An Examination of Board Director's Roles and the Impact of the External Environment and Board Characteristics.

A thesis submitted for the
degree of Doctor of
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by

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Abstract

Purpose: The thesis aims to explore the roles that board directors undertake and understand whether there is an impact of the external organisational environment as well as several board characteristics on these roles.

Design/ Methodology Approach: Building on existing literature a model is developed to test hypothesized relationships—i.e. directors' roles with external environment and board characteristics. Measurements are designed—withdrawing them from the literature—to collect quantitative data from directors of UK organisations. The responses were collected from 115 directors working in UK organisations. Principal component analysis is conducted to reduce the data and propose a set of directors' roles and correlation as well as regression analyses are utilised in order to test the hypothesised relationships.

Findings: The results of the principal component analysis propose a set of six distinct roles for board directors, providing a new framework for future researchers. In addition, it is found that both the external environment and the board characteristics have some impact on what directors do, extending the limited empirical evidence found in the literature. However, the theoretical framework needs further examination and research.

Limitations/ Future Recommendations: The current thesis is evidenced by various limitations. Firstly, additional constructs can be added as determinants of the directors' roles. Secondly, the response rate in the survey is low, which is regarded as a limitation, although there are limited studies offering quantitative results from board members.

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Chapter 1: Introduction

1.1 Introduction

Corporate governance has drawn considerable attention from academics, researchers, policy makers and practitioners over the last couple of decades, with increasing interest throughout the years. Perhaps, this is mainly due to several corporate scandals—which many studies report in their introductions (e.g. Zalewska, 2014; Elsayed, 2007; Dalton and Dalton, 2011; MacHold et al., 2008; Filatotchev and Nakajima, 2010). The scandals that keep being reported, such as at Enron (USA), WorldCom (USA), Adelphia Communications (USA), Polly Peck (UK), Parmalat (Italy) and Satyam (India) are largely related to abuse of managerial power. Hence, the common characteristic among these scandals is that the involved companies were exposed in high level of mismanagement, either due to fraudulent activity, or due to poor capability. On one hand, this mismanagement has led to the introduction of various codes and regulations across many countries (e.g. The UK Corporate Governance Code, 2012; Sarbanes Oxley Act, 2002; ICGN, 2005; OECD, 2004). On the other hand, an academic interest has arisen over the years, investigating—among other related issues—the roles and behaviours of board directors and mechanisms that may be used to affect them.

Following the above opening observations, the topic of the thesis contributes to the field of corporate governance, by studying the roles of board members and also by taking into account factors that might influence the execution of these roles. To achieve this general aim of the study, various research steps need to be taken, that will be presented in details in the eight chapters of the dissertation.

This initial chapter of the thesis presents a general view of the study. The following sections discuss the motivation of the study and the identified gaps in the extant literature, and the theoretical framework proposed along with the aim and objectives of the thesis. Finally, the methodology used is briefly presented before concluding with an outline of the significance of the study.

1.2 Motivation of the Study and Literature Gaps

Management has been systematically studied for more than half a century. Within the extensive literature, there are a few studies that have tried to capture the roles of managers, including the popular works from Mintzberg (1973) and Drucker (1973). Although the work of managers is constantly examined over the years, there is no consistent and systematic study of the roles that another leadership group of organisations has, i.e. the board of directors. Hence, the motivation for the current thesis was given by realising the potential interest that could arise for a detailed and thorough analysis of directors' roles.

After the early research period, it was found that different theories/perspectives are used in the literature trying to understand the phenomena in question, although the two dominant ones are agency theory and resource dependence perspective. On one hand, the agency theory is important as it discusses the principal-agent relationship, which can be controlled with the board of directors. On the other hand, the resource dependence perspective is also at the centre of corporate governance agenda as it considers the board of directors as a critically important mechanism that connects the organisation with the external resources available. For example, the board directors, can provide links with financial institutions or regulatory bodies. Moreover, while researchers, scholars and practitioners agree on the importance of the board of directors in ensuring the long-term well being of organisations, there is no clear and consistent identification of a board's functions and activities. As such, the author of this thesis was motivated to thoroughly research the area and achieve a contribution in the field of corporate governance.

Furthermore, during the study period, it was discovered that certain gaps exist in the previous literature. The roles of the board directors have been repeatedly described with different terms—i.e. monitor, control, service, resource dependence, advice and counsel, strategy—and in cases these roles describe overlapping activities.

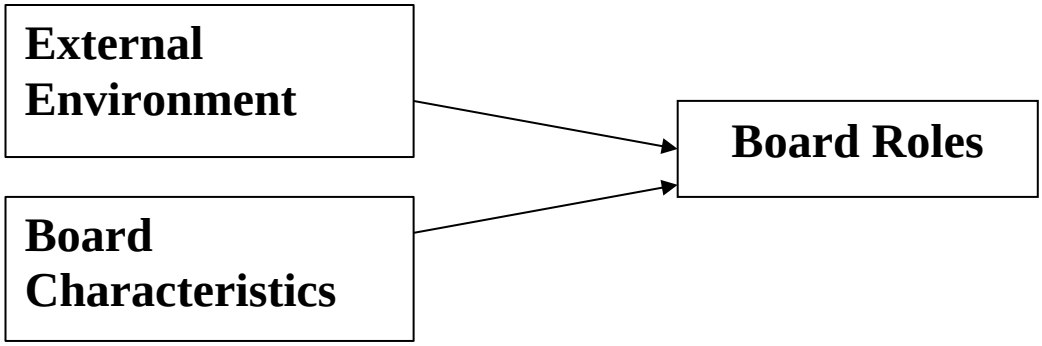
Finally, a significant gap that was identified in the literature is the direct study of the environment's impact on the roles of directors. Although there are discussions from scholars (under resource dependence perspective) indicating that there are pressures from the external environment that could determine the roles that board members undertake in an organisation, there are no studies—according to my knowledge—that have developed hypotheses and have empirically examined the proposed relationships.

1.3 Theoretical Framework and Research Aim and Objectives

The thesis has approached its research framework mainly from the two dominant theoretical perspectives existing in the literature, i.e. agency and resource dependence perspectives—presented in chapter two. Based on these, the framework aims to examine the impact of the external environment and the board characteristics on the roles of the board members. As such, the following objectives can be formed to describe the direction of the study:

1. To review the literature exhaustively on board roles, external environment and board characteristics, which comprise the research framework of the study.
2. To develop a methodology in order to empirically test the research model.
3. To collect data in order to examine the relationship between board roles and the independent constructs of the research model (i.e. external environment and board characteristics).
4. To provide recommendations for future researchers and practitioners in better understanding board roles and the impact of external environment and board characteristics.

Figure 1.1: Overview of the Theoretical Model of the Thesis



The theoretical mode of the thesis can be seen in figure 1.1. More specifically, it can be argued that the above objectives of the thesis can be depicted in two main research questions:

Research Question 1: Does the external environment of the organisation affect the board roles?

Research Question 2: Do the board characteristics of the organisation affect the board roles?

1.4 Methodology Used in the Thesis

Interestingly, there is increasing number of published articles over the last years in the literature of corporate governance, but there are a few studies trying to understand the roles of board directors. In addition, most of these—relatively few—studies have collected qualitative data through interviews with board members, aiming to explore their main duties (e.g. Roberts et al., 2005; Long et al. 2005; Machold and Farqular, 2013).

The current thesis manages to meet the aim and objectives by testing hypothesised relationships that can hopefully lead to generalised findings. According to this, it is believed that the positivist approach has been adopted in the study. Moreover, the approach used can be characterised as deductive, since the purpose of the study is to test proposed relationships and either support or reject them, rather than develop new theory.

The measurements used to achieve the objectives are quantitative and primary data from UK based companies was collected through a survey method. Finally, the study is characterised as cross sectional since the survey was conducted at a specific point in time.

1.5 Significance of the Study

It is argued that the current research thesis is significant as it achieves to contribute to knowledge, both theoretically and methodologically. As a result certain implications for researchers and practitioners are suggested.

Theoretically, it can be argued that the proposed framework has been approached from a multi-theoretical perspective, potentially giving a new direction to future researchers. In addition, the thorough literature review on the main construct of the study—i.e. board roles—results in a proposed clarification of its dimensions. The literature lacks consistency in the discussion of board roles and a variety of terms are used to describe them. Therefore, it is believed that another reason why this study is significant is the clarification of the roles, by proposing a specific set of roles for future research. Furthermore, although the theoretical framework has certain limitations—discussed in conclusions chapter—the fact that external environment is included as a potential predictor of board roles can be thought of as a significant input in both conceptual and empirical

levels. In other words, the inclusion of the external environment in the theoretical framework is a positive contribution, as previous researchers have discussed relationship of environment to the board but not systematically. In specific, the environment has been approached theoretically (i.e. mainly through resource dependence perspective) and empirically (i.e. mostly examining impact of environment to board characteristics, but not directly on roles).

Methodologically, the study can be regarded as significant for two mainly reasons. Firstly, the thesis has achieved to provide a recommendation for a set of roles to be used in the future, as a result of principal component analysis. Secondly, the study' positive contribution is the type of data collected and analysed. Most studies have offered findings—from UK companies—through interviews and the current thesis is one of the limited that have conducted a questionnaire survey. As such, despite the low response rate, the findings have some level of originality.

1.6 Structure of the Thesis

Chapter one introduces the background of the current study to the reader, by giving information on the motivation of the study. It proceeds with a brief presentation of the theoretical framework and the main aim and objectives of the thesis. Moreover, the methodological approach is outlined, followed by discussion on the significance of the study.

Chapter two firstly discusses broad definitions of corporate governance and secondly explains the importance of boards in the field. It proceeds with a presentation of various theoretical perspectives that exist in the literature related to corporate governance. Furthermore, the chapter proceeds with a detailed review of the literature for each of the constructs of the study's theoretical framework.

Chapter three presents the measurements identified in various existing studies aiming to capture the constructs of the current thesis. In addition, the propositions and hypotheses developed for testing are presented.

Chapter four initially discusses general philosophical considerations in business research and proceeds with the description of the used research design, the survey design and sampling framework of the thesis, which is followed by a brief presentation of the methods used for data analysis.

Chapter five presents the initial descriptive results produced from the conducted survey, along with detailed description of these results coming obtained from the empirical data.

Chapter six proceeds with examination of data and presentation of the results from the principal component analysis, which was used for data reduction. The results from the validity and reliability tests are also shown in this chapter.

Chapter seven shows the findings resulting from the correlation analyses conducted and proceeds with the analysis of regression results derived from the different models used. Subsequently, summary of results from the hypothesised relationships between variables is provided.

Chapter eight starts with discussion of the main findings of the study and provides some conclusions resulting from them. Moreover, it discusses the potential contribution of the study to knowledge and the possible implications for practitioners. Finally, the limitations of the study along with some recommendations for future research are described.

1.7 Summary

The current chapter introduced the topic to the reader by outlining the main issues of this thesis. Specifically, some background information was provided that was followed by discussion of study's motivation and identification of gaps found in the literature. Subsequently, the theoretical framework and the aim and objectives of the thesis were presented, followed by a brief description of the methodological approach, before concluding with some points on the study's significance. Next chapter will focus on the constructs of the theoretical framework and the thorough review of the literature found on them.

Chapter 2: Literature Review

2.1 Introduction

Due to the crash of tech stocks in the late 1990s, the proliferation of corporate scandals (such as Enron's and WorldCom in US, Siemens's in Germany, Parmalat in Italy, Satyam's in India) and the recent global financial crisis, corporate governance has attracted the attention of academics and business practitioners (Lazarri et al., 2001; The McKinsey Quarterly, 2007). Previous studies have shown that top managements' inefficiency in monitoring procedures, have resulted in financial losses (e.g. Clarke, 2005; Parker, 2005; Petra, 2005).

The following sections will examine the constructs of the theoretical model, as these have been covered in the existing literature. The literature review was based on a specific approach that was followed, in order to increase the possibility of collecting all-important references relevant to the topic. All top journals in the field—from the ABS 2012 guide—were explored to find articles on the study's constructs. Specifically, all 4 star journals under the general management, organisation studies and strategy fields were checked as a first step. Secondly, the journals related to corporate governance, regardless of their ranking, were also browsed. All the issues of these journals were checked for the period 2005-2014, trying to identify titles that could be relevant to the topic. The journals that were primarily used are shown in Table 2.1.

After finishing this procedure—that was being updated year by year—further search was conducted by using keywords in various databases (e.g. EBSCO, Science Direct, JSTOR, Sage, ABI/Inform Complete, Emerald, Ingenta, Proquest, Taylor and Francis) and the library's SUMMON function that provides results from multiple databases. Some of the keywords used included: boards of directors, corporate governance, board roles, directors, monitor, control, service, external environment, dynamism, complexity, munificence, hostility, board characteristics, board size, duality, board independence, agency theory, resource dependence perspective.

Needless to say, that this was the approach used primarily, however during the whole process, there were sources that were found with other possible approaches (e.g. reference list of articles).

Table 2.1: Journals browsed while reviewing the literature

Journals	
Academy of Management Review	Journal of Business Ethics
Academy of Management Journal	Governance: An International Journal of Policy, Administration and Institutions
Administrative Science Quarterly	Corporate Governance: An International Review
Journal of Management	Business Ethics Quarterly
Journal of Management Studies	
Harvard Business Review	
British Journal of Management	
Strategic Management Journal	
Organisation Science	
Organisation Studies	

2.2 What is Corporate Governance?

Donaldson (1990: 376) describes corporate governance as a "structure whereby managers at the organisation apex are controlled through the board of directors, its associated structures, executive initiative, and other schemes of monitoring and bonding" thereby narrowing the "scope" and "structure" of the board of directors. In contrast, Kaplan and Norton (2000), focus on "stakeholder participation", defining corporate governance as "the connection between directors, managers, employees, shareholders, customers, creditors and suppliers to the corporation and to one another" involving more "interest groups".

Corporate Governance refers to the "integrated set of internal and external controls" (Baysinger and Hoskison, 1990: 72) and deals with issues like: board size, leadership structure, and CEO dependence and independence, assuming that boards influence the strategic direction and performance of the corporations they govern (Beekun et al., 1998: 3). The internal control is related to the control of the firm's management and the external control mainly refers to provision of resources (i.e. providing legitimacy, linking the firm to important stakeholders). Another attempt to define corporate governance was made by Tricker (1984), which in my opinion accurately highlights the overall governance role of the board that is at the centre of discussion: "the governance role is not concerned with the running of the business of the company per se, but with giving overall direction to the enterprise, with overseeing and controlling the executive

actions of management and with satisfying legitimate expectations of accountability and regulation by interests beyond the corporate boundaries".

The next section further explains why the board is important for the governance of an organisation and outlines the main functions of it.

2.3 The Importance of Boards in Corporate Governance

To understand corporate boards, one should begin with the question of what do directors do? And in order to answer that question, it is important to understand how it differs from the question of what should directors do? This second question is partly answered, by the legal obligations imposed by corporate law (both statute and precedent), having to do with fiduciary obligations (Adams et al., 2010: 64). In agreement with Adams et al. (2010: 64), it is important to pose this distinction, as what is followed in practice in relation to what should be followed, might have a significant difference.

As Fama and Jensen (1983: 311) have argued the board can be described as the "apex of the firm's decision control system". According to Iskander and Chambrou (2000), the board of directors is the centre of the internal system of corporate governance and, in this scope it has the responsibility to assure long term viability of the firm and to provide oversight of management. It can be generally argued that the board of directors is the element of the highest interest in the corporate governance agenda. The main duty of the board is to monitor self-interested behaviours of executives and to fulfil stakeholders' expectations (Daily et al. 2003; Hillman and Dalziel, 2003). Similarly, many scholars have described the board's primary purpose of existence as to evaluate, reward and monitor management and vote on important decisions in an effort to maximise the value of shareholders (Becht et. al., 2003; Denis and McConnell, 2003; Fistenberg and Malkier, 1994; Salmon, 1993).

In the following pages, some theoretical views related to corporate governance and the boards of directors are presented, as found in the relevant literature. These perspectives will be presented, setting the scene in the field under which the roles of board directors will be described in the following sections. While trying to understand the roles that board directors undertake, it is important to firstly take these perspectives into account, as they try to approach and explain the director's responsibilities from a theoretical view.

2.4 Theoretical Perspectives

Different schools of thought have been developed to explain issues of corporate governance and more specifically the attributes of boards, such as agency, resource dependence, upper echelons, stewardship, institutional and social network perspectives. Each of these views approaches the subject from different lenses and the following sections offer a description of these different perspectives as they appear in the literature. Although all perspectives are being used from various researchers, the dominant ones in the study of corporate governance appear to be the agency theory and the resource dependence theory. The reason why the two perspectives are found more often in the studies of corporate governance is their explanatory power in terms of the nature and function of the boards. Both the agency theory and the resource dependence theory can well explain the roles and responsibilities of the board of directors and its relationship with the linked stakeholders. Further justification is provided in the following sections. Hence, agency and resource dependence perspectives will be discussed in more detail, as these are also the two perspectives on which the theoretical framework of this thesis is based.

In the following parts, all perspectives are presented, by providing the background and some examples of where these theories have application; however more emphasis is given on agency theory and resource dependence theory.

2.4.1 Agency Theory

Agency theory was originated by economists (e.g. Arrow, 1971; Wilson, 1968) during late 1960s, in an effort to describe the risk-sharing problem as one that arises when different parties (individuals or groups) cooperate having different approach toward risk (Eisenhardt, 1989). This problem was later identified as the agency problem, which appears when a principal-agent relationship exists. In that case, one party (principal) assigns work to another (agent), who has to carry out this work. According to Eisenhardt (1989: 58) there are two problems that might be confronted when such a relationship exists. The first one, known as the agency problem appears when "the desires or goals of the principal and agent conflict and it is difficult or expensive for the principal to verify what the agent is actually doing". In other words, this problem refers to the difficulty of the principal to make sure that the agent is doing his work appropriately and by aligning his interests to those of the principal. "The second problem is the problem of risk sharing

that arises when the principal and the agent have different attitudes toward risk". This is translated as the potential for different choices of action that the two parties would take, because of their different risk preferences.

As stated by Jensen and Meckling (1976: 308) "if both parties to the relationship are utility maximizers, there is a good reason to believe that the agent will not always act in the best interests of the principal". They further claim that the principal can limit the losses from his interest by establishing appropriate incentives to the agent, or by introducing monitoring costs to ensure that the agent is making the optimal decisions from the principal's viewpoint. It is also strongly argued, that it is almost impossible to avoid these costs and even in that case, there will still be some divergence between the agent's decisions and the decisions that would maximize the welfare of the organization. Fama and Jensen (1983) suggest that control of agency problems is important when the decision managers (i.e. executives of the firm) who initiate and implement important decisions are not the major residual claimants (owners) and as a result, do not share a great share of the wealth effects of their decisions. If effective control of the decision managers does not take place, it is very likely that the actions of these managers will diverge from the interests of principals. Therefore it is argued (Jensen and Meckling 1978; Fama and Jensen, 1983) that in order to have an effective control mechanism of decisions, the control has to be separate from the management of decisions. Thus, assuming that a decision process in broad terms has four steps that are initiation, ratification, implementation and monitoring, it is recommended that these should be allocated to different agents according to the nature of them. The first and third steps are usually allocated to the same agents and they are "grouped" under the term *decision management,* while under the term *control management,* ratification and monitoring are included.

Moreover, "since the relationship between stockholders and managers of a corporation fit the definition of a pure agency relationship, it should be no surprise to discover that the issues associated with the 'separation of ownership and control' in the modern diffuse ownership corporation are intimately associated with the general problem of agency" (Jensen and Meckling, 1978: 309). Thus, it is suggested that agency theory is highly aligned with corporations, as by definition there is an existence of agency relationships since ownership and control are often two distinct attributes. Furthermore, one of the aims of corporate governance is to manage these relationships that exist in the vast majority of large corporations around the world. Shleifer and Vishny (1997: 2) have tried to support this point since they view corporate governance as "the ways in which

suppliers of finance to corporations assure themselves of getting a return of investment" emphasizing economic return, security and control.

Agency theory literature focuses on the monitoring function of the boards of directors and argues that, by reducing the agency costs, firm performance can be improved. In other words, it is suggested that the main function of the board should be to monitor the management (agents) of the company, in order to protect shareholders' (principals) interests, which is usually translated to improved performance. Moreover, it is argued that a framework for analysing how firms can address differences between the interests of principals and agents, can contribute in assessing the efficient structure of executive compensation contracts and corporate governance relationships (Beatty and Zajac, 1994). The structure of executive compensation is determined by the scheme of compensation that is agreed in the contract of the director (cash, stock options, non-cash incentives etc.) that is strongly related with the risk bearing of the company. Depending on the compensation scheme, the agents will have different share of the wealth effects, based on their decisions. Thus, executives that are paid mostly based on their performance (i.e. stock options) are expected to have higher incentives to perform well, as this will affect their level of compensation.

By stating structure of corporate governance relationships we mean the leadership structure (duality-separation) and board dependence (ratio of internal/external members). For example, previous studies have shown that there is a preference for a dominance of external independent directors in a board, as boards consisting mainly of internal members or even of externals that are not independent of the current management of the firm, have less incentive to monitor management. Similarly, studies have shown that when the same person holds the CEO and Chairperson positions, there is less power in the board to monitor the management of a firm.

2.4.2 Resource Dependence Theory

Resource Dependence Theory (RDT), which was formalised during the 1970's, discusses the management of external resources of a company, by describing the corporation as an open system, dependent on contingencies in the external environment (Pfeffer and Salancik, 1978: 1). Pfeffer and Salancik, (1978) further argue that "this point of view is important for those that seek to understand organisations as well as for those seek to manage and control them". Furthermore, this view suggests that organizations are

part of an environment and for their survival and success they are dependent to these environments. An organisation "is linked to environments by federations, associations, customer-supplier relationships, competitive relationships and a social-legal apparatus defining and controlling the nature and limits of these relationships" (Pfeffer and Salancik, 1978: 2). RDT has been applied broadly across the research domain to explain these relationships. As stated by Hillman et al. (2009) in a review of RDT theory there are five mechanisms through which external dependencies can be minimized which are, mergers/vertical integration, joint ventures, boards of directors, political action and executive succession. These five options were initiated by Pfeffer and Sanlancik (1978) but for the purpose of this thesis we are mainly interested in boards of directors and at some extent in executive succession.

Scholars' effort to link this perspective with corporate governance, and especially with the boards of directors, seems to be reasonable. Pfeffer (1972) claims that the boards can enable firms to control these external factors and minimize the dependence of the organization to the environment. Also, it is implied that the boards of directors can bring resources to the firm. Subsequently, resource dependency theorists examine the provision of resources as the main function of the boards of directors in comparison to the agency theorists that focus on the monitoring function. Pfeffer and Salancik (1978: 162-163) support the view that the need of an advisory or governing board should lead an organization to appoint outside directors who apart from the monitoring function, should have two additional responsibilities. The first is to provide the organization with managerial expertise, since one of the criteria for appointing a director to a board is their skills and experience. The second one is to offer support to the firm. An organization that appoints a director to a board, "expects the individual will come to support the organization, will concern himself with its problems, will favourably present it to others, and will try to aid it" (Pfeffer and Salancik, 1978: 163). Usually the appointment of an outside director is decided based on his personal attributes but also his potential ability to support the firm by controlling contingencies in the external environment. The actions that directors can take to control these contingencies will be discussed in the following part about board functions and specifically under the provision of resources section.

RDT perspective however, has faced some challenges and critiques. As Pfeffer (2003: xxiii) states the very success of RDT has also been a problem. He argues that the idea of this theory has been so widely accepted and taken for granted, that it is not explored, tested and questioned as thoroughly as it might be. Furthermore, there might be

some other issues that may weaken the validity and reliability of this perspective. Hillman et al. (2009: 1421) argue that although they agree with the success and wide acceptance of RDT they do not concur that this success might have ruined the theory itself. However, they suggest that an integration of RDT with the resource-based view (RBV) of the firm could lead to a productive outcome.

According to the literature the distinction between the two perspectives is not very clear. This could be one major limitation of the theory itself. Hillman et al. (2009: 1417) base their argument on the fact that both perspectives complementarily focus on resources. Kraaijenbrink et al. (2010: 350) explains that RBV "aspires to explain the internal resources of a firm's sustained competitive advantage". This definition at first shows a distinction between the two, as RDT observes the external environment and focus on the resource dependencies that come from the outside, while the RBV tries to explain the internal resources. But Kraaijenbrink et al. (2010: 350) continue by saying that the central proposition of RBV theory is that "if a firm is to achieve a state of sustained competitive advantage, it must acquire and control valuable, rare, inimitable, and nonsubstitutable resources and capabilities, plus have the organization in place that can absorb and apply them". In other words it is suggested that the internal resources that the theory attempts to analyse have to be acquired, which is the point where the distinction of the two perspectives become unclear. These resources will be acquired from the external environment of the organisation. Nevertheless, gaining resources in order to help the organisation to achieve a competitive advantage or improve its performance is also discussed in the RDT.

2.4.3 Upper Echelons Theory

The Upper Echelons Perspective suggests that the organisational outcomes, both strategies and effectiveness, are reflected by the values and cognitive bases of the most powerful and important actors of the organisation. Based on this argument it is expected that through empirical search, such linkages can be uncovered. The theory was originated by Hambrick and Mason (1984) and is mainly concerned with the study of the top management teams of organisations which in turn can help in drawing useful conclusions for the performance of the organisations they run. More specifically, they argue that executives think, make decisions and act, based on how they interpret specific strategic situations; and these interpretations are clearly a function of their experiences, values and

personalities. Therefore, if these experiences values and personalities can be captured, we might be able to predict organisational outcomes. Moreover, Hambrick and Mason (1984) mainly argued two things. First, that it is better to focus on the characteristics of the top management team rather than focusing on one top executive (i.e. the CEO), as leadership is a shared activity and a collection of cognitions, skills and interactions of the whole top management team. Second, that the executives' values and cognitive bases can be captured with their demographic characteristics, since collecting psychological data—which is maybe more appropriate—is very difficult. Thus, characteristics such as functional background, industry and firm tenures, educational qualifications and affiliations can be used as proxies, although these indicators may contain more noise than the psychological measures.

Over the years, the theory was further developed and two more moderators were added to the theory's predictions; these were managerial discretion (Hambrick and Finkelstein, 1987) and executive job demands (Hambrick *et al.*, 2005). According to Hambrick (2007) the managerial discretion exists when there are multiple acceptable alternatives and there are no constraints from environmental factors (e.g. industry growth), organisational factors (e.g. weak board) and the executive himself/herself (e.g. tolerance for ambiguity). Similarly, the job demand is related to whether the CEO has to complete demanding tasks under great pressure, although the general idea is that all CEOs are carrying heavy loads. In reality, the jobs differ widely in their difficulty. Hambrick (2007: 335) gives example of "CEOs that operate in munificent environments, with well-fortified strategic positions and very capable subordinates, whereas others have none of these cushions".

Moreover, it is argued that the higher the managerial discretion and job demands, the more the executive characteristics will matter in predicting the organisational outcome. It seems that the theory is relevant to the study of top leadership roles and in that sense someone could argue that it should be at the centre of discussion in the studies of boards. Nevertheless, although there are a few studies in corporate governance literature approaching their research from the upper echelons perspective (e.g. Jensen and Zajac, 2004; Mueller and Barker, 1997), board researchers generally neglect to use it. In addition, it is argued from Yamak et al. (2014: 70) that there is no systematic effort in the literature to examine the impact of the external environment on the upper echelons composition processes and strategic choices—which is one of the objectives of this thesis. This simply occurs because the theory proposes that strategic choices and organisational outcomes can

be predicted from executives' demographic characteristics, as it is the top management team's job and not the board's to make decisions. The board's responsibility is to ratify and monitor the strategic choices, thus the board members' characteristics should not be accounted as predictors of organisational outcomes.

2.4.4 Stewardship Theory

There are scholars arguing that a manager of a company does not have a self-interested behaviour and that s/he might act for the achievement of collective goals, contrasting to the predictions of agency theory. This view is supported by the stewardship theorists, who believe that the managers—viewed as stewards rather than agents—are motivated to act to the best interest of their principals.

The theory seems to have its roots in the sociology and psychology domains, and was designed for researchers to examine situations where executives act as stewards, to the best interest of shareholders and not by having a self-serving behaviour (i.e. in agency theory). The debate between the two theories exists for many decades and falls under the effort of scholars to describe the 'model of man'. As stated by Davis et al. (1997: 27), according to agency theory the man is rooted in economic rationality. Nevertheless, Argyris (1973: 253) argues that this is a simplified view of man and that a more complex and humanistic model is required. According to this view, human looks for more than just to maximize his or her individual utility; instead the human's behaviour is lead by pro-organisational, collectivistic behaviours which have higher utility than individualistic behaviour (Davis et al., 1997: 24).

According to Davis et al. (1997) and Angwin et al. (2004), the differences of the two perspectives can be mainly found on the assumptions made about motivation, identification and use of power. Regarding motivation—based on the stewardship theory—a steward focuses more on intrinsic rewards such as opportunities for growth, achievement, affiliation and self-actualisation, which are not easily quantifiable. On the other hand agency theorists view managers as motivated by extrinsic rewards (i.e. tangible, exchangeable commodities like salary, medical insurance, retirement plans). Moreover, it is believed that identification of managers with the organisation's objectives helps them act as stewards. Finally, power of managers that is not considered as institutional power (i.e. derived from position), but is personal power instead (i.e. power developed over time in the context of relationships), is believed to result in steward behaviour.

The theory has been used in a few board studies to explain empirical results (Alexander et al., 1993; Brickley et al. 1997) and in many articles it is used on the side of agency theory, to serve as agency's opposite (Martynov, 2009; Angwin et al., 2004, Donaldson and Davis, 1991). However, stewardship theory has not been used as extensively as agency theory (in studies of boards), although it is considered to be its diametric and as such, one would expect to find them both being used in the same context. To my opinion, the predicted outcome of the two theories is indeed diametric, but the main reason for lack of use, is the fundamental conceptualisation of the stewardship theory. The stewardship theory does not base its assumptions on the separation of ownership and control—that is at the centre of discussion in board literature—but on the nature of managers' behaviour. It is suggested that in turn the owners will benefit from their behaviour, but the reason originates from their need for collective behaviour (i.e. intrinsic rewards). On the other hand, agency theory bases its assumptions purely on the principal-agent relationship arguing that whenever there is separation there is a potential conflict of interests resulting into the agency costs.

2.4.5 Institutional Theory

Institutional theory was originated more than a century ago, as according to Scott (2005: 408) it was a dominant theory at the end of the nineteenth century. Used widely in different fields like sociology, cognitive psychology, economics and political science, institutional theory "is not a single, unified system of assumptions and propositions, but instead a rather amorphous complex of related ideas, a broad theoretical perspective or family of approaches" (Scott, 2005: 408).

However, Eisenhardt (1988) tries to describe the institutional theory from an organisational perspective, suggesting that organisations are the way they are, just because this is the only legitimate way to organise. The key idea behind the theory is that much organisational action follows a pattern of doing things that evolves over time and becomes legitimated within an organisation and within an environment (Eisenhardt, 1988: 492). In other words, after some period, things are done in a specific way having gained legitimacy and each individual is interested to comply, otherwise his actions in the system cannot be understood (Zucker, 1977: 726). Therefore, the theory can be used to predict practices within organisations, from perceptions of legitimate behaviour. This behaviour can derive from cultural values, firm or industry traditions and management trends. Nevertheless,

these arguments do not indicate that institutional choices are unavoidably irrational; instead, it is argued that the use of structures and processes that gain legitimacy from the environment can be practical, establishing an appropriate, rational and modern organisation which avoids claims of negligence in case something goes wrong (Meyer and Rowan, 1977: 344). According to Boyd et al. (2011: 1901), "resource dependence theory and institutional theory are similar in that both contend that organizations must adapt to a constantly changing and uncertain environment".

Relatively limited studies in corporate governance have used the institutional perspective to explain or predict certain phenomena (e.g. Young et al., 2000; Judge and Zeithaml, 1992; Eisenhardt, 1988). According to previous studies, the theory's main idea—when utilised in the study of boards—is that the board can be a mechanism to provide legitimacy for the firm and that the external environment might influence or provide constraints to this function.

2.4.6 Social Network Theory

Social network theory—also referred to as social exchange theory (e.g. Cropanzano and Mitchell, 2005; Westphal and Zajac, 1997)—has its roots back to at least 1920s, bridging such disciplines as anthropology, social psychology and sociology (Cropanzano and Mitchell, 2005: 874). The theory seeks to understand how firm behaviour and performance may be explained via a pattern of ties with external actors. It is argued by Boyd et al. (2011: 1896) that "organisations are interconnected with other entities through a range of social networks, including supplier relationships, resource flows, association memberships, relationships among individual employees and alliances". This view at first seems to be similar to the resource dependence theory, as it argues than an organisation is related (or dependent in resource dependence) to other entities.

The two perspectives mainly differ on the fact that social network theory gives emphasis on the role of the social context versus the resource constraint that appears in the resource dependence. As further stated by Boyd et al. (2011: 1896) "a firm's social network consists of its prior inter-firm ties; it is the informational advantages from such a social network than enable a firm to create new ties and enhance the reliability, capabilities and trustworthiness of new potential partners".

The theory has not been extensively used in corporate governance studies and when applied, it is mainly used in order to study how interlocking directorates might shape firm

outcomes based on their networks (Gulati and Westphal 1999; Palmer et al., 1993; Westphal and Zajac, 1997; Haunschild, 1993). As Gulati and Westphal (1999: 473) claim, "the board of directors is a unique formal mechanism linking top managers of large corporations; it provides opportunity for leaders to exchange information, observe the leadership practices and style of their peers, and witness first hand the consequences of those practices". It is therefore believed that director connections to other organisations might have influence on corporate strategy and decision-making.

2.4.7 Summary

Having discussed the different perspectives/theories, it is realised that some can viewed as contradictory (e.g. agency theory and stewardship theory), others as complementary (e.g. resource dependence and social network theory) or as non-related following a totally different approach (agency theory vs. upper echelons theory). The attention is now turning to some other important issues, which are the functions of the boards of directors. The following part discusses these functions that give a specific view of what boards really do.

2.5 Board Functions/Roles

In this section the different board functions will be discussed according to the existing literature. There has been a wide discussion by researchers over the years that try to identify the roles of a board in the organizations. Although many different approaches and terms have been found that explain these roles, it seems that boards' roles are monitoring and provision of resources. Forbes and Milliken (1999: 491, 492) put boards next to the top management teams (TMTs) and refer to both as the two elite workgroups in an organisation. And they argue that as TMTs, boards face complex, multifaceted tasks that involve strategic-issue processing. They name these tasks control and service, which match to the monitoring and provision of resources functions respectively. In the following pages, these roles/functions will be analyzed based on the literature and there will be an effort to combine all the different approaches and terms that have been given, under those functions (Table 2.2).

2.5.1 Monitoring/ Control Function of Boards

The first function that is to be discussed is the monitoring function of the board. This function is according to the agency theorists the most crucial function of the board, as already discussed in the previous chapter. The theory recognizes the reality, that large organisations might have owners that are separated from the managers who are the decision makers and that these two sides might have different interests. Thus, it is suggested that when there is a separation of ownership and management, control mechanisms should be applied to the organization. As stated by Boyd (1994), the control mechanisms can be both internal and external, with external including market-based measures such as failure of the firm, or a takeover attempt. Internal control, according to Eisenhardt (1989: 61), can be achieved by discovering the agent's behaviour "through investment in information systems such as budgeting systems, reporting procedures, boards of directors, and additional layers of management". Boyd (1994) suggests, that the primary internal control mechanism that aligns the interests of shareholders and managers is the board, which serves as a representative of stockholders. This leads to the argument that the board of directors should undertake the monitoring role, by observing the management of the company in order to protect the owners' interests. In other words, residual claimants (owners) assign internal control to a board of directors. The above has been adequately described by Fama and Jensen (1983: 313) stating that "the board then delegates most decision management functions and many decision control functions to internal agents, but it retains ultimate control over internal agents—including rights to ratify and monitor major policy initiatives and to hire, fire and set the compensation of top level decision managers".

As stated in the introduction of this section, Forbes and Milliken (1999: 492) have associated boards with TMTs, as both being elite workgroups with a major role in the firm's decision control system. However, an important difference is that boards are responsible only for monitoring and influencing strategy, not for initiating and implementing strategy. In addition, boards have the responsibility to monitor the management of the organisations, in other words the CEO and members of the TMT.

The main activities of the monitoring function, as stated by (Hillman and Dalziel, 2003), are monitoring the CEO, monitoring strategy implementation, planning CEO succession and evaluating and rewarding the CEO/top managers of the firm. What these activities have in common is that their driver is the obligation to ensure that management operates at

the interest of the shareholders. Various authors refer to this function of the board as monitoring (Boyd, 1990; Jensen and Meckling, 1976; McLean Parks and Conlon, 1995; Tosi and Gomez-Mejia, 1989), while others define it as control function (Zahra and Pearce, 1989; Pearce and Zahra, 1992; Boyd, 1994; Forbes and Milliken, 1999). By examining the different definitions discussed under those two terms, it is realised that although at a conceptual level the two words differ, both are used with the same meaning.

For example, the term control seems to derive from the article of Fama and Jensen (1983), who discussed the decision making process and its four steps (initiate, ratify, implement, monitor) and argued that these tasks have to be performed by different agents. Specifically, they suggested that initiation and implementation should be grouped together under the term management decision and be allocated to one group of agents (i.e. top management team), whereas ratification and monitoring steps should be included under the management control term and be allocated to a different group of agents (i.e. board of directors). Control in this case, focuses on the two steps of the decision-making process that are ratification and monitoring. Therefore, the centre of the management control in that case is at the decision making process regarding the strategic direction of the organisation. However, Fama and Jensen (1983: 311) continue by describing the decision control rights of the board as "the power to hire, fire, and compensate the top-level decision managers and to ratify and monitor important decisions". In this further explanation, they have added the duty of controlling the executives by exerting power over them, apart from just controlling their decisions. Along the same lines, Forbes and Milliken (1999: 492), by using the term control, they refer to tasks that "include decisions regarding the hiring, compensation and replacement of the firm's most senior managers, as well as the approval of major initiatives proposed by management". This view seems to be identical to the view of the researchers describing the monitoring function and its activities, so from now on both terms will be used referring to the same function. This approach is in agreement with other scholars using both terms in their studies (Conyon and Peck, 1998; Johnson et al., 1996, Pearce and Zahra, 1991, Machold and Farquhar, 2013).

Nevertheless, some comments should be made, as although both terms are used extensively under the same function, the essence of these words (monitor and control) is different. So, we would say that there are tasks better explained by the term monitoring, like monitoring the CEO and strategy implementation, and other tasks like evaluating and rewarding the CEO/top managers or planning the succession of CEO are better described as control tasks.

Table 2.2: Board Roles as Identified in the Corporate Governance Literature

	Agency Theory		**Resource Dependence Theory**			
Journal Articles	Monitor	Control	Resource Provision	Service	Resource Depen.	Strategy
Beatty and Zajac (1994)	✓					
Boyd (1990)	✓				✓	
Boyd (1994)		✓				
Daily and Dalton (1994)			✓			
Daily et al. (2003)			✓			
Demb and Neubauer (1992)	✓					✓
Fama and Jensen (1983)		✓				
Forbes and Milliken (1999)		✓		✓		
Hillman and Dalziel (2003)	✓		✓			
Hillman et al. (2000)					✓	
Hillman et al. (2008)	✓		✓			
Jensen and Meckling (1976)	✓					
Johnson et al. (1996)		✓		✓	✓	
Judge and Zeithmal (1992)						✓
Khanna et al. (2014)	✓		✓			
Knockaert and Ucbasaran (2013)	✓	✓		✓		
Lester et al. (2008)			✓			
Li et al. (2012)		✓	✓			✓
Lin et al. (2014)	✓					
McDonald and Westphal (2010)		✓				
McDonald et al. (2008)	✓					
McLean Parks and Conlon (1995)	✓					
Pearce and Zahra (1992)		✓		✓		
Pfeffer and Salancik (1978)			✓			
Stephens (2004)		✓		✓	✓	
Sundaramurthy and Lewis (2003)		✓		✓		
Tosi and Gomez-Mejia (1989)	✓					
Wan and Ong (2005)	✓			✓	✓	✓
Westphal (1999)		✓		✓		
Yoshikawa et al. (2014)	✓		✓			
Zahra and Pearce (1989)		✓		✓		✓
Zajac and Westphal (1994)	✓					
Zona et al. (2013)	✓		✓			

Source: Author

2.5.2 Provision of Resources/ Service Function of Boards

The second function of the board that is to be discussed is the provision of resources. This function is important to the followers of the resource dependence theory, in

contrast to the agency theorists, who claim that the most important function is to control the management of the firm. Resource dependence theory suggests that organisations are open systems, inescapably bound up with the conditions of their environment, so they depend on external contingencies and actions need to be taken in order to control them (Pfeffer and Salancik, 1978). As mentioned in the relevant section discussing RDT, five mechanisms are available for an organization to minimize these dependencies that are, mergers/vertical integration, joint ventures, boards of directors, political action and executive succession. Our focus will be on the boards of directors and how these groups can act, in order to reduce environmental uncertainty. Pfeffer (1972: 219) stated that "it can be shown that corporate boards are used as if they were instruments with which to deal with the environment". It is suggested that this can be achieved through the provision of resources that describes the role of the board to provide resources to the firm through their capital, what is often called as board capital.

The activities of the board related to the provision of resources according to Hillman and Dalziel (2003) include, providing legitimacy/bolstering the public image of the firm, providing expertise, administering advice and counsel, linking the firm to important stakeholders or other important entities, facilitating access to resources such as capital, building external relations, diffusing innovation, and aiding in the formulation of strategy or other important firm decisions. The common aspect of all these activities is that they all concentrate on the role of the board to provide resources to the firm, rather than to control the management and decision making process.

However, although for the function of monitoring the term control has been used to describe more or less the same activities and is used in a quite similar way, in the case of the provision of resources function, the literature does not seem to be that clear. So, apart from the monitoring or control function of the board, there are authors arguing that there is one more function of the board that is to provide resources to the firm (Boyd, 1990; Daily et al., 2003; Daily and Dalton, 1994; Hillman and Dalziel, 2003; Hillman et al., 2000; Lester et al., 2008; Pfeffer and Salancik, 1978). These authors agree on the fact that an organization is dependent on external contingencies and it is a duty of the board members to provide resources to the firm that will help to minimize this dependence to the environment. Nevertheless, although all of them seem to share the same view, some refer to this role as resource dependence role, deriving from the relevant perspective that explains this function of the board (Boyd, 1990; Hillman et al., 2000) and some others label this role as service (Forbes and Milliken, 1999; Zahra and Pearce, 1989). For

example, Forbes and Milliken (1999: 492) portray the service role in similar lines to the provision of resources by saying that it is the board's responsibility to provide advice and counsel to the CEO and other top managers and to participate actively in the formulation of strategy. However, this captures only part of the board's responsibility to provide resources to the company.

Furthermore, Johnson et al. (1996: 411) have suggested two roles further to the controlling/monitoring, which are resource dependence role and service role. According to their view resource dependence role is the duty of the board to facilitate access to resources. The service role then is defined as the duty of the directors to provide advice and counsel to the firm's management. This classification made by Johnson et al. can be combined under the resource provision role, as both roles seem to agree to what was earlier discussed to be provision of resources.

2.5.3 Directors' Responsibility to Strategic Direction: A Separate Role?

Interestingly, Zahra and Pearce (1989), who examine the board's roles from four different perspectives (legalistic, resource dependence, class hegemony and agency), argue that from the legalistic or class hegemony perspective, the board roles are to control and service. But when they examined the board's functions from a resource dependence or agency theory perspective, they introduced a third role; that is the strategic role. Moreover, in an attempt to integrate these four approaches (different perspectives), they conclude that there are three board roles: control, service and strategy. By looking at the responsibilities of service and strategy, one could say that this is a broader approach to the roles and that there has been a division of the role of the board members to provide resources into two roles.

Therefore, Zahra and Pearce (1989: 292) suggest that service role involves "enhancing company reputation, establishing contacts with the external environment, and giving counsel and advice to executives". Conversely, the strategy role is described by the actual involvement of the directors in the strategic arena through counsel and advice to the CEO, by initiating their own analyses, or by suggesting alternatives (Zahra and Pearce, 1989: 298). It is also made clear that development or execution of strategies is not part of the role, as this is within the responsibility of the CEO.

Nevertheless, although strategy role clearly differentiates from service role in the sense that strategy describes the involvement of the directors in the strategy process, there

is not a clear distinction in terms of the activities encompassed in each case. For example, both roles require advice and counsel to the CEO or/and executives and it is not clear how this can be different in each of the two roles. In addition, while some authors (Zahra and Pearce, 1989; Judge and Zeithmal, 1992) discuss strategy role as the actual involvement of directors in the strategy process, Forbes and Milliken (1999) discuss participation of board members in the formulation of strategy under the service role.

Summarizing, it is argued that the second important function of the board is the provision of resources, with service and resource dependence functions falling within the same description. However, the proposition for a strategy role is more complicated, as although it seems correct to some extent to be discussed as a separate function, it is important to pose some unclear arguments that exist in the literature.

By examining the duties of directors under the control and resource provision roles, it is evident that both of these roles include activities that are related to the strategic responsibility of the directors. There are authors that have incorporated the strategy role into the resource provision role, as for example Hillman and Dalziel (2003: 386) state that part of the resource provision is "aiding in the formulation of strategy or other important firm decisions". Similarly, Forbes and Milliken (1999: 492) argue that directors "participate actively in the formulation of strategy", when discussing the service role.

On the other hand, the same authors also state that part of the control role is to approve major initiatives proposed by management making the strategic involvement part of the control role. Thus, it is suggested that directors' involvement in the strategic arena is related to both the monitoring and resource provision roles. Taking this idea further, it is suggested that strategy should not be discussed as a separate role, but as part of the two roles mentioned above, depending on the nature of activity, which can be either advisory or controlling.

2.6 Board Characteristics

The following sections will present and discuss various antecedents to the functions of the boards. According to the literature, the success of the directors to fulfil their responsibilities can be influenced by several factors including board size, leadership structure, board capital, board dependence, and director compensation.

2.6.1 Board Size

Board Size is an element of board structure (Daily and Dalton, 1992); it can range from very small (5) to very large (30 plus) (Chaganti et al., 1985). Studies over the past 50 and more years found the average size being from 12 to 14 members (Conference Board, 1962, 1967; Gordon, 1945). As board size increases, expertise and critical resources of a firm are enhanced (Pfeffer, 1973). Larger boards prevent the CEO from taking actions against shareholders' interests (Singh and Harianto, 1989). However, increased board size hinders initiative and strategic actions (Goodstein et al., 1994) while unproductive interactions may develop as well (O'Reilly et al., 1989).

On the contrary, a smaller board has the ability to adopt and exercise a controlling role (Chaganti et al., 1985), while a smaller group size allows for increased participation and social cohesion (Muth and Donaldson, 1998) and due to that it increases board's performance (Koufopoulos et al., 2008).

2.6.2 Board Leadership Structure

Another important issue is CEO duality, which occurs when the same individual holds both the CEO and Chairperson's positions in a corporation (Rechner and Dalton, 1991). There are previous studies (Weir and Laing, 2001) that have identified the Chairpersons' capabilities, including time to devote to running the board, knowledge of the industry and willingness to play a behind-the-scenes role. The Chairperson should also ensure that the directors have all the information needed and that there is an effective communication with shareholders. Finally, it arranges regular evaluation of the board and its members, committees and manages the relations between executive and non-executive directors.

On the other hand, CEOs are responsible for the day-to-day management of the company, including the implementation of board decisions. While an individual is serving as CEO and Chairperson at the same time, he/she has greater stature and influence among board members (Harrison et al., 1988) but hampers the board's 'monitoring' capacity (Beatty and Zajac, 1994).

Agency theorists support a separation of jobs/roles of CEO and Chairperson. As they claim, performance will be improved when the board can better monitor the CEO (Harris and Helfat, 1998). They also state that if a company combines the above roles much power is concentrated to one individual who is able to make decisions that do not

maximise shareholders' wealth (Higgs Review, 2003; Mallete and Fowell, 1992). This separation of CEO and Chairperson's roles is considered a condition for avoiding a conflict of interest between corporate constituencies and management, and due to that it improves the boards' ability to govern (OECD, 2004).

2.6.3 Board Capital

Board capital is the capital that the members of the board bring to the firm. This capital is often divided into two categories the human and social capital. As stated by Lester et al. (2008: 999) "the resources that individual directors bring to corporate boards are largely a function of their human and social capital".

By the term human capital we mean the expertise, experience, knowledge, reputation and skills that the directors offer to the organisation (Hillman and Dalziel, 2003). Similarly, Nahapiet and Ghoshal (1998) argue that human capital is the acquired knowledge, skills and capabilities that enable persons to act in new ways. However, in their study they focus on knowledge and knowing capability, which they define as intellectual capital and they argue that is not the same but in parallel with the concept of human capital.

On the other hand, social capital refers to "the sum of actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit" (Nahapiet and Ghoshal, 1998: 243). Other scholars refer to social capital also as relational capital (Hillman and Dalziel, 2003; Hillman et al., 2007). Nevertheless, Nahapiet and Ghoshal (1998: 244) use the term relational differently, as they describe it as one of three dimensions of the social capital, with the other two being structural and cognitive. They further define as structural "the properties of the social system and of the network of relations as a whole", whereas relational describes "the kind of personal relationships people have developed with each other through a history of interactions". Finally cognitive dimension of social capital "refers to those resources providing shared representations, interpretations, and systems of meaning among parties". From now on, for the purpose of this thesis, board capital will be used and it will refer to the human and social capital.

Hillman and Dalziel (2003) claim that board capital has been positively associated with the four benefits that result from the provision of resources and were initially identified by Pfeffer and Salancik (1978). However, it is important to say that Pfeffer and

Salancik discussed these four benefits under the specific condition where directors have linkages to other organizations. The first benefit that is related to board capital is the provision of advice and counsel that all directors facilitate through their knowledge, experience and expertise. Baysinger and Butler (1985: 111) identified 13 different categories of directors, showing the diversity that might exist within a board with each director bringing different skills to the board. Among these categories they listed lawyers, financial representatives, former government officials, top management of other firms and other directors and each of these categories can offer advice and counsel by using their sophisticated knowledge. The second benefit that directors provide to the firm and is associated to their board capital is legitimacy (Galaskiewicz, 1985: 296) and reputation (Bazerman and Schoorman, 1983: 211; Certo et al., 2001: 37; Pfeffer and Salancik, 1978: 145). Galaskiewicz (1985: 296) argues that "one interorganizational strategy to enhance legitimacy is to have the organization identified with cultural symbols and/ or legitimate power figures in the environment", and he suggested that one way to achieve that is to recruit prestigious people to the organization's board of directors. Third, the board capital provides channels of communication and information between the firms and other external organisations and this is mainly achieved with directors' external ties, which is an element of their social capital (Bazerman and Schoorman, 1983: 211). Often these external ties exist because of multiple appointments of directors in different organisations, which are described in the literature as interlocking directorates. Finally, board capital can help in accessing critical resources from the outside, such as influence in financial capital, influence with political bodies, or any other important stakeholder group (Baysinger and Butler, 1985: 108; D'Aveni, 1990: 121; Pfeffer, 1972: 222).

From the above, it seems that an association of board capital to the function of resource provision is clear, as the higher the capital is, the more resources are provided to the firm. However, although there is a linkage of board capital with the provision of resources, there has not been an extensive research on the possible relation of board capital with the monitoring function as stated by Hillman and Dalziel (2003). It is argued that the main focus has been on the incentives (i.e. directors' compensation) as an antecedent for the monitoring function, but what is also important to study is the ability of directors to monitor, which in great extent can be measured by their capital. Hillman and Dalziel (2003) believe that the expertise and the skills of the directors can make the difference in their ability to monitor the management and strategic direction of the firm. It is suggested that knowledge and expertise of directors either from previous experience in other firms, or

from current appointment in other boards (Carpenter and Westphal, 2001: 642-643), can lead in better monitoring. Based on the arguments above, board capital is expected to have impact on the functions on the board.

2.6.4 Board Independence

Board independence is mainly determined by the ratio of inside/outside members of the board. An independent board is then characterised as a board that is dominated by independent outside members. Thus, the more the inside directors (as a proportion to outside) serving a board, the less independent the board is. In simple terms, inside members are those that are currently managers/employees of the firm, while outside members of the board are all those that do not work for the company (Hillman and Dalziel, 2003).

However, the issue of independence arises when exploring the status of the outside directors, who can be characterized as independent only if they meet specific criteria, otherwise they are considered as affiliated. Such criteria have been published in various corporate governance practices, codes, laws and recommendations over the years. Therefore, the status of independence is not met if the director: a) has been an employee of the company within the last five years, b) has or had within the last three years a material business relationship with the company, c) receives an additional remuneration from the company apart from the director's fee or is paid based on performance, d) has close family ties with any of the company's advisers, directors or senior employees, e) holds cross-directorships or has significant links with other directors through involvement in other companies or bodies, f) represents a significant shareholder, or g) has served on the board for more than nine years (Higgs Review, 2003: 37; UK Corporate Governance Code, 2010: 12-13).

The issue of board independence has largely been discussed and has attracted the interest of scholars, professionals and regulatory bodies, since it is strongly argued that high participation of independent directors is needed in the board as they can bring different attributes to the boardroom. The main purpose of the board is to protect shareholders' interests and according to agency theory discussed earlier, the major role of the board members is to monitor the management and the decision process of the organization. Dalton et al. (1998: 275) argue that "outside directors may be best able to fulfil the control role when they are not encumbered by personal and/or professional

relationships with the firm or firm management". In addition to the agency theory and the contribution of independent directors to the monitoring function, the appointment of outside directors in a board can also be useful in terms of provision of resources (Hillman et al., 2009). Zahra and Pearce (1989: 308) support that boards with a majority of outside directors "are in a position to establish viable links with different sectors of the external environment". In similar lines, Dalton et al. (1998) argue that outside directors may have more access to external information and resources than inside directors, who are largely employed with their operational responsibilities. They make a further comment by distinguishing affiliated from independent directors: "outside directors with personal relationships (e.g. family relations) with firm management may be less effective at the resource dependence and counseling/expertise roles than outside directors without such relationships" (p. 275).

From all the above, it is apparent that there is a preference for independent boards, a prevalent position that is largely found in academic studies, corporate governance practices and codes (Boyd, 1994: 338; Daily and Dalton, 1994: 644; Higgs Review, 2003: 35; Hillman and Dalziel, 2003: 385; UK Corporate Governance Code, 2010: 12). However, it is important for each company to find a balance of inside/outside directors according to its needs, as the presence of inside directors also play an important role in the board's effectiveness. As stated by Baysinger and Hoskisson (1990: 77) "outside directors may prefer to maintain an open and subjective relationship with top management, which might lead them to lack the amount and quality of information upon which such relationships must be based". They suggest that the presence of inside directors to the board appears as a solution, or at least as an attempt to overcome information processing which in turn improve the effectiveness of decision control. Another argument that supports the dominance of insiders is that of Zahra and Pearce (1989: 315) who support that outside directors might not have the requisite time and expertise to do their job well. In contrary, inside directors, who are members of the company's management and devote significantly more time in the organization, are expected to have more knowledge and information about the processes and strategic direction of the company.

Despite the debate, it seems that further examination of board composition should be done in order to determine if an effective balance between inside and outside members exists.

2.7 External Environment

The external environment is a main construct of the current thesis and the theoretical model suggests that external environment of an organisation, may affect the roles undertaken by the board members. This section will present the main aspects of the external environment of an organisation, and will continue by focusing on its various dimensions as proposed in the existing literature.

2.7.1 Organisation as a System, and its Environment

Before analysing the external environment of an organisation, it is maybe more appropriate to explain first what constitutes the organisational environment. The literature has consistently distinguished the environment of an organisation in internal and external over the last decades (e.g. Duncan, 1972; Gibbs, 1994; Garg et al., 2003; Hall and Fagen, 1956; Lohrke et al., 2004).

To understand the difference of these two levels, although the distinction seems self explanatory, it is important to understand the boundaries that differentiate between internal and external. This idea is well explained in the literature related to systems. Hence, organisations are viewed as open systems—also an assumption of the resource dependence theory earlier in this chapter—that interact with the environment. Hall and Fagen (1956: 81) define a system as "a set of *objects* together with *relationships* between the objects and between their attributes". The objects are then explained as the parts or components of a system and the relationships to which we refer, are those that "tie the system together". Moreover, Hall and Fagen (1956: 83) introduce the notion of environment of systems:

> "For a given system, the environment is the set of all objects a change in whose attributes affect the system and also those objects whose attributes are changed by the behaviour of the system".

This definition brings the question of whether an object belongs to the system or to the environment. Because based on the above definition, it is reasonable to contend that if an object is affected by a change in the system, it should be considered as part of it. Subsequently, it is argued that there is no definite answer on this, but it depends on the intentions of the researcher. As explained, a system with its environment comprises the

universe of all things of interest in a given context. The division of this universe can be done in many different ways.

In the context of business organisations, the system is the organisation and the term environment, is used to describe aspects from the inside as well as the outside. Based on this, a business organisation is conceptually 'treated' as an organic system. According to Hall and Fagen (1956: 86) "most organic systems are open, meaning they exchange materials, energies, or information with their environments". In contrast, a closed system does not allow any import or export of such materials, energies and information and as such no change of its components takes place. Therefore, the organisation that is viewed as an open system is affected by factors from its environment. Duncan (1972: 314) gives a clear description of what should be considered as environment by saying that it is thought of as "the totality of physical and social factors that are taken directly into consideration in the decision-making behaviour of individuals in the organization". Furthermore, he claims that if this is a definition for the environment, there are also factors within the boundaries of the organization must be considered as part of the environment. This is then the reason why there is a need for differentiation of the system's environment into internal and external. Consequently, all factors within the boundaries are regarded as internal environment and all factors from the outside are regarded as external.

2.7.2 Components and Levels of the Environment

Duncan (1972: 315) proposed a set of components for the internal and the external environment (Table 2.3), after interviewing individuals from different organizational decision units in 1968. It is important to say that the sample he used was solely based on manufacturing firms, therefore the components might not have a perfect match in all companies. In short, the internal components focus on the personnel, the numerous relationships between functional and staff units and the organisation's aims, goals and general characteristics (e.g. nature of products/ services). The external components refer to all these factors outside the boundaries of the organisation that may affect the organisation, such as customers, suppliers, competitors, socio-political and technological conditions.

Although most scholars seem to agree that the environment consists of the internal and external components, various studies—started appearing from the 60s—have attempted to define the environment following different approaches. Verdu and Gomez-

Gras (2006) for example state, that Mintzberg (1979), generically defined the environment as everything that is different to the organisation, while Thompson (1967), included in environment all those external agents (stakeholders) that have inter-dependence with the organization and can affect it in the accomplishment of its mission and objectives.

Moreover, the literature suggests that the external environment is realised in two different levels. These are the general environment and the task environment (Dill, 1958; Bourgeois, 1980; Downey and Slocum, 1975). The general environment is also described as remote or macro-environment, while the task environment is also referred to as competitive or microenvironment.

The general or macro-environment is usually explained and analysed under the widely used factors, which are Political, Economic, Social and Technological, known as the PEST analysis. Later, Environmental and Legal factors were added which lead to the PESTEL analysis (Yuksel, 2012). At this point, it is noteworthy to mention that the original form of PEST was initially found by Aguilar (1967) as ETPS (i.e. economic, technical, political, social). Since then and until today, varieties of forms have been used (e.g. STEP, DEEPLIST), although the dominant one seems to be PESTEL.

On the other hand, the task environment was expressed by Dill (1958), as the part of the total environment of management, which is potentially relevant to goal setting and goal attainment. Bourgeois (1980) tried to explain the difference of the task environment to the general, by discussing different levels of strategies. He claimed that corporate level strategies are carried out in the general environment, while business level strategies in the task environment. Furthermore, it can be argued that Porter's work (1979) reflects the factors that capture the task environment. His five forces model suggests that the competitors, the suppliers, the customers, the substitute products and the threat of new entrants are the main factors that need to be taken into account in the competitive (task) environment before making any critical business decisions.

Duncan's components of external environment discussed and presented earlier, seem to combine aspects of both the general (i.e. socio-political and technological) and the task (i.e. customer, supplier, competitor) environments.

Table 2.3: Factors and Components Comprising the Organisation's Internal and External Environment

Internal Environment
(1) Organisational Personnel Component A. Educational and technological background and skills B. Previous technological and managerial skill C. Individual member's involvement and commitment to attaining system's goals D. Interpersonal behaviour styles E. Availability of manpower for utilisation within the system
(2) Organisational functional and staff units component A. Technological characteristics of organisational units B. Interdependence of organisational units in carrying out their objectives C. Intra-unit conflict among organisational functional and staff units D. Inter-unit conflict among organisational functional and staff units
(3) Organisational level component A. Organisational objectives and goals B. Integrative process integrating individuals and groups into contributing maximally to attaining organisational goals C. Nature of the organisation's product service
External Environment
(4) Customer component A. Distributors of product or service B. Actual users of product or service
(5) Supplier component A. New materials suppliers B. Equipment suppliers C. Product parts suppliers D. Labour supply
(6) Competitor component A. Competitors for suppliers B. Competitors for customers
(7) Socio-political component A. Government regulatory control over the industry B. Public political attitude towards industry and its particular product C. Relationship with trade unions with jurisdiction in the organisation
(8) Technological component A. Meeting new technological requirements of own industry and related industries in production of product or service B. Improving and developing new products by implementing new technological advances in the industry

Source: Duncan (1972: 315)

As stated by Castrogiovanni (2002), some descriptions of environmental tendencies draw examples at the general environment level (e.g. Toffler, 1970), and other descriptions at the task environment level of analysis (e.g. Castrogiovanni, 1991; Dill, 1958). It should be noted that generalization across those two levels might be inappropriate since new task environments are constantly emerging within the general environment (Castrogiovanni, 2002: 130).

This section discussed the different levels of the environment and its components. The following section will briefly discuss another important aspect of the environment as the literature suggests, that is whether environment is objective or subjective.

2.7.3 Objective versus Perceived Environment and its Dimensions

Another important approach on which the literature offers different views is whether the environment should be viewed as objective or subjective. Bourgeois (1980: 33) asks a clear question to this issue that he calls a philosophical one:

> "Which perspective of the construct of 'environment' is most relevant to an organization's behavior - its managers' *perceptions* of environmental states, or some *objective* characteristics of its environment?"

Different scholars over the years have offered contradictory views on which approach is more appropriate. According to Verdu and Gomez-Graz (2006: 7), some authors are in favour of objective data to measure the environment (e.g. Bourgeois, 1980; Starbuck, 1976; Aldrich, 1979), while others are advocates of the subjective data (e.g. Duncan, 1972; Child, 1972; Tosi et al., 1973), claiming that only through managers' perceptions the organisation can know its own environment. Although both approaches are used by different researchers, it is generally argued that using both objective and perceptual measures to assess the environment, might lead to more sophisticated studies (Dess and Beard, 1984; Bourgeois, 1980).

In the previous section, the components and levels of the environment were described. This section briefly discussed the two approaches used by researchers to conceptualise and measure the environment, i.e. objective and subjective. Nevertheless, it is not an aim of this thesis to further discuss these approaches or the components and levels of the environment. The focus in the following pages will be to review the literature on the different dimensions of the external environment, which are at the centre of this study's interest and part of the theoretical framework.

2.7.4 Dimensions of the External Environment

Different terms have been used across the literature to capture environment's dimensions, however the most dominant ones that will also be presented are environmental dynamism, complexity and munificence. Previous studies often have treated these dimensions as objective, while a fourth dimension—deriving from dynamism and complexity according to Duncan, 1972—is solely treated as subjective/perceptual (Bourgeois, 1980).

2.7.4.1 Environmental Dynamism

Dynamism, as a dimension of the organisational environment, started being discussed in a slightly abstract way during the 1960s (e.g. Emery and Trist, 1965; Terreberry, 1968, Thompson, 1967), but it was during the 1970s when it began taking its shape and becoming a more concrete concept (e.g. Duncan, 1972; Child, 1972). Duncan (1972: 316), who in my opinion conceptualised and explained the dimension in a clear manner, named the two poles of the dimension as static and dynamic. According to the him, "the static-dynamic dimension indicates the degree to which the factors of the decision unit's internal and external environment remain basically the same over time or are in a continual process of change". By further explaining the dimension, Duncan (1972) claimed that dynamism is divided into two sub-dimensions: a) the frequency of change for the factors that are identified as important to the decision making of the specific decision unit and b) the frequency with which the decision makers take into account new and different (environmental) factors in the decision making process. This means that, in a dynamic environment, a) there will be frequent changes to the factors considered as important and b) the managers will need to re-examine which factors are important regularly. The opposite would apply in a case of a static environment.

In very similar lines other authors have viewed environmental dynamism as the degree, frequency and unpredictability (or irregularity) of change among environmental factors relevant to an organisation's operations (e.g. Child 1972: 3; Castrogiovanni, 2002: 132). However, the term used by Child (1972) to describe the dimension is *variability*, although its variables converge with Duncan's and as such it is considered to be the same. Dess and Beard (1984: 56) state that based on some authors (i.e. Miles et al., 1974 and Jurkovich, 1974) it is important to differentiate between the rate of change and its

unpredictability. Child (1972) did not distinguish between these two, but Miles et al. (1974: 248) argue that it is possible to have rapid but largely predictable change in the environment, which would not be a serious challenge.

Finally, it is worth mentioning that while the work of these authors in the 1960's and 1970's is widely followed until today, there are different terms that have been used to describe environmental dynamism. These terms include volatility, instability, movement, velocity, turbulence and variability.

2.7.4.2 Environmental Complexity

The second largely discussed dimension of the environment is its complexity. Following again the description from Duncan (1972), who termed it as simple-complex dimension, it is whether the factors in the decision unit's environment are few or many in number and whether they are similar to each other, in that they are part of the same components. Hence, in a simple environment there would be only few factors involved in the decision unit which would also be similar to each other, while in a complex environment there would be a large number of factors considered as important to the decision unit and would also be heterogeneous. Similarly, Child (1972: 3) and Tung (1979: 675) argue that environmental complexity refers to the number and heterogeneity/diversity of factors and components (or activities) that the focal unit has to contend with, in decision making.

Nevertheless, when Duncan tried to provide a typology of components and factors of the environment, he took into account both the internal and the external environment. At this point, it is important to mention Tung's critique on the definition of the dimension. Tung (1979: 680), after reviewing La Porte's (1971) definition of the complexity dimension, claimed that Duncan's definition (1972) was inadequate. According to Tung (1979), there is one more aspect that should be taken into account when measuring complexity, apart from the number of factors and their heterogeneity; that is the manageability of the factors. The manageability is described as the extent to which the CEO of a company can handle the factors and components of the environment. Moreover, Tung (1979: 681) argues that this largely depends on whether the factors and components were located in the internal or external environment. If the majority of factors and components are found in the internal environment the expected complexity would be much lower than that for an organisation whose factors and components are primarily found in the external environment. To my opinion, this is an important omission from Duncan

(1972) and Child (1972), as when discussed the environment's dimensions, they neglected to distinguish the internal from the external environment.

Finally, Dess and Beard (1984) operationalized complexity dimension with two sub-dimensions, following Aldrich's (1979) codification. The one is called homogeneity-heterogeneity and is the same with what discussed above, and the other one is called concentration-dispersion. Dess and Beard (1984: 57), suggest that apart from the number and heterogeneity of factors, the dispersion is also an important aspect of complexity. They give the example of an organisation expanding through diversification into new markets, arguing that complexity will be increased having more requirements both in the operational level and—most important—in the administrative control.

2.7.4.3 Environmental Munificence

Staw and Szwajkowski (1975: 346) argued that although the most discussed and researched dimension is uncertainty, which according to Duncan (1972) and Child (1972) combines dynamism and complexity, another important dimension of the environment is that of munificence. They also claimed that the very first study incorporating the dimension clearly into a theoretical model is possibly that of March and Simon (1958). Environmental munificence has been defined as the scarcity or abundance of resources needed by firms operating within an environment (Castrogiovanni, 1991; Pfeffer and Salancik, 1978; Staw and Szwajkowski, 1975; Bradley et al., 2011). Moreover, Dess and Beard (1984) suggested that munificence is "the extent to which the environment can support sustained growth" which is similar to Aldrich's (1979) concept of environmental capacity. Furthermore, the extent of resources that are available within an environment, do not only affect the survival and growth of companies operating in this environment, but also any firms that may attempt to enter (Castrogiovanni, 1991: 543).

Furthermore, Bradley et al. (2011: 1077), argue that as resource availability increases, there are less selective pressures in the environment, which increases opportunity by allowing a greater diversity of goals, strategies, and organizational structures. On the other hand, they suggest that low munificence—or high environmental hostility—reflect lower market growth and higher competition for the reduced available resources. Subsequently, they claim that limited outside resources make it necessary for companies to depend more on their internal resources to develop opportunities. Interestingly, higher level of internal resources is associated with higher levels of innovation.

2.7.4.4 Environmental Uncertainty

The concept of uncertainty has been discussed in various ways, depending each time on the approach used by each researcher. Duncan (1972) for example, argued that uncertainty definitions were developed by information as well as decision theorists. However, Duncan (1972) who reviewed different studies that tried to define uncertainty claims that some failed to provide clarity in definition (e.g. Lawrence and Lorsch, 1967), while others gave narrower definitions by focusing on the more mathematical aspects of uncertainty such as the individuals' ability to assign probabilities to events (e.g. Luce and Raiffa, 1957; Garner, 1962). However, even in the case of these narrower definitions, it was believed that they were too abstract for managers to respond too. As such, after careful consideration of previous works and by taking into account the views of eighteen individuals, Duncan (1972) identified three components that are appropriate for capturing uncertainty:

1. The lack of information regarding the environmental factors associated with a given decision-making situation,
2. Not knowing the outcome of a specific decision in terms of how much the organisation would lose if the decision were incorrect,
3. Inability to assign probabilities with any degree of confidence with regard to how environmental factors are going to affect the success or failure of the decision unit in performing its function.

Duncan (1972) interestingly argues that these three components can be captured with the measurement of dynamism and complexity that had earlier defined in his article. In addition, he claims that dynamism is considered as a more significant factor than complexity, when measuring uncertainty. In brief, Duncan (1972: 325) states that "decision-units with dynamic environments always experience significantly more uncertainty in decision making regardless of whether their environment is simple or complex". Similarly, the difference in perceived uncertainty between simple and complex environments is not significant, unless the environment is also dynamic. By connecting this argument with the earlier conceptualisation and breaking down of the dynamism and complexity dimensions, the following statement can be established: A large number of factors affecting decisions, that are also heterogeneous (i.e. complexity) are not considered as strong contributors to uncertainty, if there is not high frequency of change and unpredictability for these factors.

Returning to the discussion of whether environmental dimensions should be measured objectively or subjectively, environmental uncertainty is a dimension that is widely considered as subjective, i.e. based on the perceptions of the executives (e.g. Duncan, 1972; Downey and Slocum, 1975; Bourgeois, 1980; Milliken, 1987; Priem et al., 2002; Oreja-Rodriguez and Yanes-Estevez, 2007; Qi et al., 2011; Srinivasan et al., 2011). However, Bourgeois (1980) insists, that both objective and subjective measures are needed to provide a more accurate view of the environment and that the perceptions of managers should definitely not be treated as objective.

Furthermore, an interesting approach by Milliken (1987: 136), divided the uncertainty dimension into three types of uncertainty namely *state, effect* and *response* uncertainty. State uncertainty occurs, when the managers perceive the environment or a component of the environment as unpredictable. Effect uncertainty is then defined as the inability to predict the nature of the impact of a future state of the environment on the organisation (example given is that of a hurricane approaching a house; although the danger is realised, the exact effect cannot be predicted). Finally response uncertainty is defined as the lack of knowledge of response option(s) or the consequences of a response choice.

Table 2.4 below, lists a number of studies that have conceptualised and examined the environmental dimensions over the decades. Notably, in some cases, different terms have been used from different authors to describe similar dimensions, which have been provided under the corresponding dimensions.

Table 2.4: Environmental Dimensions Identified in the Organisational Literature

Journal Article	**Dynamism**	**Complexity**	**Munificence**	**Uncertainty**
Baum et al. (2001)	Dynamism	Complexity	Munificence	
Bourgeois (1980)	Dynamism/ volatility/ turbulence	Complexity/ heterogeneity		Uncertainty
Boyd (1990)	Dynamism	Complexity	Munificence	
Boyd (1995)	Dynamism	Complexity	Munificence	
Bradley et al. (2011)	Dynamism		Munificence	
Carpenter and Fredrickson (2001)				Uncertainty
Castrogiovanni (1991)			Munificence	

Castrogiovanni (2002)	Dynamism	Complexity	Munificence	
Child (1972)	Variability	Complexity	Illiberability	
Dess and Beard (1984)	Dynamism	Complexity	Munificence	
Downey and Slocum (1975)				Uncertainty
Duncan (1972)	Static-dynamic	Simple-complex		Uncertainty
Emery and Trist (1965)	Dynamism/ Turbulence	Complexity		
Harrington and Kendall (2005)	Dynamism	Complexity		
Jurkovich (1974)	Movement	Complexity		
Li and Atuahene-Gima (2001)	Turbulence			
Lang and Lockhart (1990)				Uncertainty
Miller (1983)	Dynamism	Heterogeneity	Hostility	
Miller (1988)		Heterogeneity		Uncertainty (unpredictability & dynamism)
Milliken (1987)				Uncertainty
Mitchell et al. (2011)	Dynamism		Hostility	
Oke et al. (2012)				Uncertainty
Oreja-Rodriguez and Yanes-Estevez (2007)				Uncertainty
Priem et al. (2002)				Uncertainty
Qi et al. (2011)				Uncertainty
Srinivasan et al. (2011)				Uncertainty
Staw and Szwajkowski (1975)			Scarcity-munificence	
Sutcliffe (1994)	Instability		Munificence	
Terreberry (1968)	Turbulence			
Thompson (1967)	Dynamism-stability	Heterogeneity - homogeneity		
Tung (1979)	Movement	Complexity & routineness		
Waldman et al. (2001)				Uncertainty
Zahra et al. (2005)	Dynamism	Heterogeneity	Hostility	

Source: Author

2.8 Summary

This chapter was introduced by presenting some general issues about corporate governance and then continued with the discussion of the main theoretical perspectives that are found and used in the corporate governance literature (i.e. agency theory, resource dependence theory, upper echelons theory, stewardship theory, institutional theory, social network theory). Moreover, the chapter presented the roles of board members, which is a main construct of the thesis. Subsequently, several board characteristics that are assumed to affect the roles were described, although for the purpose of the thesis only some will be studied (i.e. board size, leadership structure, board dependence). Finally, the last section of the chapter discussed the second main construct of this thesis, which is the external environment of organisations. The following chapter will cover issues related to the measurement of constructs and the developed hypotheses.

Chapter 3: Measurements and Hypotheses

3.1 Introduction

The previous chapter focused on reviewing the literature on the different aspects that this study is interested. A number of theories that are related to corporate governance and the boards were reviewed. Then the major constructs of the study, as well as some closely related variables were discussed. This chapter will firstly focus on providing a review of the different measurements that have been used in the literature to capture the relevant constructs. Secondly, the chapter will proceed by developing various hypotheses to be tested, deriving from the possible relationship of the constructs and variables as argued in the literature.

Hence, the following pages will review and present different measurements of each construct and then the hypotheses of the study will be provided.

3.2 Measurements of the Study

The following sections will explain and present in detail, all the questions/measurements found in the literature to capture the main constructs related to the theoretical model.

3.2.1 Measurements of the Board Roles

In the previous chapter the focus was on reviewing the different roles that board directors undertake, based on the literature. The relevant sections also highlighted the different approaches taken by various authors to describe the roles, however, monitor, service and strategy seem to be the three dominant roles. This section will present a few of the approaches that have been adopted by different authors to measure the roles, which also helped in designing the measures for the present thesis.

3.2.1.1 Measurement of the Monitoring Role

Monitoring role of the board is widely discussed in the literature (mainly linking it with the agency theory) and there are various authors that have proposed and used different items trying to capture this function of the board members. Table 3.1 outlines some of these articles and although most of them capture similar activities the terms monitoring and control are used interchangeably (i.e. McDonald and Westphal, 2010; Hillman et al., 2008; McDonald et al., 2008; Wan and Ong, 2005; Stephens et al., 2004; Hillman and Dalziel,

2003; Carpenter and Westphal, 2001; Westphal, 1999; Beatty and Zajac, 1994; Zajac and Westphal, 1994).

Nevertheless, although most studies have used items that seem to capture the monitoring role effectively, there are authors that have used items that to my opinion can be considered as proxy variables. For example, Beatty and Zajac (1994) and Zajac and Westphal (1994) have used the ratio of outside directors to total directors as an item to measure the monitoring function. Although this might be a good indication—based on agency theory, monitoring is mostly performed by outside members—it does not refer to any specific activity that directors perform. Similarly, the issue of duality (i.e. CEO also holding the Chairperson position) is used as evidence of the monitoring function. Finally, the abovementioned authors use items related to ownership presence and venture-backed funding to determine the level of monitoring functioning. As stated earlier in this paragraph, all these items are considered as relevant indicators, but they are not regarded as appropriate measures for this thesis.

Table 3.1: Monitoring/Control Role Measurements in the Literature

Authors	**Items**
Beatty and Zajac (1994)	1. Ratio of outside directors to total directors 2. Proportion of outside owner-directors to total directors 3. Presence of a shareholder with large equity holdings who is not on the board 4. Whether the IPO firm is venture-backed 5. CEO/Chairman split
Carpenter and Westphal (2001)	1. To what extent does the board monitor top management strategic decision making? 2. To what extent does the board formally evaluate [the CEO's] performance? 3. To what extent does the board defer to [the CEO's] judgment on final strategic decisions?
Hillman and Dalziel (2003)	1. Monitoring the CEO 2. Monitoring Strategy Implementation 3. Planning Succession 4. Evaluating and Rewarding the CEO/top managers of the firm
Hillman, Nicholson and Shrosphire (2008)	1. Monitoring the CEO {{decisions by CEO}} 2. Strategy Implementation 3. Planning for CEO succession 4. Evaluating and rewarding the CEO/top managers
Judge and Zeithaml (1992)	1. The board usually collects its own information about the progress of the strategic decision in addition to top management reports.
McDonald and Westphal (2010)	1. Over the past twelve months, to what extent has the board exerted control over strategic decision making by management? 2. To what extent has the board requested information from the CEO or another inside director for the purpose of evaluating management's progress in

	implementing the firm's corporate strategy? 3. Over the past twelve months, how many times did the board call for revisions to a strategic proposal put forth by management for approval? 4. How many times did members of the board constructively criticize a strategic proposal put forth by management [for approval]? 5. On how many occasions did the board seek information from the CEO or another inside director for the purpose of evaluating the performance of top management?
McDonald, Khanna and Westphal (2008)	1. To what extent does the board monitor the CEO's strategic decision making? 2. To what extent does the board formally evaluate the CEO's performance? 3. To what extent does the board defer to the CEO's judgment on final strategic decisions? 4. Over the past year, how many times did one or more members of the board constructively criticize a strategic proposal put forth by the CEO for approval? 5. How many times during the past year have one or more members of the board requested information from the CEO or another inside director for the purpose of evaluating the CEO's strategic decision making?
Stephens et al. (2004)	1. The board seems to be satisfied with the performance of the chamber' president/CEO/executive director. (Control) 2. The board seems to be satisfied with our president/CEO/executive director's performance. (Control) 3. The president/CEO/executive director's performance is outstanding. (Control)
Stiles (2001)	1. Hire, appraise and fire executives
Van Den Heuvel, Van Gils and Voordeckers (2006)	1. Select new managers 2. Determine salary/ compensation of management 3. Evaluate/ Control management performance 4. Direct succession problems
Wan and Ong (2005)	1. Monitor top management in decision-making 2. Evaluate performance of top executives 3. Has internal mechanism to evaluate performance yearly 4. Member formally evaluated by others 5. Analyse budget allocation vs. performance 6. Require information showing progress 7. Review performance against strategic plan 8. Review financial information for important issues/trends 9. Engage in succession planning for CEO 10. Engage in succession planning for top managers besides CEO
Westphal (1999)	1. To what extent does the board monitor top management strategic decision making? 2. To what extent does the board formally evaluate your performance? 3. To what extent does the board defer to your judgment on final strategic decisions?
Zajac and Westphal (1994)	1. Outsider ratio 2. Outside directors' stock ownership (as a % of common stock) 3. Presence of a nondirector blockholder 4. CEO/Chairman split (duality)

3.2.1.2 Measurement of the Provision of Resources/ Service Role

The second role of the board largely discussed and examined in the literature is the service role. The service role is usually described under the resource dependence perspective, arguing that the board members should provide service, which in turn helps the organization to control external dependencies and become more independent to the environment.

The discussion of the service role in the literature is more diverse in the terms that have been used to describe more or less the same activities. Apart from the term service (e.g. Van Den Heuvel et al., 2006), other terms include: advice and counsel (e.g. Carpenter and Westphal, 2001; Westphal, 1999), resource provision (e.g. Hillman et al., 2008; Hillman and Dalziel, 2003) and resource dependence role (e.g. Stephens et al., 2004). In addition, it seems that Wan and Ong (2005) have broken down the role into two elements, which are service and resource dependence.

In some studies, there are variables used to capture the service role, but it would perhaps be more appropriate to use them as proxy variables. For example, Stephens et al. (2004) use the number of quality contacts that a board member has, as an item for measuring the service role; although the variable/item seems relevant, as it shows the ability of the director to link with outside resources, it does not reflect an activity. As such, it is maybe better for this quantifiable characteristic to serve as a proxy to the service role.

Nevertheless, regardless of the different terms used at the construct level, it seems that in their vast majority scholars share similar understanding about this role of the board members that is to offer their services to the company, either in a form of expertise and knowledge through advice, or in a form of networking (i.e. controlling external dependencies).

To my opinion, both cases are properly portrayed with the terms service or resource provision. The following Table (3.2) presents the items that have been used to capture the service role of the board.

Table 3.2: Provision of Resources/Service Role Measurements in the Literature

Authors	**Items**
Carpenter and Westphal (2001)	1. The extent that [the CEO] solicits board assistance in the formulation of corporate strategy 2. The extent that outside directors are a "sounding board" on strategic issues 3. [In the past twelve months:] The frequency of providing advice and counsel to the CEO on strategic issues? (_____Times)

Hillman and Dalziel (2003)	1. Providing legitimacy/bolstering the public image of the firm 2. Providing expertise 3. Administering advice and counsel 4. Linking the firm to important stakeholders or other important entities 5. Facilitating access to resources such as capital 6. Building external relations 7. Diffusing innovation 8. Aiding in the formulation of strategy or other important firm decisions
Hillman, Nicholson and Shrosphire (2008)	1. Providing legitimacy/bolstering the image of the firm 2. Providing expertise and advice 3. Linking the firm to important stakeholders 4. Facilitating access to resources such as capital 5. Diffusing innovation 6. Aiding in the formation of strategy or other important decisions
Stephens et al. (2004)	1. Are you currently serving in an elected leadership role on the chamber board? (Service) 2. Number of Quality Contacts that are useful to the board. (Resource Dependence) 3. Contributions of resources other than times to further the objectives of this chamber. (Resource Dependence)
Stiles (2001)	1. Involvement in Strategy 2. Converse with shareholders/stakeholders 3. Ensure corporate renewal 4. Ensure corporate survival 5. Determine risk position 6. Lead strategic change 7. Review social responsibilities 8. Act as ambassadors for the firm 9. Understand current and forthcoming legislation
Van Den Heuvel, Van Gils and Voordeckers (2006)	1. Building Organisational reputation 2. Formulate/ Ratify organizational strategy 3. Taking Care of access to extra resources 4. Advising Management 5. Networking and maintain relations
Wan and Ong (2005)	1. Provide advice and counsel to top managers 2. Top managers solicit board assistance 3. Ensure communications with stakeholders/public is effective 4. Take into account interests of stakeholders 5. Promote goodwill/support of stakeholders 6. Debate on Strategic Plan 7. Comprises outside directors with skills relevant to company 8. Outside directors provide alternative viewpoints 9. Members chosen for influence in community 10. Provide channels of communications between firms

	11. Serve as a link to government agencies
Westphal (1999)	1. The extent of soliciting board assistance in the formulation of corporate strategy 2. The extent that outside directors are a "sounding board" on strategic issues 3. The frequency that directors provided advice and counsel in discussions outside of board/committee meetings (by telephone or in person)? _____Times

3.2.1.3 Measurement of the Strategy Role

The case of the strategy role is not that clear in the literature and although there are few studies that have attempted to measure the board functioning related to the strategic direction of the organisation, it seems that most of the times, the measurements used often fall under the monitoring (e.g. monitoring the process of strategic decisions and asking probing questions to the top management team), or the service role (e.g. ratifying strategic proposals and involve in mission articulation).

Table 3.3 presents two studies that have proposed measurements for the strategic role of the board, although after careful examination it was concluded, that some of these items are conceptually also present under the monitoring and service role.

Table 3.3: Strategy Role Measurements in the Literature

Authors	**Items**
Judge and Zeithaml (1992)	1. The board is usually not involved with the formation of strategic decisions. 2. The board usually ratifies strategic proposals that are formed solely by top management. 3. The board usually asks probing questions and then ratifies strategic proposals that are formed primarily by top management. 4. The board usually asks probing questions which lead to revisions of strategic proposals that are formed by top management. 5. The board usually helps to form strategic decisions with top management in board meetings. 6. The board usually helps to form strategic decisions with top management within and between board meetings. 7. The board usually forms strategic decisions separate from top management. 8. The board is usually not involved with monitoring the progress of strategic decisions. 9. The board usually accepts the evaluation given to it by top management without asking probing questions. 10. The board usually accepts the evaluation given to it by top management after asking probing questions. 11. The board usually determines the timing and criteria of evaluation, but that information is supplied by top management and it is rarely challenged by the board.

	12. The board usually determines the timing and criteria of evaluation, but that information is supplied by top management and it is often challenged by the board. 13. The board usually determines the timing and criteria of evaluation and it often requests additional information after receiving the progress report from top management.
Wan and Ong (2005)	1. Aware of environmental trends 2. Benchmark strategic plan with industry data 3. Receive plan for strategy implementation from CEO 4. Involve in mission articulation 5. Identify strategic direction for company yearly

3.2.1.4 Summary on Board Role Measurements

For the purpose of this study, a mix of items from various studies was used to measure the roles of board members. The list of measurements that was decided to be used in the current thesis as well as the justification of that selection are presented in the following chapter.

3.2.2 Measurements of the External Environment

Similar to the previous section that discussed the board roles, this section will present and discuss the measurements found in the literature regarding the external environment. In this section, the different dimensions of the environment will be presented separately and subsequently, the chosen items that will be used for this study will be described. However, it is important to say that the measurements that are reviewed and will be discussed in this section are both objective and subjective, but for the purpose of this study subjective measures will be uses, since board members will be approached to assess the environment based on their perception. The dimensions that will be presented in the following pages are, dynamism, complexity and munificence.

3.2.2.1 Measurement of Environmental Dynamism

As already stated in the literature review, there are different terms used to describe similar dimensions/ concepts of the organisational environment. For example, while Davis et al. (2009) argue that they discuss and measure the dynamism aspect of the environment, by looking at the measures used it is clear that the term dynamism is used to capture all attributes of the environment. Hence, by looking into the details of the measures, they have

used the term velocity to capture "the speed of rate at which new opportunities emerge" (Davis et al., 2009: 423), i.e. the sense of dynamism.

Dynamism has been conceptualised by Duncan (1972) as the degree of change of the decision units' environmental elements. In particular, he captured dynamism by using two sub-dimensions as stated in the previous chapter, which were measured with two 5-point scale questions. The first asked the respondents how often each of the factors that they identified as being important in decision making change. The second sub-dimension asked the respondents about the frequency with which decision unit members take into account new and different environmental factors in the decision making process. He then suggested that the scores of the two questions can be added to form an index capturing dynamism.

Moreover, there are researchers that have attempted to capture dynamism using objective measures (e.g. Revilla and Fernandez, 2013). For instance, Castrogiovanni (2002) measured dynamism (Table 3.4), by using the variables found in the work of Dess and Beard (1984), being consistent with the approach of previous researchers (e.g. Child, 1974; Tosi et al., 1973).

Table 3.4: Dynamism Measures from Castrogiovanni (2002: 139)

Items	Measure
Instability of sales	For annual value of shipments assessed over 5 years, the standard error of the regression slope coefficient divided by the mean value.
Instability of employment	For total employment assessed over 5 years, the standard error of the regression slope coefficient divided by the mean value
Instability of value added	For value added by manufacture assessed over 5 years, the standard error of the regression slope coefficient divided by the mean value.
Instability of price-cost margin	For value added by manufacture minus total wages assessed over 5 years, the standard error of the regression slope coefficient divided by the mean value.

Moreover, Miller and Friesen (1983: 233) and Li and Atuahene-Gima (2001) measured the dynamism dimension with three 7-point scale questions asking about the unpredictability of change in a) customer tastes, b) production or service technologies and c) the modes of competition in the firm's principal industries. The two ends of the scale were "much less than other firms" and "much greater than other firms".

Miller and Droge (1986: 557) measured the dynamism dimension by asking the respondents how rapid or intense the following 7-point scale items are in the company:

Our business unit must rarely change its marketing practices to keep up with the market and competitors	Our business unit must change its marketing practices extremely frequently
The rate at which products/ services are becoming obsolete in the industry is very slow	The rate of obsolescence is very high
Actions of competitors are quite easy to predict	Actions of competitors are unpredictable
Demand and consumer tastes are fairly easy to forecast	Demand and tastes are almost unpredictable
The production/service technology is not subject to very much change and is well established	The models of production/service change often and in a major way

Furthermore, Judge and Miller (1991) rated dynamism with industry growth (i.e. change in employment and sales), coupled with one item asking perception of managers about the technological change in their industries.

In another study, Nadkarni and Barr (2008: 1407) used three items to capture dynamism (referred to as velocity) which were a) number of new products introduced, b) time span (number of years) between new products introduced and c) depreciation of capital equipment; other authors have also used these measures (Fines, 1998; Katila and Ahuja, 2002; Martin and Mitchell, 1998; Mendelson and Pillai, 1999; Nerkar and Roberts, 2004).

Mitchell et al. (2011: 704) have used a 7-point scale to measure the level of agreement on the following six items, which were a variant of the Miller and Friesen (1982: 17-18) scale, similar to the one used by Green et al. (2008: 378-379).

- My business unit must rarely change its marketing practices to keep up with competitors.
- The rate at which products are becoming obsolete in my industry is very slow.
- Actions of competitors are quite easy to predict.

- The set of competitors in my industry has remained relatively constant over the last 3 years.
- Product demand is easy to forecast.
- Customer requirements/preferences are easy to forecast.

After carefully considering the above options and measures found in the literature, it was decided to use the measurements from Miller and Droge (1986) to capture the dynamism dimension, which have been also found in other studies (Miller et al., 1988: 554; Miller, 1988: 307; Priem et al., 1995; Droge et al., 2008; Wu, 2010; Li and Liu, 2014).

3.2.2.2 Measurement of Environmental Complexity

Complexity is another widely researched and measured dimension of the environment. Other terms like heterogeneity or routineness have been used to describe the dimension, but as discussed in the literature, they have been used to capture the same concept, which in simple terms is the number of factors involved in the decision unit's environment.

Duncan (1972) used again two criteria to measure the simple-complex dimension by creating an index. The one criterion is the number of factors involving in the decision unit. The second criterion trying to capture the heterogeneity of the environment, which appears to be a sub-dimension of the complexity dimension, is the number of components (discussed in the literature review chapter) where the factors are found. The index is then calculated with $F \times (C)^2$. Therefore a decision unit with three factors in one component ($3 \times 1^2 = 3$) would be different to three factors in three components ($3 \times 3^2 = 27$). The same approach to measure complexity has been used by other scholars (e.g. Gibbs, 1994; Tung, 1979)

Moreover, Dess and Beard (1984: 58) captured the complexity dimension objectively, in a conceptually similar way to the one used by Duncan (1972). Their approach uses the resource dependence perspective, arguing that the environment is considered as more complex for organisations operating in industries that require more different inputs (i.e. resources) and produce more different outputs. Their operationalization consisted of eight variables used to capture the dimension of complexity—which they divide to homogeneity-heterogeneity and concentration-dispersion as seen in Table 3.5 below. Different researchers have used this approach in

their attempt to capture the complexity dimension (e.g. Boyd et al., 1993; Lawless and Finch, 1989).

Table 3.5: Complexity Measures from Dess and Beard (1984: 71)

Items	Definition	Measure
Heterogeneity-homogeneity	Concentration of industry inputs (sources of supply)	Function of the dollar volume of inputs and the number of industries supplying the inputs
	Concentration of industry outputs (customer groups)	Function of the dollar volume of outputs and the number of industries to which outputs are supplied
	Diversity of industry products (breadth of product line, in different industries)	Function of the number of product codes and dollar volumes
	Specialization ratio (degree to which firms in the industry are concentrated in one industry)	Ratio of primary product shipments to total product shipments for all establishments classified in the industry
Concentration-dispersion	Geographical concentration of sales	Function of dollar volume of industry sales and number of census divisions
	Geographical concentration of value added by manufacturers	Function of dollar volume of industry value added and number of census divisions
	Geographical concentration of total employment	Function of total industry employment and number of census divisions
	Geographical concentration of total establishments	Function of total establishments and the number of census divisions

Source: Cannon and John (2007)

Kukalis (1988) used subjective approach to measure complexity with 5-point Likert scale, even though the measurements seem to also contain variables that capture dynamism. For instance, questions 2-4 found in Table 3.6 below measure rate and frequency of change, which are elements of the dynamism dimension.

Table 3.6: Complexity Measures from Kukalis (1988: 403-404)

Question	1	2	3	4	5
The primary markets that you serve are generally	Not competitive				Very competitive
The degree of market growth rate in your primary business is:	Declining				Fast growing
In the primary industry (or industries) that you compete in, the frequency of new product introductions is generally	Very low				Very high
In the primary industry (or	Infrequent				Frequent

industries), your company's competing in technological innovations is generally	Very low	Very High
In the primary industry (or industries) that your company serves, the frequency of unpredictable changes in demand is		
The markets that you serve are	Very homogeneous (e.g. a single undifferentiated market and very similar customers)	Very heterogeneous (e.g. a great diversity of markets, mixed types of customers)
The production and marketing operations of your company are geographically	Very concentrated (e.g. in a single region of the US)	Very widely dispersed (e.g. global both in production and marketing)
Existing relationships with major suppliers and subcontractors impose	Very minor constraints on future plans	Very restrictive constraints on future plans
Existing relationships with major distributors and customers impose	Very minor constraints on future plans	Very restrictive constraints on future plans
The impact of government regulations and policies on your company's primary business produce	Very minor constraints on future plans	Very restrictive constraints on future plans

Furthermore, Miller (1988: 308) used three variables to measure the dimension of complexity/heterogeneity, by asking about the differences among products or services offered in "customers' buying habits", "the nature of the competition" and "required methods of production or service". Specifically, a 7-point scale for the question was used (1= about the same for all products, 7= varies a great deal from one line to another).

With careful consideration of the above difference approaches in measuring the complexity dimension, it was decided to use the questions found in Miller (1988). The measurements were also found to be adopted by other researchers (e.g. Lumpkin and Dess, 1995; Arregle et al., 2012).

3.2.2.3 Measurement of Environmental Munificence

Munificence is also found in the literature with different terms like capacity or hostility and it refers to "scarcity or abundance of critical resources needed by firms operating within an environment" (Castrogiovanni, 1991: 542). The following lines provide some of the measurements found in the existing literature to capture the dimension.

Mitchell et al. (2011: 704) have used a 7-point scale to measure the level of agreement on six items, which were adopted from Slevin and Covin (1997: 205-206) and were also used by Green et al. (2008: 378-379).

- The failure rate of firms in my industry is high.

- My industry is very risky, such that one bad decision could easily threaten the viability of my business unit.
- Competitive intensity is high in my industry.
- Customer loyalty is low in my industry.
- Severe price wars are characteristic of my industry.
- Low profit margins are characteristic of my industry.

Miller and Friesen (1983: 233)—who used the term hostility—attempted to capture the dimension with eight variables, asking respondents to indicate the extent that their firms faces intense competition in different areas/issues. These included price, product, technology, distribution, shortages of labour, shortages of raw material, unfavourable demographic trends and severe regulatory restrictions.

In addition, Dess and Beard (1984: 58) have used six objective measures to capture the dimension, which are growth in total sales, growth in price-cost margin, growth in total employment, growth in value added, growth in the number of establishments and industry sales concentration. Other scholars have also used this approach (e.g. Nadkarni and Barr, 2008; Bradley et al., 2011; Castrogiovanni, 2002).

For the purpose of this thesis, it was decided to use the measures proposed by Miller and Friesen (1983).

3.3 Propositions and Hypotheses

Various scholars have paid significant attention to what constitutes a theory, which will be discussed to some extent in the following chapter. However, due to the purpose of this section, it is noteworthy to refer to the following description: “a theory may be viewed as a system of constructs and variables in which the constructs are related to each other by propositions and the variables are related to each other by hypotheses” (Bacharach, 1989: 498).

In the following pages the propositions resulting from the constructs discussed in the literature review will be presented, along with the hypotheses developed between variables deriving from the methodology design of the thesis.

3.3.1 Propositions and Hypotheses on Control Role

The literature review chapter provided description of the control/monitor role of the board, mainly linked to the agency theory. According to the theory, control is needed in order to ensure that management acts in the best interest of the owners (Fama and Jensen, 1983).

Based on the above general inference, it is expected that in dynamic, complex and hostile environments the control function becomes harder, while directors' role will become more challenging and demanding.

According to Johnson et al. (2011: 1788) complexity increases the difficulty of the control role because of high information asymmetry. However, they also state, that increased complexity is often found in larger firms with wider environment. These companies have greater number of buyers, suppliers and partners, which results in higher external exposure of the directors. These directors have more difficult jobs in which they might strive for positive performance as they are highly exposed. By performing their control role successfully, they can enhance their reputation. So, it is expected that in complex environments, the controlling function of the board members will be increased.

Furthermore, it is argued that complex and dynamic environments lead to information asymmetries between managers and investors (Liu and Lai, 2012: 354). This in turn, signals a need for high quality auditors that will reduce these asymmetries. While the number of factors and components involved in the decision-making typically explains complexity, dynamism is linked to the rate of change and unpredictability of these factors. Hence, it can be argued that the need for internal information is higher in more complex and dynamic environments. In similar lines, Pirson and Turnbull (2011: 463) argue that more information processing is needed in complex environments to adequately manage risk.

Similarly, environmental hostility can have indirect effects on managerial action and behaviour. As stated by Zahra et al. (2005: 811) a rise of hostility that might harm organisational performance, will lead managers to restrict communication about the firm's financial position or performance. This makes it difficult for outsiders to gain internal information. In turn, it is expected that the board will stronger seek for internal information by controlling the executives and their decisions.

Based on the above, the following propositions and hypotheses are developed:

P_{A1}: Board Control is related to environmental complexity.

H_{A1a}: Controlling CEO is positively related to environmental complexity.

H_{A1b}: Controlling TMT is positively related to environmental complexity.

H_{A1c}: Seeking internal information is positively related to environmental complexity.

P_{A2}: Board Control is related to environmental dynamism.

H_{A2a}: Controlling CEO is positively related to environmental dynamism.

H_{A2b}: Controlling TMT is positively related to environmental dynamism.

H_{A2c}: Seeking internal information is positively related to environmental dynamism.

P_{A3}: Board Control is related to environmental munificence.

H_{A3a}: Controlling CEO is positively related to macro-environmental hostility.

H_{A3b}: Controlling TMT is positively related to macro-environmental hostility.

H_{A3c}: Seeking internal information is positively related to macro-environmental hostility.

H_{A3d}: Controlling CEO is positively related to competitive hostility.

H_{A3e}: Controlling TMT is positively related to competitive hostility.

H_{A3f}: Seeking internal information is positively related to competitive hostility.

In parallel to the effect of the external environment to the control role of an organization, there are certain board characteristics that are assumed to affect the extent that the role is undertaken in the board.

Specifically, Jensen (1993: 865) argues that smaller boards can improve the overall performance, as large boards cannot function effectively and it becomes easier for the CEO to control them. While more members can offer greater resources, the problem according to Jensen (1993: 865) appears when boards have more than seven or eight members. This leads to the assumption that larger boards will be weaker monitors of the managerial performance. Similarly, based on Upadhyay and Sriram (2011: 1239), larger boards may lead to information asymmetry due to the increased control of the CEO and this lack of transparency may increase the need for seeking internal information.

Additionally, it is suggested that when there is a leader of the board (i.e. Chairperson) separate from the CEO, the control function of the board can be enhanced, as there is less power concentrated to the CEO, as with CEO duality it is harder for board members to challenge and monitor the management (Daily and Dalton, 1994: 1605; Lohrke et al., 2004: 75, Boyd, 1995: 303). According to Lorsch (1989: 185), a separate

chairperson gives a stronger voice in setting the agenda and in selecting directors and also controls the meeting process, which encourages more open discussion. For the same reasons, it is expected that the board members stronger seek for internal information, when the two roles are separate.

Based on the above, various relationships are expected, expressed with the following proposition and hypotheses:

P_{A4}: Board Control is related to various board characteristics.

H_{A4a}: Controlling CEO is negatively related to board size.

H_{A4b}: Controlling TMT is negatively related to board size.

H_{A4c}: Seeking internal information is positively related to board size.

H_{A4d}: Controlling CEO is lower when there is CEO duality.

H_{A4e}: Controlling TMT is lower when there is CEO duality.

H_{A4f}: Seeking internal information is lower when there is CEO duality.

The independent directors are expected to contribute in the overall performance of the company, through their monitoring and controlling of management, which is emphasized under agency theory (Zona et al., 2013; Zahra and Pearce, 1989; Daily et al., 2003; Hillman and Dalziel, 2003). Moreover, the qualitative findings of Long et al (2005: 669) showed that non-executives in unlisted firms involve more in financial monitoring than non-executives in listed firms, which is a factor that should be taken into consideration. As argued by Giraldez and Hurtado (2014: 94), the presence of independent directors in the board, is believed to serve as the guarantor and defender of the shareholders' interests. This leads to the assumption that increased ratio of independent directors will intensify the control function of the board.

Moreover, it is suggested that low attendance in meetings due to overly busy directors holding many seats, could prevent them from monitoring the management of these companies (Lin et al., 2014: 267; Fich and Shivdasani, 2006: 722). From this, it can be argued, that directors who spend more time in a company's activities—through board meetings—are better able to monitor the CEO and other executives of the company.

Thus the following relationships are hypothesised:

H_{A4g}: Controlling CEO is positively related to the ratio of independent directors.

H_{A4h}: Controlling TMT is positively related to the ratio of independent directors.

H_{A4i}: Seeking internal information is positively related to the ratio of independent directors.

H_{A4j}: Controlling CEO is positively related to frequency of meetings.

H_{A4k}: Controlling TMT is positively related to frequency of meetings.

H_{A4l}: Seeking internal information is positively related to frequency of meetings.

Furthermore, it is expected that respondents' status affects the control role they operate in the board. Firstly, the independent directors—as suggested earlier—are supposed to act as monitors of the management, a role that is mainly if not solely performed by them, based on agency theory literature (Zona et al., 2013; Zahra and Pearce, 1989; Daily et al., 2003; Hillman and Dalziel, 2003).

Secondly, as argued by Khanna et al. (2014: 559) the experience of directors in the board is likely to improve their ability to perform their monitoring function. They suggest that, the role of a director is more than just reading financial statements or setting compensation packages. An important part of their job is to understand and evaluate the actions of top managers and how those actions will affect the organisation. Directors are highly involved with the organisation, so the prior experience acquired by directors should be valuable. Hence, it is assumed that higher tenure of the respondent will increase the board control function.

Based on the above, the following proposition and hypotheses are developed:

P_{A5}: Board Control is related to respondent's status in board.

H_{A5a}: Controlling CEO is higher when respondent's status is independent.

H_{A5b}: Controlling TMT is higher when respondent's status is independent.

H_{A5c}: Seeking internal information is higher when respondent's status is independent.

H_{A5d}: Controlling CEO is positively related to the respondent's tenure in board.

H_{A5e}: Controlling TMT is positively related to the respondent's tenure in board.

H_{A5f}: Seeking internal information is positively related to the respondent's tenure in board.

3.3.2 Propositions and Hypotheses on Resource Provision Role

Similar to the above propositions, external environment is assumed to affect the resource provision role of the company. Based on resource dependence perspective, an organization is an open system, dependent on external contingencies that need to be controlled. One of the ways to control these dependencies is through the board of directors (Pfeffer and Salancik, 1978). As a result, it is expected that the more dynamic, complex and hostile the environment is, the higher the need of the board to provide resources. This can be achieved with board members that provide resources, that is either in the form of service or in the form of linkages with other organisations (Lang and Lockhart, 1990: 107). It is argued that these linkages reduce both vertical and horizontal external constraints through facilitating cooperation with regulatory agencies, customers, suppliers and competitors.

As suggested by Pfeffer and Salancik (1978: 168) "one would expect that as the potential environment pressures confronting the organisation increase, the need for outside support would increase as well, leading to a larger proportion of outside directors on the board". In similar lines, Hillman et al. (2000: 242) claim that—based on resource dependence theory—as a firm's organisational environment changes, so does the need for linkages with that environment. This can lead to the assumption that the environmental pressures will require further resource provision of the board members in the form of service or external linkages (Boyd, 1990: 421). Likewise, an organisation facing difficulties—from the environment—should keep receiving support from its members and maintain the exchange relationships with its external constituencies (Sutton and Callahan, 1987: 406; Daily and Dalton, 1994: 1606).

Considering the above, it is suggested that:

P_{B1}: Resource Provision is related to environmental complexity

H_{B1a}: Providing Service is positively related to environmental complexity.

H_{B1b}: Controlling external contingencies is positively related to environmental complexity.

P_{B2}: Resource Provision is related to environmental dynamism

H_{B2a}: Providing Service is positively related to environmental dynamism.

H_{B2b}: Controlling external contingencies is positively related to environmental dynamism.

P_{B3}: Resource Provision is related to environmental munificence.

H_{B3a}: Providing Service is positively related to macro-environmental hostility.

H_{B3b}: Controlling external contingencies is positively related to macro-environmental hostility.

H_{B3c}: Providing Service is positively related to competitive hostility.

H_{B3d}: Controlling external contingencies is positively related to competitive hostility.

It is expected that as board size increases, the ability of the board to provide resources would increase too, by adding up each member's human and social capital. Pfeffer and Salancik (1978: 168) suggest that board size would depend on the needs of the organisation for access to resources and that the greater the needs, the larger the size. Therefore, it is expected that a greater number of directors will lead to increased supply of resources.

Moreover, Daily and Dalton (1994: 1606) suggest that—in accordance to the resource dependence perspective—many external representatives are needed on a board, as they provide access to valued resources and information, facilitate inter-firm commitments and help in providing legitimacy. This is critical to the continuation—especially in crisis periods—of exchange relationships between a corporation and its critical constituencies, which can also find support from the social network theory; the theory tries to understand how external ties may affect firm behaviour (Boyd et al., 2011: 1896).

Additionally, Zahra and Pearce (1990: 166) claim that increased representation of non-executives widens the expertise and in turn it improves the level of counseling to the CEO. Therefore, it may be argued that boards with increased number of externals can provide more resources through networking or direct service provision.

In similar lines, it can be argued that CEO duality could affect the level of resource provision to the board. When the chairperson and the CEO positions are separated, it is assumed that directors feel more responsibility and as a result they might provide more resources, because the power is not concentrated to the CEO (Zahra and Pearce, 1990: 167). As stated by Boyd (1995: 305), having a single leader, which is translated as concentrated power, allows faster and more unified decisions, which can be positive in periods of turbulence. However, this means reduced contribution of resources by the board.

Moreover, it is expected that directors' function to provide resources will be affected by the frequency of meetings. As Vafeas (1999: 114) claims, the common problem that directors face is the lack of time to carry out their duties and that the meeting time of directors is an important resource that improves the effectiveness of the board.

Logically, it may be proposed, that the more time the members have available for meeting, the more resources they will be able to provide.

Based on all the above, the following proposition and hypotheses are formed:

P_{B4}: Resource Provision is related to various board characteristics.

H_{B4a}: Providing Service is positively related to board size.

H_{B4b}: Controlling external contingencies is positively related to board size.

H_{B4c}: Providing Service is lower when there is CEO duality.

H_{B4d}: Controlling external contingencies lower when there is CEO duality.

H_{B4e}: Providing Service is positively related to the ratio of independent directors.

H_{B4f}: Controlling external contingencies is positively related to the ratio of independent directors.

H_{B4g}: Providing Service is positively related to frequency of meetings.

H_{B4h}: Controlling external contingencies is positively related to frequency of meetings.

Since it is argued above that increased number of independent directors may provide more resources to the board, either through direct advice and counsel or by giving access to outside resources and information (Daily and Dalton, 1994: 1606; Zahra and Pearce, 1990: 166). Therefore, a director having an independent status is expected to provide more resources to the board.

P_{B5}: Resource Provision is related to respondent's status in board.

H_{B5a}: Providing Service is higher when respondent's status is independent.

H_{B5b}: Controlling external contingencies is higher when respondent's status is independent.

Furthermore, it is argued that experienced directors can make faster decisions than inexperienced directors (Judge and Miller, 1991: 450). This happens as directors have greater knowledge about their industry and organisation, which assists in making decisions more quickly. As a result, it can be argued that longer tenure results in higher service provision and controlling of external contingencies.

Following the above arguments, the following hypotheses are developed:

H_{B5c}: Providing Service is positively related to the respondent's tenure in board.

H_{B5d}: Controlling external contingencies is positively related to the respondent's tenure in board.

3.3.3 Propositions and Hypotheses on Strategy Role

It is generally argued that organisations with changes in their environment respond by initiating strategic changes (Goodstein and Boeker, 1991: 308; Hillman et al., 2000: 242; Child 1972: 15). Change in regulations or in technology, for example, motivates action for strategic change. As discussed in earlier chapters, a role of the board members is to involve in the strategic direction of the organisation. Walrave et al. (2011: 1731) argue that the second most important entity affecting a company's strategy is the board. They give an example by saying that, particularly in times of decline—i.e. environmental change or dynamism—the board is able to affect the level of investments considered necessary by the top management team.

Hillman et al. (2000: 243) suggest that regulation or deregulation of a market could be an indicator of an industry's dynamics and claimed that in deregulated markets there is a need for strategic change. This need for change could lead to greater involvement of the board into the strategy of the firm. It can be argued that the regulation/deregulation of a market is depicted under the munificence dimension of the environment.

Finally, Judge and Zeithaml (1992: 786) argue that increased environmental complexity requires more thought and discussion; as a result the board members become more responsive and strategically adaptive.

Therefore, it is logical to assume that board members will involve more in strategy, in periods of environmental change.

P_{C1}: Strategic Involvement is related to environmental complexity

H_{C1a}: Strategic Involvement is positively related to environmental complexity

P_{C2}: Strategic Involvement is related to environmental dynamism

H_{C2a}: Strategic Involvement is positively related to environmental dynamism

P_{C3}: Strategic Involvement is related to environmental munificence.

H_{C3a}: Strategic Involvement is positively related to macro-environmental hostility.

H_{C3b}: Strategic Involvement is positively related to competitive hostility.

Goodstein and Boeker (1991) argued that the composition of a board of directors could motivate management toward the adoption of specific strategies. Various board characteristics are considered important to the extent the board involves in strategy. For example, it is assumed that larger boards involve less in the strategy and decision-making, an argument deriving from the group dynamics literature. More specifically, Judge and Zeithaml (1992: 785) advocate that when boards become very large, effective debate, discussion and the level of board involvement in strategy may decrease. In addition, as proposed by Cheng (2008: 159) and Zona et al. (2013: 303), as board size increases—to more than seven or eight directors according to Jensen (1993: 865)—communication/coordination becomes more difficult which results in less efficient and slower decision-making that can be interpreted as lower strategic involvement. Not only the communication becomes harder in large boards, but it is also expected that more compromise is needed in order to reach a final decision (Cheng, 2008: 159).

In addition, Judge and Zeithaml (1992: 785) found that greater proportion of independent directors result in greater strategic involvement, in similar lines to the findings of Roberts et al. (2005: 21) who found that higher strategic involvement of independent directors allows them to also perform their monitoring function more efficiently. Additionally, the qualitative study of Long et al. (2005: 669) found that non-executives serving on unlisted boards have greater involvement in strategy than on listed boards. However, most studies have supported that higher representation of executives in the board lead to greater board strategic involvement (Ford, 1988: 54; Zahra and Pearce, 1990: 171; Ruigrok et al., 2006: 1207) and strategic change (Goodstein and Boeker, 1991: 326), probably due to the better information flows and better knowledge of the company.

Furthermore, Ruigrok et al. (2006: 1208) proposed and found that CEO duality has a negative effect on strategic involvement. They claim that both duality and separation or the two roles may be supported, depending on the theoretical approach, but they concluded that separation enhances board involvement in strategy. In specific, Ruigrok et al. (2006: 1208) argue that on one hand, stewardship theory would be in favour of the dual structure, since the executives are supposed to act in the best interest of shareholders. As a result, the concentrated power into an individual acting—as a steward—in the best interest of the owners, would remove ambiguities of processes and responsibilities and any potential conflicts between corporate leaders.

On the other hand, agency perspective is in favour of separation, as the two roles have different responsibilities, which should be kept separated. For example, the chairperson is responsible for organising the board meetings, but with duality the CEO would have strong influence on the meeting agenda and the information provided to directors (Ruigrok et al., 2006: 1208; Golden and Zajac, 2001; 1089). Therefore, according to agency theory, a separate leadership structure is preferred, which would allow the board to higher involve in strategic decision-making.

Furthermore, Zahra and Pearce (1990: 171) found that increased frequency of meetings enhances the strategic involvement. They argue that the efficiency of the board operations influencing its decision making process is improved with more frequent meetings.

Therefore the following relationships are hypothesised:

P_{C4}: Strategic Involvement is related to various board characteristics.

H_{C4a}: Strategic Involvement has an inverted-U relationship with board size.

H_{C4b}: Strategic Involvement is lower when there is CEO duality.

H_{C4c}: Strategic Involvement is negatively related to the ratio of independent directors.

H_{C4d}: Strategic Involvement is positively related to frequency of meetings.

Furthermore, as also stated earlier, increased independence of directors is possible to increase the strategic involvement because directors feel higher responsibility for the outcome of their decision making (Zahra and Pearce, 1990: 167).

Judge and Miller (1991: 456) argue that tenure, in the sense of industry familiarity, can lead to higher involvement of a board to the strategic decision process. In addition, the increased confidence and experience of older board members might help in strategic change of the company. Also, business, organisational, leadership and any other skills accumulate over time, which is essential for the strategy of a firm. However, boards with higher average tenure, are likely to be more risk averse and stronger committed to the existing strategic status quo, which implies higher resistance to change (Golden and Zajac, 2001: 1090). The above arguments suggest that nonlinearity exists in the relationship between strategic involvement and directors' tenure.

Thus, from the above the following proposition and hypotheses are developed:

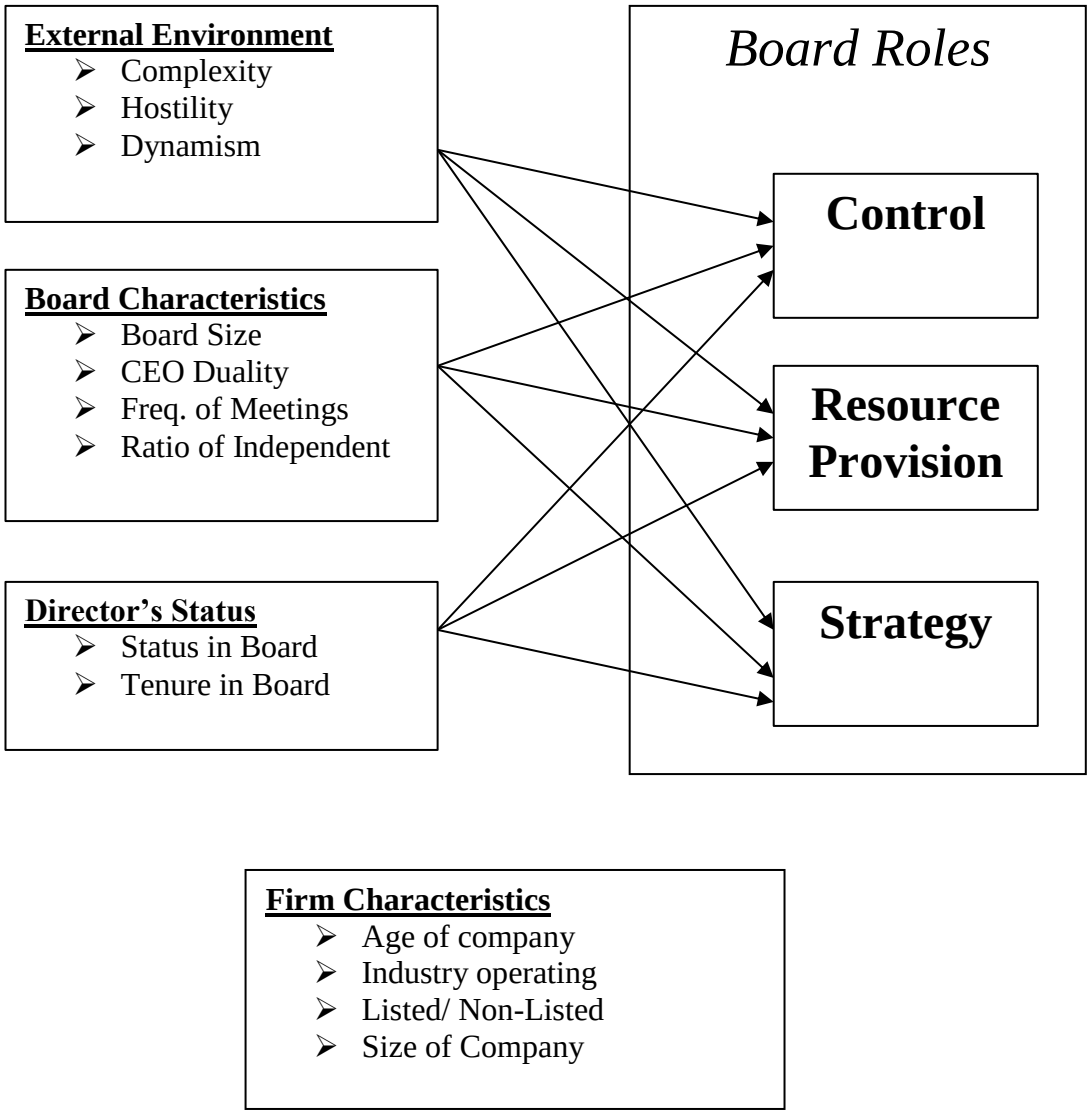
P_{C5}: Strategic Involvement is related to respondent's status in board.

H_{C5a}: Strategic Involvement is higher when respondent's status is independent.

H_{C5b}: Strategic Involvement has an inverted-U relationship with the respondent's tenure in board.

In summary, Figure 3.1 shows the proposed relationships of the study's theoretical framework.

Figure 3.1: Theoretical Model of the Thesis



Chapter 4: Research Design and Methodology

4.1 Introduction

This chapter will go through the research design and methodology of the study. Taking into account the nature of this research, which mainly aims to identify causal relationships among variables, the research design and methodology of this research is predominantly quantitative. Since quantitative study is theory-driven, and thus accounted as deductive, reviewing theories, constructs and models is of critical importance. Also, any propositions or/and hypotheses developed, should be based on strong theoretical and conceptual foundations. Previous chapters have attempted to cover these requirements, with an extensive literature review, analysis of theories and constructs and development of hypotheses. But before analysing the research design and methodology followed in this study, it is considered important, to discuss some general philosophical and methodological issues.

More specifically, this chapter will start by discussing some important aspects of philosophy of science. Then, several research design approaches will be covered and there will be an effort to explain the aims of a research design. Thirdly, the design of the survey will be explained in detail. Fourthly, the description of the study's sample and any sample issues will follow. Last but not least, the methodology that was used for the study's data analysis will be described.

4.2 Philosophical Underpinnings to Business Research

This section discusses some general philosophical issues, important to be taken into account before conducting any research project, academic or business-related.

The section starts by discussing the perspective under which, in different historical periods social sciences were approached. As Hughes claims (1990: 2), while trying to justify the relation of social sciences with philosophy, a historical connection exists which goes back to the days of Plato. It is argued that when Plato tried to speak about society and its elements (i.e. collective and individual members), he used a different approach to the relatively recent major theorists like Marx and Weber, as between these two distant periods, there have been centuries of development and big successes of the natural sciences. And the main argument is that the enormous progress of natural sciences, has significantly influenced our way of thinking, if not guided social scientists to establish their intellectual background. Nevertheless, we should not forget, as Hughes (1990: 35)

argues, that although the social sciences used the natural sciences as their yardstick, they did so with respect to particular philosophical interpretations of natural science; positivism was the major one and will be discussed in the following section. For there was a long philosophical debate—of continuing importance—on whether the study of social life could be like the study of nature. This is an important idea to consider, but not a question that can be addressed in these pages, as this would not serve the aim of the dissertation. Therefore, in the following paragraphs, there is a focus on issues closer related to the business research.

Business research, being part of the social sciences, is connected to some philosophical issues that need to be considered before conducting a research project in any business or management topic. As stated by Popper (1959), in science, either theoretical or experimental, the researcher puts forward statements, and tests them step-by-step. More specifically, in the field of the empirical sciences, the researcher constructs hypotheses, or systems of theories and tests them against experience by observation and experiment. Although this seems to be an easily comprehended process, there are several philosophical concerns that need to be taken into consideration; the field under which, these issues are discussed is called Epistemology or Philosophy of Science (i.e. branch of Philosophy) and is closely related to social research, as it is with all forms of research. Epistemology is concerned with approach to knowledge acquisition, but also tries to define and explain the nature of knowledge and answer questions like what knowledge is. As Hughes (1990: 5) argues, "Epistemology is concerned with philosophical claims about the way in which the world is known to us or can be known to us and, as such, clearly involves issues about the nature of knowledge itself".

Although the aim of this thesis is not to examine in depth all the epistemological issues related to knowledge and knowledge acquisition, it is considered essential to discuss some general aspects that are related to the approach used in this study, which will constitute the basis before analysing the research design and methodology used.

4.2.1 Issues on Philosophical Approaches

Social scientists, as all scientists, try to advance knowledge on something; this is attempted through research projects. The way that we think about the development of knowledge is discussed under the different research philosophies. The two main views that dominate the literature and which a researcher can follow are, positivism and interpretivism. Before showing the main characteristics of the two views, it is important to

say that among all the existing philosophical views, it was positivism that set the lines of debate about the nature of the social sciences. As explained by Hughes (1990: 35), this did not mean that its doctrines were unanimously agreed, but that it was positivist philosophy of social science that had to be argued against. This simply means that all other views were developed, using positivism as a starting point. To proceed, the main grounds of the two views are depicted in the following table (4.1):

Table 4.1: Comparison of Positivism with Interpretivism

	Positivism	**Interpretivism**
Basic Principles		
View of the world	External and Objective	Socially constructed and subjective
Involvement of researcher	Researcher is independent	Researcher is part of what is observed and sometimes even actively collaborates
Researcher's influence	Researcher is value-free	Researcher is driven by human interests
Assumptions		
What is observed?	Objective, often quantitative, facts	Subjective Interpretations of meanings
How is knowledge developed?	Reducing phenomena to simple elements representing general laws	Taking a broad total view of phenomena to detect explanations beyond the current knowledge

Source: Blumberg et al. (2008: 23)

One important concept related to the positivist view is that of falsifiability—or refutability—firstly popularized by Popper in the 1930's. The idea that Popper discussed (1959; 1963) in simplified terms is that, any theory (or hypothesis) needs to have the quality of falsifiability, in order to be scientific. This means that a theory should be formulated in a way that by testing it, through observation or experiment, it could be rejected or found to be false. This quality makes a theory testable which is a requirement for a theory. Popper (1959: 18) claims that a theory can be never empirically verified. Because this would mean that we would accept to verify a theory from a singular statement (observation or experiment). And there is an example widely used by Popper to explain this argument: "no matter how many instances of white swans we may have observed, this does not justify that all swans are white" (1959:4). Therefore, it is suggested that since there are statements that cannot be verified, another criterion should be used as a criterion of demarcation (distinguishing between scientific and non-scientific), i.e. falsifiability. More specifically, Popper states:

> "I shall not require of a scientific system that it shall be capable of being singled out, once and for all, in a *positive* sense; but I shall require that its logical form shall be such that it can be singled out, by means of empirical tests, in a *negative* sense: it must be possible for an empirical scientific system to be *refuted* by experience" (1959:18).

Nevertheless, other philosophers have criticized Popper's falsification doctrine over the years (e.g. Jeffrey, 1975; Hansson, 2006) however, the falsification doctrine has not yet been rejected. The criticisms mainly focus on the difficulty to have the needed conditions to falsify (i.e. study that is not explorative and provides hypotheses with binary structure). The main argument is that more and more explorative studies are conducted, which have no specific hypotheses to be rejected (Jeffrey, 1975; Hansson, 2006). To my opinion, Popper suggested the falsification doctrine as opposed to verification, to powerfully support the idea—to which I am agreeable—that we can never be sure about the absolute truth; an idea that was initially developed by the pre-Socratic philosophers. "Our belief in any particular natural law cannot have a safer basis than our unsuccessful critical attempts to refute it" (Popper, 1963: 75).

This was a major contribution of Popper to the positivists' view (who started shaping in Vienna during 1920s, when the so called Vienna Circle was developed), to whom the main criterion of demarcation until then was that of *verification*. As stated by Hughes (1990:39), the main assumptions of the positivists were the following:

> "The world, whether natural or social, operated according to strict laws and therefore possessed a deterministic structure which it was the business of science to discover; a structure which could be described formally and quantitatively. Methodologically then empirical research, and here one might well say scientific research, amounted to discovering those regular and invariant properties of the phenomena of the world and the relationships between them; the properties being described, as far as possible, in terms of what is rigorously observable".

Based on these premises, it became important for the development of the scientific method and research process itself to study and clarify issues like, what is theory, what are the constructs of a research phenomenon, the relationships among them and the methodology used for observing them.

4.2.2 Theory and Theory Development

The first of the abovementioned issues, i.e. the question of what constitutes a theory, is widely discussed from philosophers, but also researchers over a long period of time. Before presenting certain elements of a theory, as stated by different organisational researchers, it is considered important to emphasise the idea that science cannot offer the absolute truth or certain knowledge, which is essential for the understanding of theories. As such, "science is not a system of certain, or well-established, statements; nor is it a system which steadily advances towards a state of finality. Our science is not knowledge (epistēmē): it can never claim to have attained truth, or even substitute for it, such as probability" (Popper, 1959: 278). Moreover, relating this statement with the purpose and nature of a theory, we would say that science is not a collection of true theories, but instead a collection of conjectures that still have to be disproved.

> "Science is a system of guesses or anticipations which in principle cannot be justified, but with which we work as long as they stand up to tests and of which we are never justified in saying that we know that they are 'true' or 'more or less certain' or even probable" (Popper, 1959: 318).

The vital idea of the statement above is that, although we can never be certain about the truth, it is essential for science that the theories used (i.e. guesses or anticipations) are testable. In order for theories to be testable, qualities of ***falsifiability*** and ***corroborability*** need to be met. The former, already discussed in previous paragraphs, is the quality of a theory that by being tested it can be rejected or found to be false. This is important, as verification, which is the opposite quality, can never be met. The second important quality discussed by Popper (1959) and related to falsifiability is that of corroborability. He argued (1959: 206, 268) that the more a theory is testable, the higher its corroborability. But for a theory to be more testable, its falsifiability should increase. However, the concept of falsifiability is converse to that of logical probability. In other words, the more a theory is falsifiable, the less probable it is. This makes us infer that testability of a theory increases, whilst logical probability is low (and there are arguments saying that logical probability is related to objective probability—probability of events).

Moreover, theories with higher degree of ***universality*** and higher degree of ***precision*** can be better corroborated (Popper, 1959: 268). It is suggested that the more corroborating instances we have the higher the corroborability. This means that the more a

phenomenon is being observed and tested, the better it can be corroborated. Nevertheless, it is argued that the first instances are of greater importance, as further instances add only by very little to the degree of corroboration. Except if these further instances are very different to the earlier ones, which is achieved by testing the theory in new fields of application. This would broaden the universality of the theory and in turn, its corroborability.

Similarly, theory precision is important, as theories with low precision have a high logical probability of being correct due to their inaccuracy. An example posed by Popper (1959), is that of prophecies of palmists and soothsayers; their predictions are so cautious and imprecise that have a high logical probability of being correct.

To sum up "what is important about a theory is its *explanatory power*, and whether it *stands up to criticism and to tests*" (Popper, 1998: 12). In other words, the explanatory power can be explained by the level of universality and precision, and standing up to criticism and tests, by being testable through falsifiability and corroborability qualities. As he further claims, the question of the origin of the theory, "of how it is arrived at—whether by an 'inductive procedure', as some say, or by an act of intuition—may be extremely interesting… but it has little to do with its scientific status or character" (Popper, 1998: 12).

Moving the discussion to the study's area of interest, it should be noted that organisational researchers have given a lot emphasis trying to define what constitutes a theory (Bacharach, 1989; Osigweh, 1989; Van de Ven, 1989; Whetten, 1989; Sutton and Staw, 1995; DiMaggio, 1995). For example, Whetten (1989) has suggested that the building blocks of theory must contain four essential elements:

1. **What**: Which factors (variables, constructs, concepts) should be considered as part of the explanation of the phenomena of interest?
2. **How**: How are these identified factors related? (This step typically introduces causality)
3. **Why**: What are the underlying psychological, economic, or social dynamics that justify the selection of factors and the proposed causal relationships?
4. **Who, Where, When**: These conditions place limitations on the propositions generated from a theoretical model/ set the boundaries of generalizability.

According to Whetten (1989), the first two elements *describe* the phenomena of interest and the third and—to my opinion—most important *explains*. The last element

constitutes the range of the theory. However, Bacharach (1989: 501) argues that for a theory to be useful, it needs to *explain* and *predict* and he states that explanation establishes the substantive meaning of constructs, variables (i.e. describe) and their linkages (i.e. explain), while prediction tests that meaning, by comparing it to empirical evidence. Hence, both Whetten (1989) and Bacharach (1989) seem to agree that a theory should describe and explain and Bacharach adds the concept of prediction through empirical evidence. Bacharach has named this quality of usefulness of a theory—through description, explanation and prediction—***utility***.

To summarise, there are several characteristics that a theory should meet. First of all, a theory should be testable, which also requires being falsifiable. This contributes to the corroborability of a theory, which further increases with higher universality and precision of the theory. Last but not least, the theory should have increased utility (i.e. usefulness), which is determined by the four elements (what, how etc.) prescribed by Whetten (1989).

4.2.3 Research Paradigms for Theory Building

Burrell and Morgan (1979) presented a matrix with four different research paradigms, in an attempt to organise different approaches to theory building. Gioia and Pitre (1990: 586) however, argue that most studies of organisations fall under the functional paradigm as "organisational science has been guided predominantly by the assumption that the nature of organisations is a basically objective one that is 'out there' awaiting impartial exploration and discovery". Table 4.2 shows a summary of the main characteristics of the four paradigms.

Table 4.2: Paradigm Differences Affecting Theory Building

Interpretivist Paradigm	**Radical Humanist Paradigm**	**Radical Structuralist Paradigm**	**Functionalist Paradigm**
Goals	**Goals**	**Goals**	**Goals**
To DESCRIBE and EXPLAIN in order to DIAGNOSE and UNDERSTAND	To DESCRIBE and CRITIQUE in order to CHANGE (achieve freedom through revision of consciousness)	To IDENTIFY sources of domination and PERSUADE in order to GUIDE revolutionary practices (achieve freedom through revision of structures)	To SEARCH for regularities and TEST in order to PREDICT and CONTROL

Theoretical Concerns	**Theoretical Concerns**	**Theoretical Concerns**	**Theoretical Concerns**
SOCIAL CONSTRUCTION OF REALITY REIFICATION PROCESS INTERPRETATION	SOCIAL CONSTRUCTION OF REALITY DISTORTION INTERESTS SERVED	DOMINATION ALIENATION MACRO FORCES EMANCIPATION	RELATIONSHIPS CAUSATION GENERALIZATION
Theory-Building Approaches	**Theory-Building Approaches**	**Theory-Building Approaches**	**Theory-Building Approaches**
DISCOVERY through CODE ANALYSIS	DISCLOSURE through CRITICAL ANALYSIS	LIBERATION through STRUCTURAL ANALYSIS	REFINEMENT through CAUSAL ANALYSIS

Source: Gioia and Pitre (1990: 591)

It can be argued, these four paradigms have derived from the two main philosophical approaches discussed earlier in this chapter (i.e. positivism and interpretivism), in an effort to show in more details certain differences in theory building. The positivism and interpretivism views are mainly contradicted based on the objective-subjective dimension. The added dimension in this approach, which results in having four paradigms, is that of regulation (or stability)-change. This thesis, falls under the functionalist paradigm (positivistic approach), as it tries to test a number of relationships between constructs and variables and to hopefully provide refinement through causal analysis. The thesis uses the most common approach in organisational science, as also argued by Gioia and Pitre (1990: 586), that is deductive approach to theory building, by developing hypotheses and testing them against hypothesis-driven data via statistical analysis.

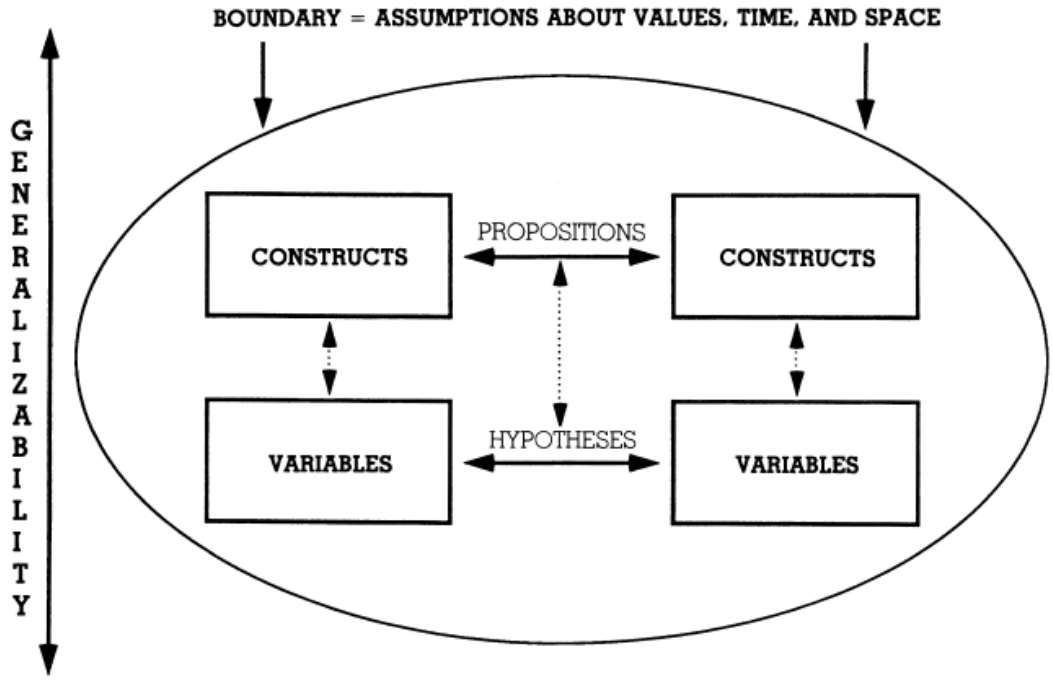
But in order to test theories and examine certain phenomena, processes, behaviours etc., there is a need of these factors, called concepts or constructs that will describe this phenomena or processes etc. Examples of such constructs are human capital, or team effectiveness and the following section will discuss the contribution of constructs and variables in the development of science.

4.2.4 Constructs and Variables

Previous sections tried to analyse what constitutes a theory and discuss various characteristics, qualities and elements of a theory. This section will discuss the components of a theory. Bacharach (1989: 498) has defined theory as "a system of constructs and variables in which the constructs are related to each other by propositions and the variables are related to each other with hypotheses". The system as a whole is then bounded by

theorist's assumptions about values, time and space. These assumptions seem to converge with Whetten's (1989) "who, where and when" conditions aforementioned, also in agreement with Doty and Glick (1994: 233). Figure 4.1 illustrates the components that constitute a theory as presented by Bacharach (1989).

Figure 4.1: Components of a Theory



Source: Bachararach (1989: 499)

Values are the implicit assumptions based often the theorist's creative imagination and ideological orientation or life experience but because of this, theories cannot be compared on the basis of their underlying values. Nonetheless, spatial and temporal assumptions are often relatively obvious. While limitations based on space and time apply to most theories, some theories have stricter restrictions than others. For example, a theory could have strict boundaries in space and no boundaries in time. "These theories are only applicable to specific types of organizations, but can be applied over different historical periods" (Bacharach, 1849: 500). Moreover, the opposite could happen, that is having time boundaries but no restrictions in space. Similarly, this would mean that the theory would apply to many types of organisations, but only in a specific period of time. From the above, it would be logical to say that the fewer boundaries are set to a theory, the more it can be generalised. And according to Bacharach (1989: 500) with fewer boundaries (or less

details) a theory would also become more abstract. This argument can also be related to the characteristics of universality and precision, which in turn contribute to the important quality of corroborability (discussed in section 4.2.2). But to my opinion, the terms of universality and precision are more carefully selected to describe certain qualities of a theory. It could be said that generalizability has the meaning of universality and in that sense less boundaries lead to higher generalizability and higher universality. But setting few boundaries does not necessarily result to an abstract theory, as Bacharach claims. Popper (1959) suggests that a theory should be universal (i.e. few boundaries of space and time), but it is also important to be precise. Thus, to make the parallel, a generalizable theory does not have to be abstract; it can be universal (few boundaries) and precise (clear boundaries).

Furthermore, the main components of the theory lie within the boundaries of values, time and space. As stated by Bacharach (1989: 500), "on a more abstract level, propositions state the relations among constructs, and on the more concrete level, hypotheses (derived from the propositions) specify the relations among variables". According to Kaplan (1964: 55) constructs are "terms which, though not observational either directly or indirectly, may be applied or even defined on the basis of the observables". In different words, constructs are general and broad terms represented by their 'observables', which are the variables. Hence, a variable is an observable entity, which is capable of taking more than one values; this would be the opposite of a constant. As inference, "a construct may be viewed as a broad mental configuration of a given phenomenon, while a variable may be viewed as an operational configuration derived from a construct" (Bacharach, 1989: 500). The propositions are the statements linking two or more constructs and hypotheses are the statements linking two or more variables that have derived from constructs.

As Lazarsfelf (1955) stated, variables are an objective and quantitative way of describing constructs. The operationalization is a process of finding these objective and quantitative observables, or measurements, which will capture the specific phenomena through constructs and variables. This process needs to address the problems of reliability and validity, so that the measurements are reliable and valid. All issues of reliability and validity are presented in Table 4.3, as depicted by Venkatraman and Grant (1986: 79).

At this point it is important to note that differences can be found in the terms and classifications of the components used to test construct validity. One example is that of reliability; although it has been treated as a distinct issue by many authors (Avenier and

Cajaiba, 2012; Carlson and Herdman, 2012; Hair *et al.*, 2006), there are some authors considering it as part of the validity component (Venkatraman and Grant, 1986; Bagozzi *et al.*, 1991; Tracey and Tews, 2005). Another example is related to the use of the terms internal consistency and reliability. Hair *et al.* (2006) and Tracey and Tews (2005) refer to internal consistency as being the measure of reliability, while Venkatraman and Grant (1986) refer to reliability as one element of internal consistency (i.e. the other being unidimensionality). It is assumed that there are no significant conceptual and practical differences among the different researchers, however for the purpose of this thesis, the classification from Venkatraman and Grant (1986) is adopted.

Content validity, also known as face validity, concerns with the extent to which the items reflect a specific domain of the construct. Content is usually attempted through the use of academics or/and executives—typically experts in the relevant field—who check and revise the measurement items. Content validity for this study was dealt during the design process and the pretesting stage of the instrument helped in verification. Specifically, in designing the instrument, the variables used were adopted from prior academic studies, as already tested constructs should have increased validity. In addition, to verify validity the questionnaire instrument was sent to scholars, considered as experts in the area of corporate governance, and their feedback with suggestions and comments was taken into account.

The following component according to Venkatraman and Grant (1986), is that of *internal consistency*, which includes two parts, the *unidimensionality* and *reliability*. The former is related to the extent that the items to be used reflect one specific construct. Unidemensionality check for this study is being addressed through exploratory factor analysis (Hair et al., 2006: 137), in that each factor should consist of items loading on a single factor.

Reliability of a study means that the reader is given the means to follow the entire cognitive path from the research database through to the results, so that s/he can reproduce this path if wished (Avenier and Cajaiba, 2012: 2). It refers to the consistency of responses to the questions of the instrument. In other words, it means that for a specific measure to be reliable, the researcher would attain the same results in different points in time. Having said this, a method to check reliability would be to create parallel measurements. One way to achieve this would be to repeat the measurement at a different time period using the same instrument on the same respondents and check the correlation of the two (Blunch, 2008: 31). This method—called *test-retest*—has the problem that the respondents might

remember the initial responses, which could lead to a bias. To avoid this, one could develop different instruments of the same difficulty and pass them to the same respondents -*alternative form method*. Again, there are obvious practical limitations to this method (i.e. different time intervals needed and difficulty in having totally parallel instruments); therefore one more method is suggested that is called *split-halves method.* With this method, the researcher may randomly split the latent variable into two equally sized parts and find the correlation of the two parts (same idea with alternative form method, but without need of time intervals).

The problem is that with this last method, the set of data can be split into two, in many different ways and the result would depend on this split. However, Cronbach (1951) found a way to overcome this problem by measuring the correlation of all possible splits and taking their average as one reliability measure. This is the coefficient (Cronbach's) alpha, which the most common diagnostic measure to assess reliability and also used for this study. For the purpose of this study, the minimum accepted score for the coefficient alpha was decided to be 0.6 (Hair et al., 2006: 137), although most factors were found to have scores higher than 0.7, which is in agreement to the limit accepted by other scholars (Cruz et al., 2010: 77; Klijn et al., 2013: 1254). However, in one case only, a score lower than 0.6 was found and after careful consideration and support from the literature, it was decided to accept it.

Table 4.3: A Summary of Key Components of Construct Validity

Component	*"Working" definition*	*Relevant techniques/ analytical framework*
Content validity	Extent to which empirical measurement reflects a specific domain of content	Review by "experts" and analyses of the extent of consistency among them.
Internal consistency		
1. Unidimensionality	Extent to which the items reflect one underlying construct.	Exploratory factory analysis; Confirmatory factor analysis.
2. Reliability	Absence of meaurement error in cluster score.	Cronbach alpha; Reliability coefficient of structural equation models.
Convergent validity	Degree to which multiple attempts to measure the same concept with different methods are in agreement.	Correlation analysis; MTMM matrix; Structural equation methodology — confirmatory factory analysis.
Discriminant validity	Extent to which a concept differs from other concepts.	Correlation analysis; MTMM matrix; Structural equation methodology.
Nomological (predictive) validity	Degree to which predictions from a theoretical network are confirmed.	Correlations; Regressions; Causal modeling.

Source: Venkatraman and Grant (1986: 79)

Convergent validity refers to the degree to which multiple attempts to measure the same concept with different methods, are in agreement (Carlson and Herdman, 2012; Venkatraman and Grant, 1986; Peter and Churchill, 1986). This means that having different instruments (e.g. two different questionnaires) to measure the same concept should get high correlated results as an evidence of convergent validity. The method used in the thesis to test convergent validity is that of correlation of each item with the summated scale/factor, following the approach from Cruz et al. (2010: 78).

Discriminant validity is the extent to which a concept or variable differs from other concepts or variables and is again tested with correlation of one concept to another (Campbell and Fiske, 1959; Venkatraman and Grant, 1986, Peter and Churchill, 1986).

Finally, *nomological validity* is the degree to which predictions from a theoretical network are confirmed (Venkatraman and Grant, 1986, Hair *et al.*, 2006).

4.3 Research Design

The section that follows covers issues related to research design such as the various approaches, the sources of data and the scale options available in designing a research project.

4.3.1 Approaches to Research Design

The research design according to Kerlinger (1986) is the plan and structure of investigation considered, as to obtain answers to research questions. The plan is the overall scheme or program of the research, including an outline of what the researcher will do, from developing hypotheses to analysing the data. The structure is the framework or configuration of the relations among the variables of the study. There are two main criteria to describe the different research design approaches. The one is related to the purpose of the study (i.e. its aims and objectives) and the other differentiates according to the time frame employed in the research.

4.3.1.1 Research Design Approach based on Aims and Objectives

Research design might vary based on the purpose of the study. There are four proposed approaches in social research, depending on the aims and objectives of a study; these are explorative, descriptive, explanatory and predictive (Blumberg *et al.*, 2008).

The *explorative* approach is used when the researcher does not have a clear idea or 'knowledge' of the issues to be examined in the study. The research design in this case is often approached by collecting observations prior to building a theory. The researchers might use this approach to identify variables and generate hypotheses that will contribute in building a theory. This is more of an inductive approach, used when trying to gain an understanding of the phenomena surrounding the research problem.

On the other hand, the *descriptive* and *explanatory* approaches are used when the researcher has a good understanding and a well-structured idea of the phenomena to be observed. The difference between these two approaches lies in the objectives of the study.

When the research is concerned with finding out what, how, who, where and when, the study is descriptive. When it is concerned with understanding why (i.e. trying to find the reasons and the factors for proposed causal relationships), the study is explanatory or *causal*. In simpler words, when a study concerns with explaining instead of just describing phenomena, there is a focus on explaining cause-effect relationships between variables. The theme of causality is widely discussed in the literature but since it is not the purpose of this section to analyse it in detail, it is important to state that two variables are considered to have a cause-effect relationship when the cause precedes the effect (i.e. cause begins before its effect), the two variables are statistically correlated and finally there is no third variable to show the observed correlation as spurious (Babbie, 2004). However, the second condition, i.e. the cause to precede the effect, fails to be met in many cases of cross-sectional surveys, where there is no time ordering to the variables (Bryman and Bell, 2007: 55). Most of the times, the researcher needs to "draw on common sense or theoretical ideas to infer the likely temporal precedence of variables" (Bryman and Bell, 2007: 169).

Conclusively, the last approach based on the given purpose of a study, is called *predictive*. Under this approach, the researcher tries to make predictions/forecasts, which is trying to predict the outcome for a specific variable based on changes of the phenomena that are observed.

All research approaches discussed above aim to achieve different purposes in a research study. However, it is not uncommon that a research study combines more than one approach and in many cases all approaches are present. In the current thesis, after taking into account the objectives as well as the theoretical model of the study, it was decided to adopt the descriptive and explanatory approaches, by describing the phenomena examined and trying to establish/explain relationships of constructs by testing specific propositions.

4.3.1.2 Research Design Approach based on Time Frame Employed

A common separation of studies is based on the time frame under which the study and its data collection taking place. The two different approaches are the cross-sectional and the longitudinal, where in the first the researcher explores the sample in one point in time, whereas in the second approach the observations repeat periodically. Although the assessment of change over time is fundamental to many phenomena investigated in organizational research (Chan, 1998: 421), for the purpose of this study and with the given time constraints, the cross-sectional approach was chosen and used.

4.3.2 Primary Vs. Secondary Sources of Data

The sources of data are divided into primary and secondary. Primary refer to data that is collected directly from the researcher to serve the purpose of the research study in process. On the other hand, secondary data is "data collected by primary researchers under a specific conceptual scheme can be reanalyzed under a vastly different scheme and may lead to new insights" (Kaase, 1991: 3253). Collecting secondary data has the significant advantage of saving time and money, however a main problem is that the data might not have high compatibility with the study in question. In other words, although the data might be easily generated, it might be the case that it does not meet the study's objectives and might be inaccurate. In addition there is no real control over the quality of data. Saunders *et al.* (2009) suggests various types of secondary data such as government publications, organisations' records, journals, newspapers, censuses (e.g. of population or employment), longitudinal surveys (e.g. government: family spending, or organisation: employee attitudes) and ad hoc surveys (e.g. governmental, organisational or academic). On the other hand, methods of primary data collection encompass experiments, case studies, surveys (e.g. questionnaires, interviews) and focus groups.

After careful consideration of the advantages and disadvantages of the various different collection methods and by taking into account the characteristics of this study, its objectives and its hypotheses, a cross sectional approach with primary data through the use of online survey technique has been adopted (i.e. Survey Monkey).

4.3.3 Objective Vs. Subjective Measures of Data

An important matter and decision in data collection is whether the measures of certain constructs and consequently variables will be objective or subjective. Objective measures are based on existing data that are considered to capture certain constructs. Subjective measures are based on perceptions of respondents over a specific phenomenon or construct. Therefore, subjective data are usually collected through questionnaires or interviews, but objective data are usually collected from statements, annual reports or any existing documents. Needless to say, that not all constructs can be measured objectively. Common examples of constructs, which are measured with both approaches in organisational studies, are organisational performance (e.g. Dess and Robinson, 1984; Verbeeten and Boons, 2009) and organisational environment (e.g. Downey and Slocum, 1975; Dess and Beard, 1984; Boyd *et al.* 1993). Researchers have tried to examine any relationship between the two approaches, but with uncertain results. There is no strong

evidence that any of the two approaches is more appropriate, however Verbeeten and Boons (2009) and Dess and Beard (1984) suggest that using a combination of objective and subjective measures, could be a strength for a study.

In the current study, due to the nature of the constructs, the measurements used are subjective, as data is collected through questionnaires, capturing respondents' perceptions.

4.3.4 Scales of Measure

Designing the measurements and their scales is of high importance, as the reliability and validity of a study, discussed earlier in this chapter (see 4.2.4), largely depends on this process. The scales determine the extent of measurement precision and the literature identifies four levels of measurements firstly proposed by Stevens (1946), i.e. nominal (or categorical), ordinal, interval and ratio, with nominal being at the lowest level and ratio being at the highest.

A *nominal* scale assigns numbers in order to label or identify subjects or objects. These numbers have no quantitative meaning except from indicating the presence or absence of the attribute or characteristic being investigated (Hair *et al.*, 2006). Common variables measured with a nominal scale are many demographic characteristics like gender (i.e. male, female), religion (i.e. Christian, Muslim, Hindu, etc.) and ethnic group (White, Black, Asian etc.).

An *ordinal* scale, widely used for subjective measurements in social science, provide no measure of the actual amount in absolute terms, but only the order of values. For instance, the ordinal scales 1, 2, 3, 4, 5 and 1, 3, 9, 27, 81 are equivalent (Gob *et al.*, 2007: 603). A researcher knows the order but not the amount of differences between the values (Hair *et al.*, 2006). The most widely used ordinal scale, was developed by Rensis Likert (1932), who suggested a technique where the respondent could choose from a variation of ranking choices/points (e.g. from strongly disagree to strongly agree). Initially, the scale was five-point, but since then, seven-point is also widely used.

At this point it is important to state that there is much debate on whether Likert scale should be treated as ordinal or not. As Gob *et al.* (2007: 602) argue, "there is no common standard accepted by the scientific community for the correct interpretation and analysis of such data... in methodological considerations it is generally acknowledged that attitude measuring scales should be considered as ordinal. Nevertheless, many studies use cardinal statistics as sample means, variances and t-tests to analyze attitude data". Another question being discussed in the literature is whether five or seven-point scale (or less, or

more) should be used and there are findings supporting all sides. Churchill and Peter (1984: 366) argued that the more rating points used the better the reliability and validity. Also, Cicchetti *et al.* (1985: 35), who examined number of scale points being from 2 to 100, concluded that reliability increases from 2 to 7 points but there is no significant increase by using above 7 scale points. On the other hand, Lehmann and Hulbert (1972) and Boote (1981) were more reluctant in increasing the number of rating points. Furthermore, Lissitz and Green (1975), Dawes (2008) and Wakita *et al.* (2012), did not offer clear conclusions of a preferable format. Dillman *et al.* (2009: 137) follow a slightly different approach to the question. They state that enough categories should be given to respondents, to be able to place themselves in the scale, but not so many that the categories begin to lose their meaning or become ambiguous. And they agree with most abovementioned authors, that five or seven points can fulfill these conditions. However, they differentiate by adding the criterion of whether scales are *bipolar* or *unipolar*. For bipolar, which measure both direction (e.g. agree or disagree) and degree (e.g. strongly, slightly), the ideal number of categories seem to be five or seven, giving to each side of the middle point, two or three levels of differentiation. For unipolar scales, measuring only gradation (e.g. extremely, very, some, not at all), it is argued that the ideal categories would be four or five.

Finally, despite the varied views on the ideal number of rating points, it seems that most scholars tend to agree that odd number of response categories is preferred, as they allow the middle value to be interpreted as the neutral point. Nevertheless, Wong *et al.* (2011), found in their study that there are no systematic differences of odd number response format with the even number response format.

After taking into account all arguments above, as well as the studies that helped in designing the study's measurements, it was decided to use seven points across all Likert scale questions of the study's survey.

The next levels of measurement, after ordinal scale, are respectively the *interval* and the *ratio* scales. These two levels provide the highest level of precision, allowing almost any mathematical operation to be performed (Hair *et al.*, 2006). The only difference between interval and ratio scales is that interval scales use an arbitrary zero point (0 Celsius degrees), whereas ratio scales include an absolute zero point (0 British pounds).

In this study, mainly ordinal scale questions will be used to capture the main constructs of the study, but the other levels of measurement will also be used in various questions.

4.4 Survey Design

The following sections discuss a number of issues related to the process of designing and sending the survey. In specific, the issues that are covered include pre-notification emails, personalisation, the content of invitation emails, the length and structure of the questionnaire and types of questions used.

4.4.1 Email Invitation(s) to the Survey

The survey for this study was conducted online and the invitation was sent through email. Therefore, the following paragraphs discuss pre-notification, personalisation, and the content of email invitations.

4.4.1.1 Pre-notification

Pre-notification is assumed to be effective in improving response rates (Anseel *et al.*, 2010; Yammarino *et al.*, 1991; Bosnjak et al., 2008) and as such, a pre-notification email was sent to all individuals of the sample to inform them a week in advance that they would receive a survey to complete. The email informed the recipients that an email with a web link of the survey would be sent to them in a week's time and that their voluntary participation would be highly appreciated.

However, it is noteworthy that in a meta-analysis from Cook *et al.* (2000), there is no strong support on the effect of the pre-notification on response rates, as there were differences between findings of different non-electronic surveys.

4.4.1.2 Personalisation

It is generally argued that no matter what is the survey method, mail or web, personalising the contacts is important, as it may establish a connection between the surveyor and the respondent and also makes the respondent feel more important for the survey, as s/he is drawn out of the sample (Dillman *et al.*, 2009: 272; Heerwegh, 2005). Older research showed evidence of a positive effect of personalisation to the response rate of mail surveys (e.g. Andreasen 1970; Eisinger *et al.* 1974), whereas recent findings show that the same applies for the webs surveys (Cook *et al.*, 2000; Heerwegh *et al.*, 2005; Joinson *et al.*, 2007). However, there are also few studies that found no effect of personalisation on response rates (Fan and Yan, 2010; Porter and Whitcomb, 2003).

Considering all above, all emails sent to the sample (from pre-notification email to the last wave) included a personalised salutation (i.e. 'Dear Mr. Brown'). In a few cases, when existing and known, the title of the contact was used, such as Dr. or Lord (UK

Parliament, 2013). The personal salutation was achieved with the help of the 'Mail Merge Manager' of MS Word software.

4.4.1.3 Content of the Email(s)

The email invitation sent to the recipients has one main aim that is to convince them to participate in the survey. A few motivation tools that could possibly increase the recipients' response rate are discussed in the literature, such as financial rewards or emphasis on the benefit of science and consequently the researcher and respondent from the survey.

There are different reasons for not offering a financial reward to the recipients of the survey. Firstly, due to financial constraints, it wasn't feasible to offer money to the sample, also taking into account the relatively large size of it. In addition, the nature of the sample's profiles made the use of financial incentives unattractive. As Dillman *et al.* (2009: 36) state, although sending a token of financial incentive to individuals might improve response, in the case of business respondents the effect might be the opposite. They might find an ethical problem or they might think that in order to accept the money they would have to complete extra paperwork.

On the other hand, an encouragement for participation, based on the premise that their contribution would be critical to the progress of the study, was used in the invitation. This was combined with a statement, explaining to the respondents that they are part of a selected group/sample, which highlights the scarcity and this in turn can increase response rates (Porter and Whitcomb, 2003).

The purpose of the study was briefly but clearly stated in the emails and emphasis was put on the fact that this study is conducted for academic purposes. The emails included digital signatures of the researchers, they were sent through the University's email address and the subject line was carefully written trying to reduce the undelivered emails due to spam filters (Manfreda *et al.,* 2008; Couper, 2000; Porter and Whitcomb, 2003). Furthermore, the recipients were ensured for preserved anonymity, which can result in higher response rate (Anseel *et al.*, 2010) and they were also informed that completion was voluntary.

Finally, the recipients of the invitation were also told that if they wanted they would receive the summary report with the main findings of the study, which is found to also affect positively the response rate (Powers and Alderman, 1982).

4.4.2 Measuring Instrument

The design and development of the questionnaire was a process that took about five months to be completed. More than twenty versions were produced before finalising, with necessary additions, changes and improvements constantly changing the content and shape of the draft. The following sections, provide a description of some 'technical' aspects of the questionnaire, such as its length, its overall structure and the types of questions used.

4.4.2.1 Length and Structure of the Questionnaire

The length of the questionnaire is also a matter of discussion in the literature. An effect of the length on the response rate has been found both in mail and web surveys (Yammarino *et al.*, 1991; Cook *et al.*, 2000, Heberlein and Baumgartner, 1978) although the strength of effect vary in these studies. However, Galesic and Bosnjak (2009) claim that we know much less about the same effect in web surveys. In addition, they add another important factor to the discussion of questionnaire length, which is the actual time length and the announced length by the sender to the recipient. They state that when the announced length time (in a survey lasting approximately 20 minutes) is longer than the actual time, there is higher non-response rate. But when the announced length is shorter, the break-off rate is higher.

The current study's length in time was about 20 minutes and taking into consideration the above arguments, the same was announced to the recipients at all email invitations sent to them. In terms of pages, the questionnaire consisted of nine pages, which is in agreement with the recommendation made by Dillman (1978) that is not to exceed twelve pages in mail questionnaires.

The questionnaire consisted of five sections (A to E), each section examining a different construct or group of variables. The questionnaire contains 27 questions in total, captured with 87 items.

4.4.2.2 Types of Questions

Both closed-ended and open-ended questions are found to have advantages and disadvantages. On one hand, it is argued that closed-ended questions limit spontaneity of the respondents and also bias can result from suggesting responses to individuals (Schuman and Presser, 1979: 692; Dillman *et al.*, 2009: 72; Vinten, 1995: 27). On the other hand, according to Vinten (1995) and Dillman *et al.* (2009), closed-ended questions are easier to handle, cost less and sometimes eliminate coding time. In addition, Schuman and Presser (1979) failed to provide strong support for superiority of open-ended

questions, although they believe that total elimination of open-ended question would be a mistake.

Most of the questions in the questionnaire are closed-ended, meaning that they "provide respondents with a list of answer choices from which they must choose to answer the question" (Dillman *et al.*, 2009: 72). The closed-ended questions were used in order to facilitate quantitative analysis. Specifically, seven-point Likert scale questions were used consistently in the first two sections of the questionnaire.

Furthermore, the option "Not-Applicable" was also added to both sections with Likert scale questions, to avoid having respondents selecting any false response when the question does not apply or is not well understood to them. As Dillman *et al.* (2009: 210) claim, options such as 'not applicable', 'don't know', 'prefer not to answer', allow respondents "to move on with the survey, without having to provide an inaccurate answer or quit the survey out of frustration".

The rest of the sections included closed-ended questions, in the format of yes/no, multiple choice or numerical (ratio scale). The questionnaire however ends with an optional question to fill in the respondent's company name and an open-ended question where the respondents could provide any comments or share any other information related to the study. This last question was added, to benefit from getting some spontaneous and detailed overall feedback. The following sections present the measurements that were decided to be used for in the study.

4.4.2.3 Measurements Used in this Study on Board Roles

Previous chapter discussed the measurements of the board roles, as they have been found in the literature. For the purpose of this study, a mix of items from various studies was used to measure the roles of board members. This action was decided, as it was thought that no study has managed to include all measures needed to capture the roles of the board. One reason is that there are studies that only focus on one of the roles; for example, McDonald and Westphal (2010) and McDonald et al. (2008) have studied monitoring role only, while Judge and Zeithaml (1992) have named and studied the role of the board as strategy involvement.

Another reason is that although scholars have attempted to have a holistic view of the roles (i.e. monitoring and service), they have used different approaches and as a result the items used among studies may differ in context. For example, Westphal (1999) and

Carpenter and Westphal (2001) use three items to capture the monitoring function, by mainly focusing on monitoring strategic decisions and the performance of these decisions. However, Van Den Heuvel et al. (2010) explain the role by focusing more on determining compensation and involving with succession planning of the management.

Therefore, after careful consideration and thorough analysis of all items found in the various articles from the literature, a list of 36 items was created in order to capture the board roles, that were measured in a 7-point Likert scale (i.e. little extent to great extent). The decision was driven by the objective to include all possible aspects of roles, but at the same time avoiding use of duplicate questions. Some of the researchers have used slightly different expressions to capture almost identical roles. The items that were selected can be seen in Table 4.4.

Table 4.4: Measures used in Current Thesis to Capture Board Roles

Item/ Measure	**Authors**
act as ambassador for the firm	Stiles 2001; Wan and Ong, 2005
build organisational reputation	Hillman and Dalziel, 2003; Hillman et al., 2008; Van Den Heuvel et al., 2010
ratify strategic proposals	Judge and Zeithaml, 1992; Wan and Ong, 2005; McDonald and Westphal, 2010
call for revisions of strategic proposals	Judge and Zeithaml, 1992; McDonald and Westphal, 2010
constructively criticise/ask probing questions	Judge and Zeithaml, 1992; McDonald et al., 2008; McDonald and Westphal, 2010
defer to [the CEO's] judgment on final strategic decisions	Westphal, 1999; Carpenter and Westphal, 2001; McDonald et al., 2008
involve in determining salary/ compensation of top management	Hillman and Dalziel, 2003; Hillman et al. 2008; Van Den Heuvel et al., 2010
involve in determining salary/ compensation of CEO	Hillman and Dalziel, 2003; Hillman et al. 2008; Van Den Heuvel et al., 2010
engage in succession planning for CEO	Hillman and Dalziel, 2003; Wan and Ong, 2005; Hillman et al., 2008
engage in succession planning for top managers besides CEO	Hillman and Dalziel, 2003; Wan and Ong, 2005
evaluate the CEO's performance	Carpenter and Westphal, 2001; Hillman and Dalziel, 2003; Stephens et al., 2004; Wan and Ong, 2005; Hillman et al., 2008; McDonald et al., 2008; Van Den Heuvel et al., 2010;
evaluate the top management's performance	Carpenter and Westphal, 2001; Hillman and Dalziel, 2003; Stephens et al., 2004; Wan and Ong, 2005; Hillman et al., 2008; McDonald et al., 2008; Van Den Heuvel et al., 2010;
facilitate access to resources such as capital	Hillman and Dalziel, 2003; Stephens et al.,

	2004; Hillman et al., 2008; Van Den Heuvel et al., 2010
involve in hiring new executives	Stiles, 2001; Van Den Heuvel et al., 2010
involve in hiring CEOs	Stiles, 2001; Van Den Heuvel et al., 2010
involve in firing executives	Stiles, 2001; Van Den Heuvel et al., 2010
involve in firing CEOs	Stiles, 2001; Van Den Heuvel et al., 2010
aid in the formulation of strategy or other important firm decisions	Westphal, 1999; Carpenter and Westphal, 2001; Wan and Ong, 2005
link the firm to important stakeholders or other important entities	Hillman and Dalziel, 2003; Stephens et al., 2004; Hillman et al., 2008
build external relations	Hillman and Dalziel, 2003; Stephens et al., 2004; Wan and Ong, 2005; Hillman et al., 2008; Van Den Heuvel et al., 2010
maintain relations with stakeholders	Hillman and Dalziel, 2003; Stephens et al., 2004; Wan and Ong, 2005; Hillman et al., 2008; Van Den Heuvel et al., 2010
monitor CEO in decision-making	Hillman and Dalziel, 2003; Hillman et al, 2008; McDonald et al., 2008; McDonald and Westphal, 2010
monitor Strategy Implementation	Hillman and Dalziel, 2003; Hillman et al, 2008; McDonald and Westphal, 2010
monitor top management in decision-making	Judge and Zeithaml, 1992; Westphal, 1999; Carpenter and Westphal, 2001; Hillman et al, 2008; Wan and Ong, 2005; McDonald and Westphal, 2010
act as a "sounding board" on strategic issues	Westphal, 1999; Carpenter and Westphal, 2001
provide advice and counsel to top managers	Carpenter and Westphal, 2001; Hillman and Dalziel, 2003; Wan and Ong, 2005; Hillman et al., 2008; Van Den Heuvel et al., 2010
provide expertise to the board	Hillman and Dalziel, 2003; Hillman et al. 2008
provide legitimacy to the firm	Stiles, 2001; Hillman and Dalziel, 2003; Hillman et al., 2008
bolster the image of the firm	Hillman and Dalziel, 2003; Hillman et al., 2008; Van Den Heuvel et al., 2010
seek information from the CEO or another inside director regarding the progress of strategic decisions	Judge and Zeithaml, 1992; Wan and Ong, 2005; McDonald et al., 2008; McDonald and Westphal, 2010
seek information from the CEO or another inside director in order to evaluate the performance of top management	McDonald et al., 2008; McDonald and Westphal, 2010
contribute in diffusion of organisational innovation	Hillman and Dalziel, 2003; Hillman et al. 2008
involve in the development of the corporate vision	Stiles, 2001
involve in mission articulation	Wan and Ong, 2005
review social responsibilities of the firm	Stiles, 2001
take into account interests of shareholders	Stiles, 2001; Hillman and Dalziel, 2003;

	Hillman et al., 2008

4.4.2.4 Measurements Used in this Study on External Environment

External Environment was measured with 11 items, as resulted from the review of the literature on certain existing items. Specifically, the measurement of the external environment dimensions is presented in Table 4.5 below:

Table 4.5: Measures used in Current Thesis to Capture External Environment

Variables	
The business unit must change its marketing practices to keep up with the market and competitors… (1) extremely rarely (7) extremely frequently The rate at which products/ services are becoming obsolete in the industry is… (1) extremely slow (7) extremely fast Actions of competitors are… (1) extremely predictable (7) extremely unpredictable Demand and consumer tastes are… (1) fairly easy to forecast (7) almost unpredictable The production/service technology…(1) Is not subject to very much change and is well established (7) Changes often and in major way	**Dynamism** Miller and Droge (1986: 557)
The extent that the firm experiences variations in its principal industry in… (1) About the same for all products (7) Varied a great deal from one product/service to another Customers' buying habits The nature of the competition Required methods of production service	***Complexity*** Miller (1988: 308)
The extent that the firm in its principal industry faces intense competition in terms of... (1) Much less competition than other firms (7) Much greater competition than other firms Price competition Product competition Technological competition Distribution competition Shortages of labour Shortages of raw material Unfavourable demographic Trends Severe Regulatory Restrictions	***Munificence*** Miller and Friesen (1983:233)

4.4.2.5 Measurements Used in this Study on Board Characteristics

Board characteristics were measured with several variables described below. **Board size** was measured as the number of board members serving in the board and is

measured at the ratio level (Bliss, 2011: 369; Ahmed et al., 2006: 422; Zona et al., 2013: 306). In addition, four further questions asked respondents about the number of directors being executive, non-executive, affiliated non-executive and independent non-executive trying to capture the **board dependence**. Consequently, the **ratio of independent** directors was measured by dividing the number of independent directors with the number of total directors (Bliss, 2011: 369; Ahmed et al., 2006: 422; Andres et al. 2005: 201; Zona et al., 2013: 306).

CEO duality is a dichotomous nominal variable (i.e. 1=yes, 2=no) measured by asking respondents if the board's CEO also serves as a Chairperson (Boyd, 1995: 306; Bliss, 2011: 369; Kim et al., 2009: 1175). Moreover, a set of questions asked respondents about the establishment of certain **board committees** (i.e. nomination, remuneration, audit, succession, risk management, governance and other committee). Finally, **frequency of meetings** was measured at an ordinal scale with 5 options (i.e. 1=every fortnight, 2=every month, 3=every 3 months, 4=twice per year, 5=yearly) adopting Vafeas (1999) and Koufopoulos et al. (2009). This variable was reversed so that it really corresponds to the variable's name (i.e. the higher the value, the higher the frequency of meetings).

4.4.2.6 Measurements Used in this Study on Directors' Characteristics

The directors' (respondents) characteristics were captured using various questions. **Status in Board** was measured at an ordinal level with 3 given options (i.e. 1=executive, 2=non-executive/affiliated, 3=non-executive/independent). In addition, the directors were asked with dichotomous (i.e. yes/no) questions to respond whether they are **CEO**, **Chairperson** or hold **committee membership** (nomination, remuneration, audit, succession, risk management, governance, other). **Tenure** was measured with two questions at a ratio level, asking respondents how many years they work in the company and how many years they serve in the company's board, following Epstein (2013) and Williams et al. (2005) who however measured average tenure of top management team. Finally, the **number of board directorships** was measured at a ratio level scale, asking respondents to state the number of directorships (including focal company's) they hold (Kiel and Nicholson, 2003: 196; Zona et al., 2013: 306).

4.4.2.7 Measurements Used in this Study on Company's Characteristics

Some of the company's' characteristics were also measured to have a view of several characteristics. **Company size** was measured with the absolute number of

employees (Koufopoulos et al., 2010). Also, asking respondents to choose the sector in which their organisation operates captured **industry sector** (Industry Classification Benchmark, 2010). Moreover **organisational age** was measured by capturing the actual year of company's establishment (Zona et al., 2013: 306). Finally, ***listing of participants' organisations*** included questions that asked participants whether their company is listed in a stock exchange (Zona et al., 2013: 306) and if the answer was positive, the specific market was also captured.

4.5 Sampling Issues

This section discusses all issues related to sampling methods used for the study and explains sample selection, sample size, key informants, reminders and response rates as well as pre-testing procedure and the issue of non-response bias.

4.5.1 Population and Sample Selection

Trying to define the population of the study in a specific country, it would be ideal to manage and get responses from all board members of all businesses in the UK, but for obvious reasons this is nearly impossible. Thus, the initial plan for the thesis was to study the boards of top UK listed companies, which were considered to be an appropriate sample for a study on corporate governance issues. The reason for this is that it was expected that their directors would have the desired knowledge to respond on the various issues of the study. Therefore, it was decided that the sample to be used would be all the board members of FTSE 350 companies. This plan was soon abandoned, as although the 350 firms could be easily identified, the email addresses of their board members were not available.

4.5.1.1 Sample Size Obtained with Email Contacts

By exhausting all available options, access to email addresses of board members was acquired through OneSource Company. The study was conducted by sending the survey to different batches, as the low response rate (because of the nature of the sample) lead me to acquire a second batch of contacts.

Initially, the company provided a database of 2,313 contacts from 326 companies that had turnover of over GBP 1.5 billions. Trying to justify the sampling method used, it

can be argued that the study follows the *non-random quota sampling*. This results from the fact that a quota was used in selecting companies from the UK—over GBP 1.5 billion turnover—and in turn only available email contacts were used, which makes the sampling non-random.

After careful examination, I found that only 1,464 were complete and appropriate, as many contacts were not from board members and some contacts did not have the email address available. As a result, 1,464 emails formed the 1st batch of the study. However, as it was expected when the first email was sent to these contacts, 586 emails returned and were marked as undelivered. This resulted to a sample size of 878 contacts from this batch that received the survey invitation. This means that only 60% of the initial contacts acquired could reach a respondent.

As this number of contacts was not considered as sufficient and the expected response rate was already low due to the nature of the key informants (board members), another batch of contacts was obtained from OneSource Company, this time by significantly lowering the turnover criterion to get enough contacts and achieve a satisfactory response rate from the increased sample size. As such, with the quota/criterion of turnover being reduced to GBP 5 millions, 2,393 additional contacts were obtained. These were all complete and appropriate, however when the initial email was sent to these contacts, 826 returned as undelivered. This results in 1,567 delivered emails, which seems to form a slightly more updated batch (65.4% compared to the 60% of the 1st batch), a note that was already acknowledged by the people in the database company.

To conclude, the sample size based on the two batches was 2,445. With 75 responses—collected during February-March 2013—the response rate of this sample was 3.0%, which is low but corroborates other researchers who claim that there is a great difficulty in collecting data from board directors (e.g. Machold and Farqular, 2013; Daily et al., 2003; Leblanc and Schwartz, 2007; Zahra and Pearce, 1989). As stated by Zahra and Pearce (1989: 324) "this is, in fact, one of the most challenging areas for future research in the contribution of boards", which seems to stand true until presently. The summary of contacts and delivered emails is presented in Table 4.6.

Table 4.6: Summary of Email Contacts

Batches	**Number of Contacts**	**Undelivered Emails**	**Delivered Emails**
1st batch	1,464	586	878
2nd batch	2,393	826	1,567

Total	***3,857***	***1412***	***2,445***

4.5.1.2 Increasing Sample Size Using Social Media (LinkedIn)

Since the responses collected from the email invitation to directors were found to be limited—for statistical analysis—it was attempted to collect more data from board directors that were members of relevant LinkedIn groups. This would increase the total number of respondents, even though it can be regarded as a limitation to the possible heterogeneity of the sample. Table 4.7 presents the various groups where the survey invitation was posted; a short description of the groups and the number of their members are also provided. From this additional effort, 40 extra responses were collected, which resulted in a total number of 115 responses.

Table 4.7: A Summary of LinkedIn Groups Accessed for Further Data Collection

Group Name	**Short Description**	**Members**
Board of Directors Society	This group provides education, insights and contacts for entrepreneurs, attorneys, investment bankers, angels or venture capitalist, investors, recruiters, CEOs, CFOs, managers, professionals, consultants and individuals who currently sit on a corporate board of directors and those who are qualified to do so and aspire for election to such a board.	4,258
Boards & Advisors	Membership in this group includes (i) external advisers, (ii) internal advisers and (iii) current or prospective board and committee members.	5,755
Company Directors and Governance Professionals	This group is a community of interest focused on boards and governance. Membership is open to all board members, aspiring board members and governance practitioners.	2,251
Company Directors Networking	This group is open to IOD Members and by invitation from Group members.	1,923
Corporate Governance	Corporate Governance Portal - a virtual community where all is found on Corporate Governance. An independent investment ratings agency and research firm focusing on corporate governance, board of director effectiveness and board risk.	2,185
Corporate Governance Contact Point	The purpose of this group is to bring together experts on Corporate Governance in different regions of the world, in order to share the latest news on the matter.	598
Governance Committee	Members of our community of corporate	253

Members of Corporate Boards	directors who serve on governance committees of corporate boards inspire each other with information, insights and other resources to help elevate their respective boards' performance in adding value to the corporations they serve.	
Irish Non Executive Director (INED) Group	This is a group for current and aspiring Irish based Non Executive Directors (NED's) who are seeking new opportunities, share experiences, network and promote the role and benefits of a Non Executive.	486
NED/ NXD – Non Executive Directors – Global	This is a group for current NED's/NXD's & individuals wishing to aspire to being a Non Executive Director. This will create a unique platform for open discussions and networking opportunities.	1,940
Next Director	Our main objective is to build a platform where company directors from around the world and with a diverse range of experience and aspirations can engage with each other, seek and contribute advice and share ideas and information.	4,909
Non Executive Director Network – England	The network has been set up to provide a forum for discussion between non-execs, mentors for non-execs, and people interested in taking up a non-executive position.	260
Non Executive Directors Association	The Non-Executive Directors Association was established in 2007 to "represent Non-Executive Directors and ensure they are properly trained and developed.	1,729
NXD – membership organization for Non-Executive Directors	NXD is a group of experienced, successful and practical business leaders who want to add value to SME businesses.	297
The Financial Times Non-Executive Directors' Club	This group is a forum for all aspiring and experienced non-executive directors to discuss boardroom issues and share thoughts, ideas and experiences - and to receive articles and items of interest	929
The Institutional Corporate Governance Network	This group is for people who are involved in corporate governance including activists, institutional owners, corporate secretaries, board members, etc.	3,116
	TOTAL	**30,889**

4.5.3 Key Informants

As mentioned in section above, it was decided for this thesis, to collect data from any directors sitting in the board. The reason was simply that all directors of a board are

considered to be knowledgeable of the constructs of interest. In addition, it was believed that collecting responses from any directors—i.e. CEOs, Chairpersons, executives and independent members—would be important in capturing the perceptions of the roles for all members of the board. After collecting the data, it was found that majority of respondents were executive members of the board, including CEOs and the rest of the responses came from independent members.

4.5.4 Reminders and Response Rates

The data collection for the current thesis has proven to be very challenging and it is argued that the reason is the profile of the respondents. However, among other techniques used to motivate respondents in completing the survey—discussed in this chapter (e.g. pre-notification)—follow up messages are also thought to improve the response rate of any kind of survey. As such, after sending the pre-notification email, the initial survey invitation was sent that was followed by two reminders and one final call in a period of five weeks. This resulted in 75 responses that were later complemented with the 40 responses from LinkedIn, which made a total of 115 responses.

The criterion used to decide which questionnaire will be considered as complete was whether the respondent moved through all pages using the navigation buttons, clicked the 'Next' button on every page, and answered all compulsory questions to finally click 'Done' (http://help.surveymonkey.com/articles/en_US/kb/What-is-a-partial-Total-Started-or-finished-Total-Finished-response).

The numbers of collected responses from the different stages of the survey were recorded as follows:

Table 4.8: Responses Resulted from Different Waves

Email Wave	**Responses**
Survey Invitation	44
1st Reminder	13
2nd Reminder	12
Final Call	6
Linked In	40
Total	*115*

4.5.5 Pre-testing Procedure

The survey instrument was pretested among academics that were regarded as experts in the field of corporate governance. As such, an email was sent to selected academics from the UK and the United States asking them to provide their feedback and comments on the quality and presentation of the questionnaire that was attached in document format. All selected academics had either numerous relevant publications on corporate governance, or were members of corporate governance interest groups (e.g. BAM SIG). Their comments were extremely helpful and constructive and were taken into account in the final online version of the questionnaire (e.g. Prof. Amy Hillman and Prof. Stephen Perkins). This approach—also used by Hambrick (1981: 261)—was used to satisfy the criterion of *content validity*.

4.5.6 Non-Respondents

While conducting the survey through email, there were a few board directors that replied to the survey invitation, stating that they do not want to participate. In total, 37 emails were received during the collection process refusing to participating and asking to be excluded from the mailing list. The main reason for the majority was the organisation's policy of not participating in surveys, while other reasons included director's retirement or changed position and lack of time.

4.5.7 Summary

Section 4.5 described the sampling approach used in the thesis, which followed two different steps. Due to the difficulty experienced in collecting data from respondents through email, LinkedIn was used as an additional method and the total responses from the two methods was 115. The following section briefly describes the statistical methods used to analyse the data collected.

4.6 Methodology Adopted for Data Analysis

Important decision for any study is the methods to be used for analysis of the data that is collected. While this decision is not independent to the previous parts of methodology, it is argued that the analysis approach needs to follow the purpose and approach of the designed methodology. Having said this, as discussed earlier, the main

purpose of the study, is to examine relationships between the study's theoretical constructs. These relationships are already discussed in chapter three, where the relevant hypotheses have also been developed.

The following paragraphs outline and briefly explain the steps and methods selected to present and analyse the findings of the data that was entered into the SPSS software.

4.6.1 Descriptive Statistics

The initial step of analysis in a study is to use univariate statistical techniques, including the measures of central tendency—such as mean, median, mode—and the measures of dispersion—such as standard deviation, variance (Curwin and Slater, 2006). This level of analysis is provided in Chapter 5, with the use of frequency scores, percentages, measures of central tendency (or location) and measures of dispersion. The descriptive findings are presented through tables and graphs, followed by a description.

This first step is useful, in order to get an initial understanding of the data that is collected through the survey.

4.6.2 Factor Analysis

Since the variables used to capture the constructs of the study were numerous, it was considered necessary to reduce data with the use of factor analysis. This is a widely used method in order " to examine the underlying patterns or relationships for a large number of variables and to determine whether the information can be condensed or summarised in a smaller set of factors or components" (Hair et al., 2006: 101). In other words the method can be used either to explore the pattern of variables and identify factors that can capture dimensions of a construct, or to confirm whether expected factors derived from literature have high loadings. The steps and decisions taken in implementing the factor analysis are presented in detail in Chapter 6.

4.6.3 Correlation Analysis

Moreover, the next step of analysis was to use a bivariate technique to get a better understanding of the hypothesised relationships. This is a commonly used method when researchers want to examine the potential relationship between variables. As such, the correlation coefficient (r) that can take values from -1 to 1 is used. Values closer to 0 indicate that the relationship of two variables is weak, while values closer to -1 or 1 show

that there is strong relationship. For negative values the relationship has negative direction and for positive values it has positive direction (Hair et al., 2006; Field, 2009).

This level of analysis is useful, in order to get a first outlook of the potential relationships and before conducting further analysis (i.e. regression) to test the hypotheses.

4.6.4 Hypothesis Testing Explanation

While the correlation analysis is used to understand whether expected relationships between constructs exist, the method is not sufficient to test the hypotheses developed on these relationships. The whole purpose of testing hypotheses is to try and confirm or reject them based on the collected data, in order to be able to generalise to the whole population. Although as discussed earlier in this chapter this may not be possible (see falsification doctrine in 4.2), it is an objective of this thesis to investigate the relationships hypothesised.

When testing hypothesis, a common approach is to develop two different and opposing statements, the *null* (H_0) and the *alternative* hypothesis (H_1) (Curwin and Slater (2006: 278). The alternative hypothesis states the expected relationship and the null hypothesis states that this relationship does not exist. Since, based on previous discussion a relationship can never be proved, the researcher can only confirm or reject the null hypothesis. As such, even though a researcher tries to confirm the alternative hypothesis (i.e. that relationship exists), he can only accept it indirectly by rejecting the null hypothesis (i.e. no relationship exists).

4.6.5 Multiple Regression Analysis

The final—and most significant—step of the findings is to decide the multivariate technique to be used for testing the hypotheses. An important factor in making this decision is the level of measurements used to depict the variables, as with every level of measurement different statistical techniques should be employed.

The relationships to be examined in this thesis, is between various independent variables with one dependent variable at a time. All the dependent (outcome) variables are measured at the ordinal level, as Likert scale questions were used to capture them. However, it was decided to treat these questions as interval that allow additional tests, as this is a common approach in social science (Gob *et al.*, 2007). Moreover, the predictor/independent variables were found to be nominal (e.g. duality), ordinal (e.g. environmental dimensions measured in Likert scale) and interval/ratio (e.g. board size and

ratio of independent). As such, multiple regression analysis was chosen as the most appropriate method for analysis (Field, 2009; Hair et al, 2006).

The general form that the multiple regression equation has in representing its dependent and independent variables is:

$$Y=b_0+b_1X_1+b_2X_2+b_3X_3+\ldots+b_nX_n+e$$

Where: y= dependent variable

b_0= intercept or constant

b_n= gradient or slope of straight line

X_n= independent variable

e= error

In brief, the constant (b_0) shows the value that y would have with the independent variables being zero. Moreover, the gradient (b_n) shows the change to y for a unit change in X_n.

From the analysis output, there are three main measure that are used for interpretation and conclusions.

First, *t-statistic* tests the null hypothesis that b is 0. As such, if it is significant (e.g. $p<0.05$) we gain the confidence that the b-value is significantly different than zero, which means the predictor makes a strong contribution to the outcome variable (Field, 2009). Hence, the t-value represents the number of standard errors that the coefficient is from zero. For instance, Hair et al. (2006: 219) explain that a coefficient of 2.5 with standard error of 0.5 would have t value of 5 (which means coefficient is 5 standard errors from zero). The standard error is the expected variation of the coefficients (i.e. standard deviation) due to sampling error (Hair et al., 2006: 217)

Second, *F-ratio* that is a measure of how much the model improves the prediction of the outcome compared to the level of its inaccuracy. If a model is good, the F-ration should be large, i.e. greater than 1 (Field, 2009: 203).

Third, the *adjusted* R^2 is used, which results from R^2. The R^2, also called coefficient of determination, is a result of the method known as the method of least squares (Field, 2009: 202; Hair et al., 2006: 184). This process starts by calculating the difference between observed values of the outcome variable and its mean value—that is initially considered a good estimate model. All these differences need to be squared, to avoid having their sum being equal to zero. This sum is called *total sum of squares* (SS_{Total}).

The mean is a useful measure and easy to be calculated, however the regression line (line of best fit) is used as a further step, trying to find a better estimate model.

Similarly, the differences between each observed data and the value predicted by the regression line are calculated (i.e. vertically distance between observed data point and point on regression line). The sum of these differences is again calculated, after being squared. This result is the *sum of squared error* (SS_{Error}). The smaller this number, the better the prediction of the regression line model, which also shows improvement in relation to the mean as a model.

Finally, the difference between the SS_{Total} and the SS_{Error} (SS_T-SS_E), give the $SS_{Regression}$ (SS_R) i.e. the *sum of squares due to regression* or *sum of squares explained.* The larger this number, the higher the difference of the regression model from using the mean to predict the dependent variable. Therefore, a large number indicates major improvement in predicting the dependent variable due to the regression model.

The R^2 is the division of $SS_{R\ over}$ SS_T and by multiplying the result with 100, the result can be interpreted as a percentage. This percentage represents the amount of variance of the dependent variable explained by the model and its predictors. Since by adding more predictors to the model the R^2 will keep increasing, *adjusted* R^2 takes into account the non-significant predictors as well as the sample size (Hair et al., 2006: 216), being a more objective measure and as such this measure will be used in the findings. In Chapter 7 the steps followed in running the regression analysis are discussed in detail.

4.7 Summary

This Chapter provided analytical explanation of the philosophical approach and the context of the study, as well as the research approach and design used, the sampling techniques and the methods selected to analyse the data collected. Next chapters will present the empirical part of this thesis, covering all methods described earlier, starting with the descriptive statistics that are presented in Chapter 5.

Chapter 5: Descriptive Statistics

5.1 Introduction

In this chapter, following the discussion on research approaches and methodology design of this thesis, an initial view of the data is provided through the presentation of descriptive statistics.

More particularly, frequencies of responses, measures of location (i.e. mean and mode) and standard deviation of variables will be presented, before proceeding to the following chapters, which will examine the relationships between the constructs, in order to test the hypotheses. The descriptive statistics will present data from all constructs including board roles, external environment as well as director, board and company characteristics.

5.2 Board Roles

The board roles construct consists of 36 items, which are presented in Table 5.1. The table shows the frequencies of responses to the 7-point Likert scale questions. Directors were asked to respond to what extent they contribute to the board on various activities. These activities, as also discussed in previous chapters, describe roles of directors related to monitoring, providing service and resources and assisting in strategy.

From the first look, it seems that directors believe that they actively take part in all activities in which they were asked. This can be argued, as the mean for most questions is found to be above 4, that is the median point in the Likert scale questions. More particularly, in thirty out of the thirty-six questions the mean is above the middle point. Interestingly, all six activities in which the directors do not seem to participate are related to monitoring and controlling the CEO. In specific, the directors scored low when asked about their extent of contribution to: hiring (mean= 3.51) and firing (3.25) the CEO, determining his/her salary/compensation (3.30), evaluating his/her performance (3.66) and finally monitoring CEO's decision making (3.88) and deferring to his/her judgement on final strategic decisions (3.61). Hiring, firing the CEO and determining his/her salary can be considered as control activities since they require some active involvement in specific processes. On the other hand, evaluating performance, monitoring decision making and deferring to judgement on strategic decisions of CEO, can be considered as monitoring activities, which would be regarded as more passive; that is overseeing the actions and performance of the CEO to ensure that the right direction is followed, without necessarily

taking further actions. This can be explained to some extent from the fact that 17 out of 97 respondents (as 18 of the 115 respondents, did not disclose their status) were CEOs and it is expected that their responses would be either ‘N/A’ or ‘to a little extent’, which lowers the overall mean for these questions.

Moreover, the highest ranked variables on the participation of directors are: ratifying strategic proposals (6.22), constructively criticizing/ asking probing questions (6.13), providing expertise to the board (6.13), aiding in the formulation of strategy or other important firm decisions (6.13) and taking into account interests of shareholders (6.0). These are the five variables that ranked the highest -six or above- although they cannot be categorised under one role. By looking at the five variables it can be noticed that features of both monitoring and service are present.

Other roles that scored high -and have a mean that is very close to point six- are, acting as a "sounding board" on strategic issues (5.99), acting as ambassador of the firm (5.96), calling for revisions of strategic proposals (5.91) and building organisational reputation (5.82). By combining the five highest scoring questions with these questions, it is evident that directors perceive their main role as being resource and networking providers to the organisation by also assisting in the strategic direction of their firms.

Another interesting outcome from the descriptive statistics is the standard deviation for many of the questions that appears to be high. Specifically, eight of the variables have a standard deviation higher than 2; for a 7-point scale used this is considerably high. This shows that there was much divergence among directors perception of their roles, as there were questions that were found to have balanced responses in the two extremes (i.e. little extent and high extent). This could be explained by the different status of directors, as executives and non-executives are expected to have different approach in their board roles. Of course, this deviation could also be smoothed out, if the number of responses was increased.

Table 5.1: Descriptive Statistics of Board Roles

Variables	**(1)***	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**N/A**	**n**	**Mean*****	**SD**
act as ambassador for the firm	6 (5.2)**	2 (1.7)	3 (2.6)	5 (4.3)	10 (8.7)	27 (23.5)	62 (53.9)	-	115	***5.96***	***1.62***
build organisational reputation	5 (4.3)	2 (1.7)	3 (2.6)	11 (9.6)	12 (10.4)	26 (22.6)	55 (47.8)	1 (0.9)	115	***5.82***	***1.61***
ratify strategic proposals	4 (3.5)	-	1 (0.9)	4 (3.5)	14 (12.2)	21 (18.3)	70 (60.9)	1 (0.9)	115	***6.22***	***1.34***
call for revisions of strategic proposals	5 (4.3)	-	1 (0.9)	9 (7.8)	19 (16.5)	25 (21.7)	55 (47.8)	1 (0.9)	115	***5.91***	***1.47***
constructively criticise/ask probing questions	5 (4.3)	-	1 (0.9)	6 (5.2)	9 (7.8)	30 (26.1)	64 (55.7)	-	115	***6.13***	***1.42***
defer to [the CEO's] judgment on final strategic decisions	10 (8.7)	18 (15.7)	11 (9.6)	22 (19.1)	20 (17.4)	13 (11.3)	10 (8.7)	11 (9.6)	115	***3.99***	***1.80***
involve in determining salary/ compensation of top management	12 (10.4)	11 (9.6)	5 (4.3)	16 (13.9)	20 (17.4)	17 (14.8)	31 (27.0)	3 (2.6)	115	***4.75***	***2.04***
involve in determining salary/ compensation of CEO	38 (33.0)	6 (5.2)	2 (1.7)	5 (4.3)	5 (4.3)	9 (7.8)	32 (27.8)	18 (15.7)	115	***3.90***	***2.69***
engage in succession planning for CEO	27 (23.5)	3 (2.6)	4 (3.5)	8 (7.0)	11 (9.6)	16 (13.9)	36 (31.3)	10 (8.7)	115	***4.57***	***2.45***
engage in succession planning for top managers besides CEO	14 (12.2)	3 (2.6)	6 (5.2)	18 (15.7)	22 (19.1)	19 (16.5)	31 (27.0)	2 (1.7)	115	***4.88***	***1.97***
evaluate the CEO's performance	22 (19.1)	10 (8.7)	3 (2.6)	8 (7.0)	10 (8.7)	13 (11.3)	30 (26.1)	19 (16.5)	115	***4.39***	***2.43***
evaluate the top management's performance	10 (8.7)	3 (2.6)	2 (1.7)	16 (13.9)	22 (19.1)	23 (20.0)	32 (27.8)	7 (6.1)	115	***5.16***	***1.83***
facilitate access to resources such as capital	14 (12.2)	9 (7.8)	7 (6.1)	21 (18.3)	23 (20.0)	18 (15.7)	21 (18.3)	2 (1.7)	115	***4.49***	***1.95***
involve in hiring new executives	14 (12.2)	9 (7.8)	5 (4.3)	21 (18.3)	18 (15.7)	28 (24.3)	19 (16.5)	1 (0.9)	115	***4.58***	***1.95***
involve in hiring CEOs	30 (26.1)	7 (6.1)	1 (0.9)	7 (6.1)	7 (6.1)	7 (6.1)	36 (31.3)	20 (17.4)	115	***4.25***	***2.63***
involve in firing executives	18 (15.7)	7 (6.1)	8 (7.0)	12 (10.4)	24 (20.9)	18 (15.7)	21 (18.3)	7 (6.1)	115	***4.44***	***2.08***
involve in firing CEOs	33 (28.7)	7 (6.1)	1 (0.9)	6 (5.2)	4 (3.5)	7 (6.1)	34 (29.6)	23 (20.0)	115	***4.07***	***2.70***
aid in the formulation of strategy or other important firm decisions	4 (3.5)	1 (0.9)	2 (1.7)	7 (6.1)	7 (6.1)	26 (22.6)	65 (56.5)	3 (2.6)	115	***6.13***	***1.45***
link the firm to important stakeholders or other important entities	7 (6.1)	-	2 (1.7)	12 (10.4)	19 (16.5)	36 (31.3)	37 (32.2)	2 (1.7)	115	***5.58***	***1.57***
build external relations	6 (5.2)	1 (0.9)	3 (2.6)	8 (7.0)	21 (18.3)	26 (22.6)	48 (41.7)	2 (1.7)	115	***5.72***	***1.60***

maintain relations with stakeholders	6 (5.2)	-	6 (5.2)	8 (7.0)	14 (12.2)	35 (30.4)	44 (38.3)	2 (1.7)	115	***5.70***	***1.59***
monitor CEO in decision-making	12 (10.4)	11 (9.6)	7 (6.1)	16 13.9)	16 (13.9)	19 (16.5)	19 (16.5)	15 (13.0)	115	***4.46***	***2.01***
monitor Strategy Implementation	5 (4.3)	1 (0.9)	2 (1.7)	9 (7.8)	18 (15.7)	38 (33.0)	41 (35.7)	1 (0.9)	115	***5.74***	***1.48***
monitor top management in decision-making	7 (6.1)	6 (5.2)	5 (4.3)	11 (9.6)	24 (20.9)	35 (30.4)	22 (19.1)	5 (4.3)	115	***5.11***	***1.71***
act as a "sounding board" on strategic issues	4 (3.5)	2 (1.7)	-	5 (4.3)	18 (15.7)	27 (23.5)	55 (47.8)	4 (3.5)	115	***5.99***	***1.43***
provide advice and counsel to top managers	6 (5.2)	4 (3.5)	1 (0.9)	9 (7.8)	19 (16.5)	31 (27.0)	43 (37.4)	2 (1.7)	115	***5.62***	***1.65***
provide expertise to the board	4 (3.5)	1 (0.9)	2 (1.7)	6 (5.2)	6 (5.2)	31 (27.0)	63 (54.8)	2 (1.7)	115	***6.13***	***1.42***
provide legitimacy to the firm	6 (5.2)	2 (1.7)	7 (6.1)	13 (11.3)	17 (14.8)	33 (28.7)	30 (26.1)	7 (6.1)	115	***5.33***	***1.66***
bolster the image of the firm	5 (4.3)	-	5 (4.3)	16 (13.9)	13 (11.3)	32 (27.8)	40 (34.8)	4 (3.5)	115	***5.60***	***1.56***
seek information from the CEO or another inside director regarding the progress of strategic decisions	7 (6.1)	1 (0.9)	4 (3.5)	11 (9.6)	13 (11.3)	29 (25.2)	38 (33.0)	12 (10.4)	115	***5.53***	***1.71***
seek information from the CEO or another inside director in order to evaluate the performance of top management	8 (7.0)	6 (5.2)	3 (2.6)	12 (10.4)	25 (21.7)	29 (25.2)	21 (18.3)	11 (9.6)	115	***5.03***	***1.76***
contribute in diffusion of organisational innovation	9 (7.8)	7 (6.1)	7 (6.1)	18 (15.7)	27 (23.5)	22 (19.1)	19 (16.5)	6 (5.2)	115	***4.73***	***1.78***
involve in the development of the corporate vision	6 (5.2)	2 (1.7)	1 (0.9)	9 (7.8)	19 (16.5)	26 (22.6)	51 (44.3)	1 (0.9)	115	***5.76***	***1.60***
involve in mission articulation	7 (6.1)	4 (3.5)	2 (1.7)	10 (8.7)	17 (14.8)	28 (24.3)	42 (36.5)	5 (4.3)	115	***5.53***	***1.74***
review social responsibilities of the firm	7 (6.1)	2 (1.7)	4 (3.5)	12 (10.4)	21 (18.3)	36 (31.3)	32 (27.8)	1 (0.9)	115	***5.40***	***1.64***
take into account interests of shareholders	7 (6.1)	1 (0.9)	-	8 (7.0)	6 (5.2)	24 (20.9)	61 (53.0)	8 (7.0)	115	***6.00***	***1.65***

*Scale: (1)=to little extent; (7)= to great extent **numbers in brackets indicate percentages ***mean and standard deviation are calculated by excluding the N/A responses

5.3 External Environment

The external environment was measured with 16 variables, which are presented in Table 5.2. Similarly to the variables on the roles of directors, the questions were measured on a 7-point Likert scale, however different variables used different labels in the scales, due to the different nature of question; the labels used in the questions are provided at the bottom of the table. The questions asked about the external environment aimed at capturing the three dimensions that were discussed in earlier chapters, which are dynamism, complexity and munificence. By looking at the variables of the environment, it is noticed that mean scores do not deviate much from the middle point (i.e. 4); this can be interpreted as a fairly dynamic, complex and munificent environment based on directors'' perceptions. However by looking at the frequencies it is seems that there is a high variance in responses, which can also be confirmed from the relatively high standard deviations.

In specific, regarding the dynamism dimension, directors were asked to rate the frequency of change in marketing practices (mean= 4.90), the rate of product/service obsolescence in the industry (3.76), the predictability rate of i) competitors' actions (3.91) and of ii) demand and tastes of customers (3.64) and the rate of change in the production/ service technology (4.18).

Moreover, the directors were asked to appreciate the complexity of the environment by the extent that their firms experience variations -in their principal industry- in customers' buying habits (3.73), in the nature of the competition (3.76) and in required methods of production service (3.58).

Finally, munificence was measured by asking the respondents about the extent of competition in eight areas and the findings show that on average there is moderate level of competition. In some areas, the competition is found to be high (i.e. price competition and regulatory restrictions), while there is an area with low competition based on directors' perceptions (i.e. shortages of raw material). More specifically, the eight areas were: price competition (4.43), product competition (3.95), technological competition (3.96), distribution competition (3.89), shortages of labour (3.07), shortages of raw material (3.07), unfavourable demographic trends (3.52) and severe regulatory restrictions (4.31).

Table 5.2: Descriptive Statistics of External Environment

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	N/A	n	Mean**	SD
	Extremely rarely						**Extremely frequently**				
The business unit must change its marketing practices to keep up with the market and competitors…	8 (7.6)*	2 (1.9)	6 (5.7)	16 (15.2)	29 (27.6)	32 (30.5)	12 (11.4)	-	105	***4.90***	***1.60***
	Extremely slow						**Extremely fast**				
The rate at which products/ services are becoming obsolete in the industry is…	13 (12.4)	12 (11.4)	20 (19.0)	18 (17.1)	24 (22.9)	11 (10.5)	4 (3.8)	3 (2.9)	105	***3.76***	***1.67***
	Extremely predictable						**Extremely unpredictable**				
Actions of competitors are…	5 (4.8)	8 (7.6)	26 (24.8)	31 (29.5)	23 (21.9)	8 (7.6)	3 (2.9)	1 (1.0)	105	***3.91***	***1.33***
	Fairly easy to forecast						**Almost unpredictable**				
Demand and consumer tastes are…	8 (7.6)	15 (14.3)	25 (23.8)	22 (21.0)	28 (26.7)	5 (4.8)	1 (1.0)	1 (1.0)	105	***3.64***	***1.40***
	Is not subject to very much change and is well established						**Changes often and in major way**				
The production/service technology…	5 (4.8)	18 (17.1)	13 (12.4)	15 (14.3)	28 (26.7)	17 (16.2)	7 (6.7)	2 (1.9)	105	***4.18***	***1.67***
The extent that the firm experiences variations in its principal industry in…	**About the same for all products**						**Varied a great deal from one product/service to another**				
Customers' buying habits	15 (14.3)	20 (19.0)	16 (15.2)	11 (10.5)	17 (16.2)	16 (15.2)	8 (7.6)	2 (1.9)	105	***3.73***	***1.92***
The nature of the competition	11 (10.6)	23 (22.1)	10 (9.6)	21 (20.2)	18 (17.3)	11 (10.6)	8 (7.7)	2 (1.9)	104	***3.76***	***1.80***
Required methods of production service	15 (14.4)	21 (20.2)	16 (15.4)	14 (13.5)	18 (17.3)	12 (11.5)	6 (5.8)	2 (1.9)	104	***3.58***	***1.83***
The extent that the firm in its principal industry faces intense competition in terms of…	**Much less competition than other firms**						**Much greater competition than other firms**				
Price competition	8 (7.6)	7 (6.7)	8 (7.6)	27 (25.7)	26 (24.8)	12 (11.4)	13 (12.4)	4 (3.8)	105	***4.43***	***1.68***
Product competition	12 (11.5)	9 (8.7)	12 (11.5)	28 (26.9)	20 (19.2)	13 (12.5)	5 (4.8)	5 (4.8)	104	***3.95***	***1.67***
Technological competition	10 (9.5)	16 (15.2)	8 (7.6)	28 (26.7)	15 (14.3)	15 (14.3)	7 (6.7)	6 (5.7)	105	***3.96***	***1.75***
Distribution competition	10 (9.5)	12 (11.4)	11 (10.5)	28 (26.7)	15 (14.3)	14 (13.3)	4 (3.8)	11 (10.5)	105	***3.89***	***1.66***
Shortages of labour	15 (14.3)	17 (16.2)	15 (14.3)	36 (34.3)	8 (7.6)	8 (7.6)	1 (1.0)	5 (4.8)	105	***3.33***	***1.50***
Shortages of raw material	18 (17.1)	14 (13.3)	12 (11.4)	24 (22.9)	9 (8.6)	2 (1.9)	2 (1.9)	24 (22.9)	105	***3.07***	***1.56***
Unfavourable demographic Trends	13 (12.4)	16 (15.2)	12 (11.4)	26 (24.8)	14 (13.3)	5 (4.8)	5 (4.8)	14 (13.3)	105	***3.52***	***1.67***
Severe Regulatory Restrictions	9 (8.6)	6 (5.7)	13 (12.4)	32 (30.5)	16 (15.2)	8 (7.6)	17 (16.2)	4 (3.8)	105	***4.31***	***1.76***

*numbers in brackets indicate percentages **mean and standard deviation are calculated by excluding the N/A responses

5.4 Independent Variables

In this section, variables that are considered as independent for the current thesis are presented. These variables are most clearly discussed under three main constructs/ categories. These constructs capture the board, the director and the company characteristics. The number of responses in some of these variables is less reduced, since they were not marked as compulsory questions.

5.4.1 Board Characteristics

The board characteristics were captured with variables that capture board size, status of directors, leadership structure, established committees and frequency of meetings.

The average ***board size*** of the companies (n=93) is found to be 8.87. The majority of the boards (54 boards or 57.4%) have a board size between 6 and 10 members. Moreover, 19 of the boards (20.2%) have between 11 and 15 members, while there are 6 boards (6.3%) that have more than 15 directors. The largest board was found to have 24 members. On the other hand, 15 respondents (16.0%) indicated that they have no more than 5 directors in their boards. Figure 5.1 below shows the board size and Figure 5.2 shows the board size, grouped from small to large: (1)= up to 5 members; (2)= 6-10 members; (3)= 11-15 members; (4)= 16 or more members.

Figure 5.1: Board Size (n=94)

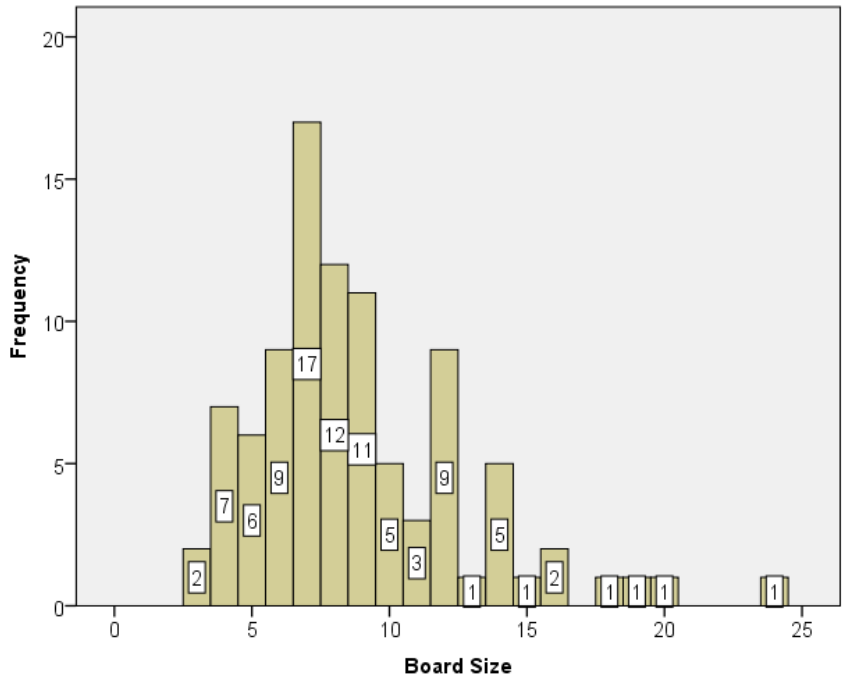
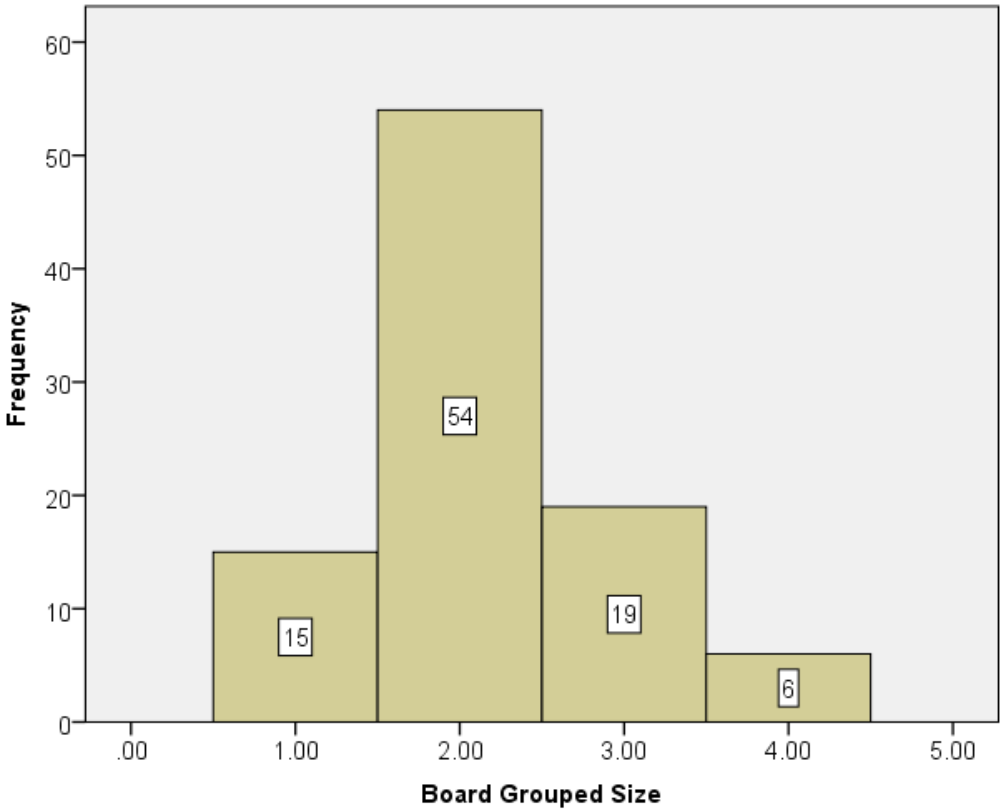


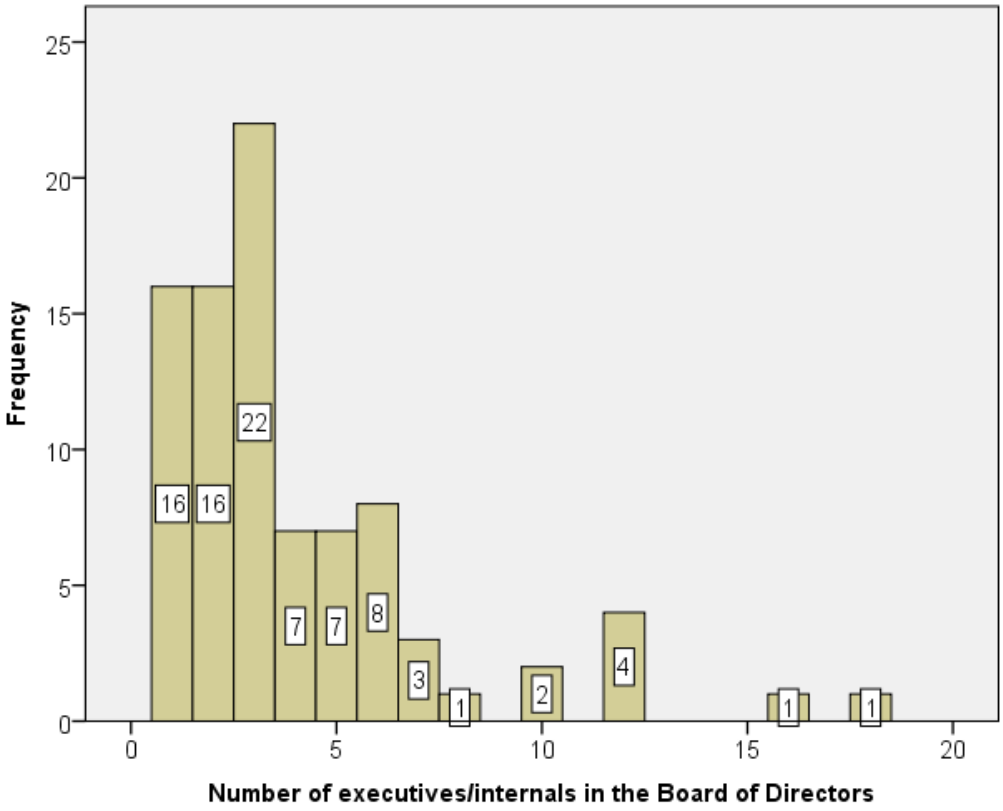
Figure 5.2: Grouped Board Size (n=94)



The ***executive directors*** in the boards of the companies (n=88) are on average 4.05. There were 16 respondents (18.2%) who indicated that they only have one executive director in their boards; it can be argued that this director is the CEO or general manager of the company. Also there are 16 boards (18.2%) with two executives and 22 boards (25.0%) with three executives.

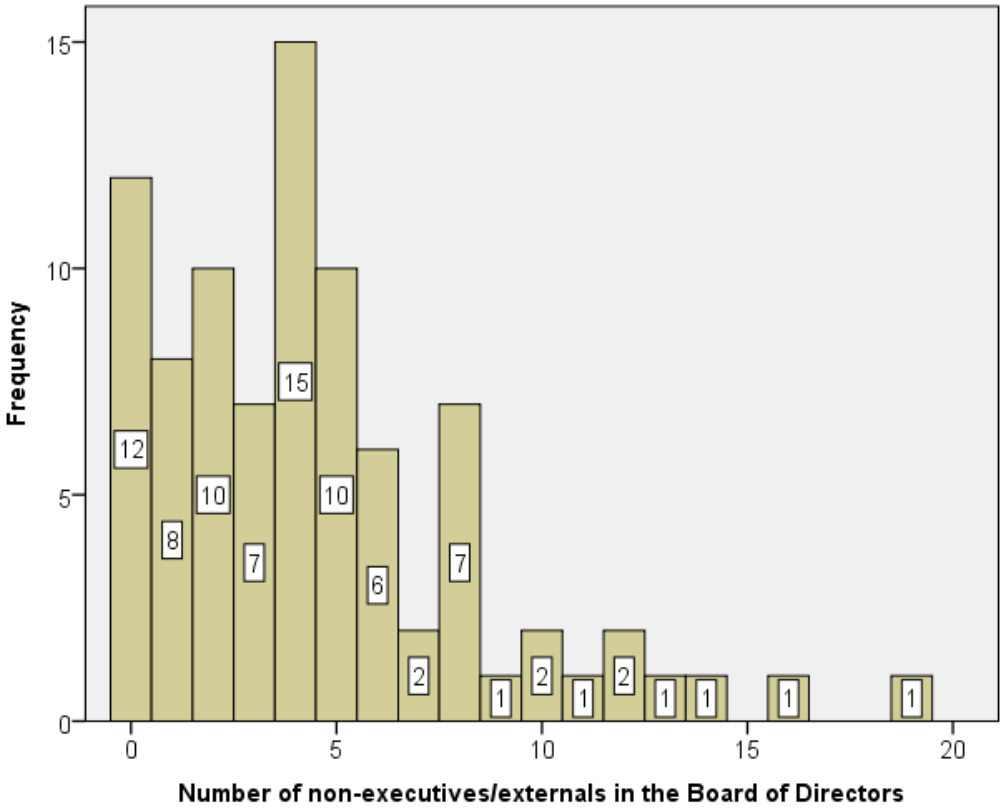
Consequently, 54 out of the 88 boards (61.4%) have a maximum of three executives in their boards. Only 8 respondents (9.0%) indicated that they have ten or more executives in their boards with the maximum found to be eighteen executive members. Figure 5.3 presents the frequency of executive members in the 88 boards.

Figure 5.3: Executive Members in the Board (n=88)



On the other hand, the average ***non-executive directors*** sitting in each board are 4.49 (n=87). There were 12 respondents (13.8%) who claimed that there aren't any non-executive members and 8 respondents (9.2%) that reported one non-executive. This is generally regarded as poor practice as usually at least two non-executive members are recommended for each board (e.g. see FRC, The UK Corporate Governance Code, 2012). Moreover, almost half of the boards (42 or 48.3%) have between two and five, while 10 cases (11.5%) were found to have exactly two non-executives. Furthermore, 9 respondents (10.3%) replied that they have ten or more non-executives with the maximum being nineteen. Figure 5.4 shows the number of non-executives in the 88 boards.

Figure 5.4: Non-executive Members in the Board (n=87)

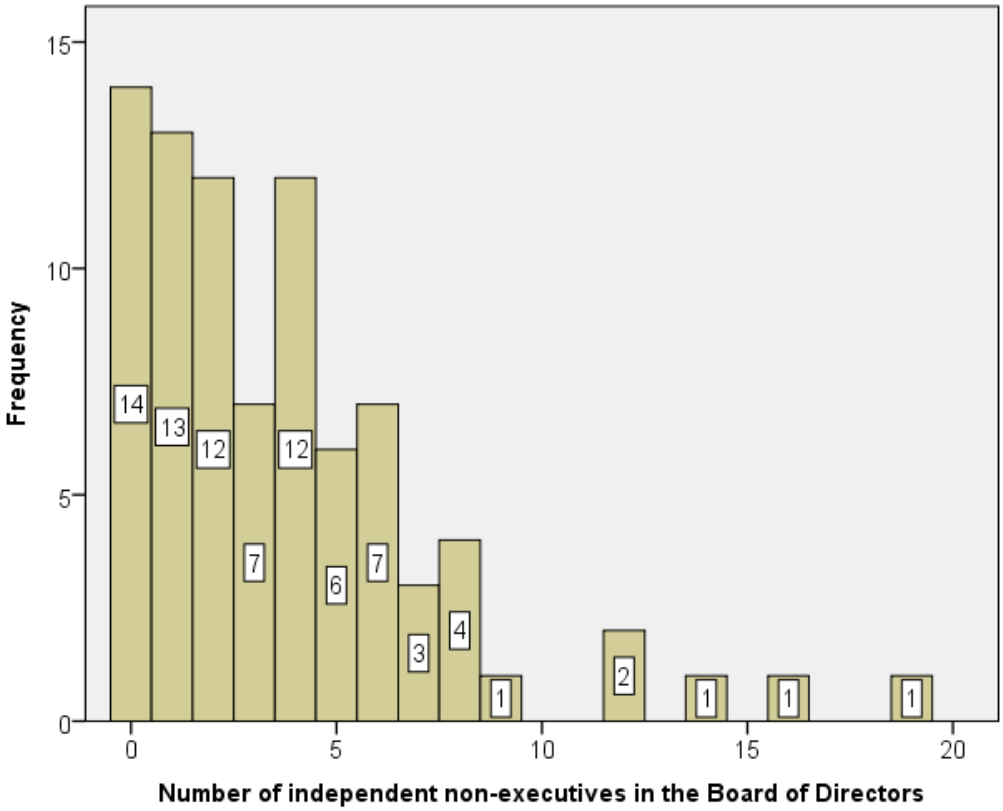


The participants of the study were further asked to report how many of the non-executive members are considered as ***affiliate*** (i.e. dependent) and how many as truly ***independent***.

In 84 responses received, 14 respondents (16.7%) claimed that no independent directors sit in their boards, while 13 (15.5%) responded that they have one independent director. This is an indicator for low independence, as it means that in about one third of the companies (32.1%) almost all board members are executives or in the case that some members are not, they have some form of affiliation to the company (i.e. being former employees, or relatives of company's executives etc.).

Additionally, 37 of the companies (44.0%) have two to five independent directors sitting in their boards and 15 companies (17.9%) have between six and ten. Finally, 5 respondents (6.0%) reported more than ten independents sitting in their board.

Figure 5.5: Independent Non-executive Members in the Board (n=84)



However, while the absolute number of independent members per board gives an idea of independence, it becomes fully meaningful when presented as a proportion to the total board size. Therefore, it is important to say that the proportion of independent members in the 84 boards is 41.4% meaning that about four in ten directors have an independent status.

Another finding related to the board characteristics concerns the ***leadership structure*** of the boards, widely described as the issue of ***CEO duality*** in the literature. 18 respondents (18.6%) answered that the CEOs of their companies also hold the Chairperson position, while 79 (81.4%) have a separate structure with the two roles being held by two directors (n= 97).

Furthermore, the respondents were asked to indicate the ***board committees*** that are established in their companies. Table 5.3 shows the committees that are established in the companies. It seems from the findings that the majority of the companies have established the audit (80.0%) and the remuneration (78.7%) committee, while nomination (54.8%) and risk management (54.9%) committees are also popular. The succession (22.1%) and governance (36.8%) committees are not widely in use. Finally, although the respondents

had the option to specify any other committees that they have established, there was no other committee that appeared in more than one companies.

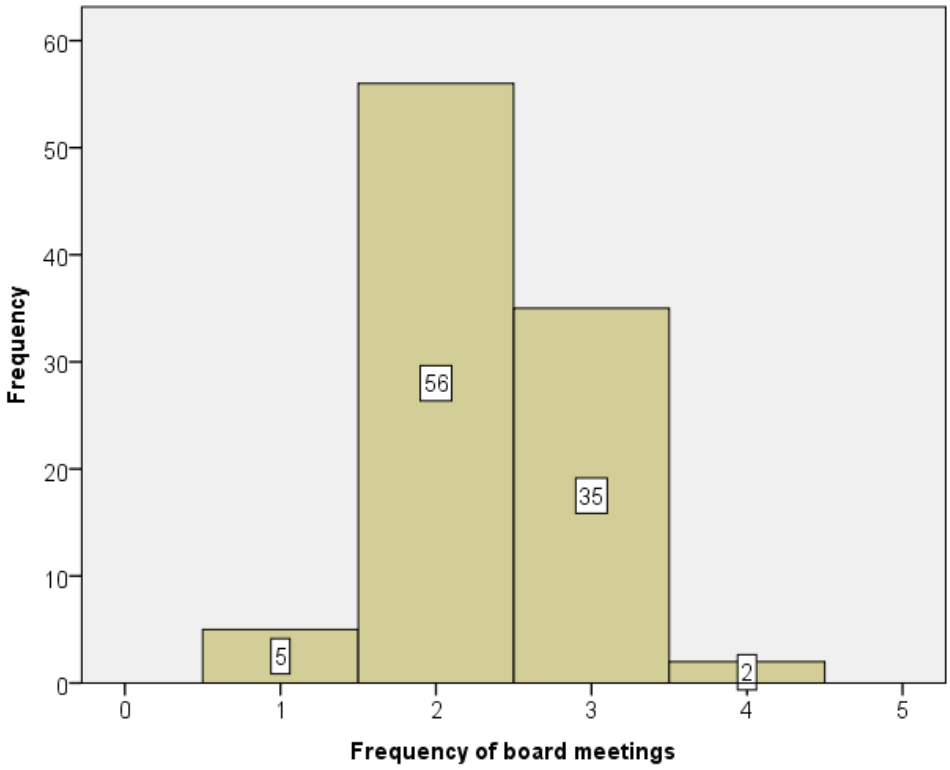
Table 5.3: Board Committees Established

Committees	Established	n
Nomination Committee	51 (54.8)*	93
Remuneration Committee	74 (78.7)	94
Audit Committee	76 (80.0)	95
Succession Committee	19 (22.1)	86
Risk Management Committee	50 (54.9)	91
Governance Committee	32 (36.8)	87

*numbers in brackets indicate percentages

Finally, the ***frequency of board meetings*** was measured with the majority of participants (56 or 57.1%) responding that they meet monthly and next most frequent answer being quarterly (35 or 35.7%). In addition, there are 5 boards (5.1%) that meet every fortnight and only 2 (2.0%) that meet twice per year (n=98). The histogram in Figure 5.6 presents analytically the frequency of board meetings: (1)= every fortnight; (2)= every month; (3)= every three months; (4)= twice per year.

Figure 5.6: Frequency of Board Meetings (n=98)

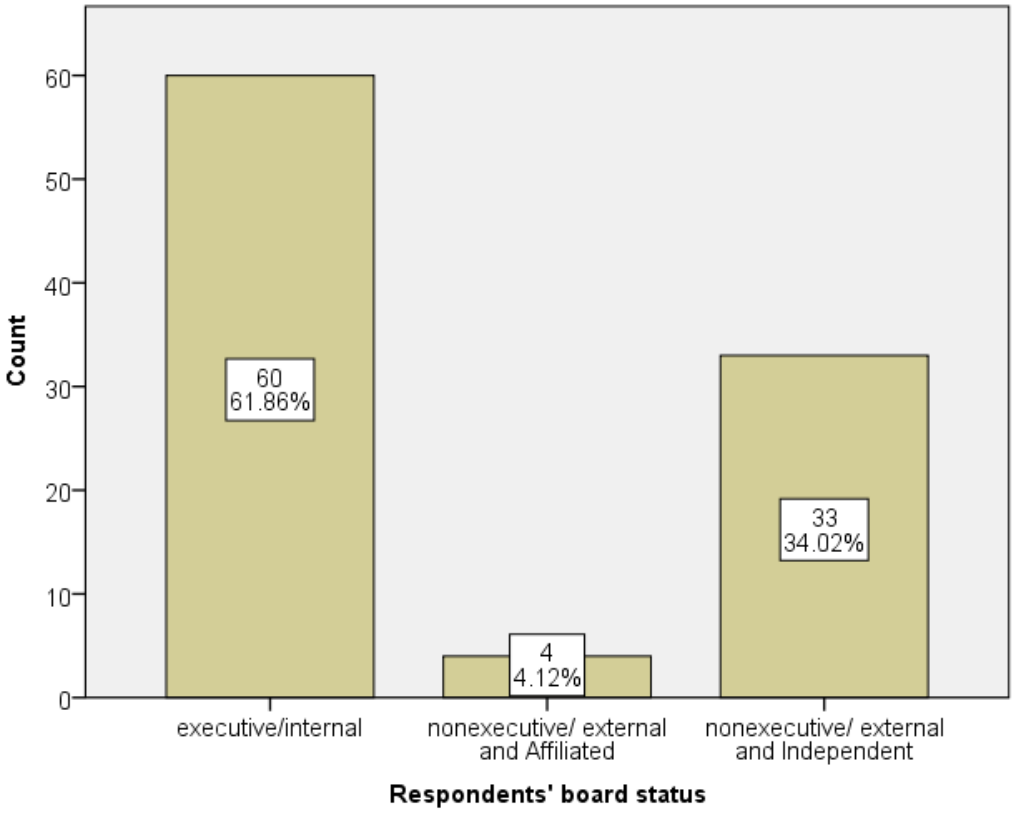


5.4.2 Director Characteristics

The director characteristics were measured by asking the respondents about their personal status in the board, any memberships they hold in board committees, their tenure in the organisation, their tenure in the industry and any memberships they hold in other boards.

About two thirds of the respondents (60 or 61.9%) are characterised as ***executive board members*** while 37 respondents (38.1%) identify themselves as non-executive. However, out of these 37 non-executive directors, 4 (4.12%) are considered as ***affiliated*** and 33 (34.02) as ***independent***. Therefore, it is strongly evident that from the respondents that are characterised as non-executive, the vast majority (89.2%) are also independent. Figure 5.7 shows the frequencies and percentages of board status among the respondents.

Figure 5.7: Respondents' board status (n=97)



In addition, 17 (14.8%) of all the 115 respondents are also the ***CEOs***, while 3 of them have a dual role by being also the Chairpersons. Out of all the participants, 24 (20.9%) were found in total to be ***Chairpersons*** of their organisations.

Moreover, the participants were asked to respond in whether they hold any ***membership in various committees*** established by their boards (Table 5.4). Taking into consideration that there are committees not established by some of the organisations, the level of membership of the respondents to the committees is relatively high. The percentages show that hardly one fifth of the respondents participate to each of the committees, however this does not reflect the full picture. For example, it was found that 51 organisations have established the nomination committee (i.e. from previous question on establishment of committees), which makes the participation of 20 respondents rising from 17.4% (in 115 companies) to 39.2% (in 51 organisations).

Table 5.4: Membership of Respondents to Board Committees

Committees	**Membership (n=115)**
Nomination Committee	20 (17.4)*
Remuneration Committee	24 (20.9)
Audit Committee	30 (26.1)
Succession Committee	9 (7.8)
Risk Management Committee	23 (20.0)
Governance Committee	12 (10.4)

*numbers in brackets indicate percentages

Furthermore, the respondents were asked to report their ***tenure*** in years, both as an employee and as a board member in the focal organisation. It was found that the average tenure of respondents being in the organisation is 10.7 years (n=92) and the average tenure of sitting in the board of the company is 7.0 years (n=95). Figures 5.8 and 5.9 present the tenure in the company and the board respectively (1=up to five years; 2= six to ten years; 3=eleven to fifteen years; 4= sixteen or more years). As it can be seen, nearly half of the respondents work in the organisation for less than 5 years; specifically 37 (40.2%) work in their company for less than 5 years. Interestingly, the maximum tenure found among respondents was 40 years.

Regarding the tenure in the board, half of the respondents (47 or 49.5%) sit in their boards for less than 5 years. One interesting finding is that 17 respondents (18.9%) said that they sit in their boars for more than 10 years. This could be an indication of lack of independence in the board, as it is generally suggested that the board members should be replaced after a few years of service.

Figure 5.8: Respondents' Tenure in Organisation (n=92)

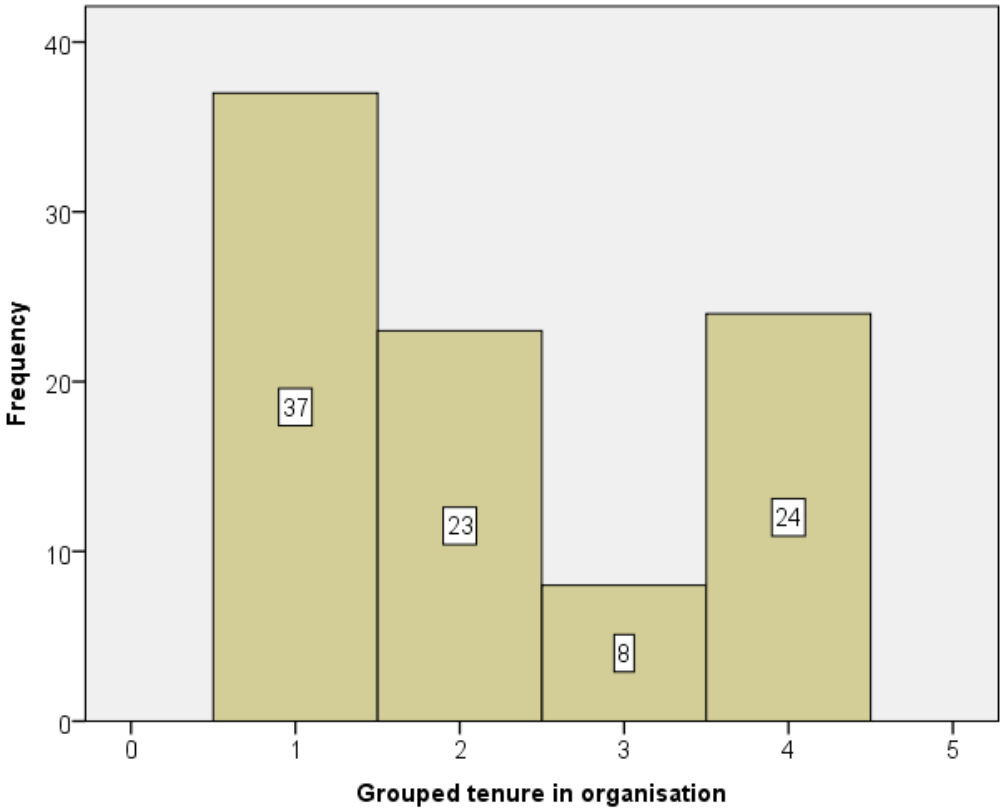
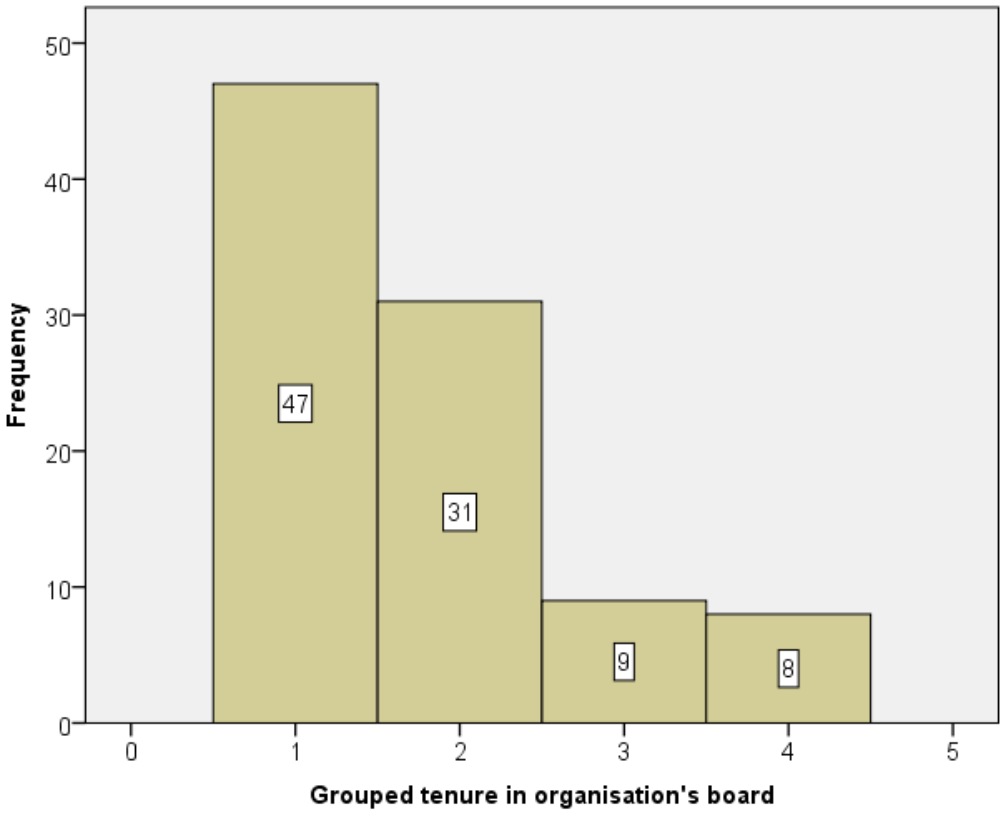


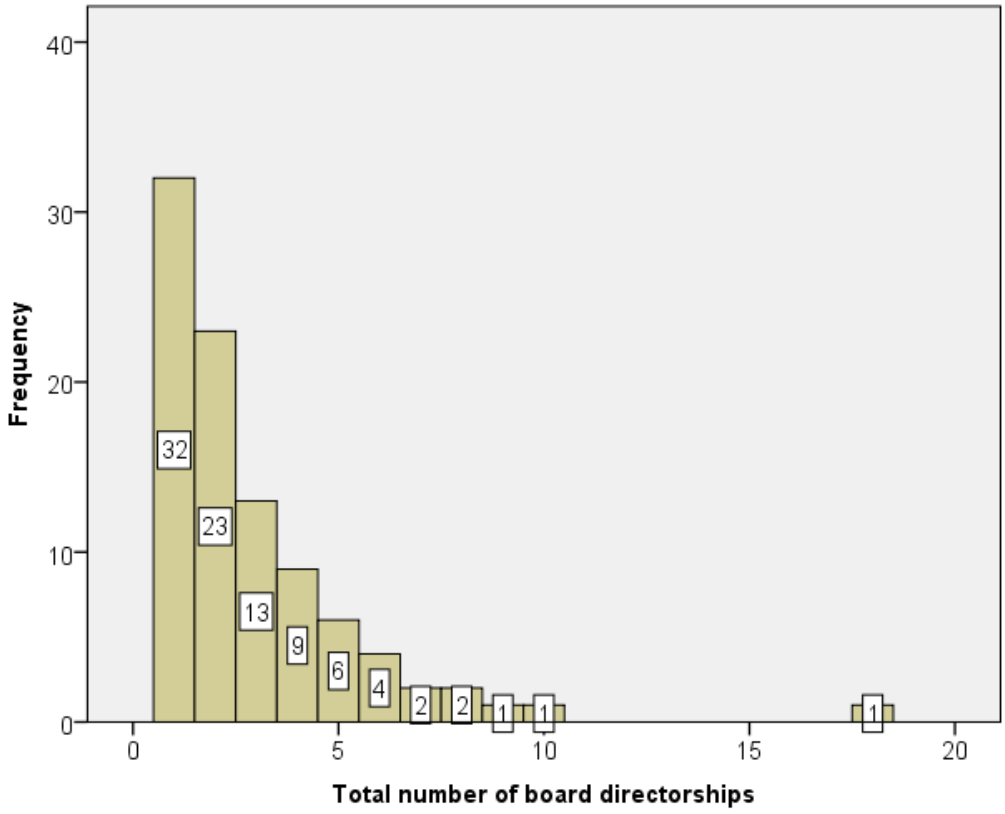
Figure 5.9: Respondents' Tenure in Board of Organisation (n=95)



Finally, the ***number of board directorships*** held by the respondents was measured

and about two thirds (66.0%) of them also hold at least one more board position in other organisations. More specifically, there are 32 respondents (34.0%) that only hold a board position in the focal organisation, while there are 23 respondents (24.5%) that also sit in another board. 13 respondents (13.8%) hold in total 3 directorships and there are 9 (9.6%) that hold 4. There is finally a respondent claiming that s/he is a board member in 18 boards. In Figure 5.10 the frequencies of board directorships are analytically portrayed.

Figure 5.10: Total number of board directorships held by respondents (n=94)



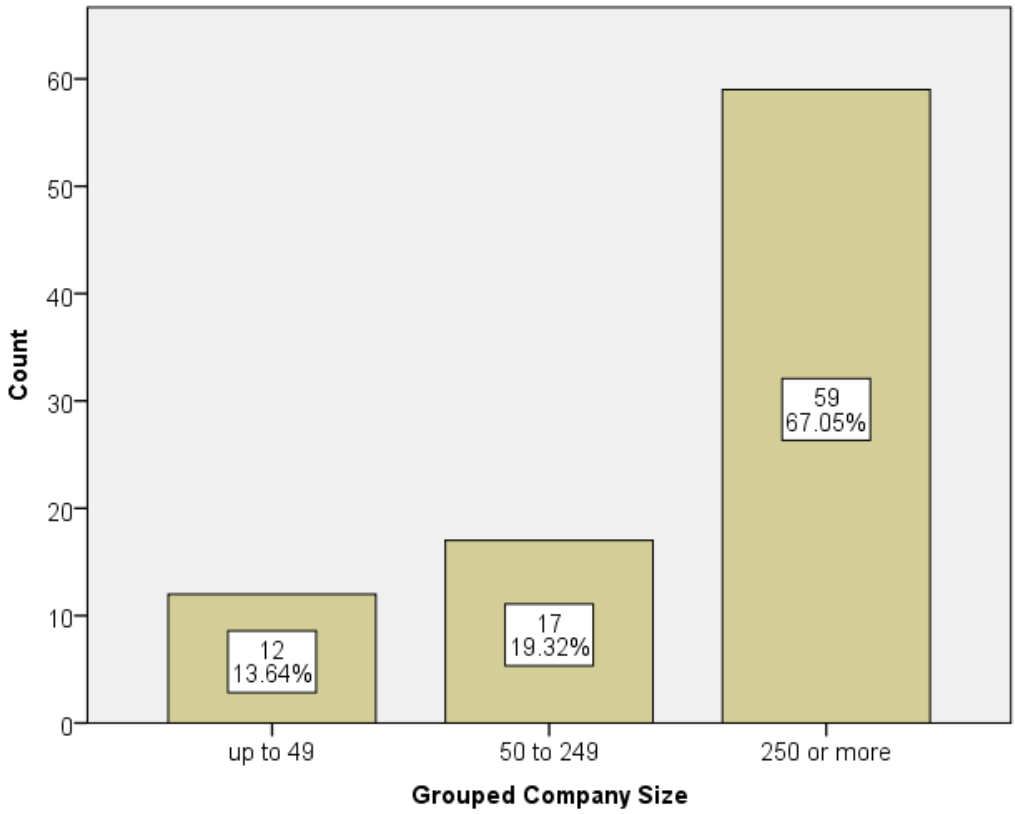
5.4.3 Company Characteristics

Company characteristics were measured by asking the participants general information about their companies. Questions included the size of the company (in employees), the industry sector in which the focal organisation operates, the company age, the country in which the company is based and information about company listing in stock exchange.

The ***company size*** was found to be 3,549 employees per company on average (n= 88). However, this is just an indication and it can be misleading, taking into account that the standard deviation is 10,409.72, which is very high. This is mainly due to a few

companies that have a significantly large size -and especially one company that was found to have 87,000 employees- which has resulted in an inflated average. Out of the 88 companies, for which the number of employees was reported, 12 (13.6%) can be characterised as small companies (less than 50 employees) and about a third (i.e. 29 companies or 33%) in total are considered as SMEs (less than 250 employees). Consequently, 59 companies (67%) are characterised as large, having 250 or more employees. It is important to note that the company size classification in the current study has been determined according to the standards of the UK Department for Business, Innovation & Skills (2010) and the European Union Commission (2003). Figure 5.11 shows the company size under small, medium and large categories.

Figure 5.11: Grouped Company Size (n=88)



Moreover, the respondents were asked to indicate the ***industry sector*** in which their focal organisation operates. The 82 responses are dispersed in various industries; most companies come from the 'industrial goods and services' industry sector (10 companies, or 12.2%), with 'food and beverage' and 'health care' following with 9 companies (11.0%). In total, respondents came from 18 different sectors leaving only 'chemicals' sector

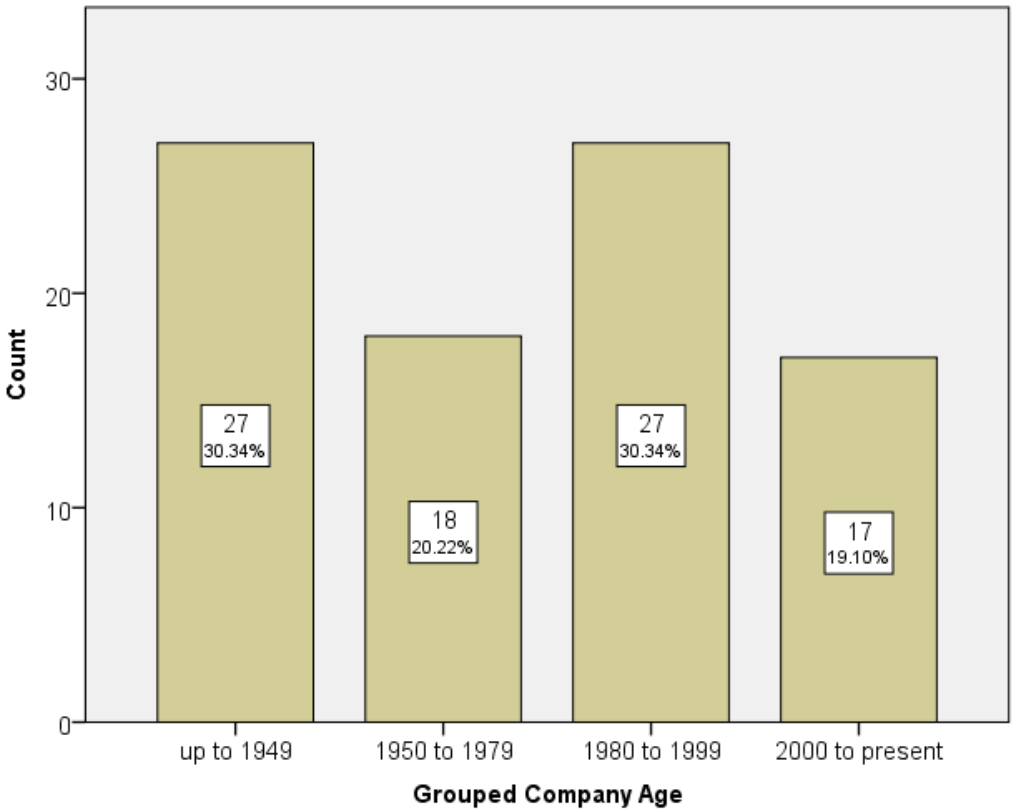
without participation. Table 5.4 shows all the organisations and the industry sector in which they operate.

Table 5.4: Industry Sector of Focal Organisation

Industry Sector	**Frequency (n= 82)**
0500 Oil & Gas	5 (6.1)
1700 Basic Resources	1 (1.2)
2300 Construction & Materials	7 (8.5)
2700 Industrial Goods & Services	10 (12.2)
3300 Automobiles & Parts	1 (1.2)
3500 Food & Beverage	9 (11.0)
3700 Personal & Household Goods	1 (1.2)
4500 Health Care	9 (11.0)
5300 Retail	1 (1.2)
5500 Media	4 (4.9)
5700 Travel & Leisure	6 (7.3)
6500 Telecommunications	1 (1.2)
7500 Utilities	6 (7.3)
8300 Banks	1 (1.2)
8500 Insurance	3 (3.7)
8600 Real Estate	5 (6.1)
8700 Financial Services	6 (7.3)
9500 Technology	6 (7.3)

Furthermore, the ***organisational age*** was measured and the average year of establishment was found to be 1956. Interestingly, almost a third of the respondents' companies (27 or 30.3%) were established in the first half of the twentieth century while 18 companies (20.2%) were established between 1950 and 1979. The companies established this century are 17 (19.1%). Figure 5.12 graphically shows the distribution of companies based on their age.

Figure 5.12: Grouped Company Age (n=89)



Additionally, the respondents were asked to determine the ***country that their organisation is based*** and vast majority of the companies were found to be from the UK, something that can be largely explained by the sampling framework and process. In specific, 17 out of the 115 companies (14.8%) are not UK companies, however almost half of these come from member states of the Commonwealth of Nations (2 from Australia, 4 from Canada and 3 from New Zealand), while others come from Anglophone culture (3 from Ireland and 1 from the US). There are 4 respondents whose companies are based in Chile, Finland, Greece and Japan. In following chapters, only the UK companies were included in the analysis, in order to retain homogeneity of the sample.

Furthermore, one of the questions aimed at capturing the ***listing of participants' organisations*** in various stock exchanges, as it is expected that listed companies may have higher accountability which may affect the followed corporate governance practices. In the 89 valid responses, 33 (37.1%) respondents argued that their organisations are listed and 56 (62.9%) said that their organisations are non-listed. Out of the 33 listed organisations, 27 are in the London Stock Exchange (LSE) and the remaining 6 are listed in different

markets, i.e. Hong Kong Stock Exchange (SEHK), NASDAQ, New York Stock Exchange (NYSE), NYSE Euronext, Santiago Stock Exchange (SSE), Tokyo Stock Exchange (TPX).

Finally, 30 out of the 33 respondents whose organisation is in a stock exchange market, indicated the year when their organisation became listed. It was found that 6 (20%) organisations became listed before 1980; 11 organisations (36.7%) between 1980 and 1999 and 13 (43.3%) between 2000 and 2012.

5.5 Summary

This chapter presented the descriptive results of all variables included in the theoretical model of the thesis. The following chapter will present the results of the principal component analysis performed for the two main constructs of the study (i.e. directors' roles and external environment), as well as the summary of all measurements used before running regression analysis test in Chapter 7.

Chapter 6: Principal Component Analysis and Scale Validation

6.1 Introduction

Previous chapter presented the descriptive findings that resulted from the study's conducted survey. This chapter will continue the data examination by using more complex statistical techniques, considered a required step before proceeding to the next chapter, which will investigate potential relationships between constructs and variables identified and hypothesized in earlier chapters.

From the development of previous chapters it is evident that while few constructs are included in the theoretical model, there are numerous variables proposed to capture these constructs. As such, the main steps to be followed in this chapter are specific; first step is to examine all data before any analysis, trying to detect and delete cases with missing data and outliers responses that could influence the results. Second step is to examine the correlation results of variables within the proposed constructs, in order to ensure that they are interrelated, which indicates that they aim to measure a similar concept. On the other hand, their correlation should not be above a certain limit (see chapter 4), as this could indicate that the variables do not differ from each other. Next step is to conduct principal component analysis in order to reduce the construct variables into various dimensions (i.e. factors) that capture this construct. Furthermore, validity and reliability tests of the scales will be conducted to ensure construct validity.

6.2 Examination of Data prior to Analysis

Before the analysis of every empirical study, there is a need to examine data responses, to try and detect potential problems that could influence the results of the study (Hair et al., 2006). These problems are identified in cases where respondents have many variables/questions in which they have not responded (i.e. missing data), or cases where the respondents' answers can be considered as outliers. According to Hair et al. (2006: 73) "outliers are observations with a unique combination of characteristics identifiable as distinctly different from the other observations. In practice this is detected as an unusually high or low value on a variable, or a unique combination of values across several variables that make the observation stand out from the others".

As a result, from the 115 total responses that are presented in chapter 5, it was decided in the cleaning data stage that only a 95 would be included in further analysis.

Specifically, out of the 115 observations, 15 were considered as having significant missing values since, either the respondents only responded the first part of the survey (i.e. part on the directors' roles), or a considerable number of missing values throughout the questionnaire were noticeable. Furthermore, 5 more observations were excluded from further analysis, falling in the category of outliers with 'a unique combination of values across several variables that make the observation stand out from the others'. These observations included responses that used a pattern (e.g. consistently selecting value 1 in responses throughout questionnaire, or giving unusual answer like having a board size of 0 or 1 members).

Nevertheless, before the final decision was made, factor analysis and reliability tests were run both with all 115 cases and with the reduced cases; since there were no significant conceptual differences found in the results, it was decided to choose the reduced cases which would be more appropriate for the regression analysis of the following chapter.

6.3 Confirmatory vs. Exploratory Factor Analysis

Factor analysis, as earlier discussed, is mainly used in order to reduce the data into latent variables (factors) that can explain certain phenomena (i.e. of whole data) to a satisfactory extent. As argued by Joreskog (1974, cited in Anderson and Gerbing, 1988: 411) "many investigations are to some extent both exploratory and confirmatory since they involve some variables of known and other variables of unknown composition". Anderson and Gerbing (1988: 412) argue that the distinction of two methods should not be thought as a strict dichotomy but an ordered progression. However, there are various issues that need to be considered for the selection of the appropriate available method. These issues largely concern conceptual level and it is argued (e.g. Hair et al., 2006: 119; Field 2009: 636) that in many instances, similar empirical results are demonstrated by using different methods.

First step is to decide is whether the factor analysis will be *confirmatory* or *exploratory*. Although this thesis has specific hypotheses that need to be tested, the measures that have been utilised -and consequently the data collected- need to be explored first. This happens when "the researcher has little control over the specification of the structure (e.g., number of factors, loadings of each variable etc.)" (Hair et al., 2006: 162). As such, the current thesis performs exploratory factor analysis, in order to explore the

data before concluding on the factors that will be used in the further analysis, rather than test and confirm a hypothesized measurement model.

6.4 Common Factor Analysis Vs. Principal Component Analysis

Since the exploratory factor analysis has been decided for the study, the different options available had to be considered as a next step. The two most common techniques for exploratory factor analysis are the *principal component analysis* and the *common factor analysis*. As stated by Blunch (2008: 47), both techniques are most often described under the name of factor analysis and little pragmatic differences appear to exist.

The differences between the two methods can be outlined in the following points raised by Hair et al. (2006):

"Component factor analysis is most appropriate when:

a) *data reduction is a primary concern*, focusing on the minimum number of factors needed to account for the maximum portion of the total variance represented in the original set of variables.
b) Prior knowledge suggests that specific and error variance represent a *relatively small proportion* of total variance

Common factor analysis is most appropriate when:

a) *the primary objective is to identify the latent dimensions or constructs* represented in the original variables, and
b) the researcher has *little knowledge about the amount of specific and error variance* and therefore wishes to eliminate this variance".

Although the two methods differ theoretically and some researchers argue that they also differ in practical terms (e.g. Mulaik, 1990), other scholars claim that often both methods arrive at similar results (e.g. Velicer and Jackson, 1990; Guadagnoli and Velicer, 1998), especially when the number of variables exceeds 30 (e.g. Stevens, 2002, cited in Field, 2009: 638; Gorsuch, 1990, cited in Hair et al., 2006: 119), which is the case for the measurement of the directors' roles construct.

For this thesis, taking into account the above conceptual differences, the principal component analysis was chosen, as the main purpose was regarded the data reduction focusing on the minimum number of factors, with the highest representation of the original set of variables. However, as it is suggested that both methods offer similar results in most

of the cases, the following sections might refer to component analysis by also using the term factor analysis, which is a common practice.

6.5 Principal Component Analysis

As stated in the introductory section of this chapter, the first step before proceeding with principal component analysis of the two main constructs used (i.e. directors' roles and external environment), is to examine whether there is correlation between the variables of each construct. It was therefore important to run bivariate correlation analysis and find that the variables/ items are correlated, indicating that they measure the same concept. As a result, correlation analyses were produced to find out whether significant relationships existed between the variables. After running the correlations of the items within each construct, it was decided that some items/questions should be deleted as they poorly correlate with the other measures of the construct and the reliability of the measure was also affected. After deleting the items, factor analysis was run to find out how the remaining items/questions loaded into different factors.

6.5.1 Correlation Analyses for the Constructs

The way to examine the correlation between variables, is by producing the ***R-matrix (correlation matrix)*** for all variables that aim to capture the same construct and visually scan for 'lots' of correlations that are below 0.3, which however is a very subjective approach (Field, 2009: 648). Taking into account the subjectivity of this approach, which was increased with the many items that were used for the two main constructs (i.e. 36 for director roles and 16 for external environment), no action was taken to delete any items for the two constructs. Even though the correlation matrix was produced and the general view was that each item correlated highly to at least a few of the other items, there were cases of items having limited correlations. However, at this stage no items were deleted, expecting that any potential problems with items would arise in the processes that follow, i.e. factor analysis and reliability analysis.

6.5.2 Component Analysis of the Directors' Roles Measurement

At first, all 36 items used in the study to capture directors' roles were selected to run the component analysis. The preliminary analysis indicated that two variables should

be eliminated, as their score in the ***anti-image correlation matrix*** was lower than 0.5 and should not be accepted (Hair et al., 2006:115; Field, 2009: 659). These two items were 'defer to [the CEO's] judgement on final strategic decisions' and 'provide legitimacy to the firm'.

Running the analysis again, with these two variables excluded, all scores in the anti-image correlation analysis were in the acceptable range of 0.5 or higher. In addition, the ***communalities*** of the variables were checked in order to confirm that they share satisfactory level of variance (i.e. squared standard deviation). This amount of shared variance between two variables is simply the squared correlation. For more than two variables the squared multiple correlation of the variable with all others is used; i.e. multiple regression with one outcome variable and all others as predictors (Field, 2009: 637). Communality is the estimate of the variable's shared (or common) variance (Hair et al., 2006: 117). The communality of the variables was acceptable, as it was above 0.5 for all variables (Hair et al., 2006: 149).

Next step was to check the factor analysis results, to find any problems with the loadings of the different factors. According to Hair et al. (2006: 151), when ***cross-loadings*** are found, further action is needed. This can be either a) purposively ignoring the cross-loadings, or b) deleting the item to eliminate the cross-loadings, or c) using another rotation technique, or d) decreasing the number of factors. For this thesis, due to its exploratory nature, it was decided not to decrease the factors without having clear reason. Ignoring the cross-loadings was considered to be a lenient solution, thus after using other rotation techniques that did not show significant differences, it was decided to delete certain items. These were the items that loaded into two factors with a very similar loading (i.e. loading differences less than 0.1). After deleting certain items, the factor analysis was run again to see if any other items come with cross-loadings. By doing this, nine items were deleted in six consecutive stages, which resulted in maintaining 25 items. The items deleted from this process are presented in Table 6.1. Only one cross-loading remained, but due to the difference in the score loading on the two factors, combined with the fact that the item conceptually fitted clearly in the factor with the highest loading, it was decided to keep the item (i.e. "engage in succession planning for top managers besides CEO").

The next step was to check the ***measure of sampling adequacy (MSA)*** of the data collected through the ***KMO*** measure (i.e. Kaiser-Meyer-Olkin measure). This was found to be 0.727, which is good (Kaiser and Rice, 1974: 112; Hutcheson and Sofroniou, 1999, cited in Field, 2009: 659). In addition, the ***Bartlett's Test of Sphericity*** was found to be

significant (p=0.000), indicating that there are sufficient significant correlations among the variables (Table 6.2).

Table 6.1: Directors' Roles Deleted Items from Cross-Loadings

Items Deleted	**Stage of deletion**
take into account interests of shareholders	1
aid in the formulation of strategy or other important firm decisions	2
provide advice and counsel to top managers	2
provide expertise to the board	3
facilitate access to resources such as capital	4
build external relations	4
involve in firing executives	5
evaluate the top management's performance	5
involve in hiring new executives	6

Table 6.2: KMO and Bartlett's Test for the factorability of Directors' Roles

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.727
Bartlett's Test of Sphericity	Approx. Chi-Square	1323.177
	df	300
	Sig.	.000

Moreover, for the 25 items that were finally included in the factor analysis, the factors excluded from the process were six. The criterion used for retaining six factors, was Kaiser's (1960: 147) recommendation, who suggested keeping factors with eigenvalues greater than 1 (i.e. ***latent root*** criterion). An alternative criterion for retaining factors could have been the scree plot –which proposed fewer factors- however the latent criterion was considered more specific -in relation to the readability of the scree plot (Figure 6.1). According to Hair et al. (2006: 120) the latent root criterion is appropriate, especially when the number of variables is between 20 and 50.

As a result, the six factors were found to explain 75.294% of the ***total variance*** (see Table 6.3). The eigenvalues and the percentages of variance for each factor are presented in the Table before and after rotation. After trying a variety of rotation methods and getting relatively similar results, it was decided to use ***orthogonal rotation*** (i.e. VARIMAX), as Hair et al. (2006) claim that no specific rules have been developed for selection of method and in most cases the choice should be made on the basis of the specific needs of the given research problem. More specifically, they argue that orthogonal rotation "is the most widely used and it is preferred when the research goal is data reduction to either a smaller number of variables or a set of uncorrelated measures tor subsequent use in other multivariate techniques" (Hair et al., 2006: 127).

Table 6.3: Total Variance Explained for Directors' Roles

Total Variance Explained									
Comp	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative%	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.589	30.355	30.355	7.589	30.355	30.355	5.163	20.652	20.652
2	4.612	18.447	48.802	4.612	18.447	48.802	4.003	16.013	36.664
3	2.267	9.066	57.868	2.267	9.066	57.868	3.478	13.910	50.574
4	1.834	7.334	65.202	1.834	7.334	65.202	2.752	11.008	61.583
5	1.384	5.538	70.740	1.384	5.538	70.740	1.733	6.932	68.515
6	1.139	4.554	75.294	1.139	4.554	75.294	1.695	6.780	75.294
7	.969	3.877	79.171						
8	.789	3.156	82.327						
9	.648	2.594	84.921						
10	.537	2.148	87.069						
11	.506	2.024	89.093						
12	.428	1.714	90.806						
13	.388	1.551	92.357						
14	.363	1.452	93.809						
15	.260	1.039	94.849						
16	.256	1.023	95.871						
17	.209	.838	96.709						
18	.194	.778	97.487						
19	.164	.658	98.145						
20	.135	.542	98.686						
21	.107	.428	99.114						
22	.082	.330	99.444						
23	.061	.245	99.688						
24	.054	.217	99.906						
25	.024	.094	100.000						

Extraction Method: Principal Component Analysis.

After the discussion of the preliminary results with all necessary tests, deletion of items and the selection of rotation method, the 25 items loaded with relatively high scores to six factors showing a satisfactory structure (Table 6.4). At this point it is important to state that factor loadings below the value 0.4 were supressed, which is in agreement to Blunch (2008: 65) and Field (2009: 661). The following sections will discuss each of these factors and the labelling that will be used to describe each one of them. The labelling is not derived or assigned by the factor analysis, but is developed by the researcher based on its appropriateness for representing the underlying dimensions of a particular factor (Hair et al., 2006: 131).

Figure 6.1: Scree Plot on Component Analysis of Directors' Roles

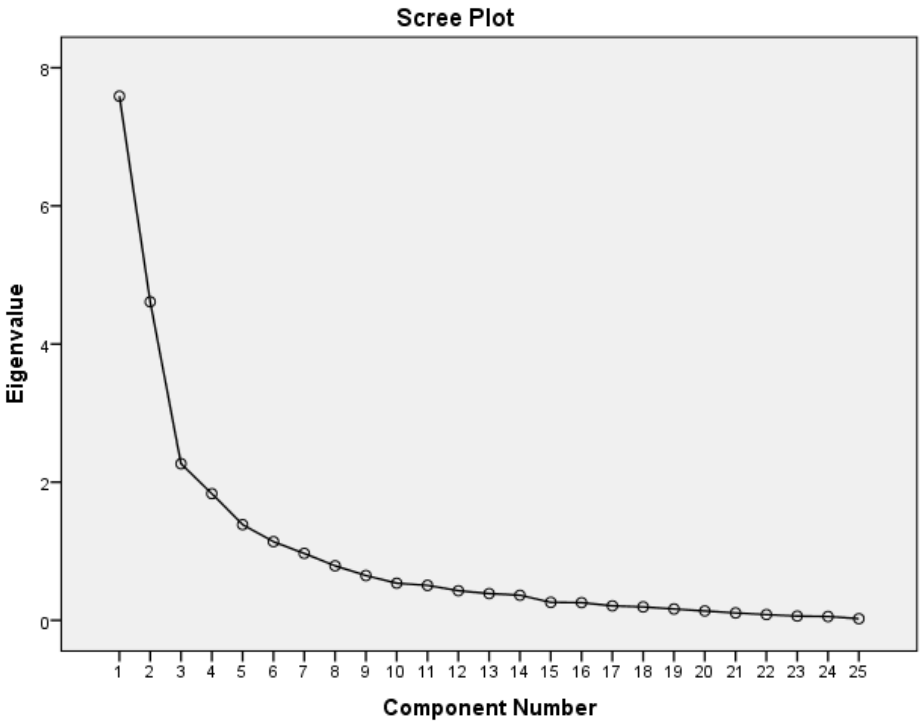


Table 6.4: Summary of Principal Component Analysis for Directors' Roles

	1	2	3	4	5	6
involve in firing CEOs	**.935**					
involve in hiring CEOs	**.928**					
involve in determining salary/ compensation of CEO	**.926**					
evaluate the CEO's performance	**.882**					
engage in succession planning for CEO	**.881**					
monitor CEO in decision making	**.731**					
involve in mission articulation		**.841**				
involve in the development of the corporate vision		**.797**				
monitor top management in decision making		**.733**				
contribute in diffusion of organisational innovation		**.728**				
monitor Strategy Implementation		**.604**				
review social responsibilities of the firm		**.581**				
act as ambassador for the firm			**.894**			
build organisational reputation			**.828**			
link the firm to important stakeholders or other important entities			**.747**			
bolster the image of the firm			**.652**			
maintain relations with stakeholders			**.648**			
constructively criticise/ask probing questions				**.812**		
call for revisions of strategic proposals				**.804**		
ratify strategic proposals				**.709**		
act as a "sounding board" on strategic issues				**.608**		
seek information from the CEO or another inside director regarding the progress of strategic decisions					**.807**	
seek information from the CEO or another inside director in order to evaluate the performance of top management					**.744**	
involve in determining salary/ compensation of top management						**.798**
engage in succession planning for top managers besides CEO		.537				**.657**
Eigenvalues	**5.16**	**4.00**	**3.48**	**2.75**	**1.73**	**1.70**
% of Variance	**20.65**	**16.01**	**13.91**	**11.01**	**6.93**	**6.78**
Cumulative %	**20.65**	**36.66**	**50.57**	**61.58**	**68.52**	**75.29**
Cronbach's Alpha	***.947***	***.854***	***.859***	***.820***	***.706***	***.702***

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 7 iterations.

6.5.2.1 Factor 1: Controlling CEO ($RCEO_1$)

The first factor consists of six variables that loaded highly on the factor and generated an eigenvalue of 5.16. Specifically the six variables are: 'involve in firing CEO', 'involve in hiring CEO', 'involve in determining salary/ compensation of CEO', 'evaluate the CEO's performance', 'engage in succession planning for CEO' and 'monitor CEO in decision making'.

By observing the six variables, it is obvious that they have a clear conceptual association, as all variables describe actions related to the CEO. These actions encompass some level of controlling; therefore the factor was labelled as *controlling CEO* ($RCEO_1$). The mean score for the $RCEO_1$ factor –measured on a seven-point scale- is 4.42 (SD= 2.22), which indicated that respondents believe they fairly contribute to this role. Interestingly, the high standard deviation reveals that respondents have a scattered perception of this role.

Moreover, *reliability* –also explained in chapter 4- is an assessment of the degree of consistency between multiple measurements of a construct. In this thesis this is measured with the Cronbach's alpha where a result higher than 0.6 is accepted (except from one case, where relevant justification and support is offered). The Cronbach's alpha score for the six items is 0.947 (for the remaining 6 items), which is satisfactory. Moreover, last column of Table 6.5 shows that reliability would only be slightly increased with deletion of the last item (i.e. monitor CEO in decision making). However, since the item seems to be relevant to the factor and the increase of a would be only by 0.006, it was decided not to delete the variable.

In addition, the 'corrected item-total correlation' is presented in the Table, showing that all items have a strong correlation with the total score of the factor. (see Field, 2009: 678; Blunch, 2008: 40). Specifically, by following the recommendation made by Field (2009: 678), if the correlation of any item is found to be less than 0.3 with the sum of the rest, the item(s) may be deleted and the correlation test should be run again to see if any further item deletions are found appropriate.

It should be noted that Blunch (2008: 40) argues that often a minimum of 0.4 is accepted, however it was considered strict for the current study and the limit of 0.3 was used. In Table 6.5, the 'corrected item-total correlation is presented', with all remaining items having a correlation higher than 0.3.

Table 6.5: Reliability Analysis for the 'Controlling CEO' Factor

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.947	.947	6

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
involve in firing CEOs	22.32	119.626	.863	.806	.935
involve in hiring CEOs	22.19	118.748	.909	.851	.929
involve in determining salary/ compensation of CEO	22.48	118.091	.887	.797	.932
evaluate the CEO's performance	21.89	126.745	.843	.742	.937
engage in succession planning for CEO	21.83	125.253	.843	.734	.937
monitor CEO in decision making	21.96	140.363	.700	.528	.953

6.5.2.2 Factor 2: Providing Service ($RSER_2$)

The second factor consists of six variables with high loadings and an eigenvalue of 3.89 that is high. The six items for this factor are: 'involve in mission articulation', 'involve in the development of the corporate vision', 'monitor top management in decision making', 'contribute in diffusion of organisational innovation', 'monitor strategy implementation' and 'review social responsibilities of the firm'.

This second factor appears to describe how directors assist in shaping strategic direction by providing various services. Thus, the factor was labelled as *providing service* ($RSER_2$) and measured on a seven-point Likert scale it has a mean of 5.50 (SD= 1.12). This result indicates that respondents seem to overall strongly contribute to this function of the board. It is important to clarify here, that although each of these items might be described with different terms like involve, monitor, contribute and review, they all seem to describe directors providing some sort of service to the board that can be also characterised as relevant to the strategic direction of the company.

The Cronbach alpha score to test reliability of this factor was 0.854 for the six factors and there is no item whose deletion would result in an improved reliability (i.e. improved alpha). Additionally, the item to total correlation for all questions is above 0.5 that is satisfactory (Table 6.6).

Table 6.6: Reliability Analysis for the 'Providing Service' Factor

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.854	.856	6

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
involve in mission articulation	27.31	29.975	.771	.713	.803
involve in the development of the corporate vision	27.13	31.392	.792	.731	.802
monitor top management in decision making	27.80	31.609	.654	.453	.827
contribute in diffusion of organisational innovation	28.30	31.778	.566	.366	.847
monitor Strategy Implementation	27.17	36.622	.531	.331	.848
review social responsibilities of the firm	27.42	33.933	.564	.382	.843

6.5.2.3 Factor 3: Controlling External Contingencies ($RCEC_3$)

The third factor is explained by four variables that capture activities in relation to maintaining relations and improving the firm image. These activities are: 'act as ambassador of the firm', 'build organisational reputation', 'link the firm to important stakeholders or other important entities' and finally, 'bolster the image of the firm'.

As a result, the label used for this factor is *controlling external contingencies* ($RCEC_3$) and the mean score for this seven-point scale measure is 5.91 (SD= 1.06). Respondents seem to strongly perceive this role as core to their responsibilities as it has the second highest mean among all roles.

The reliability of this factor is satisfactory as the Cronbach alpha was 0.859 and there is no deletion of any item that would increase the score. Moreover, all items correlated strongly with the total of the latent variable as all scores are above 0.5 (Table 6.7).

Table 6.7: Reliability Analysis for the 'Controlling External Contingencies' Factor

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.859	.858	5

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
act as ambassador for the firm	23.44	17.694	.737	.643	.813
build organisational reputation	23.51	18.186	.725	.675	.816
link the firm to important stakeholders or other important entities	23.77	18.557	.727	.644	.816
bolster the image of the firm	23.84	19.650	.609	.401	.846
maintain relations with stakeholders	23.60	19.731	.581	.560	.853

6.5.2.4 Factor 4: Involvement in Strategy ($RIIS_4$)

The fourth factor comprises four items that seem to describe activities related to strategy involvement. In specific, the questions that captured the factor that was named as *involvement in strategy* ($RIIS_4$) are: 'constructively criticise/ ask probing questions', 'call for revisions of strategic proposals', 'ratify strategic proposals' and 'act as a "sounding board" on strategic issues'.

The mean score for this factor is 6.29 (SD= 0.77) which is the highest scoring factor, showing the high importance perceived by the respondents. Also, it should be noted that this role has similarities with the providing service role, however for this one the items have a more direct relation to strategy.

Moreover, the Cronbach's alpha for this role was found 0.820, which indicates satisfactory reliability of the scale, and there is no item with whose deletion the score would be increased. Furthermore, the item-total correlation shows that all items are correlated to the total score of the factor (Table 6.8).

Table 6.8: Reliability Analysis for the 'Involvement in Strategy' Factor

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.820	.822	4

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
constructively criticise/ask probing questions	18.78	5.748	.646	.440	.772
call for revisions of strategic proposals	18.98	5.483	.640	.412	.775
ratify strategic proposals	18.74	5.698	.699	.495	.750
act as a "sounding board" on strategic issues	19.00	5.596	.594	.362	.798

6.5.2.5 Factor 5: Seeking Internal Information ($RSII_5$)

The fifth factor consists of only two items that clearly capture the role of directors in seeking internal information. Specifically, the two items included in the *seeking internal information* ($RSII_5$) factor are: 'seek information from the CEO or another inside director regarding the progress of strategic decisions' and 'seek information from the CEO or another inside director in order to evaluate the performance of top management'.

The mean score for this factor is 5.44 (SD= 1.39) indicating that the respondents rate this role as important among their other responsibilities. The reliability of this factor is high, as the Cronbach's α is 0.706. The correlation to the item-total is acceptable and it should be noted that it is the same in both cases, which can be explained by the fact that the factor has only two items. For the same reason, there is no score given for the Cronbach's α if one of the items was deleted, as this would result to a one item factor (Table 6.9). The combination of the Cronbach's α and the item-total correlation seem to cover the different views of scholars on how reliability should be tested when having a two-item scale (Eisinga et al., 2013: 637).

Table 6.9: Reliability Analysis for the 'Seeking Internal Information' Factor

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.706	.708	2

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
seek information from the CEO or another inside director regarding the progress of strategic decisions	5.17	2.727	.548	.300	.
seek information from the CEO or another inside director in order to evaluate the performance of top management	5.71	2.281	.548	.300	.

6.5.2.6 Factor 6: Controlling Top Management Executives ($RTME_6$)

The last factor extracted with an eigenvalue higher than 1.0 was called *controlling top management executives* ($RTME_6$) and similarly to the fifth factor it consists of only two items. These items are: 'involve in determining salary/ compensation of top management' and 'engage in succession planning for top managers besides CEO'. The factor has a mean score of 4.43 (SD= 1.60), which based on the respondents perception shows that they contribute moderately to this role.

The reliability of this scale is 0.702 and the correlation of the items to total are satisfactory, being above 0.5 (Table 6.10). There is no Cronbach score presented for deletion of any item, as this would mean only having one item as a factor.

Table 6.10: Reliability Analysis for the 'Controlling Top Management' Factor

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.702	.703	2

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
involve in determining salary/ compensation of top management	5.10	3.379	.542	.294	.
engage in succession planning for top managers besides CEO	4.89	3.766	.542	.294	.

6.5.3 Component Analysis of the External Environment Measurement

Following the same steps for the analysis of the external environment, the 16 items/questions were selected to run component analysis. The preliminary analysis indicated that one question should be deleted, due to a score in the ***anti-image correlation matrix*** lower than the accepted 0.5. This item was "shortages of labour" and its score was 0.418. Therefore, a visual scan of the component matrix was followed, identifying a cross-loading with similar results for one item. The item was 'product competition' and its deletion was decided -as it loaded into two factors with loadings differing less than 0.1.

Running the analysis again, without the one variable that was deleted, all scores in the anti-image correlation analysis were above the acceptable minimum limit of 0.5. Moreover, the ***communalities*** of the variables were checked in order to confirm that they share satisfactory level of variance (i.e. squared standard deviation). The communality of the two variables was below the acceptable limit of 0.5 (Hair et al., 2006: 149), so it was decided to remove them. These variables were "demand and consumer tastes are" and "severe regulatory restrictions".

Furthermore, the results of factor analysis were checked, to spot any problems with the loadings of each factor. The 13 items loaded in 4 different factors and it was decided to delete the items having ***cross-loadings,*** following the same decision as in the roles construct (i.e. items that have very similar loadings). By doing this, 2 items were deleted in one stage, which resulted in maintaining 11 items. The items deleted from this process are

"the rate at which products/ services are becoming obsolete in the industry is…" and "the production/ service technology…".

After concluding to the final number of items that would capture the external environment, the ***KMO*** measure was used to test the ***measure of sampling adequacy (MSA)*** of the data. This was found to be 0.760, which is good (Kaiser and Rice, 1974: 112; Hutcheson and Sofroniou, 1999, cited in Field, 2009: 659). Next, the result of ***Bartlett's Test of Sphericity*** was found to be significant (p=0.000), demonstrating significant correlations among the remaining variables (Table 6.11).

Table 6.11: KMO and Bartlett's Test for the factorability of External Environment

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.760
Bartlett's Test of Sphericity	Approx. Chi-Square	305.604
	df	55
	Sig.	.000

Moreover, after the preliminary tests of the external environment construct, four factors were excluded for the 11 items that were finally included in the factor analysis. The criterion used for retaining four factors, was again Kaiser's (1960: 147) recommendation, (i.e. ***latent root*** criterion). However, it is interesting to note that in the case of this construct the solution is similar to one of the possible solutions resulting from the scree plot (Figure 6.2).

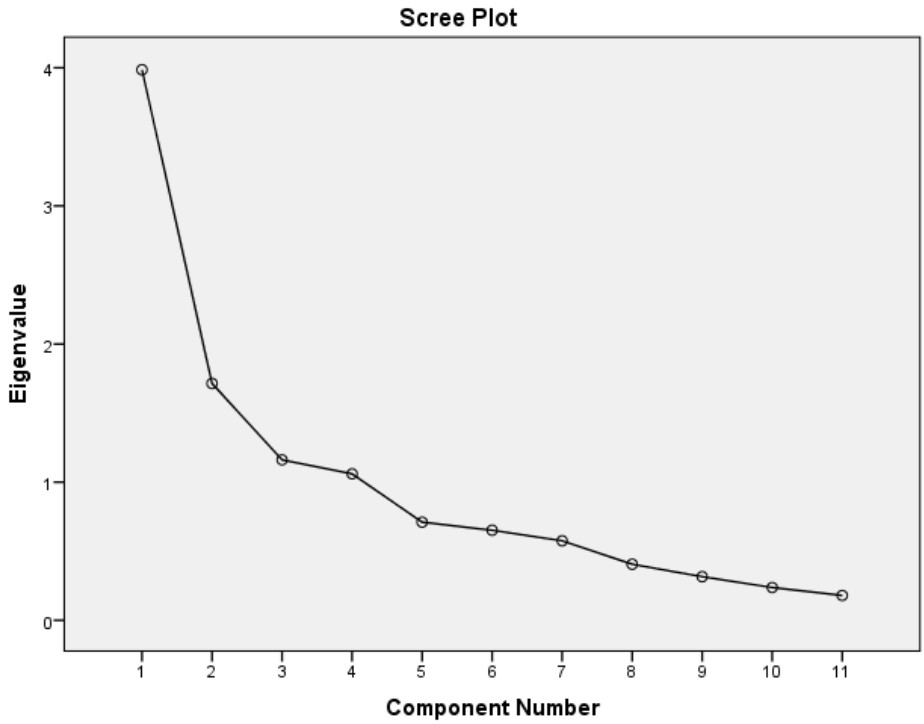
As a result, the four factors were found to explain 72.02% of the ***total variance*** (see Table 6.12). The eigenvalues and the percentages of variance for each factor are presented in the Table before and after rotation. Similarly to the roles of directors construct, various rotation methods were examined and no significant differences were spotted so it was decided to use ***orthogonal rotation*** (i.e. VARIMAX). Also, it was considered as important to keep consistency in the methods used throughout this thesis, which helped in choosing the same rotation method.

Table 6.12: Total Variance Explained for External Environment

Total Variance Explained									
Comp	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative%	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.986	36.235	36.235	3.986	36.235	36.235	2.647	24.066	24.066
2	1.715	15.587	51.822	1.715	15.587	51.822	2.093	19.025	43.091
3	1.162	10.560	62.382	1.162	10.560	62.382	1.707	15.515	58.606
4	1.060	9.639	72.021	1.060	9.639	72.021	1.476	13.415	72.021
5	.711	6.460	78.480						
6	.652	5.927	84.408						
7	.576	5.234	89.642						
8	.406	3.690	93.332						
9	.316	2.872	96.204						
10	.238	2.159	98.363						
11	.180	1.637	100.000						

Extraction Method: Principal Component Analysis.

Figure 6.2: Scree Plot on Component Analysis of External Environment



After the analysis of all necessary tests, deletion of items and the selection of rotation method, the 11 items loaded with relatively high scores to the four factors presented in Table 6.13 and showing a satisfactory structure. Similarly to the analysis of the directors' roles construct, factor loadings below the value 0.4 were supressed, which is

in agreement to Blunch (2008: 65) and Field (2009: 661). The following sections will discuss each one of the factors and the labelling that will be used to describe them.

Table 6.13:Summary of Principal Component Analysis for External Environment

	1	2	3	4
The nature of the competition...	**.889**			
Required methods of production or service...	**.836**			
Customers' buying habits...	**.798**			
Shortages of Raw Material		**.784**		
Unfavourable Demographic Trends		**.776**		
Distribution Competition		**.765**		
Technological Competition			**.799**	
Product Competition	.513		**.710**	
Price Competition			**.641**	
Actions of competitors are...				**.846**
Our business unit must change its marketing practices to keep up with the market and competitors...				**.690**
Eigenvalues	***2.65***	***2.09***	***1.71***	***1.48***
% of Variance	***24.07***	***19.03***	***15.52***	***13.42***
Cumulative %	***24.07***	***43.09***	***58.61***	***72.02***
Cronbach's Alpha	***.852***	***.712***	***.618***	***.383***

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalisation
a. Rotation converged in 6 iterations.

6.5.3.1 Factor 1: Environmental Complexity ($ECOM_1$)

The first factor consists of three variables that loaded highly on the factor and generated an eigenvalue of 2.65. Specifically the three variables are: 'the nature of the competition...', 'required methods of production or service...' and 'customers' buying habits...'.

It is evident that the three questions correspond to the complexity dimension of the environment that has been discussed in previous chapters. Therefore the factor was labelled as *environmental complexity* ($ECOM_1$). The mean score for the $ECOM_1$ factor – measured on a seven-point scale- is 3.72 (SD= 1.67), which indicated that respondents perceive the environment as moderately complex.

Additionally, the Cronbach's alpha score for the three items is 0.852, which shows satisfactory reliability of the scale. Moreover, last column of Table 6.14 shows that alpha would be slightly increased with deletion of the middle item (i.e. Required methods of production or service...). Nevertheless, since the item seems to be relevant to the factor and the increase of -an already high- alpha would be only by 0.006, it was decided not to delete the variable. Finally, the 'corrected item-total correlation' is presented in the Table, showing that all items have a strong correlation with the total score of the factor.

Table 6.14: Reliability Analysis for the 'Environmental Complexity' Factor

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.852	.852	3

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
The nature of the competition...	7.53	10.529	.793	.638	.725
Required methods of production or service...	7.69	11.895	.651	.437	.858
Customers' buying habits...	7.52	10.486	.729	.577	.788

6.5.3.2 Factor 2: Micro-Environmental Hostility ($EMHO_2$)

The second factor consists of three questions with high loadings and an eigenvalue of 2.09 that is high. In details, the three items are 'shortages of raw material', 'unfavourable demographic trends' and 'distribution competition'. The labelling for this factor was more challenging, as although the three questions have common features they are not easily identified. Nevertheless, it was decided to label this factor as *micro-environmental hostility* ($EMHO_2$) as all items seem to concern issues related to the microenvironment of the organisation. The mean for the factor is 3.59 (SD= 1.26) showing that respondents perceive it as moderately important.

The Cronbach alpha score was 0.712, showing acceptable reliability of the factor and there is no item's deletion that would result in higher reliability (Table 6.15). Finally, the item to total correlation is acceptable as the lowest one is 0.482.

Table 6.15: Reliability Analysis for the 'Micro-Environmental Hostility' Factor

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.712	.712	3

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Shortages of Raw Material	7.55	7.611	.482	.235	.680
Unfavourable Demographic Trends	7.08	6.980	.535	.298	.617
Distribution Competition	6.87	6.809	.577	.336	.563

6.5.3.3 Factor 3: Competitive Hostility ($ECHO_3$)

The third factor is also explained by three variables that capture elements of the competitive environment and as such, it was decided to label it as *competitive hostility* ($ECHO_3$) of the environment. The elements comprising this factor are 'technological competition', 'product competition' and 'price competition'.

The mean score for this seven-point scale measure is 4.31 (SD= 1.24), which indicates that in contrast to the previous factor (i.e. micro-environmental hostility), respondents perceive a strong competition -and in turn a hostile environment- in the grounds of technology, product and price.

The reliability test is acceptable, although relatively low, as Cronbach's alpha score is 0.618. In addition, although deletion of "price competition" item would increase the score to 0.699, it was decided to keep the item, as it is conceptually relevant to the other items and the factor. Also, the item to total correlation of the same item is slightly lower (0.289) than the recommended 0.3, but for the same reason it was decided to maintain it in the scale (Table 6.16).

Table 6.16: Reliability Analysis for the 'Competitive Hostility' Factor

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.618	.617	3

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Technological Competition	8.65	6.253	.479	.296	.439
Product Competition	8.59	6.440	.529	.316	.370
Price Competition	8.18	8.108	.289	.087	.699

6.5.3.4 Factor 4: Environmental Dynamism ($EDYN_4$)

The last factor of the external environment scale comprises two items. These items are 'actions of competitors are…' and 'our business unit must change its marketing practices to keep up with the market and competitors...'. Since these two items seem to capture predictability and rate of change, it was decided to label the factor *environmental dynamism* ($EDYN_4$).

The mean score of the factor is 4.64 (SD= 1.03) being the highest scoring factor of external environment. This means that respondents see the environment of their organisations as quite dynamic.

The reliability of this scale based on Cronbach alpha is 0.383 that is low, however this does not necessary indicate an unreliable scale and can be explained in various ways.

Firstly, various scholars have been discussing issues arising in measuring reliability of a two-item scale. While many researchers keep using the Cronbach's alpha as a measure of reliability in two-item scales (e.g. Lowe et al., 2005; Young et al. 2009), others claim that coefficient alpha is meaningless in two-item scales and they suggest Pearson correlation to be used instead (e.g. Sainfort and Booske, 2013; O'Brien et al., 2008). Moreover, there are authors arguing that Pearson correlation between items is similar to the split-half reliability measure; thus, they suggest Spearman-Brown formula to estimate the reliability, while the result is never lower than alpha and usually found to be higher (Eisinga et al. 2013). Following these studies, Spearman-Brown score was also checked and found almost identical result with the alpha coefficient (i.e. Spearman-Brown=.384, while α=.383).

Secondly, while the above leaves concerns about the reliability of the specific scale, Van de Ven and Ferry (1980: 78-80) claim that another important criterion for developing a standard for coefficient alpha -in addition to the number of items in a scale- is the breadth of the factor, that can be understood as the number of distinct terms/elements necessary to define the meaning of the factor. They further argue that combinations of these two criteria, can lead to accepting alpha coefficients from 0.35 to 0.90. Powell (1996: 328) used this approach reinforcing the argument, as they computed factors scoring lower than 0.6.

In the case of environmental dynamism factor, two elements are needed to define the factor based on the literature, that is 'predictability' and 'rate of change'.

Taking into account the two elements needed to define the factor and the fact that the minimum number of items are used for this the scale (two), it was decided to accept the score for this factor.

Furthermore, the low reliability of the dynamism scale could be explained by the fact that although the literature repeatedly uses dynamism as a critical dimension, Downey et al. (1975: 625) argue that it is not as important contributor as complexity. Last but not least, the low score can be explained by the ambiguity of the factors perceived to capture the dimension as conceptualised by Davis et al. (2009: 423).

Concluding from the above, it was decided to accept the low reliability score and use the dimension, as it is regarded important in further analysis (Table 6.17).

Table 6.17: Reliability Analysis for the 'Environmental Dynamism' Factor

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.383	.384	2

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Actions of competitors are...	5.13	1.729	.237	.056	.
Our business unit must change its marketing practices to keep up with the market and competitors...	4.06	1.528	.237	.056	.

6.5.4 Summary of Conducted Validity Tests

As discussed in chapter 4, validity of an instrument should be tested through different methods. The approach used to test validity and reliability was the one suggested by Venkatraman and Grant (1986). Specifically, the components tested were content validity, internal consistency, reliability, convergent and discriminant validity and nomological validity.

In specific, ***content validity*** was achieved during the design process of the instrument by adopting the variables from other academic studies as it was expected that the already tested measures would have higher validity. As next step, scholars considered as experts in the field of corporate governance (e.g. Prof. Amy Hillman and Prof. Stephen Perkins) were approached through email with an attached questionnaire and their suggestions were taken into account.

Internal consistency according to Venkatraman and Grant (1986) includes both ***unidimensionality*** and ***reliability***. The unidimensionality was checked with the exploratory factor analysis making sure that each item reflects one specific construct. On the other hand, reliability was checked for each factor by utilising the widely used coefficient of alpha (Cronbach's α). Internal consistency measures are presented in earlier sections.

Moreover, ***convergent validity*** was checked by looking at the correlations among variables within the same factor and also the correlation of each variable with the total of the items in the factor (Venkatraman and Grant, 1986). The results were satisfactory indicating that there is high convergent validity for both constructs.

Running correlations between the different latent variables created, tested ***discriminant validity***. Inter-correlation values less than 0.60 suggest discriminant validity (Gaur et al., 2011: 1768). All correlations were less than the recommended value of 0.60 (Tables 6.18 and 6.19) except from the one between 'controlling CEO' and 'controlling top management executives'. This result seems reasonable, as although the two latent variables represent controlling of different people, the nature of the role is similar.

Finally, ***nomological validity*** that assesses the "degree that the summated scale makes accurate predictions of other concepts" (Hair et al., 2006: 138) has been indirectly examined in the following chapter. This was achieved by checking the extent to which predictions from the formal theoretical model, including the latent variable in investigation, are confirmed.

Table 6.18: Correlation Test Between Latent Variables of Directors' Roles

	Controlling CEO	Providing Service	Controlling External Contingencies	Involvement in Strategy	Seeking Internal Information	Controlling Top Management Executives
Controlling CEO	1					
Providing Service	.152	1				
Controlling External Contingencies	.064	.461**	1			
Involvement in Strategy	.240	.446**	.428**	1		
Seeking Internal Information	.290*	.366**	.193	.461**	1	
Controlling Top Management Executives	.810**	.303*	.090	.304*	.256*	1
*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed). Listwise: N=67						

Table 6.19: Correlation Test Between Latent Variables of Environment

	Environmental Complexity	Macro-Environmental Hostility	Competitive Hostility	Environmental Dynamism
Environmental Complexity	1			
Micro-Environmental Hostility	.273*	1		
Competitive Hostility	.443**	.374**	1	
Environmental Dynamism	.389**	.190	.322**	1
*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed). Listwise: N=75				

6.6 Concluding Remarks

This chapter has provided the results and analysis of the various factors that resulted from the principal component analysis method. This was applied in order to identify the underlying structure of the questions used to capture the two main constructs (i.e. 36 for roles of directors and 16 for external environment). The method extracted six factors for the roles of directors and three factors for the external environment.

In addition the validity and reliability of the scales used was tested in the chapter and the summated scales that will be used in the further statistical analysis of the following chapter were created.

Chapter 7: Correlation and Multiple Regression Analysis

7.1 Introduction

Chapter 5 presented the descriptive findings that resulted from the study's conducted survey. Previous chapter presented the principal component analysis conducted for the two main constructs of the study, in order to reduce the number of variables capturing the dimensions/elements of each construct (i.e. roles of directors and external environment). Data reduction is considered an important process, as the factors that derived from this process are useful for the more complex statistical techniques that will follow in this chapter.

These techniques are utilised so as to examine the potential relationships among the constructs that are discussed in the theoretical model of the study. Therefore, by investigating these potential relationships the propositions and hypotheses formed in chapter 3 will be either supported or rejected.

The next section will review the four variables used to capture the board characteristics, the two used to describe the director's (i.e. respondent's) status in board and the three used to capture the organisational characteristics. Along with the ten factors extracted in the previous chapter—six factors for directors' roles and four factors for environment—correlation analysis will be conducted to test relationships between the nineteen in total scales formed. Furthermore, multiple regression analysis will be run, testing the effect of the independent variables to the dependent.

7.2 Description of Remaining (Non-Factor) Variables

The analysis also includes variables that are not subject to principal component analysis. The reason is that each of these variables was only measured with one item/question so no reduction technique was needed. In addition, while these variables are viewed as 'one-item scales' recoding was needed for some of them.

7.2.1 Board Characteristics

Board characteristics were measured with four variables described below. **Board size** was measured as the number of board members serving in the board and is a variable measured at the ratio level. **CEO duality** is a dichotomous nominal variable measured by asking respondents if the board's CEO also serves as a Chairperson (i.e. 1=yes, 2=no).

Frequency of Meetings was measured at an ordinal level with 5 options (i.e. 1=every fortnight, 2=every month, 3=every 3 months, 4=twice per year, 5=yearly). This variable was reversed so that it really corresponds to the variable's name (i.e. the higher the value, the higher the frequency of meetings). **Ratio of independent directors** is a (ratio) variable resulting from the division of absolute number of independent directors over the board size.

7.2.2 Director's Status

The status of the directors (respondents) was measured with two variables described below. **Status in Board** was measured at an ordinal level with 3 given options (i.e. 1=executive, 2=non-executive/affiliated, 3=non-executive/independent). **Tenure in board** was measured at a ratio level, asking respondents how many years they serve in the company's board.

7.2.3 Organisational Characteristics

The organisational characteristics were measured with three variables. **Organisational size** was measured at a ratio level, by asking respondents about the number of employees working in the organisation. Recording the year of organisation's establishment captured **organisational age**, however this variable also needed to be reversed. Before reversing the variable, the larger values (more recent years) indicated a younger age. The reverse score transformation is achieved by subtracting each value from the highest recorded value (i.e. the year 2010), which results in having large scores being small and small becoming large (Field, 2009: 155). Finally, **listed/non-listed** was a dichotomous nominal variable measuring whether the company is listed or not to a stock exchange market (1=yes, 2= no).

7.3 Summary of all Scales (Factor and Non-Factor) Included in Further Analysis

After providing the results of the principal component analysis in Chapter 6 and the description of remaining non-factor variables in previous section, a total of sixteen variables has resulted, summarised in the Table 7.1 below.

Table 7.1 Summary of all Scales

Constructs	Dimensions	No. of Variables
Directors' Roles	*Controlling CEO*	**6**
	Providing Service	**6**
	Controlling External Contingencies	**5**
	Involvement in Strategy	**4**
	Seeking Internal Information	**2**
	Controlling TMT	**2**
External Environment	*Complexity*	**3**
	Macro-Environmental Hostility	**3**
	Competitive Hostility	**3**
	Dynamism	**2**
Board Characteristics	*Board Size*	**1**
	CEO Duality	**1**
	Frequency of Meetings	**1**
	Ratio of Independent	**1**
Director's Status	*Status in board*	**1**
	Tenure in Board	**1**
Organisational Characteristics	*Company Size*	**1**
	Company Age	**1**
	Listed/Non-Listed	**1**

7.4 Correlation Analysis and Hypothesis Testing

The following two sections present the results from the correlation analysis and test hypotheses based on the correlation results before proceeding to the regression analysis.

7.4.1 Correlation Analysis

The sixteen new scales were examined through correlation analysis, in order to understand the extent of relationships between the dependent and independent variables. More specifically, both Pearson and Spearman's correlation analyses were run to test the potential relationships of directors' roles (dependent) with the external environment, the board characteristics and directors' status (independent). In addition, organisational characteristics were also included in the analysis (control variables), to check whether they have any relationships with the directors' roles.

The following table (Table 7.2) illustrates the results of Pearson's correlations. Also, in order to avoid having a separate table presenting the Spearman's correlations, notes have been made to the footnote of the table, where the relationships—or significance levels—were found to be different. There were minor differences found between the two methods thus, it was decided to report the Pearson results in the following paragraphs.

The first dependent variable—controlling CEO—was found to correlate with 7 independent variables. In specific, it was significantly and positively associated with the ratio of independent directors ($p<0.01$), the director's status in board ($p<0.01$) and CEO duality ($p<0.05$). Moreover, a significant negative relationship was found with environmental dynamism ($p<0.1$), board size ($p<0.1$), company age ($p<0.05$) and listed/non-listed ($p<0.05$).

The second dependent variable—providing service—was only found to correlate with one variable. Specifically, it was found to significantly ($p<0.1$) correlate with environmental complexity and the relationship was negative, and relatively weak.

The third dependent variable—controlling external contingencies—was found to associate with four independent variables. A significant positive association was found with environmental dynamism ($p<0.1$) and director's tenure in board ($p<0.1$). On the other hand, a significant negative relationship was found with the ratio of independent directors in the board ($p<0.01$) and the director's status in board ($p<0.01$).

The fourth dependent variable—involvement in strategy—was found to be associated with two variables. In specific, a significant positive relationship was found with environmental complexity ($p<0.01$) and with frequency of board meetings ($p<0.01$).

The fifth dependent variable—seeking internal information—did not correlate with any of the variables, indicating no relationship of the factor with any potential predictors.

The sixth dependent variable—controlling TMT—was found to significantly correlate with four variables. Controlling TMT was positively associated with the ratio of independent directors in the board ($p<0.01$) and with the director's status in the board. On the other hand, a negative association was identified with environmental dynamism and board size.

Table 7.2 Correlation Analysis Findings

Dependent / **Independent**	***Controlling CEO***	***Providing Service***	***Controlling External Contingencies***	***Involvement in Strategy***	***Seeking Internal Information***	***Controlling TMT***
External Environment						
Complexity	-0.028	**-0.191*[4]**	0.084	**.293*** **	-0.035	-0.091
N	75	84	91	90	83	81
Macro-Envir. Hostility	0.046	-0.085	-0.111	0.094	0.038	0.043
	60	71	75	73	66	63
Competitive Hostility	-0.040	0.096	-0.015	0.163[6]	-0.010	-0.048
N	73	83	89	88	81	79
Dynamism	**-0.194*[1]**	-0.176	**0.174***	0.146[7]	0.094	**-0.208*[9]**
N	75	84	91	90	83	81
Board Characteristics						
Board Size	**-0.210***	-0.133	-0.068	-0.120	-0.036	**-.241****
N	71	78	85	84	78	77
CEO Duality	**.270****	-0.005	0.012	0.136	0.134	0.147
N	70	77	84	83	77	76
Frequency of Meetings	-0.026	0.178	0.139	**.222**[8]**	0.089	0.156
N	71	78	85	84	78	77
Ratio of Independent	**.464*****	-0.092	**-.296*****	-0.016	-0.104	**.299*****
N	68	73	80	79	75	74
Director's Status						
Status in Board	**.527*****	-0.163	**-.504*****	-0.039	-0.050	**.371*****
N	71	78	85	84	78	77
Tenure in Board	0.122	0.113	**0.195*[5]**	0.100	0.173	0.173
N	70	78	85	84	77	76
Organisational Characteristics						
Company Size	0.048	-0.050	0.025	-0.082	-0.024	0.078
N	66	71	78	77	73	72
Company Age	**-.279** [2]**	-0.044	0.019	-0.116	-0.057	-0.183
N	68	73	80	79	75	74
Listed/Non-listed	**-.264**[3]**	0.024	-0.045	-0.132	-0.142	-0.118
N	67	72	79	78	74	73

Pearson's coefficient: *. Correlation is significant at the 0.10 level; **. Correlation is significant at the 0.05 level; ***. Correlation is significant at the 0.01 level
Spearman's Rho (when different from Pearson's results) 1: No Significant; 2: No Significant; 3: Significant at 0.01 level; 4: No Significant; 5: Significant at 0.01 level; 6: Significant at 0.10 level; 7: Significant at 0.10 level; 8: No Significant; 9: No Significant

7.4.2 Hypothesis Testing based on Correlation Analysis

Based on the correlation findings discussed in previous section and presented in Table 7.2, an initial hypotheses testing can be provided. As such, Table 7.3 summarises the propositions and relative hypotheses made in Chapter 3, by showing whether they are fully, partially or not supported. Furthermore, the section following will provide the results from the multiple regression analysis. The hypotheses provided below are the alternative (H_1) and they appear to be supported when the null hypothesis (H_0) is rejected.

Table 7.3 Hypotheses Testing Based on Correlation Analysis

Propositions	**Hypotheses**	**Result**
P_{A1}: Board Control is related to environmental complexity.		Not supported
	H_{A1a}: Controlling CEO is positively related to environmental complexity.	Not supported
	H_{A1b}: Controlling TMT is positively related to environmental complexity.	Not supported
	H_{A1c}: Seeking internal information is positively related to environmental complexity.	Not supported
P_{A2}: Board Control is related to environmental dynamism.		Partially supported
	H_{A2a}: Controlling CEO is positively related to environmental dynamism.	**Not supported***
	H_{A2b}: Controlling TMT is positively related to environmental dynamism.	**Not supported***
	H_{A2c}: Seeking internal information is positively related to environmental dynamism.	Not Supported
P_{A3}: Board Control is related to environmental munificence.		Not supported
	H_{A3a}: Controlling CEO is positively related to macro-environmental hostility.	Not supported
	H_{A3b}: Controlling TMT is positively related to macro-environmental hostility.	Not supported
	H_{A3c}: Seeking internal information is positively related to macro-environmental hostility.	Not supported
	H_{A3d}: Controlling CEO is positively related to competitive hostility.	Not supported
	H_{A3e}: Controlling TMT is positively related to competitive hostility.	Not supported
	H_{A3f}: Seeking internal information is positively related to competitive hostility.	Not supported
P_{A4}: Board Control is related to various board characteristics.		Partially supported
	H_{A4a}: Controlling CEO is negatively related to board size.	Supported
	H_{A4b}: Controlling TMT is negatively related to board size.	Supported
	H_{A4c}: Seeking internal information is positively related to board size.	Not supported
	H_{A4d}: Controlling CEO is lower when there is CEO duality.	Supported
	H_{A4e}: Controlling TMT is lower when there is CEO duality.	Not supported
	H_{A4f}: Seeking internal information is lower when there is CEO duality.	Not supported
	H_{A4g}: Controlling CEO is positively related to the ratio of independent directors.	Supported
	H_{A4h}: Controlling TMT is positively related to the ratio of independent directors.	Supported
	H_{A4i}: Seeking internal information is positively related to the ratio of independent directors.	Not supported
	H_{A4j}: Controlling CEO is positively related to frequency of meetings.	Not supported

	H_{A4k}: *Controlling TMT is positively related to frequency of meetings.*	Not supported
	H_{A4l}: *Seeking internal information is positively related to frequency of meetings.*	Not supported
P_{A5}: Board Control is related to respondent's status in board.		Partially supported
	H_{A5a}: *Controlling CEO is higher when respondent's status is independent.*	Supported
	H_{A5b}: *Controlling TMT is higher when respondent's status is independent.*	Supported
	H_{A5c}: *Seeking internal information is higher when respondent's status is independent.*	Not supported
	H_{A5d}: *Controlling CEO is positively related to the respondent's tenure in board.*	Not supported
	H_{A5e}: *Controlling TMT is positively related to the respondent's tenure in board.*	Not supported
	H_{A5f}: *Seeking internal information is positively related to the respondent's tenure in board.*	Not supported
P_{B1}: Resource Provision is related to environmental complexity.		Partially supported
	H_{B1a}: *Providing Service is positively related to environmental complexity.*	**Not supported***
	H_{B1b}: *Controlling external contingencies is positively related to environmental complexity.*	Not supported
P_{B2}: Resource Provision is related to environmental dynamism.		Not supported
	H_{B2a}: *Providing Service is positively related to environmental dynamism.*	Not supported
	H_{B2b}: *Controlling external contingencies is positively related to environmental dynamism.*	Not supported
P_{B3}: Resource Provision is related to environmental munificence.		Not supported
	H_{B3a}: *Providing Service is positively related to macro-environmental hostility.*	Not supported
	H_{B3b}: *Controlling external contingencies is positively related to macro-environmental hostility.*	Not supported
	H_{B3c}: *Providing Service is positively related to competitive hostility.*	Not supported
	H_{B3d}: *Controlling external contingencies is positively related to competitive hostility.*	Not supported
P_{B4}: Resource Provision is related to various board characteristics.		Partially supported
	H_{B4a}: *Providing Service is positively related to board size.*	Not supported
	H_{B4b}: *Controlling external contingencies is positively related to board size.*	Not supported
	H_{B4c}: *Providing Service is lower when there is CEO duality.*	Not supported
	H_{B4d}: *Controlling external contingencies lower when there is CEO duality.*	Not supported
	H_{B4e}: *Providing Service is positively related to the ratio of independent directors.*	Not supported
	H_{B4f}: *Controlling external contingencies is positively related to the ratio of independent*	Supported

	directors.	
	H_{B4g}*: Providing Service is positively related to frequency of meetings.*	Not supported
	H_{B4h}*: Controlling external contingencies is positively related to frequency of meetings.*	Not supported
P_{B5}: Resource Provision is related to respondent's status in board.		Partially supported
	H_{B5a}*: Providing Service is higher when respondent's status is independent.*	Not supported
	H_{B5b}*: Controlling external contingencies is higher when respondent's status is independent.*	**Not supported***
	H_{B5c}*: Providing Service is positively related to the respondent's tenure in board.*	Not supported
	H_{B5d}*: Controlling external contingencies is positively related to the respondent's tenure in board.*	Supported
P_{C1}: Strategic Involvement is related to environmental complexity.		Supported
	H_{C1a}*: Strategic Involvement is positively related to environmental complexity.*	Supported
P_{C2}: Strategic Involvement is related to environmental dynamism.		Not supported
	H_{C2a}*: Strategic Involvement is positively related to environmental dynamism.*	Not supported
P_{C3}: Strategic Involvement is related to environmental munificence.		Not supported
	H_{C3a}*: Strategic Involvement is positively related to macro-environmental hostility.*	Not supported
	H_{C3b}*: Strategic Involvement is positively related to competitive hostility.*	Not supported
P_{C4}: Strategic Involvement is related to various board characteristics.		Partially supported
	H_{C4a}*: Strategic Involvement has an inverted-U relationship with board size.*	Not supported
	H_{C4b}*: Strategic Involvement is lower when there is CEO duality.*	Not supported
	H_{C4c}*: Strategic Involvement is negatively related to the ratio of independent directors.*	Not supported
	H_{C4d}*: Strategic Involvement is positively related to frequency of meetings.*	Supported
P_{C5}: Strategic Involvement is related to respondent's status in board.		Not supported
	H_{C5a}*: Strategic Involvement is higher when respondent's status is independent.*	Not supported
	H_{C5b}*: Strategic Involvement has an inverted-U relationship with the respondent's tenure in board.*	Not supported

*Opposite relationship found

7.5 Multiple Regression Analysis and Hypothesis Testing

In this section the hypothesised relationships developed in chapter 3 will be examined through the use of multiple regression analysis. These relationships concern the directors' roles (dependent) with the external environment, the board characteristics and the directors' status (independent). The previous section presented findings from the correlation analysis, showing some initial indications of potential relationships between variables.

Since correlation analysis indicated that the three organisational characteristics variables do not correlate to the dependent variables—only two weak relationships were found—it was decided to leave these variables outside the further analysis. An additional reason for taking this decision is the low importance of the organisational characteristics in the theoretical model of the study. Organisational characteristics were suggested as control variables in this study and are not part of the main model—and its constructs—to be examined.

Specifically, Table 7.4 presents the findings of all regression analyses conducted. Separate regression analyses were performed for each of the six dependent variables (i.e. directors' roles). The table shows the standardised regression coefficients (*Beta*) of each independent variable for the six models, including the *t-statistic* and its significance level. Additionally, the coefficient of determination (R^2) and the adjusted coefficient of determination (*Adjusted* R^2), as well as the *F-Ratio*—explained to unexplained variance—for each model are provided.

Furthermore, multicollinearity tests will be provided in section 7.5.2 that follows, ensuring that independent variables—or predictors—do not highly correlate to each other, which is a needed condition when running regression analysis.

7.5.1 Regression Analysis and Hypothesis Testing: Predicting Directors' Roles

As stated above, six regression analyses were applied, one for each dependent variable tested in the current study. In particular the dependent variables capturing director's roles are controlling CEO, providing service, controlling external contingencies, involvement in strategy, seeking internal information and controlling TMT. The independent variables included in the model as predictors to the roles, were ten.

Specifically, four variables measured the external environment, four variables measured board characteristics and two variables measured director's status.

When looking at the overall results of the six models (Table 7.4), it can be observed that the coefficient of multiple determination (R^2) ranges from 0.170 to 0.565. These figures show the extent to which variability in the dependent variables is explained by the independent variables. In other words, it is the extent to which the independent variables predict the dependent variable. Therefore, it can be said that the weakest model predicts 17% of the dependent variable's variation, while the strongest model predicts 56.5% of the dependent variable's variation.

While the R^2 is a very useful statistic in determining the strength of the model in predicting the dependent variable, the adjusted R^2 adds further value by also taking into account both the sample size and the number of independent variables (Hair et al., 2006: 170). This means that while R^2 increases even when a non-significant predictor is added to the model (i.e. problem termed as *overfitting*), adjusted R^2 is more objective considering the number of observations per independent variable (Hair et al., 2006: 216). This becomes particularly useful when data with different sample sizes or different number of predictors are compared. Based on this approach (and the weak correlations), it was decided to exclude the three 'organisational characteristics' variables from the model, since by including them to the model, even though the R^2 increased, the adjusted R^2 decreased.

Moreover, by looking again the results in Table 7.4, the adjusted R^2 for all six models ranges from -0.14 to 0.456. The one negative value found indicates weakness of the model to predict the dependent variable (i.e. seeking internal information); this could be explained by either the large number of predictors (10) or by non-relevance of some predictors to this dependent variable. The other five models have a positive adjusted R^2 showing some power of prediction.

At this point it is important to say that a main reason why the majority of the models did not show strong predictive power could be—among other things discussed in limitations of section 8.5 in the next chapter—the relatively low number of responses. The reason for this is the profile of the participants, who are regarded as very difficult to approach. The limited number of quantitative board studies seems to support this argument. As Pettigrew and Reber (2013: 343) said "many board members are reluctant to speak about their participation on corporate boards, and corporate executives may not see the work of researchers pursuing primary research of this kind as important, and thus requests get ignored or pushed to the side".

Furthermore, the *F*-statistic was finally presented for the six models. The results show that *F* is significant for four out of the six models, ranging form .922 to 5.186. In short, this means that the four models predict the relevant dependent variables significantly well, while the other two do not.

Following sections will discuss every model in detail, by providing supporting or rejecting the propositions and hypotheses formed in chapter 3.

7.5.1.1 Model 1:

Model 1 shows the impact that predictors have on *controlling CEO* role. In Chapter 3, it was assumed that various dimensions from the external environment as well as various characteristics of the board and the respondents' status would affect the extent to which the board controls the CEO. Specifically, the ten hypotheses that were developed are:

H_{A1a}: Controlling CEO is positively related to environmental complexity.
H_{A2a}: Controlling CEO is positively related to environmental dynamism.
H_{A3a}: Controlling CEO is positively related to macro-environmental hostility.
H_{A3d}: Controlling CEO is positively related to competitive hostility.
H_{A4a}: Controlling CEO is negatively related to board size.
H_{A4d}: Controlling CEO is lower when there is CEO duality.
H_{A4g}: Controlling CEO is positively related to the ratio of independent directors.
H_{A4j}: Controlling CEO is positively related to frequency of meetings.
H_{A5a}: Controlling CEO is higher when respondent's status is independent.
H_{A5d}: Controlling CEO is positively related to the respondent's tenure in board.

Table 7.4 shows the overall fit of the model that has an *R* of 0.565 indicating that 56.5% of the variation of the 'controlling CEO' role is explained by the independent variables. Moreover, the *adjusted* R^2 of 0.456 or 45.6% shows that the predictive power of the model is still high, although slightly reduced when considering the sample size and the number of predictors in the morel. In addition, the *F*-statistic was found to be significant (F=5.186, p<0.001), indicating an overall strong power of the regression equation.

Moreover, by checking the independent variables of the model separately in Table 7.4, it is noticed that board size (*Beta*=-0.406, *t*=-3.262, p<0.05), ratio of independent

directors (*Beta*=0.368, *t*=2.109, p<0.05) and the tenure of the respondents in the board (*Beta*=0.203, *t*=1.727, p<0.1), are significantly predictors to the role of directors in controlling the CEO.

As such, the following hypotheses were supported from this model:

H_{A4a}: Controlling CEO is negatively related to board size.
H_{A4g}: Controlling CEO is positively related to the ratio of independent directors.
H_{A5d}: Controlling CEO is positively related to the respondent's tenure in board.

7.5.1.2 Model 2:

Model 2 shows the equation used in order to to predict the *providing service* role of the board members. It was hypothesised that the providing service role is predicted from ten variables as follow:

H_{B1a}: Providing Service is positively related to environmental complexity.
H_{B2a}: Providing Service is positively related to environmental dynamism.
H_{B3a}: Providing Service is positively related to macro-environmental hostility.
H_{B3c}: Providing Service is positively related to competitive hostility.
H_{B4a}: Providing Service is positively related to board size.
H_{B4c}: Providing Service is lower when there is CEO duality.
H_{B4e}: Providing Service is positively related to the ratio of independent directors.
H_{B4g}: Providing Service is positively related to frequency of meetings.
H_{B5a}: Providing Service is higher when respondent's status is independent.
H_{B5c}: Providing Service is positively related to the respondent's tenure in board.

From Table 7.4, it is noticed that the model has a weak predictive power as the *adjusted* R^2 is only 0.02 (2%) even though R^2 is 0.19 (19%). The weakness of the model is also depicted by the low *F*-statistic that was not found to be significant (*F*=1.114).

However, although the model does not have a strong power in predicting the dependent variable, it was found that competitive hostility is a variable that affects the role of directors in providing their services to the board (*Beta*=0.364, *t*=2.282, p<0.05). As a result only one hypothesis found support from model 2 which is:

H_{B3c}: Providing Service is positively related to competitive hostility.

7.5.1.3 Model 3:

Model 3 attempts to find the extent to which *controlling external contingencies* role of directors, is affected by the external environment, the board characteristics and the status of the respondents sitting in the board. In short, it was hypothesised that:

H_{B1b}: Controlling external contingencies is positively related to environmental complexity.
H_{B2b}: Controlling external contingencies is positively related to environmental dynamism.
H_{B3b}: Controlling external contingencies is positively related to macro-environmental hostility.
H_{B3d}: Controlling external contingencies is positively related to competitive hostility.
H_{B4b}: Controlling external contingencies is positively related to board size.
H_{B4d}: Controlling external contingencies lower when there is CEO duality.
H_{B4f}: Controlling external contingencies is positively related to the ratio of independent directors.
H_{B4h}: Controlling external contingencies is positively related to frequency of meetings.
H_{B5b}: Controlling external contingencies is higher when respondent's status is independent.
H_{B5d}: Controlling external contingencies is positively related to the respondent's tenure in board.

As presented in Table 7.4, the *R* of the model is 0.33, showing that 33% of the variation in the role, can be explained from the independent variables. As expected, the *adjusted* R^2 is slightly reduced, but still indicating a noteworthy predictive power of the model (0.199 or 19.9%). The *F*-statistic was also found to be significant (F=2.513, $p<0.05$).

Furthermore, by looking at the individual variables included as predictors in the model, only one appears to be a significant predictor, while all other variables are found as

insignificant. The significant predictor is the status of the respondent sitting in the board—i.e. executive or non-executive independent member—(*Beta*=-0.513, *t*=-3.217, p<0.05). From this model, only one relationship is found, however the hypothesis is rejected as the relationship has opposite direction:

> H_{B5b}*: Controlling external contingencies is higher when respondent's status is independent.*

7.5.1.4 Model 4:

Model 4 shows the analysis used to test if the external environment, the board characteristics and the status of the respondents in the board affect the directors' *involvement in strategy*. Specifically, the ten hypotheses that were developed are:

> H_{C1a}*: Strategic Involvement is positively related to environmental complexity*
> H_{C2a}*: Strategic Involvement is positively related to environmental dynamism*
> H_{C3a}*: Strategic Involvement is positively related to macro-environmental hostility.*
> H_{C3b}*: Strategic Involvement is positively related to competitive hostility.*
> H_{C4a}*: Strategic Involvement has an inverted-U relationship with board size.*
> H_{C4b}*: Strategic Involvement is lower when there is CEO duality.*
> H_{C4c}*: Strategic Involvement is negatively related to the ratio of independent directors.*
> H_{C4d}*: Strategic Involvement is positively related to frequency of meetings.*
> H_{C5a}*: Strategic Involvement is higher when respondent's status is independent.*
> H_{C5b}*: Strategic Involvement has an inverted-U relationship with the respondent's tenure in board.*

As observed in Table 7.4, the *R* of the model is 0.272, showing that 27.2% of the variation in the degree of involvement in strategy is explained by the independent variables. Moreover, the *adjusted* R^2 for the regression equation is 0.123 and the *F*-statistic is significant with the value of 1.827 (p<0.1).

By inspecting the independent variables of the model, it is found that three of them significantly contribute as predictors to the model. These are environmental complexity (*Beta*=0.311, *t*=2.013, p<0.05), CEO duality (*Beta*=0.329, *t*=2.334, p<0.05) and frequency

of meetings (*Beta*=0.261, *t*=2.056, p<0.05). Based on these results, three of the hypotheses of this model found support; these hypotheses are:

H_{C1a}: Strategic Involvement is positively related to environmental complexity
H_{C4b}: Strategic Involvement is lower when there is CEO duality.
H_{C4d}: Strategic Involvement is positively related to frequency of meetings.

7.5.1.5 Model 5:

Model 5 shows the regression equation used to examine the variables that were hypothesised as predictors of the *seeking internal information* role. In specific the hypotheses developed in Chapter 3 were:

H_{A1c}: Seeking internal information is positively related to environmental complexity.
H_{A2c}: Seeking internal information is positively related to environmental dynamism.
H_{A3c}: Seeking internal information is positively related to macro-environmental hostility.
H_{A3f}: Seeking internal information is positively related to competitive hostility.
H_{A4c}: Seeking internal information is positively related to board size.
H_{A4f}: Seeking internal information is lower when there is CEO duality.
H_{A4i}: Seeking internal information is positively related to the ratio of independent directors.
H_{A4l}: Seeking internal information is positively related to frequency of meetings.
H_{A5c}: Seeking internal information is higher when respondent's status is independent.
H_{A5f}: Seeking internal information is positively related to the respondent's tenure in board.

From Table 7.4 it is observed that the model has a low fit, with an R^2 being 0.170, which is translated as 17% of the variation in the 'seeking internal information' being explained by the independent variables. Furthermore, the combination of the relatively low R^2 for this model with the relatively low response rate resulted into a negative *adjusted* R^2 (-0.014), which indicates the weak power of the specific model.

However, two of the independent variables appear to have a significant relationship to the role that can be a useful outcome of the model. Specifically, both CEO duality (*Beta*=0.284, *t*=1.772, p<0.1) and respondent's tenure in the board (*Beta*=0.343, *t*=2.274, p<0.05) are found to predict the role of directors to seek for internal information. As a result, two hypotheses were confirmed in this model, which are the following:

H_{A4f}: Seeking internal information is lower when there is CEO duality.

H_{A5f}: Seeking internal information is positively related to the respondent's tenure in board.

7.5.1.6 Model 6:

Model 6 shows the shows the impact that predictors have on *controlling TMT* role. In Chapter 3, it was assumed that dimensions of the external environment, the board characteristics and the respondents' status in the board, affect the role of directors in controlling the TMT. Similarly to the previous models, the ten hypotheses that were developed are:

H_{A1b}: Controlling TMT is positively related to environmental complexity.

H_{A2b}: Controlling TMT is positively related to environmental dynamism.

H_{A3b}: Controlling TMT is positively related to macro-environmental hostility.

H_{A3e}: Controlling TMT is positively related to competitive hostility.

H_{A4b}: Controlling TMT is negatively related to board size.

H_{A4e}: Controlling TMT is lower when there is CEO duality.

H_{A4h}: Controlling TMT is positively related to the ratio of independent directors.

H_{A4k}: Controlling TMT is positively related to frequency of meetings.

H_{A5b}: Controlling TMT is higher when respondent's status is independent.

H_{A5e}: Controlling TMT is positively related to the respondent's tenure in board.

Table 7.4 shows that the predictive power of this mode is adequate, as the R^2 for the model is 0.472. This means that 47.2% of the variation of the 'controlling CEO' role is explained by the independent variables. Moreover, the *adjusted* R^2 for the regression equations is 0.349 (34.9%) and the *F*-statistic is found to be significant (*F*=3.847, p<0.001), indicating an overall sufficient power of the regression equation.

Furthermore, by checking the independent variables of the model individually, it is noticed that three of the variables are statistically significant. Specifically, board size (*Beta*=-0.398, *t*=-2.990, p<0.005), frequency of meetings (*Beta*=0.211, *t*=1.780, p<0.1) and ratio of independent directors (*Beta*=0.321, *t*=1.801, p<0.1) are significantly related to the 'controlling CEO' role. Hence, based on these results the following hypotheses were confirmed:

H_{A4b}: Controlling TMT is negatively related to board size.

H_{A4h}: Controlling TMT is positively related to the ratio of independent directors.

H_{A4k}: Controlling TMT is positively related to frequency of meetings.

Table 7.4 Multiple Regression Results Predicting Directors' Roles

Dependent	***Controlling CEO***		***Providing Service***		***Controlling External Contingencies***		***Involvement in Strategy***		***Seeking Internal Information***		***Controlling TMT***	
Independent (Predictors)												
Hypotheses	H_{A1a} H_{A2a} H_{A3a} H_{A3d} H_{A4a} H_{A4d} H_{A4g} H_{A4j} H_{A5a} H_{A5d}		H_{B1a} H_{B2a} H_{B3a} H_{B3c} H_{B4a} H_{B4c} H_{B4e} H_{B4g} H_{B5a} H_{B5c}		H_{B1b} H_{B2b} H_{B3b} H_{B3d} H_{B4b} H_{B4d} H_{B4f} H_{B4h} H_{B5b} H_{B5d}		H_{C1a} H_{C2a} H_{C3a} H_{C3b} H_{C4a} H_{C4b} H_{C4c} H_{C4d} H_{C5a} H_{C5b}		H_{A1c} H_{A2c} H_{A3c} H_{A3f} H_{A4c} H_{A4f} H_{A4i} H_{A4l} H_{A5c} H_{A5f}		H_{A1b} H_{A2b} H_{A3b} H_{A3e} H_{A4b} H_{A4e} H_{A4h} H_{A4k} H_{A5b} H_{A5e}	
	Stand. Reg. Coef. (Beta)	*t*-statistic	Stand. Reg. Coef. (Beta)	*t-statistic*	Stand. Reg. Coef. (Beta)	*t*-statistic	Stand. Reg. Coef. (Beta)	*t*-statistic	Stand. Reg. Coef. (Beta)	*t*-statistic	Stand. Reg. Coef. (Beta)	*t*-statistic
(Constant)		.370		2.472**		3.221****		2.845***		0.142		0.759
External Environment												
Complexity	.176	1.297	-.198	-1.173	.118	.822	.311	**2.013****	-.184	-1.059	.083	.566
Macro-Envir. Hostility	.066	.554	-.202	-1.298	-.203	-1.502	-.034	-.233	.030	.186	.075	.586
Competitive Hostility	.028	.221	.364	**2.282****	.037	.256	.091	.592	.033	.191	.027	.192
Dynamism	.023	.187	-.128	-.818	.160	1.193	.020	.141	.195	1.231	-.059	-.450
Board Characteristics												
Board Size	-.406	**-3.262****	.124	.844	.066	.510	-.120	-.875	.134	.848	-.398	**-2.990*****
CEO Duality	.106	.862	.088	.589	.120	.910	.329	**2.334****	.284	**1.772***	.069	.531
Frequency of Meetings	.005	.040	.170	1.256	.159	1.337	.261	**2.056****	.105	.721	.211	**1.780***
Ratio of Independent	.368	**2.109****	.162	.828	.173	.995	.020	.108	-.238	-1.080	.321	**1.801***
Director's Status												
Status in Board	.260	1.557	-.247	-1.338	-.513	**-3.217****	-.024	-.141	.267	1.339	.167	.993
Tenure in Board	.203	**1.727***	.126	.883	.155	1.258	.156	1.183	.343	**2.274****	.208	1.678
R^2	**.565**		**.192**		**.330**		**.272**		**.170**		**.472**	
Adjusted R^2	.456		.020		.199		.123		-.014		.349	
F	5.186*****		1.114		2.513**		1.827*		.922		3.847*****	

*. Significant at the 0.1 level **. Significant at the 0.05 level ***. Significant at 0.01 level ****. Significant at 0.005 level *****. Significant at 0.001level

7.5.2 Testing Multicollinearity

Table 7.5 shows the multicollinearity results between the independent variables. These results are important, in order to ensure that each independent variable is not explained by the other independent variables. Collinearity is the extent of correlation of one variable to another, while assessing multicollinearity checks the relationship of one variable with a set of independent variables. To test multicollinearity, several regression models are run. According to Hair et al. (2006: 227) in each model, one independent variable is treated as a dependent variable and all other independent variables as predictors of that variable. As a result R^2 is calculated, showing the amount of variance for each independent variable, explained by the other independent variables.

Moreover, the *tolerance*—that is a direct measure for multicollinearity—is calculated as 1- R^2. Therefore, the bigger the tolerance result the smaller degree of multicollinearity. In addition, VIF (i.e. *variance inflation factor*) is displayed in the results, which is calculated as the inverse of tolerance value, i.e. 1/tolerance (Hair et al., 2006: 227). As such, the smaller values of VIF are preferred to indicate low multicollinearity.

Specifically, the guidelines from different sources indicate that the tolerance value should not be below 0.1 and ideally not below 0.2; at the same time, the VIF should not exceed 10 and it is preferable not to be substantially greater than 1 (Curto and Pinto, 2011: 1500; Mason and Perrault, 1991: 270; Field, 2009: 242; Hair et al, 2006: 230).

The findings of the study on tolerance and VIF scores are satisfactory. All tolerance values are above the preferable limit of 0.2 ranging from 0.357 to 0.944. Similarly, the VIF scores are at an acceptable level as they range from 1.060 to 2.799.

Based on these findings, it was concluded that multicollinearity did not affect the results of the theoretical model's statistical analysis.

Table 7.5 Multicollinearity Results

Dependent	***Controlling CEO***		***Providing Service***		***Controlling External Contingencies***		***Involvement in Strategy***		***Seeking Internal Information***		***Controlling TMT***	
Independent (Predictors)	Tolerance	*VIF*	Tolerance	*VIF*	Tolerance	*VIF*	Tolerance	*VIF*	Tolerance	*VIF*	Tolerance	*VIF*
External Environment												
Complexity	0.588	1.701	0.604	1.656	0.636	1.573	0.624	1.603	0.610	1.639	0.566	1.766
Macro-Envir. Hostility	0.757	1.320	0.710	1.408	0.718	1.394	0.705	1.419	0.722	1.385	0.748	1.337
Competitive Hostility	0.667	1.499	0.676	1.479	0.632	1.583	0.627	1.594	0.614	1.629	0.618	1.619
Dynamism	0.716	1.396	0.707	1.414	0.731	1.369	0.705	1.419	0.733	1.364	0.724	1.381
Board Characteristics												
Board Size	0.704	1.420	0.793	1.261	0.785	1.274	0.786	1.273	0.742	1.348	0.694	1.440
CEO Duality	0.716	1.398	0.761	1.314	0.758	1.320	0.750	1.334	0.717	1.394	0.718	1.393
Frequency of Meetings	0.865	1.156	0.944	1.060	0.932	1.073	0.924	1.082	0.875	1.142	0.876	1.142
Ratio of Independent	0.357	2.799	0.448	2.233	0.433	2.308	0.431	2.322	0.380	2.630	0.386	2.593
Director's Status												
Status in Board	0.390	2.566	0.503	1.987	0.517	1.935	0.528	1.893	0.462	2.162	0.432	2.313
Tenure in Board	0.791	1.264	0.849	1.178	0.864	1.158	0.859	1.164	0.809	1.236	0.798	1.253

7.6 Summary

In this chapter, after summarising all scales used in the study, the results of correlation analyses were provided, examining the relationship between environmental dimensions, board characteristics, status of respondents (directors) and board roles. The purpose was to conduct a preliminary investigation of the potential relationships based on the developed hypotheses from Chapter 3 as shown in Table 7.3.

Moreover, to further examine the hypothesised relationships, the ordinary least squares method was applied to estimate the unknown parameters of the six linear regression models of the study. Each of the six models had a role of directors as a dependent variable, which derived from the principal component analysis of Chapter 6. The independent variables in all six models remained the same, assuming that they might predict any of the roles that the directors undertake when sitting in boards. These variables captured the three main independent constructs of the study. Firstly, external environment was measured with four dimensions (i.e. complexity, macro-environmental hostility, competitive hostility and dynamism). Secondly, board characteristics were measured with four variables (i.e. board size, CEO duality, frequency of meetings and ratio of independent). Thirdly, director's status—capturing the status of respondents—was measured with two variables (i.e. status and tenure in board). Table 7.4 shows the results of all six regression models, while Table 7.5 shows the multicollinearity between the independent variables. The summary of hypotheses tested, both with correlation and regression analyses, is presented in Table 7.6.

The final chapter that follows provides the conclusions of the current study based on the findings, along with the contributions and limitations of the study, making also some recommendations for future researchers.

Table 7.6 Summary of Hypotheses Testing

Propositions	**Hypotheses**	**Correlation Result**	**Regression Result**
P_{A1}: Board Control is related to environmental complexity.		Not supported	Not supported
	H_{A1a}: Controlling CEO is positively related to environmental complexity.	Not supported	Not supported
	H_{A1b}: Controlling TMT is positively related to environmental complexity.	Not supported	Not supported
	H_{A1c}: Seeking internal information is positively related to environmental complexity.	Not supported	Not supported
P_{A2}: Board Control is related to environmental dynamism.		Partially supported	Not supported
	H_{A2a}: Controlling CEO is positively related to environmental dynamism.	**Not supported***	Not supported
	H_{A2b}: Controlling TMT is positively related to environmental dynamism.	**Not supported***	Not supported
	H_{A2c}: Seeking internal information is positively related to environmental dynamism.	Not Supported	Not supported
P_{A3}: Board Control is related to environmental munificence.		Not supported	Not supported
	H_{A3a}: Controlling CEO is positively related to macro-environmental hostility.	Not supported	Not supported
	H_{A3b}: Controlling TMT is positively related to macro-environmental hostility.	Not supported	Not supported
	H_{A3c}: Seeking internal information is positively related to macro-environmental hostility.	Not supported	Not supported
	H_{A3d}: Controlling CEO is positively related to competitive hostility.	Not supported	Not supported
	H_{A3e}: Controlling TMT is positively related to competitive hostility.	Not supported	Not supported
	H_{A3f}: Seeking internal information is positively related to competitive hostility.	Not supported	Not supported
P_{A4}: Board Control is related to various board characteristics.		Partially supported	Partially supported
	H_{A4a}: Controlling CEO is negatively related to board size.	Supported	Supported
	H_{A4b}: Controlling TMT is negatively related to board size.	Supported	Supported
	H_{A4c}: Seeking internal information is positively related to board size.	Not supported	Not supported
	H_{A4d}: Controlling CEO is lower when there is CEO duality.	Supported	Not supported
	H_{A4e}: Controlling TMT is lower when there is CEO duality.	Not supported	Not supported
	H_{A4f}: Seeking internal information is lower	Not supported	Supported

	when there is CEO duality.		
	H_{A4g}*: Controlling CEO is positively related to the ratio of independent directors.*	Supported	Supported
	H_{A4h}*: Controlling TMT is positively related to the ratio of independent directors.*	Supported	Not supported
	H_{A4i}*: Seeking internal information is positively related to the ratio of independent directors.*	Not supported	Not supported
	H_{A4j}*: Controlling CEO is positively related to frequency of meetings.*	Not supported	Not supported
	H_{A4k}*: Controlling TMT is positively related to frequency of meetings.*	Not supported	Supported
	H_{A4l}*: Seeking internal information is positively related to frequency of meetings.*	Not supported	Not supported
P_{A5}: Board Control is related to respondent's status in board.		Partially supported	Partially supported
	H_{A5a}*: Controlling CEO is higher when respondent's status is independent.*	Supported	Not supported
	H_{A5b}*: Controlling TMT is higher when respondent's status is independent.*	Supported	Supported
	H_{A5c}*: Seeking internal information is higher when respondent's status is independent.*	Not supported	Not supported
	H_{A5d}*: Controlling CEO is positively related to the respondent's tenure in board.*	Not supported	Supported
	H_{A5e}*: Controlling TMT is positively related to the respondent's tenure in board.*	Not supported	Not supported
	H_{A5f}*: Seeking internal information is positively related to the respondent's tenure in board.*	Not supported	Supported
P_{B1}: Resource Provision is related to environmental complexity.		Partially supported	Not supported
	H_{B1a}*: Providing Service is positively related to environmental complexity.*	**Not supported***	Not supported
	H_{B1b}*: Controlling external contingencies is positively related to environmental complexity.*	Not supported	Not supported
P_{B2}: Resource Provision is related to environmental dynamism.		Not supported	Not supported
	H_{B2a}*: Providing Service is positively related to environmental dynamism.*	Not supported	Not supported
	H_{B2b}*: Controlling external contingencies is positively related to environmental dynamism.*	Not supported	Not supported
P_{B3}: Resource Provision is related to environmental munificence.		Not supported	Partially supported
	H_{B3a}*: Providing Service is positively related to macro-environmental hostility.*	Not supported	Not supported

	H_{B3b}: Controlling external contingencies is positively related to macro-environmental hostility.	Not supported	Not supported
	H_{B3c}: Providing Service is positively related to competitive hostility.	Not supported	Supported
	H_{B3d}: Controlling external contingencies is positively related to competitive hostility.	Not supported	Not supported
P_{B4}: Resource Provision is related to various board characteristics.		Partially supported	Not supported
	H_{B4a}: Providing Service is positively related to board size.	Not supported	Not supported
	H_{B4b}: Controlling external contingencies is positively related to board size.	Not supported	Not supported
	H_{B4c}: Providing Service is lower when there is CEO duality.	Not supported	Not supported
	H_{B4d}: Controlling external contingencies lower when there is CEO duality.	Not supported	Not supported
	H_{B4e}: Providing Service is positively related to the ratio of independent directors.	Not supported	Not supported
	H_{B4f}: Controlling external contingencies is positively related to the ratio of independent directors.	Supported	Not supported
	H_{B4g}: Providing Service is positively related to frequency of meetings.	Not supported	Not supported
	H_{B4h}: Controlling external contingencies is positively related to frequency of meetings.	Not supported	Not supported
P_{B5}: Resource Provision is related to respondent's status in board.		Partially supported	Partially supported
	H_{B5a}: Providing Service is higher when respondent's status is independent.	Not supported	Not supported
	H_{B5b}: Controlling external contingencies is higher when respondent's status is independent.	**Not supported***	**Not supported***
	H_{B5c}: Providing Service is positively related to the respondent's tenure in board.	Not supported	Not supported
	H_{B5d}: Controlling external contingencies is positively related to the respondent's tenure in board.	Supported	Not supported
P_{C1}: Strategic Involvement is related to environmental complexity.		Supported	Supported
	H_{C1a}: Strategic Involvement is positively related to environmental complexity.	Supported	Supported
P_{C2}: Strategic Involvement is related to environmental dynamism.		Not supported	Not supported
	H_{C2a}: Strategic Involvement is positively related to environmental dynamism.	Not supported	Not supported
P_{C3}: Strategic Involvement is related to environmental		Not supported	Not supported

munificence.			
	H_{C3a}*: Strategic Involvement is positively related to macro-environmental hostility.*	Not supported	Not supported
	H_{C3b}*: Strategic Involvement is positively related to competitive hostility.*	Not supported	Not supported
P_{C4}: Strategic Involvement is related to various board characteristics.		Partially supported	Partially supported
	H_{C4a}*: Strategic Involvement has an inverted-U relationship with board size.*	Not supported	Not supported
	H_{C4b}*: Strategic Involvement is lower when there is CEO duality.*	Not supported	Supported
	H_{C4c}*: Strategic Involvement is negatively related to the ratio of independent directors.*	Not supported	Not supported
	H_{C4d}*: Strategic Involvement is positively related to frequency of meetings.*	Supported	Supported
P_{C5}: Strategic Involvement is related to respondent's status in board.		Not supported	Not supported
	H_{C5a}*: Strategic Involvement is higher when respondent's status is independent.*	Not supported	Not supported
	H_{C5b}*: Strategic Involvement has an inverted-U relationship with the respondent's tenure in board.*	Not supported	Not supported

*Opposite relationship found

Chapter 8: Conclusions

8.1 Introduction

Previous chapter presented and described all the findings from the correlation and regression analyses, which examined the potential relationships between constructs and variables as hypothesised in Chapter 3, following the theoretical model of this thesis.

The aim of this chapter is to discuss these findings in accordance to the existing literature, followed by a section that highlights the contribution of the study to the existing knowledge in the field and another section that poses some potential managerial implications. In addition, the various limitations of the study will be discussed and the chapter will conclude with some ideas, which might serve as recommendations for future research and possible academic improvements.

8.2 Discussion of Findings

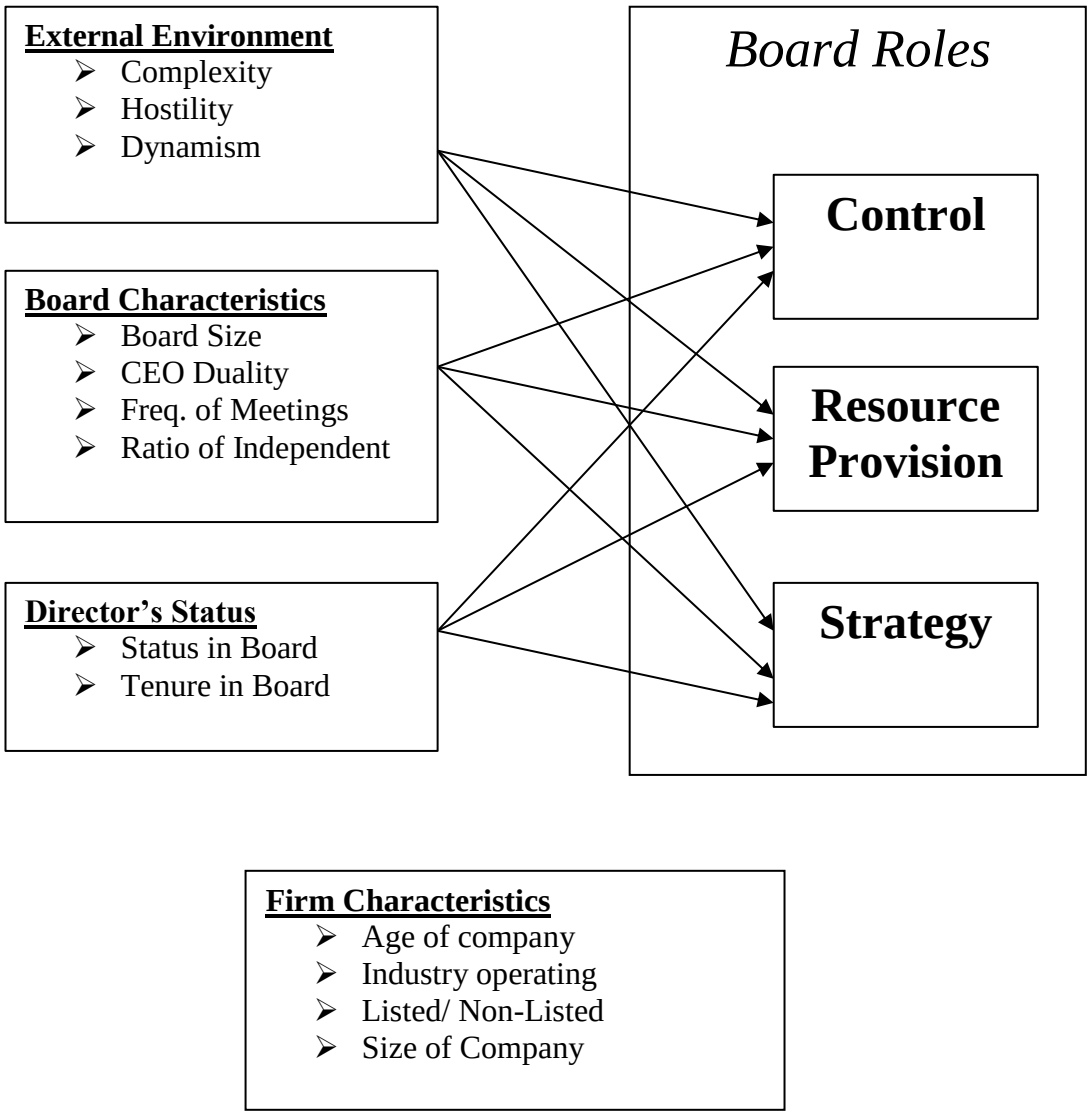
This section discusses the findings presented in the previous chapter, which examined the relationship between the independent and dependent variables of the study. Six regression models were tested in this thesis, examining how several variables might relate to the roles that directors undertake in the board—as resulted from the principal component analysis. These (independent) variables can be largely classified under three main constructs that were used in the theoretical model (Figure 8.1). Based on this model, three main relationships were examined: the extent that the external environment, the board characteristics and the director's status relate to the board roles.

8.2.1 Regression Model 1 (controlling CEO)

The first regression model examined the extent to which the *controlling CEO* role is affected by the external environment, the various board characteristics and the respondent's status in board. The results of this model showed that the external environment does not have any effect on the role of directors to control the CEO. This means that variance in the complexity, dynamism or hostility of the environment does not seem to relate to the directors' role to control the CEO, despite the arguments made by other researchers (Johnson et al., 2011: 1788; Liu and Lai, 2012: 354; Pirson and Turnbull, 2011: 463).

On the other hand, it seems that the *controlling the CEO* role is affected by some board characteristics. Specifically, it was found that board size has a negative relationship with the role, meaning that the greater the number of directors sitting in the board, the less

Figure 8.1: Theoretical Model of the Thesis



the CEO is being controlled. This result is in agreement with Jensen (1993: 865), who argues that when a board is very large, it cannot function effectively, making the CEO more able to control its members.

In addition, it was found from this model, that the ratio of independent directors is positively related to the *controlling CEO* role. In other words, when the ratio of independent directors over the board size becomes higher, the board controls the CEO

more intensively. The literature largely supports this view, which is mainly discussed under the lenses of the agency perspective (Zona et al., 2013; Zahra and Pearce, 1989; Daily et al., 2003; Hillman and Dalziel, 2003). This is also in agreement to different corporate governance codes and reports (e.g. The UK Corporate Governance Code, 2012; OECD Guidelines on Corporate Governance of State-owned Enterprises, 2005) that strongly recommend a high presence of independent members in the boards, for monitoring reasons.

Finally, it was found that the tenure of the respondents in their boards has a positive effect on the *controlling CEO* function. This means that the longer a director sits in the board, the higher the controlling of CEO will be. In similar lines, Khanna et al. (2014: 559) claim that the increased experience of directors in boards, leads to better ability in monitoring.

8.2.2 Regression Model 2 (providing service)

The second regression model examined the extent to which the *providing service* role is affected by the external environment and the board characteristics, along with the status of the respondent in the board. This model was found to be weak as there was no contribution found by most variables. The results showed that the only significant predictor out of the environment's dimensions for this role was the competitive hostility. This indicates that increased competition in the organisation's environment, results in higher service provision of directors to the organisation. This is in agreement to Boyd (1990: 421) who argues that increased pressures from the external environment—including competition—lead to higher requirement for service provision by the board members.

However, there was no other dimension of the environment that appeared to affect the *service* role based on the findings. In addition, the board characteristics being board size, CEO duality, frequency of meetings and ratio of independent members were not found to have any significant effect on the service role of directors which contradicts to the work of various scholars (e.g. Pfeffer and Salancik, 1978: 168; Daily and Dalton, 1994: 1606; Boyd et al., 2011: 1896, Zahra and Pearce, 1990: 166; Vafeas, 1999: 114 etc.). Finally, the respondents' characteristics (i.e. dependence/independence and tenure in board) were not found to be significant predictors of the service role, despite arguments in literature that suggest relationship (Daily and Dalton, 1994: 1606; Judge and Miller, 1991: 450).

8.2.3 Regression Model 3 (controlling external contingencies)

The third regression model assessed the extent to which the independent variables affect the *controlling external contingencies* role of board members. This model was found to be significant, however only one variable significantly contributed to the role. This variable is the status of respondents in their boards, which was found to be a significant predictor of the *controlling external contingencies* responsibility. Specifically, it was found that when the status of respondents in the board is independent, they tend to control external contingencies less intensively. As suggested by the literature, this could be through access to either resources or information. This result is surprising, as based on the literature it is more expected from the independent directors—rather than the executive members—to provide access to external resources and information (Daily and Dalton, 1994: 1606; Zahra and Pearce, 1990: 166). As such, the relevant hypothesis developed in the thesis was rejected while the relationship hypothesised had an opposite relationship than the one found to exist.

No other predictor was found to be significant for this model, meaning that neither the external environment, nor the various board characteristics influence the directors' task to control external dependencies.

8.2.4 Regression Model 4 (involvement in strategy)

The fourth model proposed, examined the relationship between the independent variables and the *involvement in strategy* role of directors. The regression model was found to have some predictive power and few variables to affect the directors' strategy role. More specifically, the external environment was once again found to have limited predictive power over the role, with only one of its dimensions being found to be significant. The dimension of the environment that appears to affect the involvement in strategy is that of complexity. More particularly, it was found that in more complex environments, directors involve more in the strategy of the organisation. This is in similar lines to Judge and Zeithaml (1992: 786) who argue that in more complex environments directors become more strategically adaptive.

Moreover, it was found that CEO duality is a significant predictor of the strategy role of board members. In specific, it was found that when there is CEO duality the strategic involvement is lower. Supporting the literature and the developed hypothesis of the study, the results indicate that having a separate leadership structure is important for

the strategic involvement of the board (Ruigrok et al., 2006: 1208; Golden and Zajac, 2001; 1089).

Finally, the strategy role of directors was found to be affected by the frequency of board meetings. The findings showed that increased frequency of board meetings results in higher involvement of board members in the strategic decisions of the organisation, which is logical and in agreement with other work in the extant literature (e.g. Zahra and Pearce, 1990: 171).

8.2.5 Regression Model 5 (seeking internal information)

Furthermore, the fifth regression model was found to be weak with lack of overall predictive power, nevertheless there were indications of contribution from two independent variables. The model attempted to examine the factors that may affect the role of directors in *seeking internal information*. Once again, the external environment was found to have no effect on the role, indicating no relationship of environmental dimensions with the task of board members to seek internal information—as part of their overall control role.

However, leadership structure in the organisation was found to be a significant determinant of the role. When there is CEO duality, directors seek for less internal information. This can be explained by the increased power of the CEO holding both positions, which may result in less control power of the rest of directors (Daily and Dalton, 1994: 1605; Lohrke et al., 2004: 75, Boyd, 1995: 303). On the other hand, when the CEO and Chairperson positions are separated, there is increased seeking of internal information. This may be happening as the separate Chairperson gives a stronger voice in setting the agenda, selecting the directors, controlling the meeting process (Lorsch, 1989: 185).

Additionally, the tenure of respondents in their board was found to contribute in the *seeking internal information* role. This means that the greater the experience that the directors have in their boards, the more they tend to seek internal information. This hypothesis was supported from the findings and is in similar lines with Khanna et al. (2014: 559) arguing that the experience of directors in their boards is likely to improve their ability to perform their monitoring role.

8.2.6 Regression Model 6 (*controlling TMT)*

Finally, the sixth regression model examined the contribution of the independent variables to the *controlling TMT* role. Overall, the model was found to have a relatively

strong predictive power, although the external environment appeared to have no effect on the role. Similarly to the controlling CEO role, this finding is surprising, as it is not in agreement with various studies stating the importance of the external environment in the control role (e.g. Johnson et al., 2011: 1788; Liu and Lai, 2012: 354; Pirson and Turnbull, 2011: 463).

On the other hand, all board characteristics used in the model, except for the CEO duality, appear to contribute to the regression model. Firstly, board size was found related with the *controlling TMT* role by having a negative relationship. This means that as the board size increases, the board's activity in controlling the top management becomes weaker. This agrees to Jensen (1993) who claims that the larger boards will be weaker monitors of the managerial performance.

Secondly, frequency of meetings was found to be a significant predictor of the *controlling TMT* role. In other words, when the frequency of meetings for directors is higher, they become stronger monitors of the top management. Lin et al. (2014: 267) and Fich and Shivdasani (2006: 722) argue that low frequency of meetings could prevent directors from monitoring the management of the organisation successfully.

Thirdly, it was found that the ratio of independent directors is an important determinant for the *controlling TMT* role. Specifically, it was found that the higher the ratio of independent members in the board—over the whole board size—the more control is exercised on the top management. The argument on this relationship is mainly supported from the agency perspective; independent directors are expected to contribute more in the monitoring of the organisation's management (Zona et al., 2013; Hillman and Dalziel, 2003).

Finally, the respondent's status in the board—dependence/independence and tenure—was not found to be significant contributor to the controlling TMT role.

8.3 Contribution of the Thesis to Knowledge

This section discusses the contribution of the thesis in knowledge, by justifying the significance of the study. As such, it can be argued that the current study has contributed in the following theoretical and methodological areas.

8.3.1 Theoretical Contribution to Knowledge

Initially, the thesis proposed a theoretical framework that was supported and approached from various different theories discussed. The dominant ones—based on most studies—are the agency and the resource dependence perspectives, however the literature review also covered upper echelons, stewardship, institutional, and social network theories attempting to describe the corporate governance constructs from a multi-theoretical perspective. This—combined with the discussion of what a theory and its qualities are (e.g. Popper, 1959; Bacharach, 1989; Whetten, 1989; Van de Ven, 1989; Kilduff, 2006)—can be considered as contribution, giving a new direction to future researchers.

Secondly, the literature review chapter identifies a wide number of articles, trying to collect most—if not all—studies on board roles in order to clarify which are the roles based on previous work. It was realised that many different roles have been described in the literature including monitor, control, service, resource dependence, advice and counsel, strategy. The studies found, use the roles interchangeably, which results in a mixed and unclear set of roles for the directors. After a thorough review, it was concluded that the discrepancies found are not due to substantive reasons. To my opinion various scholars use different terms for convenience, overlooking to keep consistency among the studies. However, by examining the description that the scholars offered, it was also realised that some of the roles overlap each other. This mainly occurred in describing the strategic role of the directors, which in cases seems to have aspects of both control and providing resources roles (e.g. Zahra and Pearce, 1989; Hillman and Dalziel, 2003; Forbes and Milliken, 1999). This thesis suggests, that from the activities described in various studies, three board roles are broadly identified, which are control, providing resources and strategy. It is noteworthy, that while this assumption was made, the roles are considered to be a continuum rather than a trichotomy. This means that there are not clearly distinct activities for each role and while a director undertakes a task, s/he might be performing two or three of her/his roles.

Thirdly, it is argued that the theoretical model itself contributes to the existing literature, as there are not any studies—to my knowledge—investigating the impact of the external environment on the board roles. The theoretical model proposes a direct relationship of external environment to the roles instead of using its dimensions as determinants of the board characteristics. Most previous studies (e.g. Pfeffer and Salancik, 1978; Daily and Dalton, 1994; Yamak et al., 2014) have examined the impact of the

environment's dimensions on board characteristics, neglecting how the directors might directly respond to any environmental pressures. Only few scholars have considered this direct relationship, but have still conducted limited research on it. For example, Johnson et al. (2011: 1788) refer to the higher needs for monitoring when complexity increases, while Walrave et al. (2011: 1732) explain how boards' involvement in strategy might slow down during times of environmental change.

Fourthly, the respondents' status was also considered in the framework, which can be considered a contribution, as previous research either uses one type of board members in their samples (e.g. CEOs) or by asking respondents to state the roles that the whole board undertakes. In this thesis, it was assumed that the different status of the respondent in the board (i.e. dependence and tenure in board) is another important determinant for the roles undertaken and as such it was included in the tested model.

As a result, the theoretical model of this thesis, proposes three possible determinants of board roles that is the external environment, the board's characteristics and the status of the respondents in the board.

8.3.2 Methodological Contribution to Knowledge

Another area of contribution for this thesis is the proposition of a new instrument for measuring board roles, after conducting a principal component analysis. Specifically, in the methodology of this thesis, existing measurements/questions from previous studies were used and principal component analysis was used to reduce the data set by retaining as much information as possible. Consequently, six factors/roles were proposed that are supposed to cover the full spectrum of board members' activities. These are 'controlling CEO', 'providing resources', 'controlling external contingencies', 'involving in strategy', 'seeking internal information' and 'controlling TMT.

Finally, a contribution of this thesis is the data collected from UK organisations, as there is very limited quantitative research on UK boards. Most of the—already limited—existing studies in the UK have collected qualitative data mainly through interviews (e.g. Roberts et al., 2005; Long et al. 2005; Machold and Farqular, 2013), which makes the current study more important, despite the low response rate. The profile of the respondents might explain this difficulty in collecting data from boards, which could also be the reason for the very limited attempts in the extant literature to survey board directors through questionnaires.

While the qualitative findings offer some interesting insights in terms of the board roles, the approach and framework they use is different. These studies do not investigate the impact of the external environment or the board characteristics on directors' duties. For example, Long et al. (2005: 669) researched the roles of non-executive directors, trying to identify the differences between the listed and unlisted companies in UK. They found that directors in 'unlisted' boards have higher involvement—than 'listed' boards—in strategy, financial monitoring, shareholder communication, and overall contribution and less involvement in management monitoring, executive remuneration, appointing and removing directors, and succession planning. These findings agree to all roles that resulted from the current thesis, however the current thesis contributes by suggesting that controlling the CEO and the management is not the same function. Additionally, the current thesis proposes the providing internal information as a separate important function that should be measured.

Another example is that of Machold and Farqular (2013: 161) who conducted a qualitative study and suggested in their conclusions that board tasks are neither homogeneous, nor linear not unchanging. By looking at the current thesis' proposed roles, it can be argued that the views of Machold and Farqular (2013) find further support. While this thesis proposes—as a result of the component analysis—six distinct roles for the directors, by having a closer look to the activities it can be argued that they are not discrete. This can be a significant contribution and a recommendation for future researchers, to not look at the roles of directors as independent functions of the board, but as a mixed set of activities that contain controlling, provision of service and involvement in strategy.

Furthermore, a contribution of the thesis is the fact that the external environment and the board characteristics have been included in the framework as predictors of the board roles. There is no or limited empirical evidence on examination of these relationships, which recommends further research.

8.4 Implications of the Thesis

It can be argued that this thesis also has some implications to different groups like business specialists, decision makers, management consultants and even policy makers. These implications are mainly derived from the findings of the thesis, however it should be

noted that certain limitations are related to the findings, which are discussed in the following section.

However, although researchers might be more reluctant in accepting findings of a study—even though still using them for evidence—practitioners should be also alert and follow a critical approach before adopting any of the findings as universally true. This applies mainly due to the fact that each study faces various limitations. Nevertheless, a more important reason is the philosophical and fundamental issue—that troubles philosophers for over two thousand years—of attainment of real knowledge and certain truth. This idea goes back to the *homo mensura* proposition of Protagoras, which means that "man is the measure of all things" and therefore we must take human knowledge as our standard of measure (Popper, 1998: 1). To my opinion, this is a helpful proposition to make us understand that after testing certain propositions and coming with some findings, there might be some serious and fundamental issues of validity that cannot be avoided, so we can never be certain about our results. In similar lines, Xenophanes—another pre-Socratic philosopher—argued the following (cited in Popper, 1998: 25):

> "But as for certain truth, no man has known it,
> Nor will he know it; neither of the gods
> Nor yet of all the things of which I speak.
> And even per chance he were to utter
> The perfect truth, he would himself not know it;
> For all is but a woven web of guesses."

After discussing the above issues, which are considered essential and should make practitioners cautious before adopting results, it is important to discuss the main implications of the thesis. The theoretical framework of the study examined the impact that the external environment, the board characteristics and the status of respondents in their boards have on the roles of board directors. In short the following findings were found: a) limited support on the assumption that the external environment affects the roles of directors, b) board characteristics appear to have a significant impact on roles and especially control and strategy and c) there is evidence that the respondents' status in board can be a predictor of the directors' roles.

More specifically, the practitioners should be aware of the importance that environmental complexity appear to have on directors' involvement in strategy. This is

translated as higher involvement of directors in strategy when the nature of the competition, the customers' buying habits and the required methods of production significantly vary from one product/service to another.

Moreover, competitive hostility was found to affect the role of directors in providing service. In particular, directors are found to provide service more intensively when there is higher competition in issues like shortages of raw material, distribution and unfavourable demographic trends. Dynamism and macro-environmental hostility were not found to be significant predictors of any board roles, however further research is recommended on these relationships.

Furthermore, practitioners should take into account the second premise that resulted from the findings, that is the impact of board characteristics on the directors' roles. Board size and ratio of independent directors appear to be significant predictors, mainly for the control role of the board. Smaller boards and with higher ratio of independents perform their control role more intensively.

In addition, practitioners and decision makers should be knowledgeable of the effect that CEO duality and frequency of meetings have on involvement of board members in strategy. The separate leadership structure and the high frequency of meetings are found to contribute in higher strategic involvement of directors. The separate structure also appears to increase the directors' role in seeking internal information.

Finally, practitioners should become aware of the potential effect of the respondents' status on the board roles. Specifically, the independent directors seem to control external contingencies less intensively, while the directors with higher tenure in board control the CEO and seek internal information more regularly.

In summary, the above implications are listed below:

- *Controlling CEO* was found related to:
    - *Board Size* (-)
    - *Ratio of Independent* (+)
    - *Tenure of respondent in board* (+)
- *Providing Service* was found related to:
    - *Competitive Hostility* (+)
- *Controlling External Contingencies* was found related to:
    - *Status of respondent in board* (-)
- *Involvement in Strategy* was found related to:

    - *Complexity* (+)
    - *CEO Duality* (+)
    - *Frequency of Meetings* (+)
- *Seeking Internal Information* was found related to:
    - *CEO Duality* (+)
    - *Tenure of respondent in board* (+)
- *Controlling CEO* was found related to:
    - *Board Size* (-)
    - *Frequency of Meetings* (+)
    - *Ratio of Independent* (+)

8.5 Limitations of the Thesis

All parts of this thesis have been organised and structured very carefully, however there are certain limitations that should be considered while interpreting and using any of the conclusions. Most of the limitations that will be explained in the following lines are common to any research study and not just limitations of the current thesis. The key reason for this is the limited resources that a researcher has, especially in the limited timeframe of a study.

An important limitation of this thesis that should be taken into account is the large room for improvement in the conceptual/theoretical framework developed. As in all studies, the researcher only includes specific constructs and proposes specific relationships for examination. More specifically, when the theoretical model was described in Chapters 2 and 3, specific factors/constructs were selected in order to test their potential effect on the dependent construct, i.e. directors' roles. There are certainly many more factors that could be regarded as determinants of the directors' roles, but due to the size and timeframe of the thesis only the specific ones were selected. This significant limitation should make researchers understand, that many different outcomes may result with a large number of factors used as determinants. Adding more factors in the existing model could help in getting closer to the real knowledge—a fact that is evident for all kinds of research studies. As Protagoras has argued, we can only keep improving our knowledge a little, by using the existing human knowledge (Popper, 1998: 4).

The above limitation concerns the theoretical conceptualisation of the study. The following points are further limitations of the study, related to the empirical part of the thesis.

An issue that can be regarded as a limitation of the study is that collected data come only from UK firms. This implies that while the findings might apply in the UK context, differences that might exist in another country (e.g. legal structures, corporate governance codes and guidelines etc.) are not captured in the data. An example of this would be the one or two-tier boards that are found in different countries, which are expected to have different roles and behaviours. As such, even though companies are often internationalised, what applies in one country might not apply in another. Studies from multiple contexts would offset the potential risk associated with generalizing, however studies from multiple contexts are relatively rare. Overall, we caution scholars against generalizing these findings to other contexts.

Similarly, since collection of data for the thesis appeared to be difficult due to the nature/profile of respondents, the data had to be collected from a variety of industries. It should be noted, that different industries might share different characteristics, which could not be tested in this thesis due to the relatively low response rate. Therefore, the findings should not be generalised in all industries before examining possible characteristics within certain industries.

Also, the survey was mainly based on perceptual/subjective questions, which by definition is regarded as a limitation to a study. Since the findings are based on respondents' personal judgement, there is a raised issue of concern.

Moreover, it is argued by Minichilli et al. (2009: 70), that getting answers from respondents that have different status in board produces bias. On the other hand, if all respondents had the same status (e.g. CEOs or Chairpersons), the problem of single respondent bias would be faced. The thesis tried to overcome this issue by including variables in the framework, which capture respondents' characteristics/status in board. However, these variables (i.e. status and tenure in board) do not capture the full profile of a respondent and also the relatively low response rate made it difficult to check for this effect—even though there are indications in the findings showing some significance.

Furthermore, the study is cross sectional, which is subject to few limitations. The findings result from a specific point in time and collection of data at any other period could result in different findings. The cross sectional studies cannot answer questions on the stability of a certain phenomenon or process over time (Miller, 1998, cited in Robinson et

al., 2008). Another criticism based on this work, is the effect that 'historical' differences might have on external validity. For example, if a new recommendation is introduced in a corporate governance code, it is expected to alter behaviours in the boards, which is considered a historical event. These limitations are common to all cross sectional studies, even though longitudinal studies also have their own limitations.

Finally, while the sample size was large, the response rate was very low. This can be explained by the nature of the sample that consists of board directors, who are considered to be difficult to approach. The limited number of existing studies—offering survey results from board members—appears to corroborate this argument. Pettigrew and Reber (2013: 343) support this by claiming that "many board members are reluctant to speak about their participation on corporate boards, and corporate executives may not see the work of researchers pursuing primary research of this kind as important, and thus requests get ignored or pushed to the side".

8.6 Recommendations for Future Research

Following the previous section that discusses the limitations of the current thesis, certain recommendations can be offered for future researchers, which are discusses in the following paragraphs.

Firstly, considering the limitation of the theoretical framework, it is suggested that future researchers use other theoretical framework with various modifications, additions to the existing constructs. It is expected that the directors' roles are affected by other constructs as well, therefore it would be important in future research to try and propose more potential predictors (e.g. organisational life-cycle stage, ownership structure etc.). In addition, while this thesis mainly finds support from the dominant agency and resource dependence perspectives, future researchers should examine the board roles through different theoretical lenses.

Secondly, use of mixed methods can be a consideration for future research. While this thesis is based on collection and interpretation of quantitative data, future researchers can consider collecting a combination of quantitative and qualitative data that may offer an integrated approach with mixed findings. This approach can be also combined with collection of longitudinal data, attempting to capture the changing effects over time. Another approach that could be beneficial for future researchers in further understanding

the roles of directors and their possible predictors, would be to attend board meetings in order to collect data from the processes and activities that the directors involve with.

Thirdly, as also mentioned in limitations, the findings of this thesis come from UK companies. Future researchers could replicate the framework in other countries, to further understand whether different national context—with their accompanied attributes (e.g. legal structures)—is an important determinant of the directors' roles.

Fourthly, while the current study collected responses from individual directors trying to understand the roles in their boards, future researchers could survey multiple directors from the same companies, in order to capture the overall contribution of board members in the boards.

Finally, even though the instrument of the thesis was carefully designed by adopting measurements from other existing studies, the questions used to capture external environment's dimensions might need to be updated. This recommendation is proposed, as the findings showed limited relationship between the external environment and directors' roles, while the literature suggests arguments that would lead to a significant relationship (e.g. resource dependence perspective).

8.6 Summary

The thesis examined the relationship between the external environment and the board characteristics with the roles of directors. It has provided a useful contribution in the literature review on board roles. In addition, it suggests a methodological instrument of board roles for future studies. Moreover, findings from UK organisations contribute to the limited existing findings on board roles. Last but not least, the direct effect of environmental dimensions on board roles is examined for the first time—according to the best of my knowledge.

In this concluding part of the thesis—and personal intellectual journey—I would like to present a statement coming from Popper's work, which to my opinion explains in few lines the approach that researchers and scientists should have to the systematic inquiry of knowledge and truth:

> "I shall not require of a scientific system that it shall be capable of being singled out, once and for all, in a *positive* sense; but I shall require that its

> logical form shall be such that it can be singled out, by means of empirical tests, in a *negative* sense: it must be possible for an empirical scientific system to be *refuted* by experience" (1959:18).

This statement describes his doctrine of *falsification*, which—despite various objections—I believe highlights the most important fact about all scientific theories. It is the fact that theories are never empirically verifiable. I think this expresses in more practical terms what pre-Socratic philosophers (referred in previous parts of the thesis) believed; that absolute truth can never be reached, because the only standard of measure is human measure (Protagoras) and even if by chance it is reached, we wouldn't know it (Xenophanes). And Heraclitus (cited in Popper, 1998: 25) continues on similar grounds:

> "It is not in the nature or character of man to possess true knowledge, though it is in the divine nature. … He who does not expect the unexpected will not detect it: for him it will remain undetectable and unapproachable".

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Appendices

Prenotification Letter

Dear «Title» «Last Name»,

We are currently conducting a research on UK companies, to understand the way that **Boards and Directors contemplate Competitive Environmental Pressures and Challenges.** More specifically we are interested in the activities undertaken by board members as a response to the Competitive Environment.

The research is carried out for the purposes of a PhD thesis and it would be of invaluable help if you could kindly participate, by providing your views. The questionnaire will be administered online and will take less than 20 minutes of your time to complete.

Although entirely optional, your participation would be highly appreciated, as it will contribute in having a significant number of survey responses. Furthermore, we would like to inform you that your participation in this research study will be kept **completely anonymous**.

An e-mail with details on how to complete the questionnaire and **a link to the questionnaire itself will be sent to you next week.**

Once the data collection and the thesis are complete and approved by the University, we would be more than happy to share the results with you.

Kind regards,

Ioannis P. Gkliatis
BSc, MSc
Researcher
ioannis.gkliatis@brunel.ac.uk

Dimitrios N. Koufopoulos
BSc, MBA, PhD, MCMI, FIB, MCSI
Senior Lecturer
dimitrios.koufopoulos@brunel.ac.uk

Brunel University, Brunel Business School, Eastern Gateway Building

Uxbridge, Middlesex UB8 3PH, United Kingdom

1st Wave email

Ref: Competitive Environmental Challenges and Board Dynamics
Dear «Title» «Last Name»,

We are currently conducting a survey on **UK companies**, with the aim to better understand **how the competitive environment's challenges drive board members to undertake specific roles**.

You have been personally selected on the basis of a sample drawn from UK companies and we would be grateful if you could take a few minutes of your precious time to complete the questionnaire. Participation in the study is **entirely voluntary** and will take less than 20 minutes of your time.

If you are a Board Member and You DO wish to participate in the survey please visit the following link: https://www.surveymonkey.com/s/SL735R3

If you are not a board member in the company, please disregard this invitation and accept our apologies for contacting you.

Many thanks in advance for your valuable contribution and time to the research project.

Yours sincerely,

Ioannis P. Gkliatis
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Researcher
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2nd Wave Email

Dear «Title» «Last Name»,

Last week an invitation was sent to you, to participate on our survey that is conducted on **UK companies**. The study aims to better understand **how the competitive environmental challenges drive board members to take upon specific roles** and seeks views and opinions **only** from board members.

If you have already completed the questionnaire, please accept our sincere thanks. Your participation to our study is deeply appreciated.

If you haven't completed the survey we would be grateful if you could take a few minutes of your precious time to complete it. Participation in the study is **entirely voluntary** and will take less than 20 minutes of your time.

If you are a Board Member and You DO wish to participate in the survey please visit the following link: https://www.surveymonkey.com/s/8B7HVJ5

If you are not a board member, please disregard this invitation and accept our apologies for contacting you.

Many thanks in advance for your valuable contribution and time to our research project.

Yours sincerely,

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Final Email Call

Ref: Final Call to Participate by Tomorrow, March 21st: Board Roles and Competitive Environment
Dear «Title» «Last Name»,

This is the last kind reminder inviting you to our survey, which aims at capturing **board members' activities and the challenges of the competitive environment**.

If you have already completed the questionnaire, please accept our gratitude and ignore this email. Your participation to our study is highly appreciated.

If you haven't completed the survey, this will be your last chance; **the deadline is tomorrow, March 21st.** We kindly ask you to take a few minutes of your precious time to complete it. As mentioned in previous emails, the participation in the study is **entirely voluntary** and will take less than 20 minutes of your time. Also, all your responses will be kept **confidential.**

If you are a Board Member and You DO wish to participate in the survey please visit the following link: https://www.surveymonkey.com/s/SL735R3

If you are not a board member, please disregard this invitation and accept our apologies for contacting you.

Once again, many thanks in advance for your valuable contribution and time to our research project. We look forward to receiving your responses.

Yours sincerely,

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Survey Monkey Front Page

Dear participant,

First of all, many thanks for taking the time to support this crucial part of our research.

This is a national multi-industry research effort, which seeks to understand elements of board configuration, the board directors' roles, and the effect that competitive environment developments and challenges have on them.

Your co-operation in completing the questionnaire is central to the success of this research project. In order to assist us, please answer all of the questions as fully and honestly as possible. Please note there are no “right” or “wrong” answers to any of the questions and it is your initial impression and response, which we are looking for.

For the purpose of this study, you are kindly invited to answer all questions as **a board director** of the organisation (i.e. company/focal organisation) to which you received the questionnaire (email address).

ALL THE INFORMATION PROVIDED IN THIS QUESTIONNAIRE WILL REMAIN ABSOLUTELY CONFIDENTIAL AND ONLY BE SEEN BY THE ACADEMIC RESEARCHERS INVOLVED IN THIS STUDY.

ONLY SUMMARIES WILL BE INCORPORATED INTO THE FINAL REPORT AND NO COMPANIES OR INDIVIDUALS WILL BE IDENTIFIED.

May we thank you in again for your co-operation.

Sincerely yours,

Ioannis P. Gkliatis
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The Questionnaire

Competitive Environmental Challenges and Board Dynamics

The Effect of the Competitive External Environment on Directors' Roles

Brunel UNIVERSITY LONDON

Dear participant,

First of all, many thanks for taking the time to support this crucial part of our research.

This is a multi-industry research effort, which seeks to understand elements of board configuration, the board directors' roles, and the effect that competitive environment developments and challenges have on them.

Your co-operation in completing the questionnaire is central to the success of this research project. In order to assist us, please answer all of the questions as fully and honestly as possible. Please note there are no "right" or "wrong" answers to any of the questions and it is your initial impression and response, which we are looking for.

For the purpose of this study, you are kindly invited to answer all questions as a member of a board. In the case that you are a board director in more than one organisations, please respond to our questionnaire as a director of an organisation where you serve as an independent (non-executive) board member.

ALL THE INFORMATION PROVIDED IN THIS QUESTIONNAIRE WILL REMAIN ABSOLUTELY CONFIDENTIAL AND ONLY BE SEEN BY THE ACADEMIC RESEARCHERS INVOLVED IN THIS STUDY.

ONLY SUMMARIES WILL BE INCORPORATED INTO THE FINAL REPORT AND NO COMPANIES OR INDIVIDUALS WILL BE IDENTIFIED.

May we thank you in again for your co-operation.

Sincerely yours,

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Competitive Environmental Challenges and Board Dynamics

SECTION A

In this section, we seek to understand the roles undertaken by each board member individually.

Please indicate to what extent YOU (as an individual board member) contribute to the following roles in the focal organisation (the organisation for which you answer the questionnaire):

***1. As a board member, I...**

	Little Extent						Great Extent	N/A
act as ambassador for the firm	○	○	○	○	○	○	○	○
build organisational reputation	○	○	○	○	○	○	○	○
ratify strategic proposals	○	○	○	○	○	○	○	○
call for revisions of strategic proposals	○	○	○	○	○	○	○	○
constructively criticise/ask probing questions	○	○	○	○	○	○	○	○
defer to [the CEO's] judgment on final strategic decisions	○	○	○	○	○	○	○	○
involve in determining salary/ compensation of top management	○	○	○	○	○	○	○	○
involve in determining salary/ compensation of CEO	○	○	○	○	○	○	○	○
engage in succession planning for CEO	○	○	○	○	○	○	○	○
engage in succession planning for top managers besides CEO	○	○	○	○	○	○	○	○
evaluate the CEO's performance	○	○	○	○	○	○	○	○
evaluate the top management's performance	○	○	○	○	○	○	○	○
facilitate access to resources such as capital	○	○	○	○	○	○	○	○
involve in hiring new executives	○	○	○	○	○	○	○	○
involve in hiring CEOs	○	○	○	○	○	○	○	○
involve in firing executives	○	○	○	○	○	○	○	○
involve in firing CEOs	○	○	○	○	○	○	○	○
aid in the formulation of strategy or other important firm decisions	○	○	○	○	○	○	○	○
link the firm to important stakeholders or other important entities	○	○	○	○	○	○	○	○
build external relations	○	○	○	○	○	○	○	○

Competitive Environmental Challenges and Board Dynamics

maintain relations with stakeholders	○	○	○	○	○	○	○	○
monitor CEO in decision-making	○	○	○	○	○	○	○	○
monitor Strategy Implementation	○	○	○	○	○	○	○	○
monitor top management in decision-making	○	○	○	○	○	○	○	○
act as a "sounding board" on strategic issues	○	○	○	○	○	○	○	○
provide advice and counsel to top managers	○	○	○	○	○	○	○	○
provide expertise to the board	○	○	○	○	○	○	○	○
provide legitimacy to the firm	○	○	○	○	○	○	○	○
bolster the image of the firm	○	○	○	○	○	○	○	○
seek information from the CEO or another inside director regarding the progress of strategic decisions	○	○	○	○	○	○	○	○
seek information from the CEO or another inside director in order to evaluate the performance of top management	○	○	○	○	○	○	○	○
contribute in diffusion of organisational innovation	○	○	○	○	○	○	○	○
involve in the development of the corporate vision	○	○	○	○	○	○	○	○
involve in mission articulation	○	○	○	○	○	○	○	○
review social responsibilities of the firm	○	○	○	○	○	○	○	○
take into account interests of shareholders	○	○	○	○	○	○	○	○

Competitive Environmental Challenges and Board Dynamics

SECTION B

In this section we seek information relating to your competitive environment. Please answer the following questions with reference to the industry that accounts for the largest percentage of your organisation's sales (in other words, your principal industry). Please check the option in each scale that best approximates the actual conditions in your organisation's principal industry.

***2. Our business unit must change its marketing practices to keep up with the market and competitors...**

Extremely Rarely						Extremely Frequently	N/A
○	○	○	○	○	○	○	○

***3. The rate at which products/ services are becoming obsolete in the industry is...**

Extremely Slow						Extremely Fast	N/A
○	○	○	○	○	○	○	○

***4. Actions of competitors are...**

Extremely Predictable						Extremely Unpredictable	N/A
○	○	○	○	○	○	○	○

***5. Demand and consumer tastes are...**

Fairly Easy to Forecast						Almost Unpredictable	N/A
○	○	○	○	○	○	○	○

***6. The production/service technology...**

is not subject to very much change and is well established						changes often and in a major way	N/A
○	○	○	○	○	○	○	○

***7. Please indicate the extent that your organisation experiences variations in the following three items in its principal industry.**

	About The Same For All Products/Services						Varied A Great Deal From One Product/Service to Another	N/A
Customers' buying habits...	○	○	○	○	○	○	○	○
The nature of the competition...	○	○	○	○	○	○	○	○
Required methods of production or service...	○	○	○	○	○	○	○	○

Competitive Environmental Challenges and Board Dynamics

***8. Please indicate the extent that your firm in its principal industry faces intense competition relative to your main competitors in the following issues.**

	Much Less Competition Than Other Firms						Much Greater Competition Than Other Firms	N/A
Price Competition	○	○	○	○	○	○	○	○
Product Competition	○	○	○	○	○	○	○	○
Technological Competition	○	○	○	○	○	○	○	○
Distribution Competition	○	○	○	○	○	○	○	○
Shortages of Labour	○	○	○	○	○	○	○	○
Shortages of Raw Material	○	○	○	○	○	○	○	○
Unfavourable Demographic Trends	○	○	○	○	○	○	○	○
Severe Regulatory Restrictions	○	○	○	○	○	○	○	○

Competitive Environmental Challenges and Board Dynamics

SECTION C

In this section we seek to understand some board characteristics of your company's Board of Directors.

***9. What is the total number of...**

board members in the Board of Directors? ☐

executives/internals in the Board of Directors?* ☐

non-executives/externals in the Board of Directors?** ☐

*Executive/internal board members are defined as those who are employees of the Organisation

**Non-executives/external board members are defined as those who are NOT employees of the Organisation

***10. How many of the non-executive/external Board members of the Organization are characterized as...**

Affiliate*** ☐

Independent**** ☐

***Affiliate board members are defined as those that meet any of the following conditions: affiliation with the Organization/firm as a supplier, banker or creditor within the past two years, association with a law firm engaged by your firm, being an employee of your firm's subsidiaries or holding companies or relation by blood/marriage with a member of the board

****Independent board members are defined as those who are both outside/external and not affiliate

11. Does the Chief Executive Officer also hold the position of the Chairperson of the Board?

◯ Yes

◯ No

12. Please indicate whether the following board sub-committees are established in your board:

	Yes	No
Nomination Committee	◯	◯
Remuneration Committee	◯	◯
Audit Committee	◯	◯
Succession Committee	◯	◯
Risk Management Committee	◯	◯
Governance Committee	◯	◯

Other board sub-committees (please specify)

Competitive Environmental Challenges and Board Dynamics

13. Please indicate which of the following options best describes the frequency of the Board's meetings:

- ◯ Every fortnight
- ◯ Every month
- ◯ Every 3 months
- ◯ Twice per year
- ◯ Yearly

Competitive Environmental Challenges and Board Dynamics

SECTION D

In this section we seek to understand your position and status in the focal organisation (the organisation for which you answer the questionnaire).

***14. Your status as a board member of the company is:**

- ◯ executive/internal
- ◯ non-executive/external and Affiliated
- ◯ non-executive/external and Independent

15. Please indicate if you hold any of the following position(s) in the company: (you may check more than one boxes)

- ☐ Chairperson
- ☐ CEO
- ☐ Member of nomination committee
- ☐ Member of remuneration committee
- ☐ Member of audit committee
- ☐ Member of succession committee
- ☐ Member of risk management committee
- ☐ Member of governance committee

Member of other board committee(s) (please specify)

16. About how long have you been working for the focal organisation?

Years

17. About how long have you been serving as a board member in the focal organisation?

Years

18. What is the total number of board directorships that you currently hold (including the directorship held in the focal organisation)?

Number

Competitive Environmental Challenges and Board Dynamics

SECTION E

In this section we seek to understand some general organizational characteristics of your company .

19. What was the number of full-time employees working in your company last year?

Number

20. Under which of the following industries (supersectors) is your organisation classified?

- ◯ 0500 Oil & Gas
- ◯ 1300 Chemicals
- ◯ 1700 Basic Resources
- ◯ 2300 Construction & Materials
- ◯ 2700 Industrial Goods & Services
- ◯ 3300 Automobiles & Parts
- ◯ 3500 Food & Beverage
- ◯ 3700 Personal & Household Goods
- ◯ 4500 Health Care
- ◯ 5300 Retail
- ◯ 5500 Media
- ◯ 5700 Travel & Leisure
- ◯ 6500 Telecommunications
- ◯ 7500 Utilities
- ◯ 8300 Banks
- ◯ 8500 Insurance
- ◯ 8600 Real Estate
- ◯ 8700 Financial Services
- ◯ 9500 Technology

21. When was your company established?

Year

***22. In which country is the company based?**

23. Is your company listed to the stock exchange?

- ◯ Yes
- ◯ No

24. If yes, please indicate to which stock exchange market the organisation is listed (e.g. LSE main market, LSE "AIM", Nasdaq, ASX, Nigeria Stock Exchange etc.)

25. If listed, when did your company enter the stock exchange?

Year

At this point we would like to thank you for taking part in our survey. Your views are highly appreciated.

26. Would you like to receive a summary of the results of the study?

- ◯ Yes
- ◯ No

Competitive Environmental Challenges and Board Dynamics

27. Please provide the name of your organisation (Optional).

28. In the following box, please feel free to provide any comments in regards to the study/questions or to give us any additional information that you may want to share.