



Dissertation

Master's in International Business

***Gender and size diversity in Top Management Team:
Evidence from Portugal***

Joana Gomes Pedro

Leiria, September 2016

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This dissertation was developed under the supervision of Doctor *Tânia Marques*, professor at the School of Technology and Management of the Polytechnic Institute of Leiria.

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Resumo

Nos últimos anos a equipa de gestão de topo das empresas (TMT – Top Management Team) tem sido bastante estudada e abordada por vários investigadores (Campbell & Mínguez-Vera, 2008; Erhardt et al., 2003; Haleblan & Finkelstein, 1993; Amason & Spienza; 1997). Desta forma, este tema tem sofrido uma grande evolução assim como progressivamente se tem diversificado. Combinado com a *Upper Echelons Theory* é estabelecida uma nova dimensão da diversidade da equipa de gestão de topo que aborda, por exemplo, a diversidade de género e a dimensão da equipa de gestão de topo. Já existem vários países que têm criado leis e requisitos normativos de modo a aumentar a presença de mulheres no meio empresarial como é o caso da Noruega, Espanha, França, Holanda e Itália. No entanto, o género feminino está longe da igualdade em termos de representatividade (Torchia et al., 2011), mas é notável a evolução de ano para ano. Também é perceptível que a dimensão das equipas de gestão de topo também tem aumentado, o que pode proporcionar vantagens para a empresa (Heleblan & Finkelstein, 1993). No decorrer deste trabalho é estudada a relação do género feminino e do tamanho da equipa de gestão de topo com a rentabilidade (ROA – Return On Assets) das 41 empresas portuguesas cotadas na bolsa da *Euronext Lisbon*, entre 2011 - 2015. Inicialmente, é aplicado o teste de Spearman para verificar as correlações entre as variáveis em estudo. É também elaborada uma regressão linear que relaciona o número de mulheres (variável independente) com o ROA (variável dependente). O teste de Mann-Whitney tem como objetivo verificar o comportamento do ROA entre empresas sem mulheres nos TMT e as empresas com mulheres no TMT. Após a análise, os resultados demonstram que existe uma relação positiva entre o número de mulheres com o ROA. Assim como, as empresas que têm mulheres nos TMT têm melhor performance quando comparado com empresas sem mulheres na equipa de gestão de topo. Relativamente à dimensão da equipa esta também influencia positivamente a rentabilidade económica, de uma forma significativa.

Palavras-chave: equipa de gestão de topo; género; dimensão da equipa de gestão de topo; rentabilidade, ROA.

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Abstract

In recent years the Top Management Team (TMT) in the companies has been extensively studied and discussed by many researchers (Campbell & Mínguez-Vera, 2008; Erhardt et al, 2003; Haleblian & Finkelstein, 1993; Amason & Spienza, 1997). Thus, this theme has undergone a major evolution as well as it has been diversified progressively. Combined with the *Upper Echelons Theory*, it was established a new dimension of diversity of the Top Management Team that addresses, for example, the diversity of gender and the size of the team. There are several countries that have established laws and regulatory requirements in order to increase the presence of women in the business environment such as Norway, Spain, France, Holland and Italy. However, the female gender is far from equal in terms of representativeness (Torchia et al., 2011), but there are noteworthy developments yearly. It is also noticeable that the size of Top Management Teams has also increased, which can provide advantages for the company (Heleblian & Finkelstein, 1993). In the course of this dissertation it was studied the female gender ratio and the size of the Top Management Team with the profitability (ROA – Return On Assets) of 41 Portuguese companies listed on the *Euronext Lisbon* between 2011 - 2015. Initially, the Spearman test was applied in order to verify the correlations between the variables in study. It was created a linear regression that relates the number of women (independent variable) and ROA (dependent variable). The Mann-Whitney test was used to verify the ROA behaviour between companies with no women in TMT and companies with women in TMT. After analysis, the results demonstrated that there was a positive relationship between the number of women with ROA. Also companies that have women in TMT have better performance compared to companies with no women in the Top Management Team. As far as the size of the team is concerned, it positively influences the economic profitability, in a meaningful way.

Keywords: Top Management Team; gender; size of TMT; profitability, ROA

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List of acronyms

BSI – Board Service Involvement

CEO – Chief Executive Officer

MR – Mean Rank

ROA – Return On Assets

ROAA – Return On Average Assets

SABI - Sistema de Análise de Balanços Ibéricos

TMT – Top Management Team

U.S. – United States

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1. Introduction

Top Management Team (TMT) has been studied by several researchers (e.g. Campbell & Mínguez-Vera, 2008; Erhardt et al., 2003; Haleblan & Finkelstein, 1993; Amason & Spienza; 1997). Hambrick and Mason (1984) have studied the senior management features of a particular organization, the upper echelons, that can influence the decisions and practices adopted by an organization. Hambrick and Mason (1984) in the *upper echelon theory* have shown that top manager's characteristics influence the decisions and the actions adopted and implemented by the managers. There are two characteristics that are well discussed in the recent TMT literature: diversity and size of TMT (Daily & Cooper, 1997; Birley & Stockley, 2000). The trend has led women into occupying top careers; however, the vast majority of the meeting rooms are still made by male directors (Torchia et al., 2011). Researchers and country leaders are increasingly concerned with this topic, which leads countries and politicians to establish laws and regulatory requirements in order to increase the presence of women on the boards of listed companies (Alvarado, Fuentes & Laffarga, 2015). There are countries in the European community, including Norway, Spain, France, Holland, and Italy that have legislation requiring that 40% of a company's directors are women (Rose, 2007; Adams & Ferreira, 2009). Campbell and Mínguez-Vera (2008) showed that diversity gender has a positive relationship with economic performance, concluding that the gender composition of the management team can affect the quality of the company's financial performance. Economic performance is analysed through Tobin's Q (Q). This measurement is defined as the sum of the market value stock and the value of debt divided by the value of total assets. Campbell and Mínguez-Vera (2008) demonstrated that the presence of women has a positive effect on the company's value and that the opposite causal relationship is not significant. They also claim that greater gender diversity can generate financial advantages. Alvarado, Fuentes and Laffarga (2015) also demonstrated the positive relationship of the female gender with firm performance (Tobin's Q (Q)). Cable & Gimeno Nieto (2012) state that the diversity of gender in management, doesn't come only from an ethical point of view. This area provides clear benefits for improved cooperative governance.

Nielsen and Nielsen (2012) studied the relationship between Top Management Team diversity and firm performance, focusing, on TMT tenure and nationality of TMT.

Alvarado Fuentes and Laffarga (2015) studied the board gender diversity in Spain. Researchers concluded that, with a sample of 125 companies listed on the Madrid stock exchange, increasing the number of women in Top Management Teams is positively related to improved business performance, i.e., economic gains. It has reinforced the idea that the diversity of gender in the TMT must be increased, mandatory laws being a key factor in doing so. Based on the literature, it is noticeable that the presence of the female gender in higher positions clearly affects their economic and organizational performance (Krishnan & Park, 2005; Ren & Wang, 2011).

There are also studies that relate the board size and its influence in the firm performance (Knockaert, Bjornali & Erikson, 2015). Knockaert, Bjornali and Erikson (2015) with a sample of 117 high-tech Norwegian companies showed that diversity in the TMT affects positively the Board Service Involvement (BSI). Haleblian and Finkelstein (1993) showed in their study of 47 organizations taken from the *Ward's Directory of 50,000 Largest U.S. Corporations*, that companies with larger Top Management Teams had better performance (return on assets, return on sales and return on equity), rather than the companies with smaller TMT which had worse performance levels. Hellman and Puri (2002), claim that the larger the team, the more resources available which are oriented towards growth and business development. However, Amason and Spienza (1997) showed in their study of 48 Top Management Teams from U.S., that the size and openness of TMT were positively related to cognitive conflict. The size of the team was also associated with higher affective conflicts, when teams had high levels of reciprocity, greater openness led to less affective conflict. The cognitive conflict is task oriented arising from differences on perspective. Regarding the emotional conflict that is oriented to individuals due to personal dissatisfaction.

Progress has been significant but the difference between the gender male and female is still visible. In Portugal, there are few or no studies on the diversity of TMT and its influence on profitability, with greater focus on gender diversity and the size of the team in order to understand the relationship of these variables with financial performance. In this article we analyse two characteristics of TMT and their relationship with the performance of the Portuguese listed companies. In the present investigation it was analysed the way that the number of women in TMT interact with the company performance, in order to understand if the ratio is positive or negative, i.e., understand as one variable increases the other increases/decreases. It was also analysed the size of the team with the firm

performance, in order to understand the interaction on variables, such as the gender. The data was correlated in order to understand how the variables under study interact, for that Spearman test was applied. Thereafter, a linear regression was created relating the number of women in Top Management Team (independent variable) with their performance - ROA (dependent variable). Mann-Whitney test was also applied where the main objective is to verify the ROA behaviour between companies with women in TMT and companies without women in TMT. After the analysis of the data some results are presented. Results show that there is a significantly positive relationship between the presence of women and the economic performance of the company (ROA). Results also show that companies that have women in their Top Management Teams have better performance compared to companies with no women in Top Management Teams. Also, the size of the team positively influences the economic profitability.

The main objective of this article is to provide evidence concerning the relationship between the attributes of TMT boards, specifically the relationship between female gender and also the size of the board with the financial performance. In this study we used 41 Portuguese companies that are listed on the *Euronext Lisbon Stock Exchange* in the period 2011-2015.

This study follows the following structure. Initially, it is reviewed the literature on the topic. The literature review is divided in three sections: dealing with the Top Management Team in a more theoretical perspective; then it is presented the TMT gender diversity versus firm performance literature, which relates these two themes, and after that, it is reviewed the TMT board size versus performance firm literature. The second chapter is dedicated to the data and methodology, which presents the dataset, variables and the methodology used to test the hypotheses proposed. After the data and methodology, the results are presented followed by the analysis and discussion. Finally, some limitations and future research avenues are presented.

2. Literature Review

Top Management Team (TMT) is considered to be one of the most important resource for business (Yuan-qiong, Wen & Yun, 2009). *“In the last several decades, we have witnessed a huge evolution around this issue with several studies appearing”* (Erhardt et al. 2003; Campbell & Mínguez-Vera, 2008; Alvarado, Fuentes, Laffarga, 2015; Haleblan & Finkelstein, 1993; Amason & Spienza; 1997). However, the performance implications of Top Management Team diversity are not well defined (Park & Lee, 2008; Nielsen & Nielsen, 2012). Like other concepts, the relationship between Top Management Team (TMT) diversity and firm performance is widely discussed (e.g. Cannella, Park, & Lee; 2008; Carpenter; 2002; Boond & Hendriks, 2009; Dwyer, Richard, & Chadwick; 2003).

2.1. Top Management Team (TMT)

According to the study of Pegels, Song and Yang (2000, pp. 916), TMT is defined as “consisting of those executives above the vice president level (sometimes secretary, controller and treasurer depending on the firm’s structure), as well as any other officers who served as directors of the company, e.g., senior vice president, vice chairman, CEO, and any other officers who were on the board of directors”. The main roles of TMT are guiding corporate strategy and elaborate it by making decisions about which projects one should bet, the directions that their strategies should take and how they should allocate resources available in different projects. Collins and Clark (2003) state that TMT is an important subset between of those employees, because TMT has contact with employees, and internal and external people (e.g. clients, providers).

Hambrick (1987), states that except for some extreme cases, management is a shared effort. There are many choices to be made and issues to be considered for one person and also management involves delegation and team collaboration. Hambrick (1987) shows that communication skills, vision and other key features that exist within the teams are essential for its proper functioning and consequently for successful business strategies. There are several human factors such as interpersonal dynamics, skills, among others, affecting

businesses. Managers who want to improve the performance of their organizations will work to improve their TMT (Hambrick, 1987).

Hambrick and Mason (1984) dedicated their research efforts to investigate the upper echelons and the attributes of top managers. Hambrick and Mason (1984) showed that organizational outcomes (performance and strategic) are predicted by characteristics of top managers. Upper echelon characteristics are composed by: *Psychological* – cognitive base and values; and *Observable*: age, functional tracks, other career experiences, education, socioeconomic roots, financial position and group characteristics. Top managers' characteristics influence the decisions and the actions that the managers make and adopt. (Hambrick & Mason, 1984). In a more recent study, Hambrick (2007) updated the upper echelon theory and reports that the central point of the upper echelon theory is associated with values, experiences and personalities of top managers team. Thus, such characteristics greatly influence their interpretations of the situations which they face along the business route as well as it affects their choices. Several studies used and applied the upper echelon theory (Ting, Azizan & Kweh, 2015; Olson, Parayitam & Twigg, 2006; Heyden, et al., 2013; Monga, 2016).

There are authors who similarly argue that the impact of the diversity of TMT on their performance is neither positive nor negative. Cannella, Park and Lee (2008) conducted a study of 207 USA companies, representing 11 industries examining the background diversity of TMT and firm performance. Researchers verify the increase on the effects of TMT functional diversity, on its performance in which the enterprise becomes more positive in terms of the ratio of TMT members with offices at the same location. Buyl et al. (2011) used 33 Dutch and Belgian information and technology companies in order to understand the moderating role of three sets of CEO characteristics and the relationship between functional diversity TMT and company performance. After the analysis of the study, the results show that the CEO and TMT characteristics interact in achieving the potential benefits of functional TMT specialization. This type of effect is related to the specific relevance attributes which varies in the different layers of context (Cannella, Park & Lee, 2008). There are studies that reinforce the idea that the CEO with international experience creates value for their companies and themselves through their control of a valuable resource (Carpenter, Sanders, & Gregersen, 2001).

Variety in teams or even in groups is frequently described as a positive force leading to effective functioning of the team (Awino, Ogutu, & Muchemi, 2011). In order to get a

better group performance, diversity is closely linked to a broader range of ideas, creativity and even innovation (Awino, Ogutu, & Muchemi, 2011; Jackson, May & Whitney, 1995, 1995; Cox, 1993). Research suggests that diversity can have effects and consequences both positive and negative at the same time. Milliken and Martins (1996) demonstrate in the article that diversity in organizational groups composition affects the company results. It can be through the: emotional impact, cognitive aspect, communication and symbolic processes. The emotional consequences of diversity were found to have negative effects on affective outcomes, i.e., there are negative affective outcomes of diversity in observable attributes which appear to decrease. The cognitive consequences of diversity are unclear if the positive effects on cognitive outcomes of diversity group of observable attributes are due to the differences in these attributes alone or are due to the diversity in the underlying attributes. Symbolic consequences of diversity can affect the quality of task performance and affective reactions of the members. Diversity can have important effects on organizational results due to the composition of some organizational groups that have a symbolic meaning for both internal and external stakeholders. The consequences of oriented diversity of communication: the more diverse the groups, the more they seem to communicate in a more formal way. Perhaps, less frequently with each other in lower group members. However, they can communicate more often with those who are outside the group. That is, the effect is positive if it is a cognitive one. However, it is negative if the consequences are emotional (Milliken & Martins, 1996).

There are different ways to study the area of diversity of the Top Management Teams. The study of Jackson et al. (1995) states that the diversity of teams is based on differences in age, gender, education, firm tenure and technical / functional background. However, studies on cross-functional teams are defined as deliberate differences in demographic diversity and technical expertise (Ancona & Caldwell, 1992). This dissertation focuses on the diversity of gender and on the size of the management team. Based on the theoretical arguments derived from the *Upper Echelons Theory*, which argues that managers' demographic characteristics (e.g. gender) need to be considered due to their influence on the organizations' performance. It is suggested that gender diversity in the Top Management Teams of Portuguese firms will be positively related to economic performance (Ruiz-Jiménez & Fuentes-Fuentes, 2016).

2.1.1. Gender

The importance of gender diversity in management comes not only from an ethical point of view, but also from an increasing number of studies which claim that this theme provides clear gains / benefits, obtaining a better corporate governance (Cabo, Gimeno & Nieto, 2012).

The diversity, as stated before, can be explained and respectively differentiated in two categories:

- Observable. The population level is based on what is visible, that is, race, gender and education level;
- No observable. It refers to not visible attributes, that is, knowledge, skills, individual profiles and capabilities. (Milliken & Martins, 1996; Pelled 1996)

The study of Rosenzweig (1998) states that much of the research on the diversity addresses population subjects and mid gender diversity. The focus on gender diversity is mainly explained by their gender imbalances that commonly occur in the context of the organizations in which almost the entire geographical area and, also to society and laws. This research becomes even more important, since increasingly female gender begins to have more strength in the labour market fighting intensely for gender equality. Table 1 characterizes the European landscape regarding the involvement of women in senior positions in the business sector.

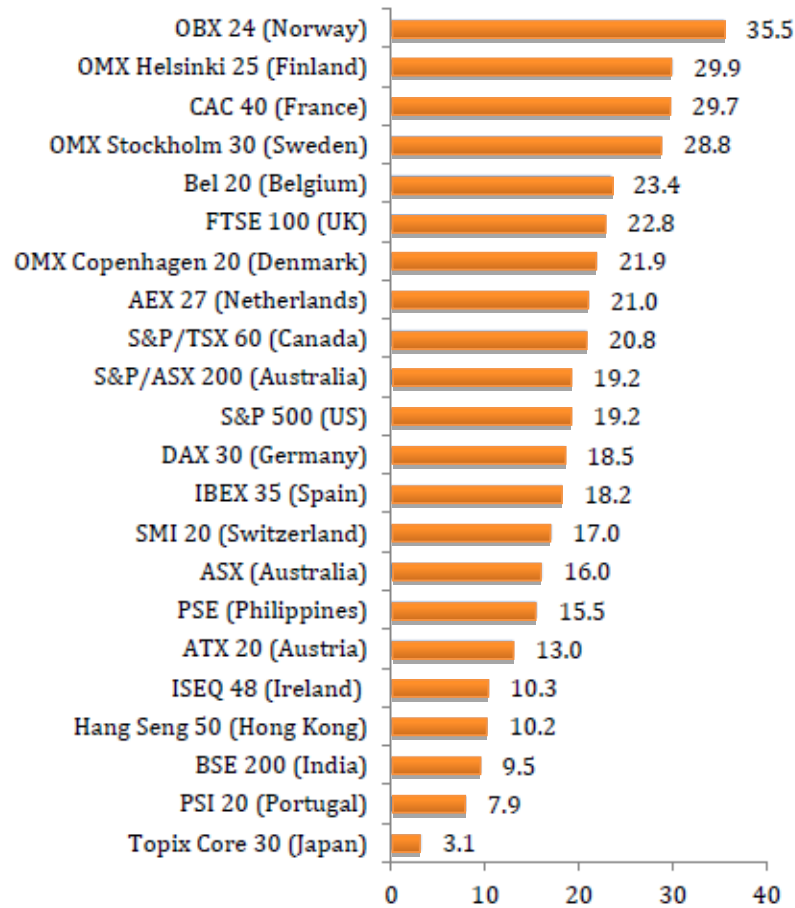
Table 1 - Women in TMT: European landscape

| Country | % of women directors represented on the board | % of board with no women directors on the board |
|------------------|--|--|
| Austria | 10 | 20 |
| Belgium | 15 | 15 |
| Denmark | 17 | 10 |
| Finland | 27 | 0 |
| France | 25 | 3 |
| Germany | 16 | 7 |
| Italy | 11 | 20 |
| Netherlands | 19 | 4 |
| Norway | 39 | 0 |
| Poland | 8 | 40 |
| Portugal | 8 | 30 |
| Spain | 13 | 24 |
| Sweden | 27 | 0 |
| Switzerland | 14 | 15 |
| United Kingdom | 18 | 6 |
| European average | 17 | 12 |

Source: Heidrick & Struggles (2014), Spencer Stuart (2014)

According to Table 1, regarding the percentage of women directors one may highlight the case of Norway with 39%, then Finland reaching 27% similar do Sweden. The lowest values have been reached by Poland and Portugal with 8% of women directors represented on the board. Concerning the percentage of no women directors on the board Poland reaches 40%, followed by Portugal with 30%. On the other hand, Norway and Sweden have no company with no women directors on the board. The values that are in the table can be explained by their historical past, laws, political and sociological contexts and other facts (Alvarado, Fuentes & Laffarga, 2015). The study of Unite, Sullivan and Shi (2015) is dedicated to the gender composition and diversity trends among TMT, and they have used data on about 250 PSE-listed firms. They also present some data on the average proportion of women directors on boards by country (Table 2).

Table 2 - Average proportion of female directors in boards by country (2014, %)



Source: Unite, Sullivan & Shi (2015)

Table 2 shows that Portugal has a place in the table background compared to some non-European countries, and it is the country with a lowest percentage (7.9%) when compared to the European countries. On top of the Table 2 it can be observed that Norway, Finland and France have interesting values of average proportion of female on TMT. On the bottom of the table, with the worst value, it is Japan, immediately followed by Portugal. Smith, Smith and Verner (2005) study the relationship between women in senior positions and on boards of directors in a sample of 2500 largest Danish. Investigators argue that the proportion of women reaching top positions is still very low in most countries, although it has increased in, for example, the US and in some European countries. They also show that women in the TMT have significant effect on firm performance measured

by the alternative measures performance. Jurkus, Park and Woodard (2011) investigate gender diversity among top company managers. The study finds that companies with a higher percentage of female employees have lower costs, but that the negative relationship is not robust when considering the endogeneity of diversity.

2.1.2. Size board

Members of TMT are considered important players in management and their characteristics are frequently studied in the field of TMT (Chaganti et al., 2016).

Size board is also considered as one of the resources for early stage companies especially high-tech, affecting the competitive advantage (Knockaert, Bjornali & Erikson, 2015). From the theoretical point of view, the size of TMT can be a measurable indicator of organizational resources to make strategic choices (Varner & Palmer, 2007). The team size is an essential team characteristic (Jaw & Lin, 2009). However, Top Management Team size has been little studied and analysed on the effects of team size by researchers.

The larger the team, the more human resources are available, as well as the absolute level of human capital, which leads to particularly targeted and companies focused on growth (Hellmann & Puri, 2002; Hambrick e D'Aveni, 1992). With a larger team, more information can be handled and carried to be focused on the problems, resulting in potentially better decisions (Cummings et al., 1974; Haleblian & Finkelstein, 1993). The higher the human capital levels, the further the development they can provide, becoming a greater ability available to solve problems extemporaneously and to adapt naturally to changes in the external environment (Ucbasaran et al., 2003; Wright et al., 2007). Cummings et al. (1974) state that the larger the size of TMT, the more resources are needed to solve problems as well as the development of capabilities and resources. It is useful to explain the high quality decisions of large-scale team, so that mistakes and risks are avoided. A larger TMT has more advantages compared with a small-scale TMT. Jaw & Lin (2009), state that a larger TMT has more physical and interrelation resources which is good in situations of ambiguity and uncontrollable factors from multinational markets. The larger size of board can also cause more advantages in terms of legitimacy (Foo, 2010). Cooper and Bruno (1977) and Song et al. (2008) state that higher teams of TMT contribute to solve problems more effectively and the company performance improves compared to

smaller TMT's. Chaganti et al. (2016) state that the board size may affect the decision of the public. The resources of a large TMT can also conduct the company to better decisions and position the company for long-term success.

2.2. TMT gender diversity versus firm performance

Increasingly there is more diversity in Top Management Teams (Carpeter, 2002; Wiersema & Bantel, 1992). This diversity is set to a diverse mix of attributes, characteristics and skills that individual team members bring to it (Van der Walt & Ingley, 2003). As in the study of Smith, Smith and Verner (2005) in order to measure gender diversity in top management, there is a number of alternative measures of gender diversity in TMT. The most restrictive definition includes only the proportion of women among the top CEO (Smith, Smith & Verner, 2005).

Typically, there are two types of arguments to increase the presence of women in TMT: ethical or financial component (Campbell & Mínguez-Vera, 2007). In this way, companies should consider a larger representation of women not as a means to an end, but as a desirable end in itself (Brammer et al., 2007). The diversity of gender and business performance has been investigated in recent times. Studies are attempting to test the relationship between these two variables. Carter et al. (2010), led some investigators to connect diversity with economic results and they did not find a significant relationship between sex of the Top Management Team with the financial performance of a sample of large US companies.

Older studies as the Robinson and Dechant (1997) study, based on intuitive reasoning, demonstrate that companies that have women and men in TMT mobilize the company different skills, experiences and knowledge, i.e., having a greater diversity promotes a better accepting of the marketplace. This indicates that heterogeneous groups produce higher quality in the decision. Williams and O'Reilly (1998) and Earley and Mosakowski (2000) show that members of homogeneous groups tend to communicate more recurrently as they are more likely to share the opinions, i.e., they argue that gender diversity can reduce firm performance. The component of creativity and innovation is also influenced by gender diversity.

In a more recent study, Tyson (2003) finds that gender diversity provides a better company performance, and this is mainly due to the existence of different points of view. There are studies that support and demonstrate two different foundations when compared to the females in the TMT or top position and firm performance. Campbell & Mínguez-Vera (2007), claim that diversity increases creativity and innovation as these features are not randomly distributed in the population, but tend to vary (e.g. gender). The gender composition of the board can affect the quality of this monitoring role and thus the financial firm performance. They used 68 companies and 408 observations, from companies listed on the Madrid market in the following period 1995-2000. In order to measure firm performance researchers used Tobin Q, which is defined by the sum of the market value of the shares and the book value of debt divided by book value of total assets. Researchers (Campbell & Mínguez-Vera, 2007) show that the presence of one or more women on the board has an irrelevant effect on firm value. Nevertheless, it is understood that the ratio of women to men on the board and the diversity indices have a positive effect on the value of the firm, and the indices of the company does not affect the ratio of women to men on the board and the diversity indices.

Cable, Gimeno and Nieto (2012) analyse a sample of 612 European banks, representing 20 European countries over the sample period (1998–2004) where the main focus is gender diversity of corporate board seats of the European Union. In order to test the hypothesis, it was used Standard Deviation of the Return On Average Assets (ROAA). The study showed that the proportion of women on the board is low risk. The researchers argue that there may be some statistical discrimination behind this relationship, or aversion to real risk. They also show that larger teams have a higher proportion of women on their boards. In addition to that, the banks that have a growth orientation are more likely to include women on its board.

Alvarado Fuentes and Laffarga (2015) analyse the relationship between gender plate diversity and economic results in Spain, with a sample of 125 non-financial companies listed on the Madrid Stock Exchange in the period 2005-2009. Tobin Q use the measure of the financial performance of each firm. Researchers studied the case and suggested that there was a positive relationship between the diversity of gender and economic results (assets) in the companies, this means that having more women in leadership positions increases business performance. Accordingly, the study suggests that companies should

have a vision of economic efficiency, thus incorporating a greater percentage of women in leadership positions.

Many previous investigations, showed that the increase of women in TMT brings economic gains to the firm, i.e., there is a positive relation between diversity and firm performance (Erhardt et al., 2003; Bonn et al., 2004; Carter et al., 2003). However, there are studies that show that the relationship between the number of women in top management of companies and the company performance is negative, i.e., the more women with worse top features influence the performance of the company (Carter et al., 2010) (Adams & Ferreira, 2009). There are also studies that claim that there is no significant link between the firm performance and females in the top management (Rose, 2007).

Thus, researchers have been demonstrating that the number of women in top management is closely related to firm performance, i.e., the higher number of women in this position the better business results (Alvarado, Fuentes & Laffarga, 2015; Campbell & Mínguez-Vera, 2008; Erhardt et al., 2003). There are some characteristics that differ between the genders. One example is the risk aversion. Women are more risk averse compared to man (Post & Byron, 2015) (Croson & Gneezy, 2009). The social preferences of women are more specific, and it is also stated that women are more averse to competition compared to men (Croson & Gneezy, 2009). Researchers have focused on the effects on the reputation of the social and ethical business which benefits all, where it is visible a favourable reputation. That is, the more diverse the environment, the more this will affect the company's profitability in a positive way (Kang, Cheng & Gray, 2007). Therefore, it is expected that the higher the number of women in the companies' boards, the higher the profitability will be.

Based on the previous research and theoretical arguments, the following hypothesis are presented:

Hypothesis 1: The higher the presence of women in the TMT, significantly higher the ROA will be.

In order to understand the variation between the performance (ROA) in Top Management Teams with women and Top Management Teams without women it is proposed a new hypothesis.

Hypothesis 2: The distribution of ROA will be significantly different in companies with women in their TMT and in companies without women in their TMT.

2.3. TMT Size versus firm performance

There are several studies showing that a larger TMT size contributes to solving problems more effectively, when compared to companies with smaller teams. The studies of Cooper and Bruno (1997) and Eisenhardt and Schoonhoven (1990) show that the teams in companies that own high technology have associated the company growth to its size.

There are quite a few studies that address the Top Management Team size (Chaganti et al., 2016). In previous studies the team size is typically used as a control variable (Wiersema & Bantel, 1992; Sessa, Julin, & Peyronnin, 1991; Bantel & Jackson, 1989). Wiersema & Bantel (1992) analysed the relationship between the demographics of the Top Management Team and strategic change, for this study it was used a sample of Fortune 500 companies. As control variables they used firm performance, size of TMT, and industry structure. Sessa, Julin, and Peyronnin (1991) used as a sample 93 TMT to test hypotheses regarding interpersonal context for recruitment, promotion, and the turnover patterns, interpersonal context with a several control variables (e.g. organization size). Bantel and Jackson (1989) used a sample of 199 banks in order to verify the relationship between the social composition of management teams and top innovation adoption. The effects of bank size, location (operating status), and the size of the staff, who were used as control variables demonstrated that the relationship remain significant when the size of the organization, team size, and location were controlled.

Other studies (Haleblian & Finkelstein, 1993; Amason & Spienza; 1997) used the size of the board as an independent variable. Older studies (e.g. Steiner, 1972) showed that the productivity of the group is consisting mainly by productivity with the exception of losses arising from defective processes. Steiner's study also shows that the group size affects the gains and process losses conflicts. Investigators have shown that the size of the teams is related to the group's performance and with characteristic / capacity of member (Hambrick & D'Aveni, 1992; Hoffman, 1979). Haleblian and Finkelstein (1993) state that the size of board has a positively effect in the firm performance. Researches (Haleblian & Finkelstein, 1993) analyse the effects of top management dimension as performance of

companies in different environments. To check the veracity of hypothesis it was used a sample of 47 organizations and ROA was used to measure the company performance. Researchers have shown that companies with higher size on board, have a better performance. They also proved that the association between the size of the team and CEO domain and company performance is significant in an environment that allows top high discretion managers to make strategic choices, but is not significant in a low discretion environment. Amason and Spienza (1997) showed that the expansion TMT size, increased the conflict, which lead to a negative impact on the performance of the company. Investigators (Amason & Spienza, 1997) showed that a study of 48 TMT, the size of board and openness were positively related to cognitive conflict. The size of the team was also associated with higher affective conflicts, when teams had high levels of reciprocity, greater openness led to less affective conflicts.

A more recent study, Yuan-qiong, Wen and Yun (2009) proves that the team size has a negative impact on firm performance. To obtain the results companies in the Shenzhen or Shanghai Stock Exchange were used. The results presented that at high ambient uncertainty, there was an inverse relationship and kind form of U between the size of TMT and company performance and, in the low environmental uncertainty, there is a U form between the variable (Yuan-qiong, Wen & Yun, 2009). Chaganti et al. (2016) used a sample of firms in the software industry, and showed that one of the main influences of the Top Management Team is the size of team.

The study of Song et al. (2008) and, Cooper and Bruno (1977) found out that the company performance is influenced positively by the size of the Top Management Team. These conditions are met and are explained by Hambrick and D'Aveni (1992), who claims that a larger size of TMT means more resources available for the company, which gives more information and provides more problems / solutions, that leads to further reflection and consideration of several hypotheses that help in the decision making. (Haleblian & Finkelstein, 1993)

The teams that have more members can improve problem-solving skills by increasing the volume of information that can be acquired and also rejected, increasing the number of people who will analyse and demonstrate other views and criticism. One can correct errors in the link information and analysis, so the number of potential solution strategies increases, and the increase prospects applied on a problem (Shaw, 1981; Shull et

al., 1970; Harrison, 1975). Increased capacity and resources may help explain the higher quality decisions, and further intensity results.

The advantages of large groups are huge, as mentioned above. However, there are also other points that are not so positive when size is considered. On account of their scale there may be more problems of communication and coordination. On the other hand, teams where there are fewer members tend to be more cohesive and the individuals are more satisfied (Shaw & Harkey, 1976; Shaw, 1981). The quality of the decision in small teams tend to be not as good when compared to larger companies.

Teams with more members have more features and capabilities in solving activities in group. (Jaw & Lin, 2009; Chaganti et al., 2016; Jackson, 1992). The resources of a large TMT may allow the company to make better decisions, in order to position the company in a more long-term success. (Chaganti et al, 2016) Thus, one can conclude that the higher number of TMT members, the greater the processing of information, which aids in the decision-making, when comparing with shorter teams with more intensity performance.

Based on the previous arguments, it is suggested that the size board of TMT is positively related to performance. Thus, the following hypothesis are proposed:

Hypothesis 3: The higher the size of the TMT, the significantly higher the ROA will be.

3. Data and Methodology

3.1. Dataset

Previous investigations (e.g. Campbell & Mínguez-Vera, 2008; Nielsen & Nielsen, 2013; Alvarado, Fuentes & Laffarga, 2015) used listed firms for their samples. Campbell and Mínguez-Vera (2008) used 408 observations from 68 non-financial firms listed on the continuous market in Madrid, for the period of 1995 - 2000. Nielsen and Nielsen (2013) used 146 Swiss listed firms representing 32 industries, for the period of 2001 - 2008. Reguera-Alavarado, Fuentes and Laffarga (2015) used 497 observations from 125 non-financial firms listed in the *Madrid Stock Exchange* General Index for the period of 2005 - 2009. This study adopted a similar sample procedure and a sample of portuguese listed firms in *Euronext Lisbon* was used. *Euronext* is the pan-European financial center. This center plays an essential role in the center of the capital and financial markets in Europe (Euronext, 2016). A total of 205 observations of 41 portuguese listed Euronext Lisbon companies were used, for the five-year period: 2011 – 2015, as can observe in Appendices 1 – Companies of Sample. The sample used in this study was taken from the database SABI – “Sistema de Análise de Balanços Ibéricos”. To obtain data for the five years’ sample, several filters were adopted, obtaining a final total of 41 Portuguese listed sample, for 2011 – 2015, the last available year in the dataset. Figure 1 shows the filters presented above in SABI database. Thus, below are presented the input filters:

- Country: Portugal
- Status of the company: active;
- Listed firms: Euronext Lisbon.

Figure 1 – Example of sample of SABI

The screenshot shows the SABI search interface with the following filters and results:

| Filter | Resultado do passo | Resultado da pesquisa |
|--|--------------------|-----------------------|
| <input checked="" type="checkbox"/> 1. País/Região: Portugal | 566.636 | 566.636 |
| <input checked="" type="checkbox"/> 2. Estado (Portugal): Activa | 313.954 | 313.954 |
| <input checked="" type="checkbox"/> 3. Bolsa de valores principal: Euronext Lisbon | 54 | 51 |

At the bottom, there is a search box with the text "Pesquisa Booleana" and "1 E 2 E 3", an "Actualizar" button, and a "Total : 51" indicator. A "Ver lista de resultados" button is also present.

Note Source: SABI, 19th April 2016

Data on TMT gender, size composition and return on assets (ROA) of each company were collected from SABI. In order to obtain the final sample several procedures were adopted and applied. Firstly, only companies that were present in the 5 years of the analysis in the study were considered, i.e., companies that were four years or less were eliminated from the sample. Secondly, companies that did not have all the data were eliminated, that is, companies with missing data. Thus, after the application of these two procedures the final sample was composed of 41 companies that were listed on the Portuguese Stock Exchange for the 2011 – 2015 period leading to a total of 205 observations. In order to better characterize this sample, some descriptive statistics of the final sample are presented in Table 3.

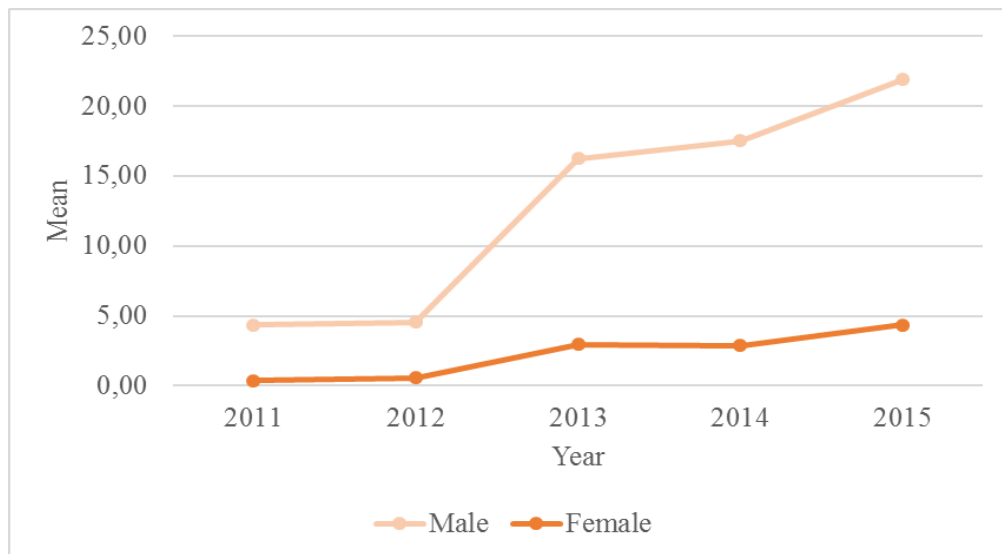
Table 3 - Composition of boards of directors sample

| | Year | | | | | | | | | | Total |
|-----------------------------|------|--------|------|--------|------|--------|------|--------|------|--------|-------|
| | 2011 | % | 2012 | % | 2013 | % | 2014 | % | 2015 | % | |
| Men Directors (n) | 179 | 92.27% | 186 | 88.57% | 666 | 84.52% | 718 | 85.89% | 898 | 83.46% | 2647 |
| Women Directors (n) | 15 | 7.73% | 24 | 11.43% | 122 | 15.48% | 118 | 14.11% | 178 | 16,54% | 457 |
| Total of Team Directors (n) | 194 | - | 210 | - | 788 | - | 836 | - | 1076 | - | 3104 |

Table 3 shows that the percentage of women directors' increases over time analysis, with a slightly exception in 2013 / 2014. Even though the total number of women serving on corporate boards remains small. It is obvious that the female gender remains under represented in the Top Management Teams, similar to previous studies (Joecks et al., 2013; Alvarado, Fuentes & Laffarga, 2015). The results show that there is still a minimal presence of women on boards. However, it is visible a progress over time. In 2011 the presence of women reaches 7.73%, and in 2015 it is perceptible a significant development, the percentage increased to more than a double, reaching 16.54%. Compared with the rules of European countries that aspire to a representation of 40% women in the Top Management Team, it is evident that there is still a long way to go.

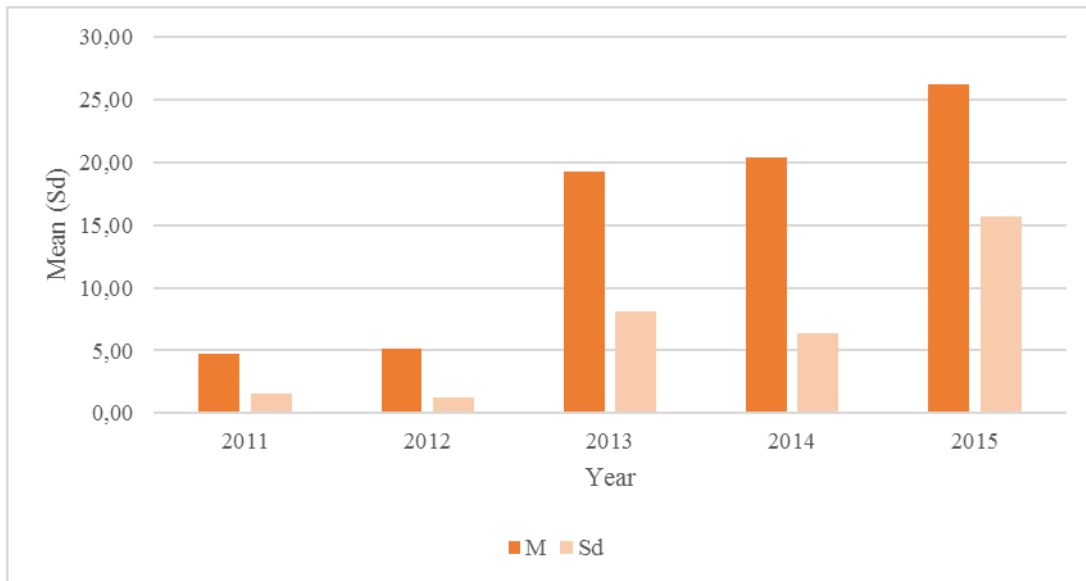
In order to understand the evolution of gender in this sample, over the years 2011 - 2015, Figure 2 shows the evolution of the female and male gender, in terms of mean values.

Figure 2 -Evolution of gender 2011 - 2015



Regarding Figure 2, it is noticeable that the female gender is significantly distance from the male gender in several years in analysis. The mean has been increasing over the years, however there was an increase in 2013. The mean of the difference between the genders has also been increasing over the years. The minimum value of the female gender mean is 0.37 in 2011 and in 2015 was obtained the highest with a mean value of 4.37. As it can be seen the female gender in TMT has been increasing yearly. A progressive evolution is visible and thereby an increase of gender diversity in teams. The male gender has a minimum value of 4.37 and a maximum value of 21.90 in 2011 and 2015 respectively. In order to understand the evolution of size over the years 2011 - 2015, Figure 4 was created with the mean of size of board and the standard deviation. The values are presented in Appendices 2 - Evolution of gender 2011 – 2015. Applied graph is the bar chart that displays information with a number of data points by straight line segments.

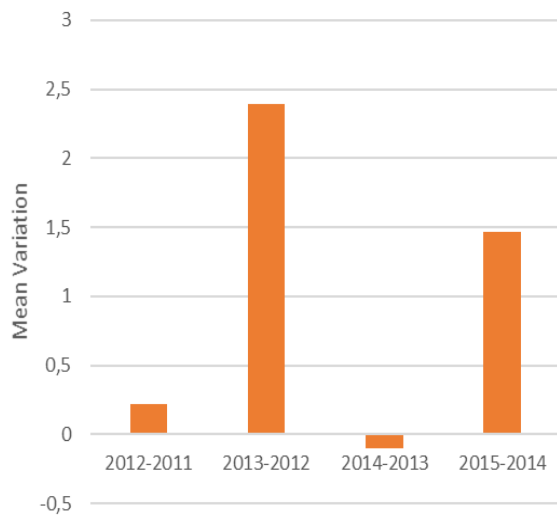
Figure 3 - Board size evolution 2011 – 2015



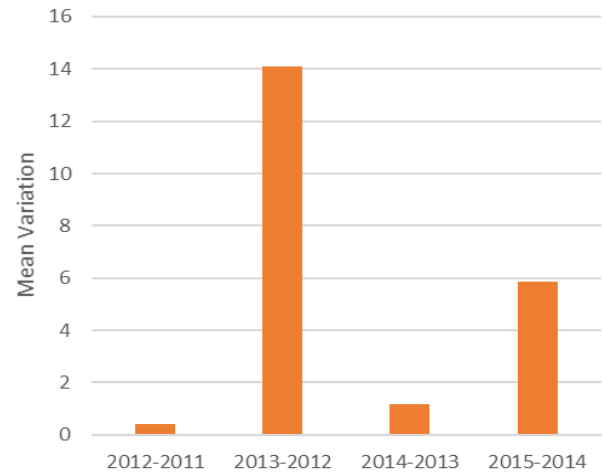
According to Figure 3, it is visible the evolution from 2011 to 2015. The minimum was recorded in 2011 with a value of 4.73 (Sd = 1.58) and the maximum was reached in 2015 with the value of 26.24 (Sd = 15.64). The standard deviation is also higher than in 2015, which means that there is higher variation or "dispersion" in relation to the average. Analysing 2013 to 2014 the increase in the number of TMT was not very high, although in 2014 it appeared that companies were more homogeneous in terms of number of employees in upper frame, as the standard deviation is lower. The values are presented in Appendices 3 - Evolution of board size 2011 – 2015.

In order to understand the variation in women in TMT and the size of the board, a graph was created, which shows changes over the five years in the study. First column shows the variation that was given between 2012 and 2011, the second column shows 2013 - 2012, the third column shows 2014 to 2013 and the last column refers to 2015 - 2014.

**Figure 4 - Variation of gender in TMT
2011 - 2015**



**Figure 5 - Variation of size board in TMT
2011 – 2015**



Despite the difference in intervals between Figure 4 and Figure 5, which is shown in the change in kind and dimension of the Top Management Team, it is visible a peak in the year 2013 – 2014, which is far from the rest of the year when compared later in 2014 – 2013, where there was a decrease. In 2015 - 2014 it is clear that there is a significant increase. As the number of women in TMT increases, the increase the size of the board TMT also exits as it is shown by the figures.

In Table 4 it is represent the mean, standard deviation, maximum and minimum of men, women, size of team and ROA.

Table 4 - Comprehensive information of sample in analysis

| Year | | Men | Women | Size of team | ROA |
|-------|----------------|-------|-------|--------------|--------|
| 2011 | Mean | 4.37 | 0.37 | 4.73 | 0.11 |
| | Std. Deviation | 1.58 | 0.70 | 1.58 | 12.49 |
| | Minimum | 0 | 0 | 1 | -48.29 |
| | Maximum | 7 | 3 | 8 | 36.03 |
| 2012 | Mean | 4.54 | 0.59 | 5.12 | -.64 |
| | Std. Deviation | 1.33 | 0.74 | 1.27 | 10.82 |
| | Minimum | 1 | 0 | 1 | -30.84 |
| | Maximum | 8 | 3 | 9 | 35.32 |
| 2013 | Mean | 16.24 | 2.98 | 19.22 | 5.87 |
| | Std. Deviation | 7.55 | 1.92 | 8.12 | 26.19 |
| | Minimum | 5 | 0 | 6 | -30.61 |
| | Maximum | 36 | 7 | 38 | 159.95 |
| 2014 | Mean | 17.51 | 2.88 | 20.39 | 0.92 |
| | Std. Deviation | 6.10 | 1.86 | 6.32 | 11.99 |
| | Minimum | 8 | 0 | 10 | -56.20 |
| | Maximum | 34 | 6 | 38 | 23.26 |
| 2015 | Mean | 21.90 | 4.34 | 26.24 | 4.47 |
| | Std. Deviation | 13.41 | 3.38 | 15.64 | 11.27 |
| | Minimum | 6 | 0 | 9 | -27.64 |
| | Maximum | 68 | 15 | 78 | 36.73 |
| Total | Mean | 12.91 | 2.23 | 15.14 | 2.14 |
| | Std. Deviation | 10.30 | 2.49 | 12.05 | 15.74 |
| | Minimum | 0 | 0 | 1 | -56.20 |
| | Maximum | 68 | 15 | 78 | 159.95 |

Regarding Table 4, the increase is visible on all variables from 2011 to 2012, with the exception of ROA. In 2013 there was a more significant increase in all variables. Regarding 2014, the variable of the number of men and the size increased. However, women and ROA suffered a slight decrease. In 2015 all variables, i.e., men, women, size of team and ROA increased.

3.2. Variables Description

Following the previous literature, performance is measured through an accounting measure (Haleblian & Finkelstein, 1993; Nielsen & Nielsen, 2013; Hambrick, 2007; Cannella et al., 2008). The dependent variable is the financial performance measured through *ROA*. *ROA* is obtained by the percentage of how profitable the assets of a company are in generating revenue. The dependent variable, *ROA*, is operationalized at the end of each calendar year. The composition of the Top Management Team is checked at the beginning of each year. However, if there are some changes, those changes are realized at the end of the year. That is, there is no time spacing like in the study of Hambrick (2007) and Nielsen and Nielsen (2013).

Women (female gender) are also considered as variable which is designated by the number of women belonging to the TMT as well as the *Size of the Team*, which is related to the number of elements that the Top Management Team has in its composition.

As applied in other studies (e.g. Alvarado, Fuentes & Laffarga, 2015; Nielsen & Nielsen, 2012; Campbell & Minguéz-Vera, 2008), it is calculated a new measure of gender diversity that consider both the number of categories of gender (women and men) and the uniformity of distribution of members of the Top Management Team between them. In this sense, and based on the concept of diversity *Blau* variable is created. In order to compare the number of women in TMT with the total number of directors on the board, *Blau* index is applied (Blau, 1977). This index is measured by the following formula $B = [1 - \sum(P_i)^2]$. In this formula p_i represents the percentage of board members in each category (i.e.: gender). To analyse gender diversity *Blau* values varies between 0 and 0.5. The 0.5 is considered in cases where the board has an equal number of women and men.

3.3. Methodology

The study analyses the relationship between gender diversity and size of the Top Management Team with financial performance. The first goal is to understand whether the parametric tests can be used based on the normality analysis. The parametric tests are used when a normal distribution exists (Maroco, 2007). Normality is analysed through the Kolmogorov-Smirnov test to see if the variables follow a normal distribution.

In order to understand the correlation of variables two types of correlation could be used: Pearson or Spearman. The Pearson correlation measures the strength of the linear relationship between normally distributed variables. Due to the absence of normality, it must be applied the Spearman correlation.

Subsequently, a linear regression is created in order to study the behaviour of two assembly quantitative variables. The regression equation is to estimate the conditional (expected value) y of a variable, given the values of some other variable x . In order to create the linear regression, it was also created a new variable called *NewROA*, where all values of ROA have been added a constant of 60. The added constant (+60) is to ensure that all ROA are positive and for technical purpose. When established the linear regression model compound, it was considered as dependent variable *NewROA* (ROA +60) and, as an independent variable *Women* (number of women in TMT).

To study the presence of women, two groups were created: companies that have women (with women) and companies that do not have women in top positions (without women). In order to test if the distribution of ROA is similar in companies with women in TMT and without women TMT, i.e., understand the behaviour of the firm performance of companies with women and without women, it is applied a non-parametric Mann-Whitney test that compares the means of two independent samples (gender: female or male) (Maroco, 2010). T-Test is a parametric test and the alternative to the T-Test, a non-parametric test, Mann-Whitney is used due to the lack of normality in our data. This test compares the centre location of two samples, the differences between the corresponding two populations, which is based on the order of observations and the local differences comments. (Pestana & Gageiro. 2005; Maroco, 2010).

All the analyses were performed using the latest SPSS version.

4. Results

4.1. The Kolmogorov-Smirnov test

In order to test both hypotheses that relate the female gender with the performance and the size of the board and the firm performance, only companies that are present in the five years' period were considered, from 2011 to 2015. Thus, the final sample includes 41 companies and 205 observations. The sample and data were prepared in order to eliminate all the missing values and to have the same companies through the 5 years' period. Thus, all companies will have equal weight in the final sample for all subjects / observations. The Kolmogorov-Smirnov test is used to verify if the variables follow a normal distribution. (Maroco, 2008)

Table 5 - Kolmogorov-Smirnov

| Variables | Skewness | Kurtosis | Kolmogorov-Smirnov | |
|---------------------|----------|----------|--------------------|---|
| | | | Statistic | p |
| ROA | 4.60 | 50.37 | 0.194 | 0 |
| Women | 1.67 | 4.23 | 0.207 | 0 |
| Size | 1.87 | 5.89 | 0.146 | 0 |
| Blau | 0 | -1.36 | 0.201 | 0 |
| ROA (With Women) | -0.70 | 3.91 | 0.194 | 0 |
| ROA (Without Women) | 5.49 | 54.16 | 0.219 | 0 |

After applying the Komolgorov-Smirnov test it is clear that the distribution is not normal because the p-value of the several variables is bellow to 0.05 ($p < 0.05$), which leads to apply the Spearman correlation due to the lack of normality. The skewness and kurtosis coefficients also show that the quality of distribution is not normal because they are not close to 0. According to Maroco (2008) when the absolute values of these two coefficients are greater than 1, it can be assumed that the data distribution in question is not the normal type.

4.2. Spearman correlation and linear regression - gender

In order to understand the correlation between ROA and the number of women on TMT, and also between ROA and the size of the TMT board, and ROA with Blau the Spearman correlation analysis was performed.

Table 6 - Correlations of Spearman - gender

| | | Women | Blau |
|-----|-----|---------|-------|
| ROA | rho | 0.191** | 0.099 |
| | p | 0.006 | 0.157 |

*Note: ** - The correlation is significant at the 0.01 level (2-tailed)*

Table 6 shows that the correlation between ROA and the presence of women on the TMT in Portuguese companies. The relation between ROA and Women is positive ($\rho_{\text{Women}} = 0.191$) and significant at the 0.01 level. Therefore, the higher the number of women in TMT, the more tendency there is for ROA to be. As purposed in the *H1*, the higher the number of women in TMT, the more tendency exists for the ROA to be higher. Based on this, Hypothesis 1 has been corroborated.

Comparatively, the relation between ROA and Blau index is positive ($\rho_{\text{Blau}} = 0.099$), but it is not significant. In the sampling point of view and, regarding the relationship of Blau index with ROA, these two variables have a positive relationship, which means that the higher the performance increases, the higher the Blau index.

A linear regression model was also performed, after eliminating the extreme cases based on the minimum and maximum descriptives. It was created a new variable called *NewROA*, where to all values of ROA have been added a constant 60. The added constant (+60) is to ensure that all ROA are positive and to be able to perform the technical procedure in the SPSS. The linear regression is an equation to estimate the conditional (expected value) y of a variable, given the values of some other variable x . Table 7 presents the coefficients of the linear regression. To perform the linear regression, it was considered the dependent variable, ROA (*NewROA*).

Table 7 – Coefficients of Linear Regression

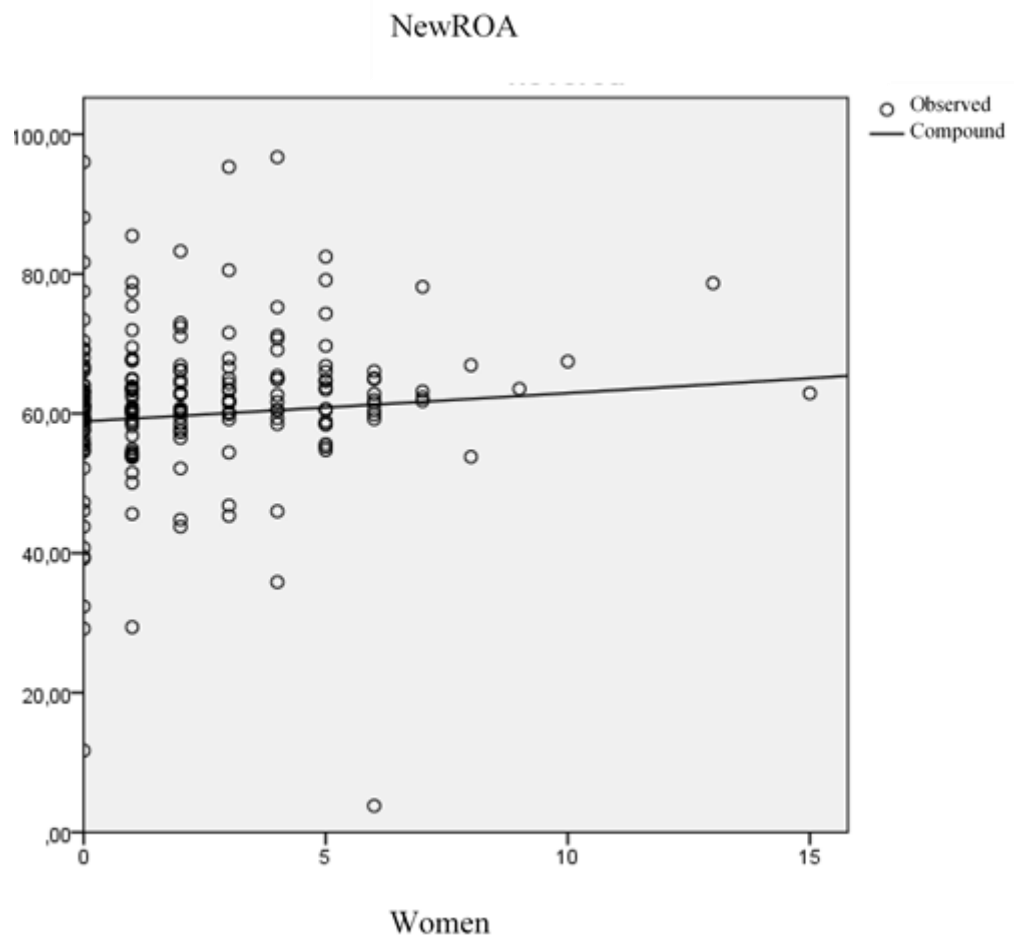
| | No standardized coefficients | | Standard Coefficients | t | p |
|------------|------------------------------|----------------|-----------------------|---------|-------|
| | B | Standard Error | Beta | | |
| Women | 1.007 | 0.008 | 1.061 | 125.834 | 0.000 |
| (Constant) | 58.876 | 1.564 | | 37.656 | 0.000 |

In the linear regression it was used the compound model, with ROA without extreme cases where the minimum was -56.20 and the maximum value was +159.95. Results show that the model is significant (sig. = 0.000). Results show that gender diversity (female gender) is significantly positively associated with performance (ROA). Table 8 presents the model summary and parameter estimates. The dependent variable is the *NewROA* and the independent variable is *Women*. Figure 6 is also included for a better visualization of the performed regression.

Table 8 – Model Summary and Parameter Estimates

| Equation | Model Summary | | | | | Parameter Estimates | |
|----------|---------------|-------|-----|-----|-------|---------------------|-------|
| | R Square | Z | df1 | df2 | Sig. | Constant | b1 |
| Compound | 0.003 | 0.700 | 1 | 202 | 0.404 | 58.876 | 1.007 |

Figure 6 – Linear Regression



In the Figure 6 it is visible the linear regression. Based on Table 8, the final model assumes the following equation:

$$\ln(y) = \ln(b_0) + [(\ln(b_1) \times t)]$$

That it is, for this case:

$$\ln(\mathit{NewROA}) = \ln(58.876) + [\ln(1.007) \times \mathit{Women}]$$

4.3. Mann-Whitney test - gender

The non-parametric Mann-Whitney test compares the centre location of two samples, as a way of detecting the differences between two corresponding populations, based on the order of observations and differences in local observations. Once these variables do not follow a normal distribution, the Mann-Whitney test was used instead of the T-test (Maroco, 2010). The main objective is to determine whether the companies that have women on their TMT, have higher performance than those who do not have women in their TMT. In order to test the Hypothesis 2, which purpose that the distribution of ROA is different in companies with women in TMT and without women in TMT, Table 9 is presented.

Table 9 - Women in TMT Versus No Women in TMT

| | With women in TMT | Without women in TMT | Test | |
|-----|-------------------|----------------------|------|--------|
| | Mean Rank | Mean Rank | U | p |
| ROA | 108.85 | 89.50 | 3596 | 0.032* |

* - Significant at the 0.05 level (2-tailed)

Results show that, according to Table 9, there are significant differences in ROA between companies that have women and companies that do not have women on their TMT. Results show that the mean rank of ROA with women in TMT has a higher value (MR = 108.85), compared to ROA without women in TMT (MR = 89.50) that has a lower value. One can infer that the ROA is higher in companies that have women in their TMT. Test U has a value of 3596 and it is significant at the 0.05 level ($p = 0.032 < 0.05$). Thus, hypothesis 2 is corroborated.

4.4. Spearman correlation – size of the team

Table 10 - Correlations of Spearman – size of the team

| | | Size of Team |
|-----|-----|--------------|
| ROA | rho | 0.195** |
| | p | 0.005 |

*Note: ** - The correlation is significant at the 0.01 level (2-tailed)*

According to the correlation between the size of the board and ROA, results show a positive ($\rho_{\text{Size of Team}} = 0.195$) and significant correlation at the 0.01 level. Thus, the larger the size of TMT, the greater is the tendency to ROA to be higher. Hypothesis 3, suggests that the higher the size of Top Management Team, the higher tendency to ROA to reach higher value. Hypothesis 3 has been corroborated.

5. Discussion

This study brings some new inputs concerning gender diversity in TMT and its relationship with the firm performance, as well as TMT board size with economic performance. In this study, 41 listed companies (205 observations) obtained from the *Euronext Lisbon* for the 2011 – 2015 years' period were used.

Concerning Hypothesis 1, which propose that the higher the number of women in TMT, the more tendency there is for the ROA to be higher, the Spearman correlation and regression was used in order to analyse the veracity of the hypothesis. The relation between the number of women and ROA is positive and significant ($p < 0.01$). As one variable increases, the other variable will also increase. This means that the increase of the number of women in higher positions, the tendency for ROA to be higher increases as well. Based on this, Hypothesis 1 has been corroborated. As far as the Blau index is concerned, it is positive however the correlation is not significant. In the sampling point of view, there are no statistically significant relationship between the Blau index and performance, which means that when the value of Blau index of the company increases, the firm performance also increases. As previous studies (Campbell & Minguez-Vera, 2008 Erhardt et al., 2003; Tyson, 2003) state the relationship is positive between the number of women in TMT with positive economic overall result. The results show that having more women in top positions increases the performance of the company. After analysing relation between the variables, linear regression that comes with the variable *Women* (independent) and *NewROA* (dependent) is applied, resulting in the following equation; $\ln(\text{NewROA}) = \ln(58,876) + [\ln(1.007) \times \text{Women}]$. Results show that gender diversity (female gender) is significant and positively associated with performance (ROA).

Through the Mann-Whitney test it is analysed the cross-cutting effects, making a comparison between companies with women and companies that have no women in a given year in relation to its average measures of profitability. The Mann-Whitney test shows that there are significant ($p < 0.05$) differences in ROA between companies that have women and companies that do not have women. The mean rank of ROA with women have a higher value comparing with ROA without women. ROA is higher in companies that have women in their TMT. Thus, hypothesis 2 is corroborated.

Regarding Hypothesis 3, it suggests that the higher the size of the Top Management Team, the higher is the ROA tendency to have higher values. Results showed that there is a positive and statistically significant correlation ($p < 0.01$) between size and performance. As one variable increases, the other variable will also increase. Which means that the larger the size of team, the greater is the tendency for the ROA to be higher. That is, the company performance is greater when greater is the size of the team. As previous investigations Ucbasaran et al., (2003) and Wright et al., (2007) demonstrated that the higher are the levels of human capital certain developments can provide greater ability to solve problems extemporaneously and to adapt naturally to changes in the external environment. Chaganti et al. (2016) state that the resources of a large TMT may allow the company to make better decisions, in order to position the company in a more long-term success and reach better performance. The larger the size of TMT, the greater is the tendency to ROA to be higher. Based on this, Hypothesis 3 has been corroborated.

6. Main Conclusions

This dissertation contributes to the literature showing that there is a positive and significant correlation between ROA and the presence of women on the TMT of Portuguese companies listed in *Euronext Lisbon*. Thus, the higher is the number of women in TMT, the greater is the tendency to ROA to be higher, which allows to infer that, the higher the number of women in higher positions, the greater economic performance will be. Results show that gender diversity (female gender) is significantly positively associated with performance (ROA). Results also show that ROA is higher in companies that have women on their Top Management Teams. It is also concluded that increasing the size of the TMT will have direct relationship with better economic results.

In conclusion, it is suggested that the most efficient companies on the economic perspective should incorporate more women, i.e., increase the number of women on the TMT. As well as the increase the board size of TMT to become a more efficient economic enterprise. Regarding the incorporation of more women in teams, it will provide greater ethical commitments, social visibility and attraction of human talent companies (Alvarado Fuentes & Laffarga, 2015). And that somehow this presence influences positively the economy of the company.

This research contributes to the literature of the diversity of characteristics of TMT with financial performance. The article contributes mainly to the diversity of gender and economic performance as well as the size of TMT board and corporate performance on the Portuguese case.

Some limitations may be pointed out. The first limitation has to do with the sample size. Another limitation is that the study applies only to the Portuguese case, but it is also a strength since there were no other studies on this topic using a Portuguese sample.

In further research it would be interesting to include other variables of TMT diversity. It would be interesting to study other characteristics related to the characterization of the top management team (e.g. TMT nationality, TMT tenure, TMT age, TMT education) and relate it to the economic performance of the company (e.g. ROA).

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Appendices

Appendices 1 – Companies of Sample

| Number | Name of Company (Sample) |
|--------|---|
| 1 | EDP - ENERGIAS DE PORTUGAL, S.A. |
| 2 | GALP ENERGIA, SGPS, S.A. |
| 3 | JERÓNIMO MARTINS - SGPS, S.A. |
| 4 | SONAE - S.G.P.S., S.A. |
| 5 | MOTA - ENGIL, SGPS, S.A. |
| 6 | SEMAPA - SOCIEDADE DE INVESTIMENTO E GESTÃO, SGPS, S.A. |
| 7 | SONAE INDÚSTRIA, SGPS, S.A. |
| 8 | THE NAVIGATOR COMPANY, S.A. |
| 9 | INAPA - INVESTIMENTOS, PARTICIPAÇÕES E GESTÃO, S.A. |
| 10 | SAG GEST - SOLUÇÕES AUTOMÓVEL GLOBAIS, SGPS, S.A. |
| 11 | SONAECOM - S.G.P.S., S.A. |
| 12 | NOS, SGPS, S.A. |
| 13 | REN - REDES ENERGÉTICAS NACIONAIS, SGPS, S.A. |
| 14 | MARTIFER - S.G.P.S., S.A. |
| 15 | ALTRI, SGPS, S.A. |
| 16 | TOYOTA CAETANO PORTUGAL, S.A. |
| 17 | CORTICEIRA AMORIM, SGPS, S.A. |
| 18 | SUMOL + COMPAL, S.A. |
| 19 | IMPRESA - SOCIEDADE GESTORA DE PARTICIPAÇÕES SOCIAIS, S.A. |
| 20 | ESTORIL-SOL, SGPS, S.A. |
| 21 | GRUPO MÉDIA CAPITAL - SGPS, S.A. |
| 22 | NOVABASE - SOCIEDADE GESTORA DE PARTICIPAÇÕES SOCIAIS, S.A. |
| 23 | IBERSOL - SGPS, S.A. |
| 24 | COFINA - SGPS, S.A. |
| 25 | GLINTT - GLOBAL INTELLIGENT TECHNOLOGIES, S.A. |
| 26 | CONDURIL - ENGENHARIA, S.A. |
| 27 | REDITUS - SOCIEDADE GESTORA DE PARTICIPAÇÕES SOCIAIS, S.A. |
| 28 | F.RAMADA - INVESTIMENTOS, SGPS, S.A. |
| 29 | VAA - VISTA ALEGRE ATLANTIS, SGPS, S.A. |
| 30 | SPORT LISBOA E BENFICA - FUTEBOL, SAD |
| 31 | OLIVEIRA & IRMÃO, S.A. |

| | |
|----|---|
| 32 | FUTEBOL CLUBE DO PORTO, FUTEBOL, SAD |
| 33 | SPORTING CLUBE DE PORTUGAL - FUTEBOL, SAD |
| 34 | LISGRÁFICA - IMPRESSÃO E ARTES GRÁFICAS, S.A. |
| 35 | COPAM - COMPANHIA PORTUGUESA DE AMIDOS, S.A. |
| 36 | COMPTA - EQUIPAMENTOS E SERVIÇOS DE INFORMÁTICA, S.A. |
| 37 | CIPAN - COMPANHIA INDUSTRIAL PRODUTORA DE ANTIBIÓTICOS, S.A. |
| 38 | LITHO FORMAS, S.A. |
| 39 | SPORTING CLUBE DE BRAGA - FUTEBOL, SAD |
| 40 | SONAGI, SGPS, S.A. |
| 41 | IMOBILIÁRIA CONSTRUTORA GRÃO-PARÁ, S.A. |

Appendices 2 - Evolution of gender 2011 – 2015

| Year | Mean of women | Mean of Male |
|-------------|----------------------|---------------------|
| 2011 | .37 | 4.37 |
| 2012 | .59 | 4.54 |
| 2013 | 2.98 | 16.24 |
| 2014 | 2.88 | 17.51 |
| 2015 | 4.34 | 21.90 |

Appendices 3 - Board Size Evolution 2011 – 2015

| Year | Mean of board size | Standard deviation |
|-------------|---------------------------|---------------------------|
| 2011 | 4.73 | 1.582 |
| 2012 | 5.12 | 1.269 |
| 2013 | 19.22 | 8.119 |
| 2014 | 20.39 | 6.324 |
| 2015 | 26.24 | 15.644 |

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