The Influence of CEO Personality Traits on Firm Performance and Growth

Joaquim Luís Simões Malafaia

Dissertation written under the supervision of professor Cristina Mendonça

Dissertation submitted in partial fulfilment of requirements for the International MSc in Management with Specialization in Entrepreneurship and Innovation, at the Universidade Católica Portuguesa, September 2022.

i. ABSTRACT

Small and Medium-sized Enterprises constitute the backbone of the Portuguese economy, being of invaluable importance. These companies are the focus of my study, which aims to assess the impact of CEO personality on firm performance and growth. To achieve this, a survey-based approach was followed to measure the influence of the big five personality traits (conscientiousness, neuroticism, openness to experience, extraversion and agreeableness) of a sample of recruited CEOs, on several performance metrics.

Results showed that neuroticism is the only CEO personality trait significantly correlated with firm performance (on an inverse basis), while both neuroticism and conscientiousness show significant influence on company growth. Neither of the other traits are related to performance nor growth. It is worth mentioning that his dissertation was significantly influenced by Covid-19, which affected the performances of most companies in question, and by the process of collecting CEO responses, which was of extreme difficulty and led to a low response count.

This study contributes to further create knowledge in an underdeveloped area, one that has extreme importance as it has been proven that CEO personality affects company performance, meaning that it has to be considered when companies choose their leaders. As CEO effects have been studied in detail in the academic literature, most papers have focused on their influence in firm strategy, employee motivation, leadership, culture setting, among others. However, personality, by affecting the way CEOs think, feel and act, should be more and more assessed to account for the effects it has on performance.

Title: The Influence of CEO Personality Traits on Firm Performance and Growth

Author: Joaquim Luís Simões Malafaia

Keywords: SME; CEO; Big Five Personality Traits; Firm Performance; Firm Growth

ii. RESUMO

As Pequenas e Médias Empresas constituem o principal suporte da economia portuguesa, sendo dotadas de uma importância incomensurável. Estas empresas são o foco do meu estudo, cujo propósito é analisar o impacto da personalidade dos CEOs no desempenho e evolução da performance empresarial. Com este objetivo em mente, realizei uma abordagem baseada num questionário, por mim desenvolvido, que serviu para medir o impacto dos Cinco Grandes Fatores da Personalidade (amabilidade, conscienciosidade, neuroticismo, abertura à experiência e extroversão) de uma amostra de CEOs, em várias métricas de desempenho.

Os resultados mostram que o neuroticismo é o único fator de personalidade dos CEOs que correlaciona com o desempenho empresarial, embora inversamente, enquanto ambos neuroticismo e conscienciosidade impactam significativamente a melhoria da performance ao longo do tempo. Nenhum outro fator foi considerado significativo. De salientar que esta dissertação foi bastante influenciada pelo Covid-19, que afetou as empresas em análise e trouxe bastante incerteza, assim como por um reduzido número de respostas de CEOs, que, de salientar, são de bastante difícil contacto.

Este estudo contribui para a contínua criação de conhecimento numa área subdesenvolvida que, por influenciar contratações de líderes empresariais e estar relacionada com o desempenho empresarial, é bastante importante. Apesar do estudo de CEOs ser um tópico bastante desenvolvido na academia, a maior parte dos estudos foca-se em áreas que não a personalidade - estratégia, motivação, liderança, cultura, entre outros. Ao influenciar a maneira de pensar, sentir e agir e ao influenciar a performance, a personalidade devia ser mais utilizada nestes estudos.

Título: A Influência dos Fatores de Personalidade de CEOs no Desempenho e Evolução Empresarial.

Autor: Joaquim Luís Simões Malafaia

Palavras-chave: Pequenas e Médias Empresas; CEO; Cinco Grandes Fatores da Personalidade; Desempenho Empresarial; Evolução da Performance Empresarial

iii. ACKNOWLEDGEMENTS

This dissertation marks the end of a chapter in my life, one that I will forever fondly remember. Firstly, I have to thank my family for always being there for me and for all the effort that was put onto my education and all other facets of my life.

A special thank you to my father Joaquim and to my mother Anabela for everything you have done for me and my brothers. I will never forget all the effort, all the motivation, all the preoccupation, all the celebration when things went accordingly and all the compassion and cheering up when they did not. I am a part of you and will do my best to let the both of you proud eternally.

Secondly, I have to thank my brothers José and Ricardo for always caring about me and showing it at all times. Your successes are mine and mine are yours forever.

To my grandmother Maria Luísa, to my grandmother Lusitana and to my late grandfather António, I am forever grateful for your influence in my life. The three of you left such a mark on me which I will never forget and will carry with me at all times. I would not be here without the three of you and you know it.

A special thank you to my girlfriend Inês for putting up with me for the past couple of months. You certainly were my rock during this phase of my life and I could not have done this without you. You know the importance you had in me finishing this dissertation and I hope I had the same effect on yours.

Another person I owe a sincere thank you is to my supervisor Cristina Mendonça. I know it was probably not easy to deal with me for these past few months, but you were essential for my dissertation. The tips and tricks, the calmness provided and all the knowledge you gave me were fundamental and I am extremely grateful for that.

I have to thank Católica Lisbon for all the conditions it provided me for the past five years (bachelor and masters) of continuous and constant growth, not only on a theoretic and practical way, but also on a personal basis.

Lastly, I have to thank my employer, EY, for believing in me and giving me a chance to start this professional journey. A special thank you to every single colleague who has worked with me.

This was a very fulfilling journey, one of a high degree of difficulty but at the same time very rewarding. As I finish my masters' degree, I am sure it helped me grow exponentially as a person, on a knowledge basis, but also as a thinker and, more importantly, as a professional.

All the ups and downs, all the experiences, all the people who helped me in either way, I am forever grateful for you and those memories will never be forgotten. This would not have been possible were it not for all of you.

TABLE OF CONTENTS

iv. LIST OF ABBREVIATIONS

BFI – Big Five Inventory

CEO – Chief Executive Officer

EU – European Union

EUR – Euros

K – Thousand

M – Million

SME – Small and Medium-sized Enterprises

1. INTRODUCTION

Small and Medium-sized Enterprises (SMEs) constitute more than 99% of firms in the EU and in Portugal (European Commission, 2020; Pordata, 2020). Additionally, they "provide two thirds of total private-sector employment, represent 80% of the total job creation and produce more than half of the EU added value" (p. 32) according to Lopriore (2009). These facts highlight the influence that these companies exert in the European context, leading many authors to consider SMEs as the backbone of the economy (Lopriore, 2009; Robu, 2013). Smaller firms, thus, serve fundamental purposes and have tremendous influence in the normal functioning of the multiple environments they act on and are fundamental to the pursuit of new knowledge and technology (Anggadwita & Mustafid, 2014; Prasanna et al., 2019), meanining that they should, therefore, be incentivized and celebrated due to their importance. According to Prasanna and collaborators (2019), smaller firms contribute to higher competition in their respective markets consequently leading to increases in product quality, in productivity, better use of resources, more choice available to consumers, among others.

According to Gourinchas and collaborators (2020), the percentage of SME business failures is around 9.6% on a yearly basis, and, although this is alarming in itself, due to COVID-19 this number increased twofold to 18.7% in 2020. This shows the impact that the pandemic had, not only on the whole economy, but particularly on smaller companies. It also elucidates us to the negative effects of exogenous economic shocks that lead to recession periods, that can put smaller firms in threat of closing operations. Although SMEs tend to be more adaptive and agile in dealing with shocks, they are also much more vulnerable and exposed (Miklian & Hoelscher, 2022; Smallbone et al., 2012). Furthermore, in the European Union (EU) approximately 50% of all companies do not survive the first five years of their lifecycle, while 15% incur in bankruptcy (European Commission, 2011), which poses an entry barrier to the development of SMEs.

Due to the importance associated with SMEs in the national and international context, multiple papers have been developed with the focus of enhancing performance among these companies. Some studies highlight the importance of leadership, mostly in regard to the Chief Executive Officer (CEO) position but also extended to executives and managers, relating it to firm performance (Franco & Matos, 2015; Kaiser et al., 2008; Özer & Tınaztepe, 2014) and to the significance these people have in culture setting and shaping of business values (Ciulla , 2020).

Other studies focus on firm level factors, including strategy, culture, products commercialized (Anggadwita & Mustafid, 2014; Anning-Dorson, 2021; Kyriakidou et al., 2017; Moore & Manring, 2009; Singh et al., 2008; Tidor et al., 2012) and on the business and industry environment as a whole (Kraja et al., 2014; Kyriakidou et al., 2017; Maranto-Vargas & Gómez-Tagle Rangel, 2007; Prasanna et al., 2019) to try to develop theories based on past results that have consistently been linked with higher levels of success and performance.

One common ground among most studies is the influence of the CEO on SMEs. According to Daily and Johnson, (1997), the CEO "is generally regarded as the most powerful organization member" (p. 97), occupying the top position in the management of firms. The CEO has, therefore, a lot of power and responsibilities in regard to firm performance by controlling the structures, strategies and policies of their companies, as well as actively pursuing opportunities and combating threats (Altarawneh et al., 2020; Daily & Johnson, 1997; Zacharias et al., 2015). The person in this hierarchical position has tremendous influence in their respective firms (Hambrick & Quigley, 2014; Mackey, 2008), being this particularly truthful amongst SMEs due to the low employee count (Miller et al., 1982). Furthermore, in many companies the CEO is the only decision maker and culture setter (Miller & Toulouse, 1986), which means he or she has more freedom to operate (Halikias & Panayotopoulou, 2003). Due to these reasons, smaller firms tend to be more centralized, which also increases the responsibilities and influence of the leader (Halikias & Panayotopoulou, 2003; Kets De Vries & Miller, 1986; Miller et al., 1982).

According to the academic literature, there are a lot of characteristics that CEOs possess that may influence company performance, such as leadership style (Ling et al., 2007), managerial behavior (Andersson & Tell, 2009), entrepreneurial orientation (Kraus et al., 2018), managerial intentions and the ability to motivate his or hers employees (Andersson & Tell, 2009; Wiklund & Shepherd, 2003), among others. The characteristic I will focus on, in this thesis, is personality traits (Halikias & Panayotopoulou, 2003; Han et al., 2017; Miller & Toulouse, 1986).

There are a few studies that have already directly or indirectly covered the relationship between CEO personality traits and firm performance, specifically in SMEs, by using, in most cases, personality characteristics as a mediator between firm performance and other variables. These other variables include learning and growth (Han et al., 2017), entrepreneurial orientation (Kraus et al., 2018; Verdú-Jover et al., 2020) and top management team behavioral integration (Peterson et al.,

2003). To my knowledge, there are only two papers that have directly related CEO personality to firm performance. The first one was published by Miller & Toulouse (1986), when the Big Five personality traits theory had still not been developed, which meant that a different assessment of personality traits was used when comparing to this paper. The other study was carried out by Domingos (2015) and it studies the influence of founder entrepreneurs on their family-owned business performance, being this a differentiating factor from my thesis.

My analysis will cover the influence of CEO personality in respect to company performance. In order for my analysis to have the utmost rigor, I am going to be analyzing company performance through two different lenses: "a picture of the company as of now" which will be measured by the sales and profits in 2021, with the additional information regarding total turnover, balance sheet and number of employees in 2022 (which are part of the requisites to being considered a SME). The second one is through a "movie covering the past 3 years" of the company, in which I will use profits and sales in each of the past three years, and their yearly evolution, to be able to grasp the growth of the company in this period, while measuring the impact that personality traits exert on it.

2. LITERATURE REVIEW

2.1 SME

2.1.1 Definition and Measurement

Companies can be classified according to their size, meaning that firms with similar dimension can be grouped into various different categories. My study focuses on SMEs, which represent 99% of all businesses in the EU, per the European Commission (2020), with a similar, but higher, influence in the Portuguese context, where they account for 99.9% of all companies in the nation (Pordata, 2020).

In order for a firm to be considered a SME, there are a few requisites that need to be met. In Europe (European Commission, 2020) and in Portugal (INE, 2020) all companies that have less than 250 employees, whose turnover is lower than 50M EUR and/or whose balance sheet total is lower than 43M EUR are included in this category. This definition can be quite broad, and in order to better differentiate and compare SMEs, there are three sub-categories that serve this purpose: medium-sized, small and micro enterprises (European Commission, 2020). In this thesis, this differentiation will not be made as it would entail the collection of a large amount of responses in order to account for these different types of SMEs.

2.1.2 Importance and consequences of SMEs

As previously mentioned, SMEs are of fundamental importance to the European and to the Portuguese economies, being that they make up for more than 99% of all firms (European Commission, 2020; INE, 2020). As previously mentioned, these companies also "provide two thirds of total private-sector employment, represent 80% of the total job creation and produce more than half of the EU added value" (p.32) according to Lopriore (2009). These facts highlight the influence of these firms in regard to the European economy, leading many authors to consider them the backbone of the economy (Eggers, 2020; Lopriore, 2009; Robu, 2013).

In addition, according to Prasanna and collaborators (2019), SMEs contribute to increase competition in their respective markets. The same authors mention that this entails positive consequences that include, among others, improvements in product quality, constitutions of

economies of scale that lead to a higher market value of the industry, a more efficient use of resources, increases in productivity through cost reduction, technology improvements as well as enhancements in the service and response to costumers.

This importance of SMEs in the economy is what leads many authors to focus their studies on these companies, trying to find factors that may or may not have direct impact on performance. According to Sarwoko & Frisdiantara (2016), all factors can be divided into three subgroups: environmental, organizational and individual factors. Environmental factors include, among others, the amount of existing competition in the industry/sector they will operate in (Maranto-Vargas & Gómez-Tagle Rangel, 2007; Prasanna et al., 2019) and government restrictions and directions (Smallbone & Welter, 2001; Kraja et al., 2014). Organizational factors include the strategy that companies have developed and are currently following (Kyriakidou et al., 2017; Moore & Manring, 2009; Singh et al., 2008) and the culture that is set within the firms (Anning-Dorson, 2021; Tidor et al., 2012), among others. Individual factors include the entrepreneur's (or CEO's) characteristics, such as personality, education and amount of management experience (Pasanen, n.d.; Westhead et al. 1995) and the products and services that each SME commercializes, including the technology they provide (Anggadwita & Mustafid, 2014; Prasanna et al., 2019). Out of all of these SME factors, in this thesis I will focus on CEO's.

2.2 CEO

The Chief Executive Officer (CEO) is, in most cases, the person in the highest hierarchy tier of a company (Daily & Johnson, 1997; Hambrick & Quigley, 2014; Mackey, 2008). This means that their influence in firms is almost invaluable in several different aspects, which include firm strategy (Hambrick & Quigley, 2014), decision making (Busenbark et al., 2016), leadership (Waldman et al., 2001), employee motivation (Hambrick & Quigley, 2014) and culture setting within the company (Hambrick & Quigley, 2014; Miller & Toulouse, 1986), among others. In addition, according to Lieberson and O'connor (1972), CEO effects can explain between 6.5% and 14.5% of firm performance variance and as much as 29.2% of the variance in corporate profitability (Mackey, 2008).

As previously mentioned in the introduction, there are several CEO characteristics that differ from person to person due to their personality, knowledge, experience and individual characteristics

(age, gender, among others), which can significantly impact the influence the CEO exercises on their respective firms. These characteristics lead to different leadership styles and may lead to different results in strategy formulation/implementation and culture setting, among others (Altarawneh et al., 2020; Han et al., 2017; Kaplan et al., 2012; Mackey, 2008; Zacharias et al., 2015).

With this being said, the topic I've decided to focus on is personality. This is still an underdeveloped area in the literature, in regard to the CEO position, as there are only a few papers that cover it (Domingos, 2015; Han et al., 2017; Miller & Toulouse, 1986; Verdú-Jover et al., 2020) and there are many areas still to be explored.

2.3 Personality and Personality Traits

According to Abdullah and collaborators (2016), personality "can be defined as the collection of intrinsic and extrinsic traits that may affect the behavior of an individual" (p. 178). What this means is that there are several components that lead to a person's way of thinking, feeling and acting, that account for each one's personality, being that each of them can be grouped into different traits (or can have impact in assessing different traits. Personality traits, thus, can be described as "internal dispositions that manifest in processes: to think, feel, or act in certain ways in specific situations and with intended outcomes" (p. 250) – Wrzus and Mehl (2015).

Assessing which personality traits are important to identify one's personality in the most trustworthy way possible is a topic that, as of now, has not reached a consensus in the literature (John et al., 2008a; John & Srivastava, 1999; McCrae & Costa, 1986). Nevertheless, according to many authors (John et al., 2008a; John & Srivastava, 1999; McCrae & Costa, 1986) the most appropriate model to use is the Big Five Personality Traits, as it offers an "universal and comprehensive framework for the description of individual differences in personality" (p. 1001) - McCrae and Costa (1986). This model consists of five broad dimensions of personality that "represent the various and diverse systems of personality description in a common framework" (p. 116), according to John and collaborators (2008). The five traits considered are the following: openness to experience, conscientiousness, extraversion, agreeableness and neuroticism (John & Srivastava, 1999; John et al., 2008; McCrae & Costa, 1986). Summarily, the Big Five can be described as a five-factor structure composed by traits that are shown to significantly impact each

persons' personality. Based on these traits one can extrapolate several characteristics that are likely to be associated with each individual (Goldberg, 1990; John & Srivastava, 1999).

With the purpose of measuring the big five traits of personality, several instruments, already developed by previous academic research, are considered reliable. The two main instruments are the Big Five Inventory (BFI) (John & Srivastava, 1999) and the NEO Personality Inventory (NEO-PI) (McCrae & Costa, 1986). Both these instruments have been used multiple times in studies for the assessment of personality traits, being that both of them are proven to be reliable in doing so (John & Srivastava, 1999; McCrae & Costa, 1986). This way, when developing the questionnaire I chose to use the BFI, not only due to the fact that Portuguese versions had already been developed (Brito Costa et al., 2016; Domingos, 2015; Fernandes, 2021), but also because the BFI is composed of 44 questions (John & Srivastava, 1999), while the NEO-PI consists of 60 (Costa & McCrae, 1992). In order to keep my study and questionnaire concise, while maintaining maximum reliability, I opted to choosing the BFI and will further explain this decision on the next sections of this paper.

The subsequent part of this literature review will cover each personality trait on an individual basis. This way I can keep clarity as a central aspect in this study, while addressing all of the following points:

1) Defining the five personality traits and explaining the spectrum of predicted actions/personality covered in each.

2) Gathering information on other studies that tried to link (CEO) personality traits to firm performance.

3) Analyzing the impact and the significance that these papers found for each trait.

4) Hypothesize the influence each trait is expected to have on company performance.

2.3.1 Openness to experience

According to Kerr and collaborators (2018), openness to experience "describes the breadth, depth, originality and complexity of an individual's mental and experimental life" (p. 12). A person who scores high in this trait is more receptive to new experiences and situations, more imaginative and more independent. To the contrary, a person who exhibits lower scores tends to be more conservative, not prone to new challenges, confirming and down to earth (McCrae & Costa, 1986).

A study conducted by Han and collaborators (2017) found a significant correlation between CEO openness to experience and learning and growth (mediator variable used), meaning that people who score high on this trait tend to be better at learning and growth. This paper also found evidence that learning and growth is correlated with company performance and, thus, it concluded that CEOs who score high in this trait are more prone to lead firms to better results, partially explained by being better at learning and growth. Adding to this, Verdú-Jover and collaborators (2020) found that people who are more open to new experiences score higher in entrepreneurial orientation, and, consequently, tend to lead their firms to higher levels of performance. Domingos (2015) also concluded that there is an association between a high degree of openness to experience, in this case of the founding entrepreneur, and (family-owned) companies' performance. In addition, Araujo-Cabrera and collaborators (2017) found that CEO openness to experience is positively and significantly related to firm performance through top management team behavioral integration (mediator variable used in this study). Openness to experience, in this study, was found to lead to higher scores in top management team behavioral integration, which in turn entails higher levels of firm performance. A study conducted by Miller and Toulouse (1986), and that was developed before the widespread use of the Big Five Personality Traits, found that CEO flexibility was correlated to SME performance. As flexibility is one of the focal parts in openness to experience, it is another proof of its influence and significance in regard to company performance.

All of the analyzed studies demonstrated that openness to experience is correlated with SME performance. Therefore, I am also expecting this to be the result.

H1: CEO's openness to experience will have a positive and significant impact on the performance and growth of SMEs.

2.3.2 Conscientiousness

Conscientiousness "describes socially prescribed impulse control that facilitates task and goal-orientated behavior" (p. 120), according to John and collaborators (2008) and John and Srivastava (1999). People who score high on Conscientiousness tend to have a larger capacity of organization and to be more thorough, more dependable, well-organized and self-disciplined. Low conscientiousness scores are associated with negligent or careless behavior and an incapacity of being reliable and organized (McCrae & Costa, 1986).

According to Han and collaborators (2017), conscientiousness was found to have a significant and positive impact on the performance of SMEs through improving scores of learning and growth. In addition, Domingos (2015) has also reached the same conclusion regarding the positive and statistically significant influence that founding entrepreneurs (in this case) who score high in conscientiousness exert on their respective companies' performance.

Nevertheless, not all studies have found this relationship. Verdú-Jover and collaborators (2020) did not find significant evidence of the influence of conscientiousness on the performance of SMEs.

In regard to CEO conscientiousness, although there is no consensus about its impact on firm performance, two of the studies included in this analysis have found this trait to have a positive and significant impact on company's results while the third one found no relationship to exist. I am expecting it to have significant impact as most studies analyzed found this relationship and, additionally, one can argue that more thorough and more dependable people (i.e., a person high on consciousness) will perform a better job compared to those who behave in a negligent manner (i.e., a person low on consciousness) (John et al., 2008a; John & Srivastava, 1999).

H2: CEO's conscientiousness will have a positive and significant impact on the performance and growth of SMEs.

2.3.3 Extraversion

According to John and collaborators (2008), as cited in John and Srivastava (1999), extraversion "implies an energetic approach toward the social and material world and includes traits such as sociability, activity, assertiveness and positive emotionality" (p. 120). High scores on extraversion

are related to sociable, fun-loving and affectionate people. Lower scores entail people who are more reserved and less sociable, even considered introverts (McCrae & Costa, 1986).

Verdú-Jover and collaborators (2020) concluded that there was a correlation between high degree extraversion and higher scores in entrepreneurial orientation and, thus, higher company performance. Furthermore, Araujo-Cabrera and collaborators (2017) also reached the conclusion that there is a significant positive effect that extraversion has on company performance, through top management team behavioral integration.

Nevertheless, Han and collaborators (2017) found that extraversion did not significantly influence company results. Adding to this evidence, a study carried out by Domingos (2015) also did not find that the degree of extraversion, of the founding entrepreneur of a company, significantly impacted the company's performance.

The literature is torn in what regards CEO's extraversion, being that there is a lack of consensus regarding the influence that it has on company results. Out of the four papers I analyzed, two concluded that it had significant positive impact in company performance, but the other two found that the impact did not exist or was not significant.

Due to these reasons, although I expect that extraversion will have a positive impact in SME performance, I am not expecting it to be significant.

H3: CEO's extraversion will not have significant impact on the performance and growth of SMEs.

2.3.4 Agreeableness

Agreeableness can be described as the tendency to be accepting, conforming, trusting and nurturing, according to Goldberg (1990) and John and Srivastava (1999). People who score high on agreeableness tend to show these characteristics. However, those who present lower scores tend to show a low amount of cooperation as well as being unpolite or even rude (McCrae & Costa, 1986).

On one hand, Han and collaborators (2017) reached the conclusion that people who score high on agreeableness achieve higher level of learning and growth and, therefore, present better company

results. On the other hand, no other studies reached the conclusion that agreeableness significantly influences company performance (Domingos, 2015; Verdú-Jover et al., 2020)

Out of the three papers I analyzed, only one found agreeableness among CEOs to impact company performance positively and significantly. Therefore, as the literature doesn't reach a consensus on the impact of CEO agreeableness, in regard to firm performance, I do not expect this trait to have a significant and positive effect on firm performance.

H4: CEO's agreeableness will not have significant impact on the performance and growth of SMEs.

2.3.5 Neuroticism

Neuroticism can be best described as the tendency to feel anxious, nervous, sad, and tense, according to John and collaborators (2008) and John and Srivastava (1999). People who score high on neuroticism tend to be depressed, insecure and anxious. Contrarily, people who exhibit low scores tend to be more emotionally stable, calm and secure (McCrae & Costa, 1986).

According to Verdú-Jover and collaborators (2020), a lower degree of neuroticism is significantly correlated with a higher degree entrepreneurial orientation and, thus, firm performance. Furthermore, Domingos (2015) also concluded that there is an inverse relationship between neuroticism and SME performance, meaning that lower levels of neuroticism of founding entrepreneurs are related to better company results.

Nevertheless, Han and collaborators (2017), did not find significant impact of neuroticism in regard to SMEs' performance.

In what regards to CEO's neuroticism, out of the three papers analyzed, two mentioned that lower scores in this trait (for CEOs) are correlated with higher levels of firm performance. As the majority of the researchers in this topic show this relationship, I am expecting a significant and inverse relationship between neuroticism and company performance.

H5: CEO's lower levels of neuroticism will have a positive and significant impact on the performance and growth of SMEs.

2.4 Empirical Expectations and Thesis Aim

The aim of my thesis is to evaluate and analyze the relationships, if any exist, between CEO personality traits and firm performance and growth. The way I will measure these metrics will be mentioned and explained in the following sections.

Based on the literature reviewed above, I expect that several CEO personality traits will be related to higher company performance and growth. I am predicting that, in particular, openness to experience (H1), conscientiousness (H2) and neuroticism – inversely – (H5) will be correlated with higher performance. This would corroborate the findings that were previously achieved in the literature, which could further prove that, when hiring CEOs, companies must be aware of the influence that personality traits pose and the direction of these relationships so that, on average and everything else constant, they should choose those high on the mentioned traits (openness to experience, conscientiousness and low on neuroticism).

3. DATA AND METHODOLOGY

3.1 Participants

There were several constraints regarding the participant section of my study. With this, I mean that, in order to respond to my survey, all participants had to be Portuguese and had to work on a Portuguese SME. Additionally, they had to be working as a CEO for, at least, the past three years for reasons that will later be explained.

According to Statista (2018) the average age for a CEO is 54.1 years, with tendency of increasing. This helped me in the process of forming my target audience – people within the age range of 40-70 – and in order to compare if my data is a representative sample of the population.

Moving on to my sample, all participants in my study were Portuguese CEOs with more than three years of experience working on a SME. Moving on to the individual characteristics of the people who responded to my questionnaire, we can conclude that their average age is around 51 years (see Table B.1 present in Appendix B), meaning that it is close to that calculated by Statista (2018) – 54.1 years. Additionally, participants have been occupying the position of CEO for 17.5 years, on average. We can observe that 65% of responses are from men, while the other 35% are from women which depicts the reality that more men occupy the position of CEO, comparing to women (Shao & Management, 2014) – despite no correlation has been proven significant between the gender of a CEO and firm performance (Shao & Management, 2014). In addition to this, 40.5% of all participants have a high school degree or less, while 35% have a bachelor's degree, 21.6% have got a master's degree and only one person has a doctorship degree.

3.2 Research Design

Throughout my study, I aimed to test the implications that CEO's personality traits have on the performance and growth of their respective firms. To test the hypotheses previously formulated, I conducted a survey-based approach using Qualtrics, a commonly used online survey platform. The questionnaire was divided into three different parts: a first part regarding personal information, a second part that was constituted by the Big Five Inventory (BFI), as used by John and Srivastava (1999), and a third part in which company information was asked.

3.3 Survey procedure

As the target audience was composed of CEOs, I intended to develop a questionnaire that would be straight to the point and not too much attention demanding. As already stated, this study focuses on Portuguese CEOs that had been working in the same SME for more than three years, with an average age of approximately 51 years. As such, the questionnaire was developed in Portuguese for the CEOs to be able to read and answer the questions in their mother tongue. For parts one and three, the survey being in Portuguese does not make a difference; however, for part two it does, and, in the next paragraph I will further explain the reason as to why.

Although I have already mentioned the three parts of the study, in this section I am going to further explain the logic of this division and mention which kind of questions were asked and with what purpose. The first part, regarding personal information, contained demographic, educational and career questions. These were placed in the beginning of the questionnaire as they are easy to answer and would then serve as control variables in the results section. The second part is composed of the BFI questionnaire. The original BFI survey was developed in English and an official Portuguese translation was not carried out. Nevertheless, during my research I have found three studies which have used Portuguese translations of the BFI: Brito Costa and collaborators (2016), Domingos, (2015) and Fernandes (2021). I used these studies as the basis of my translation process. Firstly, I translated all 44 questions into Portuguese and then I compared my version to that of the three studies mentioned. Afterwards, I changed the wording/phrasing of certain questions, opting, this way, to use already proven Portuguese translations instead. Finally, part three was composed of company questions that served two different purposes: to determine if the firm was indeed a SME (employee count has to be lower than 250 and either turnover has to be lower than 50M € or the balance sheet total has to be lower than 43M €) and to gain knowledge on the evolution of the profits and sales in the past three years, in order to get a grasp of the current state and the growth of the firm, with the purpose of serving as dependent variables in my analysis (Han et al., 2017; Ling et al., 2007; Miller & Toulouse, 1986; Sarwoko & Frisdiantara, 2016b; Zhou, 2009).

The full survey, as constructed, is annexed in the appendix of this thesis under the name: Appendix A | Full Survey in Portuguese.

3.4 Survey Delivery

It is worth mentioning that getting CEO responses is very difficult, not only because it is a role with little expression in the overall number of employees (only one CEO per firm) but also because it is a role with a high deal of importance associated to it, meaning that they tend to be overwhelmed with work, as I predicted and eventually found out. Many of them do a lot of extra hours and do not want to waste time they could be working or relaxing to perform unproductive tasks, like responding to a rather long survey (this is the message I got from a lot of people I asked to do the questionnaire).

This way, in order to get responses, I had two options: to use my personal contacts (but I do not have a big network, especially in regard to CEOs) or to cold ask people that I do not know personally but that fit my target audience – Portuguese CEO for more than three years.

I tried both sources, but, because I wanted to track who responded to my questionnaire, more specifically, because I wanted to know if my participants answered my survey through the first option – personal connections – or through the second option – reaching out to unknown people – , I did the survey delivery through phases. In the beginning of the data collection process, I relied on my personal contacts to get responses. This way, I followed a snowball sampling approach to the recruitment of participants, which can best be explained by starting with a small number of initial contacts (seeds) and asking them to recommend participants that fit the target audience and so on (Goodman, 1961; Parker et al., 2020). This way, my contacts distributed the link of my survey to their connections that could either answer the survey or help getting more responses. This quickly led me to reach 54 responses in the first two weeks. The goal I set to my study, initially, was to surpass the 82 responses, the ideal minimum number of responses to reach in correlational analysis studies such as mine, so I really thought I was on the right track. What I had not noticed was that a lot of participants did not respond to multiple parts of the questionnaire, in particular to the one in which company information was asked (third part), even though the questionnaire was completely anonymous and none of the data would be disclosed anyway (this message was highlighted in the questionnaire). All of these efforts of direct and snowball recruitment led me to get 60 responses in the first three weeks, of which only 33 had answered to all questions and thus were eligible to use in the analysis.

After these first three weeks I stopped the data collection process for a month and a half. When I restarted this process, I went through phase two: reaching out directly to unknown people. The way I managed to do this was by using my LinkedIn profile and messaging 50 different CEOs (using Sales Navigator, the premium function of this social media). This method led me to get 13 more responses, of which only 4 were eligible – from CEOs that had been working for more than three years and responded to every question.

Thus, and despite my best efforts to get more and more responses, I only managed to get 37 responses that were usable for my study.

3.5 Modelling approach

3.5.1 Dependent Variables

This study will assess the correlation between firm performance and CEO personality traits; therefore, the dependent variable has to be a metric that can estimate firm performance. This way, I developed four different regression models with four different dependent variables: sales, increase in sales, profits and increase in profits.

The reason why I chose these variables is due to many authors considering them a good representation of firm performance (sales and profits) and using them in their respective studies (Han et al., 2017; Ling et al., 2007; Miller & Toulouse, 1986; Sarwoko & Frisdiantara, 2016b; Zhou, 2009), while also considering it a fair way of accounting for firm growth (Sarwoko & Frisdiantara, 2016b; Zhou, 2009) – in what concerns evolution of sales and profits. Also, these are metrics that are much more easily memorable to a CEO, comparing to other more advanced financial statistics I intended on using, such as return-on-assets (Hill & Snell, 1988.; Zajac & Kellogg, 1990). Therefore, in order to properly access firm performance and growth, but also not to extend the burden to the CEOs, I chose to analyze firm performance through sales and profits registered in the past three years.

Furthermore, the four different models I developed were with the intent of both trying to comprehend the impact that CEO personality traits have on firm performance, but also on firm growth.

3.5.2 Independent Variables

The Big Five Inventory (BFI) (John & Srivastava, 1999) was the instrument I used to measure the big five personality traits: conscientiousness, neuroticism, openness to experience, extraversion and agreeableness.

The BFI is composed of 44 short phrases, in which participants answer, according to their own beliefs and values, through a five-point Likert scale (in which 1 = strongly disagree and 5 = strongly agree). Questions regarding each personality traits are mixed and many of them are reversed-score answers.

The BFI is widely regarded as one of the most commonly used instruments to measure personality due to being a reliable and flexible measure of the five broad personality traits (Arterberry et al., 2014; Brito Costa et al., 2016; John & Srivastava, 1999; Domingos, 2015). According to Burisch (1984) "short scales not only save testing time but also avoid subject boredom and fatigue" and "you won't get any response if the test looks too long" (p. 219), which means that in order to get more responses and for the participants to finalize questionnaires, shorter scales should be used. This is the case with BFI, in comparison with different instruments already mentioned. In summary, the BFI is a sufficient, concise and rather short survey for the purposed objective (defining personality traits of the participants) which is the reason it was used in this dissertation.

3.5.3 Control Variables

In my survey, CEOs were asked demographic and academic information, while company performance measures were also mandatory to answer.

Having this in mind and knowing that the goal of the study is to measure the effects of CEO personality traits on company performance, I used several measures as control variables, including age, gender, level of education and the time spent as a CEO, for the participants, but also the number of employees in the company (Hill & Snell, 1988; Ling et al., 2007).

4. RESULTS

4.1 Data Preparation

As previously mentioned, a total of 73 responses were received. However, the final sample was only composed of 37 people, meaning that 36 were excluded from the analysis. Out of these invalid answers, 13 did not complete the BFI questionnaire, which was the second part of the survey; 16 did not answer company related questions (part three); 3 answered with a zero to all company questions regarding profits and sales; 3 were not CEOs and 1 answer was from a CEO with only one year of experience. In summary, the process of distributing my questionnaire to all people that could either do it or reach out to people who could, led me to get 37 eligible answers from Portuguese CEOs, working on a SME, with more than three years of experience as a CEO, that responded to all questions accordingly.

Finally, to detect the presence of outliers, the median absolute deviation method was applied, as, according to Leys and collaborators (2013), it is seen as a more robust alternative for exclusion when compared to the traditional method around the mean. No outlier was found in the study meaning that from this section onwards, my analysis will be based on the answers from these 37 CEOs.

4.2 Summary Statistics

4.2.1 Company Information

All firms in my analysis are SMEs, meaning that all of them have less than 250 employees and either the turnover is lower than 50M EUR or the total balance sheet is lower than 43M EUR (see Table B.1, present in Appendix B).

Through an analysis of Table B.1, we can conclude that, for my sample, the average number of employees is 23, approximately, and that the average total balance sheet is of 12.9M EUR. The mean sales in 2021 is around 2.04M EUR, while the average sales of the past three years were slightly higher at 2.21M EUR. Additionally, the mean of profits in 2021 was of 363K EUR, while the average profits of the past three years were 333K EUR, which entails a decrease of 30K EUR. The advantage of having information regarding the past three years is that we can observe the

growth of the firm (profits and sales) and have more than one metric to analyze it. The results show that despite an increase in sales in 15.4% in 2020, with reference to 2019, profits decreased by 17.9%, while, on the following year, sales decreased by 17.1% and profits increased by 26.7%. One explanation for these variations can be related to the pandemic of COVID 19 that, as we have seen, tremendously affected SMEs, having distinct effects on them (Gourinchas et al., 2020; Miklian & Hoelscher, 2022; Smallbone et al., 2012) which led to a high increase in costs, especially in 2020, according to Vo and Tran (2021).

4.2.2 Personality traits of the CEO

By observation of Table B.1, we can conclude that the average score in conscientiousness is rather high, being it a 4.08 in a scale from one to five. Scores in agreeableness (3.96), extraversion (3.85) and openness to experience (3.83) are also high, which, according to Larson (2019) is the tendency regarding self-assessment questionnaires with subjective measures, which have been constantly related to higher levels of firm performance – (Araujo-Cabrera et al., 2017; Domingos, 2015; Han et al., 2017; Verdú-Jover et al., 2020). Neuroticism, on the other hand exhibited a mean of 2.33 which is a low score. However, this also entails the same thought seen on other traits (Larson, 2019) as several studies have found that higher levels of neuroticism tend to be correlated with lower firm performance – Domingos, (2015), Verdú-Jover and collaborators (2020).

In regard to the validity of the BFI, I opted on using Cronbach's Alpha to verify if the results of the questionnaire are consistent and reliable (Bonett & Wright, 2015; Christmann & van Aelst, 2006). This way, I calculated the alpha for both the whole BFI survey and for each personality trait individually, in order to assess the validity of results, as done in previous literature - Domingos (2015).

Cronbach's Alpha tends to be "referred to as a measure of internal consistency reliability" (p. 3), according to Bonett & Wright (2015), being widely used in multiple contexts of social and organizational sciences (Bonett & Wright, 2015; Christmann & van Aelst, 2006). A score lower than 0,5 tends to be unacceptable, between 0,5 and 0,6 is bad, between 0,6 and 0,7 is acceptable, between 0,7 and 0,8 is good, between 0,8 and 0,9 is great and higher than 0,9 is excellent (Bonett & Wright, 2015; Domingos, 2015).

In regard to the answers to my survey, each individual personality trait, except agreeableness, showed scores that either fall in the good or great categories: extraversion = 0.74; neuroticism = 0.71; conscientiousness = 0.71 and openness to experience = 0.81. Agreeableness instead had a very low alpha of only 0.5 being considered bad on the scale previously explained. Nonetheless, the BFI questionnaire as a whole had a Cronbach's Alpha of 0.74, which shows reliability in the use of this instrument as it is a good alpha.

4.3 Regression Models and Hypotheses Testing

In this section I am going to build four different models to test two different assumptions, by using two different dependent variables to measure each assumption: if CEO personality traits have significant influence on firm performance and on firm growth, measured by profits and sales.

In order to test firm performance, I am using static measures such as sales and profits of the previous year and the average of these for the past three years (period covered in my study), as mentioned in the methods. In order to test company growth, I will use the yearly and overall evolution in profits and sales for the period of 2019 to 2021 (three years), as also mentioned in the methods section.

Resuming, in this study I will have the ability to both test the influence of CEO personality traits on the moment (profits and sales from the past three years and from the last year) and on the evolution of profits and sales (yearly evolution of sales and profits in the past three years).

4.3.1 Influence of Personality Traits on Firm Performance

In this part of the results section, I will be developing two models to assess firm performance. One regression will use sales as a dependent variable while the other will use profits, in order to be able to assess the impact CEO personality traits will exert on firm performance. Both variables, sales and profits, have been used as firm performance measures, as previously mentioned (Han et al., 2017; Ling et al., 2007; Miller & Toulouse, 1986; Sarwoko & Frisdiantara, 2016b; Zhou, 2009).

Initially, I developed each model without control variables to evaluate the impact that each trait has on firm performance, while afterwards I controlled for variables which help further explain the

model. This was done with the purpose of assessing the net impact that CEO personality traits have on firm performance.

4.3.1.1 Impact of personality traits on company performance, measured with firm profits

Personality traits did not have significant influence neither on last years' profits nor on the average profits recorded for the previous three years (as seen in Table B.2 present on Appendix B). Additionally, this model explains 8.7% and 7.1% of the variation of the respective dependent variables, which is a very low score compared to other studies (Domingos, 2015; Han et al., 2017; Verdú-Jover et al., 2020). This way, I controlled for certain metrics that were considered relevant to the analysis, being those variables age, gender, level of education (in which the default group is a high school degree or less, 2 = bachelor degree, 3 = masters' degree and 4 = doctorship degree), time spent as a CEO and the number of employees the company currently has.

4.3.1.2 Impact of personality traits on company performance measured with firm profits and controlling for impactful variables

Table 1: Regression coefficients (and respective standard errors) of CEO personality traits on firm profits of 2021 and on the average of profits of the past three years, controlling for certain variables

	Dependent variable:	
	Profits in 2021	Average Profits
	(1)	(2)
Agreeableness	242,170.90	130,680.70
	(349,452.50)	(308,290.70)
Extraversion	-100,892.10	-45,209.52
	(185,351.00)	(163,518.70)
Conscientiousness	140,119.00	96,214.14
	(256,082.60)	(225,918.90)
Neuroticism	-337,905.90*	-280,783.40
	(187,516.00)	(165,428.60)
Openness to Experience	60,254.17	92,259.01
	(190,844.90)	(168,365.40)
Age	18,830.38	12,153.34
	(21,584.45)	(19,042.03)

Gender	376,929.40	253,461.90
	(301,489.00)	(265,976.90)
Bachelor's Degree	255,174.40	199,528.00
	(306,478.30)	(270,378.50)
Masters' Degree	97,337.53	120,382.10
	(309,150.10)	(272,735.60)
Doctorship Degree	176,279.30	158,173.70
	(696,200.20)	(614,195.30)
Time Spent on That Role	-12,528.13	-5,322.10
	(23,185.40)	(20,454.41)
Current Number of Employees	10,023.67***	9,893.04***
	(2,716.33)	(2,396.37)
Constant	-1,822,923.00	-1,301,832.00
	(2,016,124.00)	(1,778,646.00)
Observations	37	37
R2	0.551	0.572
Adjusted R2	0.327	0.358
Residual Std. Error (df = 24)	626,914.20	553,070.40
F Statistic (df = 12; 24)	2.455**	2.673**
Note:	*p<0.1; **p<0.05; ***p<0.01	

This model, which includes all the control variables mentioned is better at predicting the variance related to the dependent variable as it has a *R^2* of 55.1% for profits in 2021 and 57.2% for average profits.

By observing the regression table of this model, we can conclude that a higher employee count is significantly correlated with higher profits (for both dependent variables), with significance at the 1% level. Out of the five CEO personality traits, only neuroticism was significant at the 10% level, in regard to company profits in 2021. This entails that, with 90% confidence, we can affirm that higher levels of neuroticism for CEOs seems to be associated with worse company results.

4.3.1.3 Impact of personality traits on company performance, measured with sales

The second model tested in this study (Table B.3, present in Appendix B) consisted in utilizing sales (of 2021 and the average amount for the past three years) as the dependent variables in order to access the influence CEO personality traits have on firm performance.

Although this model only explains 11.2% and 16.6% of the variance of the dependent variable, we can conclude that neuroticism is inversely correlated to sales with a high degree of significance. In 2021, with 90% confidence, we can state that higher levels of Neuroticism of CEOs led to worse company results. Looking at the average of sales in the past three years, the same can be said with an even higher confidence level: 95%. Neither of the other personality traits showed significance in this model. In order to confirm this conclusion, I then controlled for certain variables previously mentioned (age, gender, level of education, time spent as a CEO and employee count).

4.3.1.4 Impact of personality traits on company performance, measured with sales and controlling for impactful variables

Table 2: Regression coefficients (and respective standard errors) of CEO personality traits on firm sales of 2021 and on the average of sales of the past three years, controlling for certain variables

	Dependent variable:	
	Sales in 2021	Average Sales
	(1)	(2)
Agreeableness	179,421.10	352,057.70
	(1,979,871.00)	(2,208,311.00)
Extraversion	813,641.60	448,471.90
	(1,050,132.00)	(1,171,297.00)
Conscientiousness	1,131,609.00	2,022,998.00
	(1,450,871.00)	(1,618,275.00)
Neuroticism	-1,897,108.00*	-2,801,414.00**
	(1,062,398.00)	(1,184,978.00)
Openness to Experience	253,533.90	855,490.40
	(1,081,258.00)	(1,206,015.00)
Age	83,083.85	116,338.00
	(122,289.60)	(136,399.60)

Gender	1,609,735.00	1,751,018.00
	(1,708,127.00)	(1,905,213.00)
Bachelor's Degree	2,205,466.00	2,824,372.00
	(1,736,395.00)	(1,936,743.00)
Masters' Degree	1,715,198.00	1,824,929.00
	(1,751,532.00)	(1,953,626.00)
Doctorship Degree	1,083,484.00	1,586,186.00
	(3,944,417.00)	(4,399,529.00)
Time Spent on That Role	-25,121.37	-26,305.36
	(131,360.00)	(146,516.50)
Current Number of Employees	21,467.62	25,959.78
	(15,389.72)	(17,165.41)
Constant	-10,617,358.00	-15,789,727.00
	(11,422,625.00)	(12,740,584.00)
Observations	37	37
R2	0.382	0.452
Adjusted R2	0.072	0.179
Residual Std. Error (df = 24)	3,551,868.00	3,961,687.00
F Statistic (df = 12; 24)	1.234	1.652
Note:	*p<0.1; **p<0.05; ***p<0.01	

Controlling for the variables mentioned, we get the same conclusions regarding personality traits: only Neuroticism is significant out of the five personality traits. We can state that, with 90% confidence and everything else constant, higher CEO Neuroticism values led to lower company sales in 2021 – (and with 95% confidence if we look at the average of sales in the past three years).

Additionally, this model is much better at explaining the variation of its dependent variables, when compared to that without control variables – section 4.3.1.3 – by having a R^2 of 38.2% and 45.2%, respectively.

4.3.2 Influence of Personality Traits on Firm Growth

The models that follow were developed with the purpose of assessing the influence that CEO personality traits have on firm growth. In order to perform this analysis, the evolutions in sales and profits in the past three years were used as dependent variables, being these measures of firm growth according to the academic literature (Sarwoko & Frisdiantara, 2016b; Zhou, 2009), and, therefore, can be used in terms of predicting the evolution of firm performance.

When answering my questionnaire, every participant had to respond to questions on company profits and sales of the previous three years (2019 to 2021) in order to be eligible to participate in this study. This requirement was related to the intention of studying the impact that CEO personality traits have in terms of firm growth. Therefore, I calculated the increase/decrease in sales (and profits), both on a yearly basis and the overall variation from 2019 to 2021, creating three different columns. Afterwards I developed two models on the yearly and overall evolution of sales and profits (one for the increase from 2019 to 2020, one for the increase in 2021 comparing to 2020 and a last one for the increase in 2021 compared to 2019), controlling for the following variables (as previously explained): age, gender, level of education, time spent as a CEO and the current number of employees.

4.3.2.1 Impact of personality traits on company growth, measured by the increase in firm sales (both annually and overall) and controlling for impactful variables

Table 3: Regression coefficients (and respective standard errors) of CEO personality traits on the increase in firm sales (both annually and overall), controlling for certain variables

	Dependent variable:		
	Increase in Sales 19-21	Increase in Sales 19-20	Increase in Sales 20-21
	(1)	(2)	(3)
Agreeableness	-466,111.30	-414,312.80	-51,798.49
	(1,207,378.00)	(3,009,189.00)	(2,196,385.00)
Extraversion	206,749.60	-682,009.90	888,759.60
	(640,398.30)	(1,596,087.00)	(1,164,972.00)
Conscientiousness	1,426,137.00	5,526,439.00**	-4,100,302.00**
	(884,779.90)	(2,205,167.00)	(1,609,535.00)

Neuroticism	-625,455.60	-3,963,828.00**	3,338,373.00***
	(647,878.40)	(1,614,729.00)	(1,178,579.00)
Openness to Experience	-331,968.40	1,141,933.00	-1,473,901.00
	(659,379.90)	(1,643,395.00)	(1,199,502.00)
Age	13,232.83	126,228.00	-112,995.20
	(74,575.49)	(185,867.10)	(135,663.00)
Gender	310,801.10	1,045,452.00	-734,651.40
	(1,041,662.00)	(2,596,169.00)	(1,894,924.00)
Bachelor's Degree	929,318.90	3,715,356.00	-2,786,037.00
	(1,058,900.00)	(2,639,132.00)	(1,926,283.00)
Masters' Degree	164,183.30	657,562.40	-493,379.10
	(1,068,131.00)	(2,662,140.00)	(1,943,076.00)
Doctorship Degree	385,083.60	2,278,272.00	-1,893,189.00
	(2,405,411.00)	(5,995,088.00)	(4,375,770.00)
Time Spent on That Role	-6,708.35	-16,968.68	10,260.34
	(80,106.85)	(199,653.00)	(145,725.30)
Current Number of Employees	-30,567.05***	-47,657.62*	17,090.57
	(9,385.07)	(23,390.72)	(17,072.71)
Constant	-2,778,659.00	-21,074,425.00	18,295,765.00
	(6,965,822.00)	(17,361,156.00)	(12,671,779.00)
Observations	37	37	37
R2	0.396	0.414	0.437
Adjusted R2	0.094	0.121	0.156
Residual Std. Error (df = 24)	2,166,024.00	5,398,455.00	3,940,292.00
F Statistic (df = 12; 24)	1.312	1.412	1.553
Note:		*p<0.1; **p<0.05; ***p<0.01	

We conclude that the impact that personality traits have on the increase of sales for the three-year period is dubious (see Table 3). This is due to two factors: first of all, although both neuroticism and conscientiousness show significant values at the 5% level of significance for the yearly evolution in sales, the influence in 2021 was inversely related to that of 2020. This means that, although both are significant, they entail that in one year it led to an increase in sales, while in the

other year it increased which leads to an overall loss of significance, for this model. Secondly, the rest of the personality traits don't show significance and, particularly in the regression testing the effect of these traits in the evolution of sales in 2021 compared to 2019, no trait showed significance.

4.3.2.2 Impact of personality traits on company growth, measured by the increase in firm profits (both annually and overall) and controlling for impactful variables

This model is a continuation of the previous one (Table 3) with one difference: the evolution of profits was the measure of firm growth used.

Table 4: Regression coefficients (and respective standard errors) of CEO personality traits on the increase in firm profits (both annually and overall), controlling for certain variables

	Dependent variable:		
	Increase in Profits 19-21	Increase in Profits 19-20	Increase in Profits 20-21
	(1)	(2)	(3)
Agreeableness	131,205.10	-72,060.55	203,265.60
	(243,678.70)	(447,622.10)	(294,541.90)
Extraversion	-60,700.11	45,647.56	-106,347.70
	(129,248.20)	(237,420.60)	(156,226.30)
Conscientiousness	409,808.70**	687,902.90**	-278,094.20
	(178,570.40)	(328,022.40)	(215,843.60)
Neuroticism	-311,085.90**	-450,804.40*	139,718.50
	(130,757.90)	(240,193.80)	(158,051.10)
Openness to Experience	-48,721.05	-1,427.58	-47,293.48
	(133,079.20)	(244,457.90)	(160,856.90)
Age	18,255.29	16,479.46	1,775.83
	(15,051.18)	(27,648.04)	(18,192.82)
Gender	244,166.00	117,929.80	126,236.30
	(210,233.00)	(386,184.60)	(254,115.10)
Bachelor's Degree	323,031.10	479,123.20	-156,092.10
	(213,712.20)	(392,575.50)	(258,320.50)
Masters' Degree	-8,479.50	52,174.57	-60,654.07
	(215,575.20)	(395,997.90)	(260,572.40)
Doctorship Degree	149,149.70	243,982.40	-94,832.67

	(485,471.30)	(891,779.70)	(586,804.10)
Time Spent on That Role	-13,250.20	-4,882.32	-8,367.88
	(16,167.54)	(29,698.73)	(19,542.20)
Current Number of Employees	-5,613.40***	-11,618.70***	6,005.30**
	(1,894.14)	(3,479.41)	(2,289.50)
Constant	-2,050,572.00	-2,537,869.00	487,297.50
	(1,405,875.00)	(2,582,502.00)	(1,699,324.00)
Observations	37	37	37
R2	0.485	0.452	0.322
Adjusted R2	0.227	0.178	-0.017
Residual Std. Error (df = 24)	437,157.10	803,029.50	528,405.30
F Statistic (df = 12; 24)	1.881*	1.651	0.950
Note:		*p<0.1; **p<0.05; ***p<0.01	

This model explains 49%, 45% and 32% of the variance around the mean of the dependent variable (increase in profits), being a decent predictor of this variable.

As observed in this model, both neuroticism and conscientiousness proved to be significant at the 5% or 10% level, in regard to the overall increase in profits in this period and in 2020 compared to 2019 (this relation was, nevertheless, not found significant in 2021, in regard to 2020). This means that, with at least 90% confidence and everything else constant, we can state that higher levels of neuroticism are, thus, related to lower levels of firm growth, while higher levels in conscientiousness are related to higher levels of firm growth.

All other traits did not show significance at least at the 10% confidence level, while the number of employees showed dubious results (it is significant at least at the 5% level but this relation does not always go in the same direction).

5. DISCUSSION

5.1 Main Findings

My dissertation intended on studying the impact that CEO personality traits have on firm performance and growth. In order to assess this relationship, I used the BFI (John & Srivastava, 1999) survey to measure personality traits, as this instrument has been widely used in the literature with the purpose of assessing the big five personality traits (Benet-Martínez & John, 1998; Domingos, 2015; Fernandes, 2021; John & Srivastava, 1999). In terms of firm performance metrics, I used profits and sales in the past year (2021) and in the past three years (2019 to 2021) as measures, as the literature has shown it to provide a good representation of company performance (Han et al., 2017; Ling et al., 2007; Miller & Toulouse, 1986; Sarwoko & Frisdiantara, 2016b; Zhou, 2009). Additionally, I used the increase in sales and in profits (in the previous 3 years) to measure firm growth, which is also corroborated by previous literature as a good measure of growth (Sarwoko & Frisdiantara, 2016b; Zhou, 2009).

My research was based on previous studies (Araujo-Cabrera et al., 2017; Domingos, 2015; Han et al., 2017; Miller & Toulouse, 1986; Verdú-Jover et al., 2020), in the sense that the goal is related to finding the significance, if any, that each CEO personality trait has on companies' financial statements. This led me to develop five hypothesis which, as previously mentioned, succinctly stated that higher levels of openness to experience (H1), conscientiousness (H2) and lower levels of neuroticism (H5) would have a positive and significant impact on company performance and growth, while neither extraversion (H3) nor agreeableness (H4) would show significant effects in this regard.

I tested all hypotheses in four different regression models, in which sales, profits, increase in sales and increase in profits were considered as the dependent variables. The conclusions that were collected from this study corroborated both hypothesis H3 and H4, meaning that CEO's levels of extraversion and agreeableness do not show a significant influence neither on company performance nor on growth, at least at the 10% level of significance. These results go in the same direction as most previous studies in this area, as no consensus has been reached as to the importance of these specific traits in regard to company performance (Araujo-Cabrera et al., 2017; Domingos, 2015; Han et al., 2017; Verdú-Jover et al., 2020). Nevertheless, hypotheses H1 and H2

were not corroborated in this thesis, despite most studies researched and analyzed, in this thesis, having shown that CEO openness to experience and conscientiousness were significantly correlated with firm performance. In regard to openness to experience, none of the four models showed it be correlated to company performance and growth (at the 10% significance level at least), which led me to conclude that, for my analysis, it did not significantly affect firm performance and growth. On the other hand, conscientiousness showed significance, at the 5% level, for the increase in sales and profits. Therefore, despite not being significant in terms of firm performance (considered as a static measure), it seems as though higher levels of conscientiousness lead to an increase in profits and, thus, to company growth, which partially supports H2. As for neuroticism, my study consistently found that it is significantly related to firm performance on an inverse basis. This means that lower levels of CEO neuroticism are correlated with better firm performance and growth. This result goes in the same direction as found in the academic literature, in which the majority of studies had found this inverse and significant correlation (Domingos, 2015; Verdú-Jover et al., 2020).

When interpreting the theoretical implications of my study, three out of the five hypotheses formulated were in line with the literature (H3, H4 and H5), one was partially in line (H2), while one was not corroborated in this thesis (H1). This being said, despite the deviations found – H1 and H2 – the results go in line with most studies in similar fields, even though several limitations impacted this thesis. These are mostly related to the past two past years, much influenced by COVID-19, but also due to the lack of responses collected, which decreased the reliability and confidence of the analysis.

In addition to these findings, it is also worth mentioning that the number of employees of a firm seems to be correlated to company performance, meaning that companies with a higher employee count tend to show higher total values in sales and profits, at a high significance level – 99% in most cases – on average and everything else constant. These results go in the same direction as many previous studies (Doğan, 2013; Serrasqueiro & Maçãs Nunes, 2008), which mention that there is a positive correlation between size indicators, in this case employee count, and profitability of firms, according to Doğan (2013). Nevertheless, when accounting for company growth, the opposite happens. Firms with higher employee counts tend to grow at slower rates when compared to the others. This result is also explored in several papers that, among other things state that,

particularly in SMEs, firms who show successive and consistent growth are younger and have lower employee counts (Becker-Blease et al., 2010; Orser et al., 2000). Contrarily, firms who consistently tend to plateau or even decline, are usually older firms with more employees (Orser et al., 2000). This thought is particularly evident in Becker-Blease and collaborators' (2010) study, where it is stated that "profitability is negatively correlated with the number of employees for firms of a given size" (p. 7).

5.2 Implications

This study provides some relevant insights both from an academic and from a company's point of view. The influence of CEOs on their respective firms is a topic that has been explored in detail in many areas, including leadership, employee motivation, company strategy, decision making and culture setting, among many others (Busenbark et al., 2016; Hambrick & Quigley, 2014; Waldman et al., 2001). Despite this and bearing in mind that most studies have found that CEOs are of extreme importance to their companies and that it has been proved that CEO differences help explain part of the variation of firm performance and profitability (Lieberson & O'connor, 1972; Mackey, 2008), the study on their personality and its influence on company performance is an underdeveloped subject in the literature.

Being a CEO entails the development of multiple tasks, decision making, motivating employees, among many other assignments. This way, his or her personality is a major factor, not only through culture setting and leadership, but also in terms of firm strategy and decision-making. As seen in the literature review, an individuals' personality influences the behavior, way of thinking and feeling of said person. This highlights the importance of CEO personality and entails that its study should be further developed as it may influence many areas within the company.

This thesis found that CEOs with low scores of neuroticism tend to lead their firms to higher performance and growth levels. This result goes in the same direction as the literature in the area (Domingos, 2015; Verdú-Jover et al., 2020), proving that this trait is, in fact, significant and something that should be considered in the process of hiring a CEO. Many other individual characteristics should be taken into account in this process as personality traits only explain a part of the variation of performance; nevertheless, this study provides a framework regarding the

influence of personality on the hiring of a CEO, meaning that, everything else constant, a person with lower scores of neuroticism should be chosen over a person with higher scores.

Companies should, therefore, bear in mind that CEOs low on neuroticism and high on conscientiousness tend to lead their firms to better results. This way, personality should be taken into consideration when choosing the next leader of a company. Additionally, CEO personality traits, by influencing firm performance in a significant way, should be addressed in future CEO-level studies and should be usen as mediator variables in any study that measures the influence of the CEO on firm performance and growth.

5.3 Limitations

This study faced several limitations, which I will now address.

The responses to my questionnaire were collected based on a snowball technique, which, has previously studied in the academic literature, show a set of limitations that must be accounted for (Parker et al., 2020b; Sadler et al., 2010). This proved to be the case in terms of industry dispersity as most responses to my questionnaire are from firms working in the same industries (all responses are from either healthcare, real estate, finance, hospitality, construction, retail or other sectors) with a tendency of concentration among the retail industry – 33%. This way I could not account for industry effects in my models, which have been studied in detail in the academic literature (Arend, 2009; Mauri & Michaels, 1998; Short et al., 2009) and, according to Arend (2009), help to explain 4% - 20% of the variance around firm performance. To avoid this issue, future studies should partner with big companies that have more experience conducting surveys and that have enough influence to recruit a big number of CEOs (Teixeira, 2021).

The personality measurement used in this study was the BFI. This instrument, despite its reliability and use in the academic literature (Benet-Martínez & John, 1998; Brito Costa et al., 2016; Domingos, 2015; Fernandes, 2021; John et al., 2008a; John & Srivastava, 1999), has its own set of limitations. These are related to it being a self-assessment (Larson, 2019), brief measure (Gosling et al., 2003) and, also, due to it using the Big Five Personality Traits model, which is a broad model of personality (despite accounting “for much of the variation in human behavior” it does “not account for all of that variation”, p. 88, - Paunonen and Ashton 2001). Even though no consensus

has been found in regard to a more reliable scale of personality to be used for future studies, facet-level traits (Fernandes, 2021; Larson, 2019; Paunonen & Ashton, 2001) and the use of both self-reports and observer ratings (Fernandes, 2021; McCrae et al., 2005) have been proposed in the literature to address BFI's shortcomings. This would increase the reliability of personality measures but would also increase the difficulty of the study and of getting CEO responses.

As I have noted throughout this process, CEOs are a group of workers that are very difficult to reach. This is due to multiple reasons which include their lack of free time, the importance of their work that can either lead their company to success, to failure or anywhere in between. This constant pressure tends to make CEOs not too fond of wasting time or of not using it in the most efficient way possible. I can definitely say that most of the people who responded to my questionnaire would not have done it were it not for knowing me or my contacts on a personal level. As this study uses a 44-question inventory – BFI – it also increases the likelihood that people get tired of answering questions, being this very likely to have occurred due to the fact that several people did not answer the BFI or company information questions (even though the questionnaire was anonymous). As previously mentioned, future studies should partner with big data corporations with the means to reach out to multiple CEOs and collect full responses from them.

Another limitation regarding my study is related to the period chosen to analyze (previous three years) as it coincided partially with the pandemic of COVID-19. Despite it affecting different companies in distinct ways, it certainly adds a lot of uncertainty to the study. The main aim of my paper was to evaluate the impact that personality traits have on SME performance and firm growth, if any. However, if growth is measured in a pandemic period which had severe consequences not only to the survival of firms (Gourinchas et al., 2020; Miklian & Hoelscher, 2022; Smallbone et al., 2012) but also to the functioning of their normal activities, it will undoubtedly have an impact on the metrics used, in this case, sales and profits. Although the results go in line with previous literature (three hypotheses validated, one partially validated and one not validated), I would advise future researchers to perform firm-related studies in a non-recession period.

In addition, in terms of firm metrics I intended on using the Return on Assets as a variable to test the performance and growth of companies. This financial measure can be calculated by dividing the net income by total assets. This metric, according to Doğan (2013), Hill and Snell (1988) and Zajac and Kellogg (1990) is the most appropriate to assess the performance and evolution of firms.

The reason as to why it was not used is related to the burden that it would imply on the CEOs which, most likely do not know these by memory. Nevertheless, future researchers would increase the reliability of their studies if this metric was incorporated as a dependent variable.

6. CONCLUSION

My study found that CEO personality traits (in particular, neuroticism and conscientiousness) have an influence on firm performance and growth, going in line with previous literature, despite some deviations and limitations already explained.

The importance of CEO personality and its influence on company results is still an underdeveloped topic in the academic literature and one that should have more of a focus on. This idea is related to the fact that it studies the performance of companies which have tremendous importance in the Portuguese and European context (SMEs), while also evaluating the relationship there is between their performance/growth and CEO personality traits (which are shown to have significant influence, not only in previous studies but also in this thesis).

Furthermore, future researchers should use CEO personality traits as a mediating factor in most CEO level studies regarding leadership, strategy formulation, company culture, employee motivation, among many others, as personality influences the way CEOs think, act and feel. Being that CEO personality traits have also been proven to influence firm performance and growth, omitting these variables may can lead to biased findings in future researches.

7. REFERENCES

Abdullah, I., Omar, R., & Panatik, S. A. (2016). International Review of Management and Marketing A Literature Review on Personality, Creativity and Innovative Behavior. *International Review of Management and Marketing*, *6*(1), 177–182. http:www.econjournals.com

Altarawneh, M., Intan, T., Malaysia, U., & Shafie, R. (2020). CEO CHARACTERISTICS: A LITERATURE REVIEW AND FUTURE DIRECTIONS. In *Academy of Strategic Management Journal* (Vol. 19, Issue 1).

Andersson, S., & Tell, J. (2009). The relationship between the manager and growth in small firms. In *Journal of Small Business and Enterprise Development* (Vol. 16, Issue 4, pp. 586–598). https://doi.org/10.1108/14626000911000938

Anggadwita, G., & Mustafid, Q. Y. (2014). Identification of Factors Influencing the Performance of Small Medium Enterprises (SMEs). *Procedia - Social and Behavioral Sciences*, *115*, 415–423. https://doi.org/10.1016/j.sbspro.2014.02.448

Anning-Dorson, T. (2021). Organizational culture and leadership as antecedents to organizational flexibility: implications for SME competitiveness. *Journal of Entrepreneurship in Emerging Economies*, *13*(5), 1309–1325. https://doi.org/10.1108/JEEE-08-2020-0288

Araujo-Cabrera, Y., Suarez-Acosta, M. A., & Aguiar-Quintana, T. (2017). Exploring the Influence of CEO Extraversion and Openness to Experience on Firm Performance: The Mediating Role of Top Management Team Behavioral Integration. *Journal of Leadership and Organizational Studies*, *24*(2), 201–215. https://doi.org/10.1177/1548051816655991

Arend, R. J. (2009). Industry effects and firm effects: No effect is an island. *Journal of Business Research*, *62*(6), 651–659. https://doi.org/10.1016/j.jbusres.2008.02.002

Arterberry, B. J., Martens, M. P., Cadigan, J. M., & Rohrer, D. (2014). Application of generalizability theory to the big five inventory. *Personality and Individual Differences*, *69*, 98–103. https://doi.org/10.1016/j.paid.2014.05.015

Becker-Blease, J. R., Kaen, F. R., Etebari, A., & Baumann, H. (2010). *Employees, Firm Size and Profitability of U.S. Manufacturing Employees, Firm Size and Profitability of U.S. Manufacturing Industries Industries*. https://scholars.unh.edu/account_facpub

Benet-Martínez, V., & John, O. P. (1998). Los Cinco Grandes Across Cultures and Ethnic Groups: Multitrait Multimethod Analyses of the Big Five in Spanish and English. *Journal of Personality and Social Psychology*, *75*(3), 729–750. https://doi.org/10.1037/0022-3514.75.3.729

Bonett, D. G., & Wright, T. A. (2015). Cronbach's alpha reliability. *Source: Journal of Organizational Behavior*, *36*(1), 3–15. https://doi.org/10.2307/26610966

Brito Costa, S., Bem-Haja, P., Moisao, A., Alberty, A., Vicente Castro, F., & de Almeida, H. (2016). PSYCHOMETRIC PROPERTIES OF PORTUGUESE VERSION OF BIG FIVE INVENTORY (BFI). *International Journal of Developmental and Educational Psychology. Revista INFAD de Psicología.*, *1*(2), 83. https://doi.org/10.17060/ijodaep.2015.n2.v1.325

Burisch, M. (1984). *Approaches to personality inventory construction: A comparison of merits*.

Busenbark, J. R., Krause, R., Boivie, S., & Graffin, S. D. (2016). Toward a Configurational Perspective on the CEO: A Review and Synthesis of the Management Literature. In *Journal of Management* (Vol. 42, Issue 1, pp. 234–268). SAGE Publications Inc. https://doi.org/10.1177/0149206315618448

Christmann, A., & van Aelst, S. (2006). Robust estimation of Cronbach's alpha. *Journal of Multivariate Analysis*, *97*(7), 1660–1674. https://doi.org/10.1016/j.jmva.2005.05.012

Costa, P. T., & McCrae, R. R. (1992). Normal Personality Assessment in Clinical Practice: The NEO Personality Inventory. *Psychological Assessment*, *4*(1), 5–13. https://doi.org/10.1037/1040-3590.4.1.5

Daily, C. M., & Johnson, J. L. (1997). *Sources of CEO Power and Firm Financial Performance: A Longitudinal Assessment*.

Doğan, M. (2013). Does Firm Size Affect The Firm Profitability? Evidence from Turkey. In *Research Journal of Finance and Accounting www.iiste.org ISSN* (Vol. 4, Issue 4). Online. www.iiste.org

Domingos, M. S. P. (2015). *Influência das Características e dos Traços de Personalidade do Empresário-Fundador no Desempenho das PME Familiares*.

Eggers, F. (2020). Masters of disasters? Challenges and opportunities for SMEs in times of crisis. *Journal of Business Research*, *116*, 199–208. https://doi.org/10.1016/j.jbusres.2020.05.025

European Commission. (2011). *Business Dynamics: Start-ups, Business Transfers and Bankruptcy*.

Fernandes, M. de O. (2021). *The influence of advice on a service purchase decision and the role of personality in this effect*.

Franco, M., & Matos, P. G. (2015). Leadership styles in SMEs: a mixed-method approach. *International Entrepreneurship and Management Journal*, *11*(2), 425–451. https://doi.org/10.1007/s11365-013-0283-2

Goldberg, L. (1990). *An Alternative "Description of Personality": The Big-Five Factor Structure*.

Goodman, L. A. (1961). Snowball Sampling. In *Source: The Annals of Mathematical Statistics* (Vol. 32, Issue 1).

Gosling, S. D., Rentfrow, P. J., & Swann, W. B. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality*, *37*(6), 504–528. https://doi.org/10.1016/S0092-6566(03)00046-1

Gourinchas, P.-O., Kalemli-Özcan, Şebnem, Penciakova, V., Sander, N., Decker, R., Martin, P., Neiman, B., Ragot, X., Sraer, D., Thesmar, D., & Wang, J. (2020). *COVID-19 AND SME FAILURES*. http://www.nber.org/papers/w27877

Halikias, J., & Panayotopoulou, L. (2003). Chief executive personality and export involvement. *Management Decision*, *41*(4), 340–349. https://doi.org/10.1108/00251740310468072

Hambrick, D. C., & Quigley, T. J. (2014). Toward more accurate contextualization of the CEO effect on firm performance. *Strategic Management Journal*, *35*(4), 473–491. https://doi.org/10.1002/smj.2108

Han, M. P., Seok, B. I., & Kim, J. H. (2017). Effects of six personality factors of ceos at small and medium-sized enterprises on performance in business management: Focusing on learning and growth. *Asian Academy of Management Journal*, *22*(2), 97–128. https://doi.org/10.21315/aamj2017.22.2.4

Hill, C. W. L., & Snell, S. A. (1988). EXTERNAL CONTROL, CORPORATE STRATEGY, AND FIRM PERFORMANCE IN RESEARCH-/-INTENSIVE INDUSTRIES. In *Strategic Management Journal* (Vol. 9).

John, O. P., Naumann, L. P., & Soto, C. J. (2008a). *Paradigm Shift to the Integrative Big Five Trait Taxonomy History, Measurement, and Conceptual Issues*.

John, O. P., Naumann, L. P., & Soto, C. J. (2008b). *Paradigm Shift to the Integrative Big Five Trait Taxonomy History, Measurement, and Conceptual Issues*.

John, O. P., & Srivastava, S. (1999). *The Big Five Trait Taxonomy: History, Measurement and Theoretical Perspectives*.

Kaiser, R. B., Hogan, R., & Craig, S. B. (2008). Leadership and the Fate of Organizations. *American Psychologist*, *63*(2), 96–110. https://doi.org/10.1037/0003-066X.63.2.96

Kaplan, S. N., Klebanov, M. M., Sorensen, M., Altman, D., Baker, M., Frydman, C., Harvey, C., Graham, J., Jensen, M., Pratch, L., Robinson, D., Yermack, D., Da, X., Garger, S., Iftimie, C., Tang, I., Tse, P., & Yamada, J. (2012). Which CEO Characteristics and Abilities Matter? In *THE JOURNAL OF FINANCE •: Vol. LXVII* (Issue 3).

Kerr, S. P., Kerr, W. R., & Xu, T. (2018). Personality traits of entrepreneurs: A review of recent literature. In *Foundations and Trends in Entrepreneurship* (Vol. 14, Issue 3, pp. 279–356). Now Publishers Inc. https://doi.org/10.1561/0300000080

Kets De Vries, M. F. R., & Miller, D. (1986). Personality, Culture, and Organization. In *Source: The Academy of Management Review* (Vol. 11, Issue 2).

Kraja, Y. B., Osmani, E., & Molla, F. (2014). The Role of the Government Policy for Support the SME-s. *Academic Journal of Interdisciplinary Studies*. https://doi.org/10.5901/ajis.2014.v3n2p391

Kraus, S., Berchtold, J., Palmer, C., & Filser, M. (2018). Entrepreneurial Orientation: The Dark Triad of Executive Personality. *Journal of Promotion Management*, *24*(5), 715–735. https://doi.org/10.1080/10496491.2018.1405524

Kyriakidou, N., Smith, G., & Lampadarios, E. (2017). Towards a new framework for SMEs success: a literature review. *International Journal of Business and Globalisation*, *18*(2), 194. https://doi.org/10.1504/ijbg.2017.10001686

Larson, R. B. (2019). Controlling social desirability bias. *International Journal of Market Research*, *61*(5), 534–547. https://doi.org/10.1177/1470785318805305

Leys, C., Ley, C., Klein, O., Bernard, P., & Licata, L. (2013). Detecting outliers: Do not use standard deviation around the mean, use absolute deviation around the median. *Journal of Experimental Social Psychology*, *49*(4), 764–766. https://doi.org/10.1016/j.jesp.2013.03.013

Lieberson, S., & O'connor, J. F. (1972). Leadership and Organizational Performance: A Study of Large Corporations. In *Source* (Vol. 37, Issue 2). American Sociological Review. https://www.jstor.org/stable/2094020

Ling, Y., Zhao, H., & Baron, R. A. (2007). Influence of Founder—CEOs' Personal Values on Firm Performance: Moderating Effects of Firm Age and Size†. *Journal of Management*, *33*(5), 673–696. https://doi.org/10.1177/0149206307305564

Lopriore, M. (2009). Supporting Enterprise Development and SME in Europe. *EIPASCOPE 2009/2*.

Mackey, A. (2008). The effect of CEOS on firm performance. *Strategic Management Journal*, *29*(12), 1357–1367. https://doi.org/10.1002/smj.708

Maranto-Vargas, D., & Gómez-Tagle Rangel, R. (2007). Development of internal resources and capabilities as sources of differentiation of SME under increased global competition: A field study in Mexico. *Technological Forecasting and Social Change*, *74*(1), 90–99. https://doi.org/10.1016/j.techfore.2005.09.007

Mauri, A. J., & Michaels, M. P. (1998). FIRM AND INDUSTRY EFFECTS WITHIN STRATEGIC MANAGEMENT: AN EMPIRICAL EXAMINATION. In *Strategic Management Journal* (Vol. 19).

McCrae, R. R., & Costa, P. T. (1986). Clinical Assessment Can Benefit From Recent Advances In Personality Psychology. *American Psychologist*, *41*(9), 1001–1003. https://doi.org/10.1037/0003-066X.41.9.1001

McCrae, R. R., Costa, P. T., & Martin, T. A. (2005). The NEO-PI-3: A more readable Revised NEO Personality Inventory. *Journal of Personality Assessment*, *84*(3), 261–270. https://doi.org/10.1207/s15327752jpa8403_05

Miklian, J., & Hoelscher, K. (2022). SMEs and exogenous shocks: A conceptual literature review and forward research agenda. In *International Small Business Journal: Researching Entrepreneurship* (Vol. 40, Issue 2, pp. 178–204). SAGE Publications Ltd. https://doi.org/10.1177/02662426211050796

Miller, D., Kets, M. F. R., Vries, D., & Toulouse, J.-M. (1982). Top Executive Locus of Control and Its Relationship to Strategy-Making, Structure, and Environment. In *Source: The Academy of Management Journal* (Vol. 25, Issue 2). https://www.jstor.org/stable/255988?seq=1&cid=pdf-

Miller, D., & Toulouse, J.-M. (1986). Chief Executive Personality and Corporate Strategy and Structure in Small Firms. In *Management Science* (Vol. 32, Issue 11). https://www.jstor.org/stable/2631499

Moore, S. B., & Manring, S. L. (2009). Strategy development in small and medium sized enterprises for sustainability and increased value creation. *Journal of Cleaner Production*, *17*(2), 276–282. https://doi.org/10.1016/j.jclepro.2008.06.004

Orser, B. J. ;, Hogarth-Scott, S. ;, & Riding, A. L. (2000). Performance, firm size, and management problem solving. In *Journal of Small Business Management* (Vol. 38).

Özer, F., & Tınaztepe, C. (2014). Effect of Strategic Leadership Styles on Firm Performance: A Study in a Turkish SME. *Procedia - Social and Behavioral Sciences*, *150*, 778–784. https://doi.org/10.1016/j.sbspro.2014.09.059

Parker, C., Scott, S., & Geddes, A. (2020a). *Snowball Sampling*. https://doi.org/10.4135/URL

Parker, C., Scott, S., & Geddes, A. (2020b). *Snowball Sampling*. https://doi.org/10.4135/URL

Pasanen, M. (2003). *In Search of Factors Affecting SME Performance: The Case of Eastern Finland*.

Paunonen, S. v., & Ashton, M. C. (2001). Big Five Predictors of Academic Achievement. *Journal of Research in Personality*, *35*(1), 78–90. https://doi.org/10.1006/jrpe.2000.2309

Peterson, R. S., Smith, D. B., Martorana, P. v., & Owens, P. D. (2003). The Impact of Chief Executive Officer Personality on Top Management Team Dynamics: One Mechanism by Which Leadership Affects Organizational Performance. *Journal of Applied Psychology*, *88*(5), 795–808. https://doi.org/10.1037/0021-9010.88.5.795

Prasanna, R. P. I. R., Jayasundara, J. M. S. B., Gamage, S. K. N., Ekanayake, E. M. S., Rajapakshe, P. S. K., & Abeyrathne, G. A. K. N. J. (2019). Sustainability of SMEs in the competition: A systemic review on technological challenges and SME performance. In *Journal of Open Innovation: Technology, Market, and Complexity* (Vol. 5, Issue 4). MDPI Multidisciplinary Digital Publishing Institute. https://doi.org/10.3390/joitmc5040100

Robu, M. (2013). *THE DYNAMIC AND IMPORTANCE OF SMES IN ECONOMY*. http://www.ifc.org/ifcext/globalfm.nsf/AttachmentsByTitle/MSME-Country-Indicators-Analysis-Note/$FILE/MSME-

Sadler, G. R., Lee, H. C., Lim, R. S. H., & Fullerton, J. (2010). Recruitment of hard-to-reach population subgroups via adaptations of the snowball sampling strategy. *Nursing and Health Sciences*, *12*(3), 369–374. https://doi.org/10.1111/j.1442-2018.2010.00541.x

Sarwoko, E., & Frisdiantara, C. (2016a). Growth Determinants of Small Medium Enterprises (SMEs). *Universal Journal of Management*, *4*(1), 36–41. https://doi.org/10.13189/ujm.2016.040105

Sarwoko, E., & Frisdiantara, C. (2016b). Growth Determinants of Small Medium Enterprises (SMEs). *Universal Journal of Management*, *4*(1), 36–41. https://doi.org/10.13189/ujm.2016.040105

Serrasqueiro, Z. S., & MaçÃs Nunes, P. (2008). Performance and size: Empirical evidence from Portuguese SMEs. *Small Business Economics*, *31*(2), 195–217. https://doi.org/10.1007/s11187-007-9092-8

Shao, L., & Management, B. A. (2014). *CEO GENDER AND FIRM PERFORMANCE*.

Short, J. C., McKelvie, A., Ketchen, D. J., & Chandler, G. N. (2009). Firm and industry effects on firm performance: A generalization and extension for new ventures. *Strategic Entrepreneurship Journal*, *3*(1), 47–65. https://doi.org/10.1002/sej.53

Singh, R. K., Garg, S. K., & Deshmukh, S. G. (2008). Strategy development by SMEs for competitiveness: A review. In *Benchmarking: An International Journal* (Vol. 15, Issue 5, pp. 525–547). https://doi.org/10.1108/14635770810903132

Smallbone, D., Deakins, D., Battisti, M., & Kitching, J. (2012). Small business responses to a major economic downturn: Empirical perspectives from New Zealand and the United Kingdom. *International Small Business Journal*, *30*(7), 754–777. https://doi.org/10.1177/0266242612448077

Smallbone, D., & Welter, F. (2012). The Role of Government in SME Development in Transition Economies. *International Small Business Journal*.

Statista, (2018). Average age at hire of CEOs and CFOs in the United States from 2005 to 2018. https://www.statista.com/statistics/1097551/average-age-at-hire-of-ceos-and-cfos-in-the-united-states/#:~:text=CEOs%20and%20CFOs%20in%20the,age%20at%20hire%202005%2D2018&text=In%202018%2C%20the%20average%20age,States%20has%20been%20trending%20upwards.

Teixeira, M. A. (2021). *Behavioral Biases and Choices of Capital Structure: A Sample from Portugal*.

Tidor, A., Gelmereanu, C., Baru, P., & Morar, L. (2012). Diagnosing Organizational Culture for SME Performance. *Procedia Economics and Finance*, *3*, 710–715. https://doi.org/10.1016/s2212-5671(12)00218-3

Verdú-Jover, A. J., Estrada-Cruz, M., Rodríguez-Hernández, N., & Gómez-Gras, J. M. (2020). Relationship between CEO's personality and company's entrepreneurial orientation: The case of SMEs. *Journal of Management and Organization*. https://doi.org/10.1017/jmo.2020.33

Vo, T. D., & Tran, M. D. (2021). The Impact of Covid-19 Pandemic on the Global Trade. *International Journal of Social Science and Economics Invention*, *7*(01). https://doi.org/10.23958/ijssei/vol07-i01/261

Waldman, D. A., Ramírez, G. G., & House, R. J. (2001). Does Leadership Matter? CEO Leadership Attributes and Profitability under Conditions of Perceived Environmental Uncertainty. In *Management Journal* (Vol. 44, Issue 1). https://www.jstor.org/stable/3069341?seq=1&cid=pdf-

Wiklund, J. ;, & Shepherd. (2003). *Strategic Management Journal* (Vol. 24).

Wrzus, C., & Mehl, M. R. (2015). Lab and/or field? measuring personality processes and their social consequences. *European Journal of Personality*, *29*(2), 250–271. https://doi.org/10.1002/per.1986

Zacharias, N. A., Six, B., Schiereck, D., & Stock, R. M. (2015). CEO influences on firms' strategic actions: A comparison of CEO-, firm-, and industry-level effects. *Journal of Business Research*, *68*(11), 2338–2346. https://doi.org/10.1016/j.jbusres.2015.03.045

Zajac, E. J., & Kellogg, J. L. (1990). / CEO SELECTION, SUCCESSION, COMPENSATION AND FIRM PERFORMANCE: A THEORETICAL INTEGRATION AND EMPIRICAL ANALYSIS. In *Strategic Management Journal* (Vol. 11).

Zhou, H. (2009). *Determinants and dimensions of firm growth*. www.eim.nl

Zimmerli, W., Richter, K., & Holzinger, M. (2007). *Corporate Ethics and Corporate Governance*.

8. APPENDIX

8.1 Appendix A | Full Survey in Portuguese

Start of Block: Introdução

Introdução Caro participante,
O meu nome é Joaquim Luís Simões Malafaia e estou a desenvolver a minha tese na área de Optimal Decision Making, particularmente no que diz respeito à influência da personalidade de CEO's e executivos na performance de pequenas e médias empresas, nas quais desempenham essas mesmas funções, pelo que a finalidade deste questionário é a obtenção de informação fidedigna para análise posterior.
Todos os dados são recolhidos de forma anónima e usados exclusivamente para esta pesquisa. Levará cerca de 10 minutos a concluir o questionário, sendo que a sua participação é uma contribuição deveras importante e com um valor incalculável para a minha investigação.
Peço-lhe que responda da maneira mais honesta possível e em caso de dúvidas ou curiosidades acerca do estudo, não hesite em contactar-me através do meu e-mail: joaquimlsmalafaia@gmail.com, sendo que terei todo o gosto em conhecer as pessoas que farão o meu estudo ser possível, servindo de base para o mesmo.
Agradeço desde já o seu tempo e colaboração!

End of Block: Introdução

Start of Block: Informações Pessoais

Introdução IP Nesta secção terá de responder a algumas perguntas simples de carácter pessoal relativas a características demográficas, de estudo e de trabalho.

Q1 Idade

_____

Q2 Género

- ○ Masculino (1)
- ○ Feminino (2)
- ○ Outro (3) _____

Q3 Grau de Escolaridade

- ○ Ensino Secundário ou menos (1)
- ○ Ensino Superior – Licenciatura ou equivalente (2)
- ○ Ensino Superior – Mestrado ou equivalente (3)
- ○ Ensino Superior – Doutoramento ou equivalente (4)
- ○ Outro (5) _____

Q4 Área(s) de Formação (Relativamente a Todos os Níveis de Ensino Superior)

- ☐ Economia (1)
- ☐ Gestão (2)
- ☐ Finanças (3)
- ☐ Marketing (4)
- ☐ Outro (5) _____

Q5 Posição atual na empresa

- ○ CEO (1)
- ○ CFO (4)
- ○ Executivo (Especificar a Função) (2) _____
- ○ Outra (Especificar) (3) _____

Q6 Tempo decorrido a desempenhar a posição mencionada (em anos)

_____

End of Block: Informações Pessoais

Start of Block: Big 5 Personality Test

Q7 Nesta secção encontram-se algumas características que podem, ou não, dizer respeito à sua personalidade. De acordo com a escala em questão (1. Completamente em Desacordo, 2. Moderadamente em Desacordo, 3. Nem Concordo nem Discordo, 4. Concordo Parcialmente, ou 5. Concordo Plenamente) escolha a opção que, na sua opinião, se adeque mais à sua sua maneira de ser, estar ou trabalhar.	Completamente em Desacordo (1)	Moderadamente em Desacordo (2)	Nem Concordo nem Discordo (3)	Concordo Parcialmente (4)	Concordo Plenamente (5)
1. É conversador (1)	○	○	○	○	○
2. Tende a ser crítico com os outros (2)	○	○	○	○	○
3. Faz um trabalho eficiente e com qualidade (3)	○	○	○	○	○
4. É depressivo, triste (4)	○	○	○	○	○
5. É original e criativo (5)	○	○	○	○	○
6. É reservado (6)	○	○	○	○	○
7. É altruísta e ajudável (7)	○	○	○	○	○
8. Pode ser um tanto descuidado (8)	○	○	○	○	○
9. É relaxado, controla bem o stress (9)	○	○	○	○	○
10. É curioso sobre muitas temáticas diferentes (10)	○	○	○	○	○
11. É cheio de energia (11)	○	○	○	○	○
12. Começa discussões e disputas com os outros (12)	○	○	○	○	○
13. É um trabalhador de confiança (13)	○	○	○	○	○
14. Fica frequentemente tenso (14)	○	○	○	○	○
15. É engenhoso, alguém que gosta de analisar profundamente as coisas (15)	○	○	○	○	○

16. Gera muito entusiasmo (16)	○	○	○	○	○
17. Tem capacidade de perdoar facilmente (17)	○	○	○	○	○
18. Tende a ser desorganizado (18)	○	○	○	○	○
19. Preocupa-se muito com tudo (19)	○	○	○	○	○
20. Tem uma imaginação fértil/ ativa (20)	○	○	○	○	○
21. Tende a ser calado (21)	○	○	○	○	○
22. É geralmente confiável (22)	○	○	○	○	○
23. Tende a ser preguiçoso (23)	○	○	○	○	○
24. É emocionalmente estável, não se altera facilmente (24)	○	○	○	○	○
25. É inventivo (25)	○	○	○	○	○
26. Tem uma personalidade assertiva (26)	○	○	○	○	○
27. Pode ser frio e distante (27)	○	○	○	○	○
28. Insiste até concluir a tarefa ou o trabalho (28)	○	○	○	○	○
29. É temperamental, muda de humor facilmente (29)	○	○	○	○	○
30. Valoriza experiências artísticas, estéticas (30)	○	○	○	○	○
31. Às vezes é tímido e inibido (31)	○	○	○	○	○
32. É amável, gentil com os outros (32)	○	○	○	○	○
33. Faz as mais variadas coisas com eficiência (33)	○	○	○	○	○
34. Mantém-se calmo em situações de tensão (34)	○	○	○	○	○
35. Prefere trabalho rotineiro (35)	○	○	○	○	○
36. É extrovertido e sociável (36)	○	○	○	○	○

37. É frequentemente rude/grosseiro com os outros (37)	○	○	○	○	○
38. Faz planos e segue-os à risca (38)	○	○	○	○	○
39. Fica nervoso facilmente (39)	○	○	○	○	○
40. Gosta de refletir, brincar com as ideias (40)	○	○	○	○	○
41. Tem poucos interesses artísticos (41)	○	○	○	○	○
42. Gosta de cooperar com outros (42)	○	○	○	○	○
43. É facilmente distraído (43)	○	○	○	○	○
44. É sofisticado em artes, música ou literatura (44)	○	○	○	○	○

End of Block: Big 5 Personality Test

Start of Block: Informações Acerca da Empresa

Finalmente, neste último bloco peço que responda a uma série de questões, relativas à empresa em que trabalha, com o maior rigor possível devido à importância desta informação no contexto global do estudo.

Q8 Setor de Atividade

- ○ Agricultura, produção animal, caça, silvicultura e pesca (1)
- ○ Indústria transformadora (2)
- ○ Indústria extrativa (3)
- ○ Eletricidade, gás, água ou outras energias (4)
- ○ Construção (5)
- ○ Comércio por grosso e retalho (6)
- ○ Transporte e armazenagem (7)
- ○ Alojamento, restauração ou outros serviços de hospitalidade (8)
- ○ Setor financeiro e/ou de seguros (9)
- ○ Setor imobiliário (10)
- ○ Educação (11)
- ○ Atividades de saúde humana e apoio social (12)
- ○ Outro (13) _____

Q9 Número Atual de Trabalhadores Empregados

_____

Q10 Total do Balanço em 2021 (€) - Arredondado às unidades

_____

Display This Question:

If If Total do Balanço em 2021 (€) - Arredondado às unidades Text Response Is Greater Than 43000000

Q11 Total do Volume de Negócios de 2021 (€)

_____

Q12 Lucros/Prejuízos Anuais (€) Registados em:

- 2021 (1) _____
- 2020 (2) _____
- 2019 (3) _____

Q13 Total Anual de Vendas (€) Registado em:

- 2021 (1) _____
- 2020 (2) _____
- 2019 (3) _____

End of Survey

Agradecemos a sua participação neste inquérito e o tempo despendido.

A sua resposta foi registada.

8.2 Appendix B | Models and Regressions

Table B.1.

Summary statistics

Statistic	N	Mean	St. Dev.	Min	Max
Current Position in the Company	37	1.00	0.00	1	1
Time Spent on That Role	37	17.45	9.87	3.50	40.00
Extraversion	37	3.85	0.61	2.38	4.88
Agreeableness	37	3.96	0.46	2.44	4.78
Conscientiousness	37	4.08	0.54	2.67	5.00
Neuroticism	37	2.33	0.65	1.13	3.50
Openness to Experience	37	3.83	0.67	2.30	5.00
Total Turnover in 2021	4	14,129,622.00	3,746,518.00	10,000,00	18,000,00
Profits in 2021	37	363,496.00	763,952.50	-6,39	3,500,00
Profits in 2020	37	286,878.80	675,861.90	-75,62	3,490,35
Profits in 2019	37	349,271.10	907,935.90	-455,69	4,000,00
Average Profits	37	333,215.30	690,235.40	-28,376.67	2,666,667.00
Increase in Profits 20-21	37	76,617.24	523,944.50	-1,779,82	2,500,00
Increase in Profits 19-20	37	-62,392.35	885,829.00	-2,500,00	3,946,03
Increase in Profits 19-21	37	14,224.89	497,238.00	-2,000,00	2,166,22
Sales2021	37	2,040,485.00	3,688,044.00	7,50	17,300,00
Sales2020	37	2,462,641.00	6,525,961.00	3,75	37,297,91
Sales2019	37	2,133,348.00	4,475,913.00	5,40	17,400,00
Increase in Sales 20-21	37	-422,155.90	4,288,119.00	-25,279,42	4,400,00
Increase in Sales 19-20	37	329,293.40	5,757,416.00	-7,000,00	32,776,61
Increase in Sales 19-21	37	-92,862.51	2,275,838.00	-8,000,00	7,497,19
Average Sales	37	2,212,158.00	4,371,062.00	5,550.00	17,945,896.00
Age	37	51.03	11.13	28	72
Gender	37	1.35	0.48	1	2
Level of Education	37	1.87	0.86	1	4
Industry Field	37	9.03	3.11	5	13
Current Number of Employees	37	23.14	42.63	1	180

Table B.2.

Regression coefficients (and respective standard errors) of CEO personality traits on firm profits of 2021 and on the average of profits of the past three years

	Dependent variable:	
	Profits in 2021	Average Profits
	(1)	(2)
Agreeableness	230,676.30	156,726.20
	(336,153.00)	(306,477.30)
Extraversion	-159,760.50	-108,568.20
	(227,671.10)	(207,572.30)
Conscientiousness	145,542.70	129,775.30
	(301,858.90)	(275,210.70)
Neuroticism	-316,905.20	-258,501.00
	(222,330.20)	(202,702.80)
Openness to Experience	106,664.30	115,599.70
	(223,083.50)	(203,389.70)
Constant	-200,854.80	-240,782.90
	(1,374,673.00)	(1,253,317.00)
Observations	37	37
R2	0.087	0.071
Adjusted R2	-0.060	-0.079
Residual Std. Error (df = 31)	786,428.70	717,002.50
F Statistic (df = 5; 31)	0.594	0.472
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table B.3.

Regression coefficients (and respective standard errors) of CEO personality traits on firm sales of 2021 and on the average of sales of the past three years

	Dependent variable:	
	Sales in 2021	Average Sales
	(1)	(2)
Agreeableness	266,332.90	411,627.90
	(1,601,042.00)	(1,838,915.00)
Extraversion	687,988.80	243,784.80
	(1,084,361.00)	(1,245,468.00)
Conscientiousness	1,069,132.00	1,825,619.00
	(1,437,705.00)	(1,651,310.00)
Neuroticism	-1,798,643.00*	-2,708,979.00**
	(1,058,923.00)	(1,216,251.00)
Openness to Experience	305,076.10	902,072.10
	(1,062,511.00)	(1,220,372.00)
Constant	-3,002,287.00	-4,952,598.00
	(6,547,345.00)	(7,520,108.00)
Observations	37	37
R2	0.112	0.166
Adjusted R2	-0.031	0.031
Residual Std. Error (df = 31)	3,745,632.00	4,302,134.00
F Statistic (df = 5; 31)	0.780	1.233
Note:	*p<0.1; **p<0.05; ***p<0.01	