

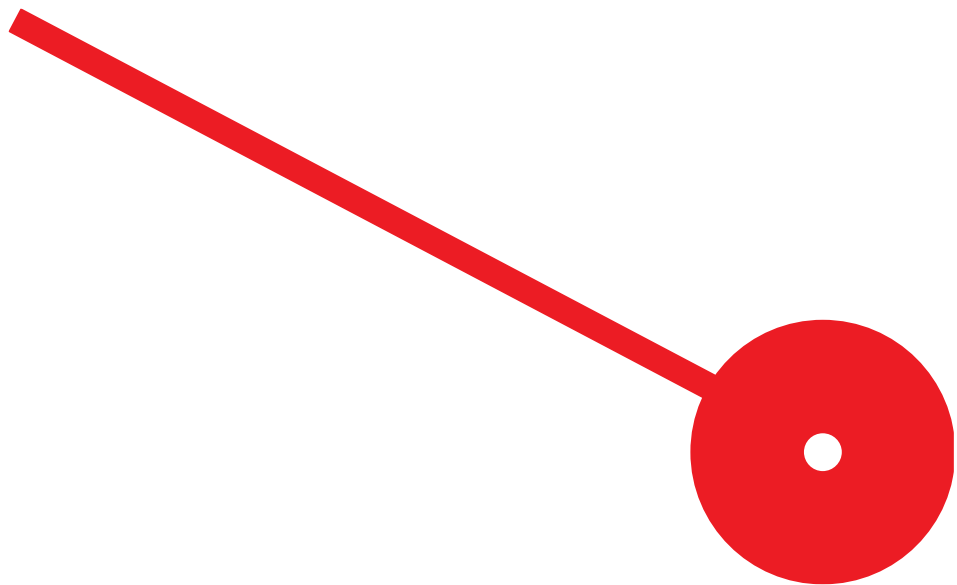
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Master's degree in Entrepreneurship and Internationalization

# Linking Emotional Intelligence and Transformational Leadership: An empirical study of the Portuguese Technological Sector

Joana Filipa Amorim Moreira

07/2022



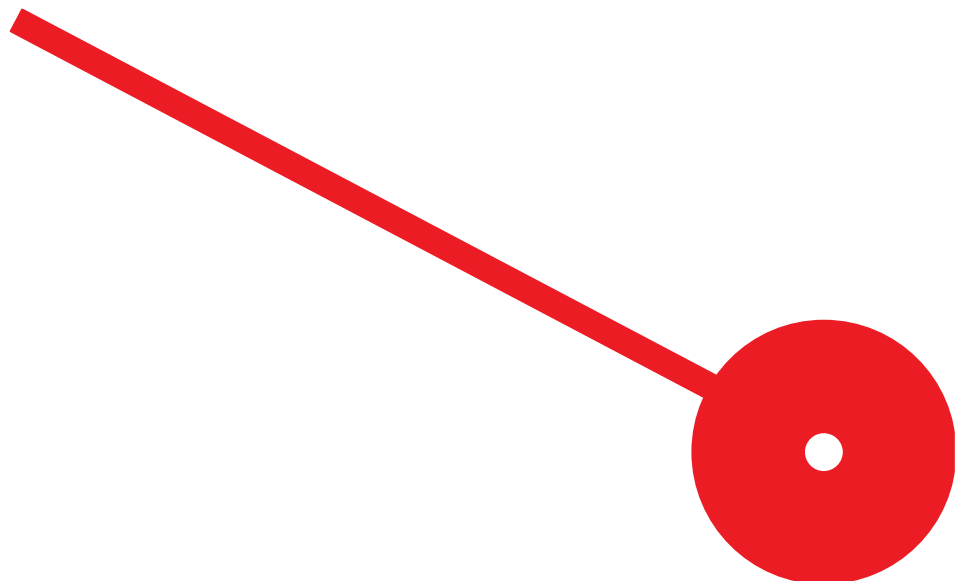
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Joana Filipa Amorim Moreira

**Master's dissertation presented to Instituto Superior de Contabilidade e Administração do Porto to obtain a master's degree in Entrepreneurship and Internationalization, under the guidance of Professor Orlando Lima Rua.**



## **Acknowledgment**

“There are people who pass through our lives and teach us a lot, some positively. Others in a negative way, but that also cooperate for our learning. But none of them are as important as those that remain with us.” (Luís Victhorino)

With the conclusion of this master’s degree, it is time to say goodbye to an institution that was like home for almost 7 years. For all the professors that crossed my path during this time in ISCAP, my special thanks for inspiring me and giving me the honor to learn with you Especially to the master’s coordinator professor Maria Clara Ribeiro, who was always present to give enlightenment, thank you for making this process easier.

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For last, to all the people that cross my path and taught me something, positive or negative, thank you for the learning and to help me to become who I am.

**THANK YOU!**

## **Abstract:**

This study aims to analyze the relationship between emotional intelligence, including its dimensions, and transformational leadership in Portuguese companies from the technology sector.

In this sense, we reviewed the literature on emotional intelligence, transformational leadership and the linkage between themes. An empirical study was conducted using an online questionnaire to adopt a quantitative methodological approach. 180 responses were obtained from executive directors of companies in the mentioned sector. Data analysis was performed using the structural equation model (SEM).

The results demonstrated a positive and significant relationship between three of emotional intelligence dimensions' and transformational leadership, more specifically, between self-emotion appraisal (SEA), other's emotion appraisal (OEA) and the use of emotions (UA), and between transformational leadership. However, the relationship between emotion regulation (ER) and transformational leadership was not supported.

This study differs from the others as it seeks to establish relationships between emotional intelligence dimensions' and transformational leadership rather than treating the emotional intelligence's construct as a whole. Therefore, considering the scarce literature relating to the mentioned constructs fills the literature's lack. Its applicability in the Portuguese technological sector is also an innovative factor.

**Keywords:** Emotional Intelligence, Social Intelligence, Transformational Leadership, Portuguese Technological Sector, Structural Equations Modeling (SEM).

## **Resumo:**

O objetivo fundamental deste estudo é compreender a relação entre inteligência emocional, compreendendo as várias dimensões desta, e liderança transformacional em empresas do setor tecnológico português.

Neste sentido, procedeu-se à revisão de literatura existente dedicada a estes construtos e à realização de um estudo empírico com a adoção de uma abordagem metodológica quantitativa, com recurso à aplicação de um questionário online. Obteve-se 180 respostas de diretores executivos de empresas do referido setor. A análise dos dados foi realizada através do modelo de equações estruturais (SEM).

Os resultados obtidos demonstraram a existência de uma relação positiva e significativa entre inteligência emocional e liderança transformacional, mais especificamente, entre autoavaliação das emoções, avaliação das emoções dos outros e uso de emoções e entre liderança transformacional. Porém, não foi possível comprovar a relação entre regulação de emoções e a liderança transformacional.

Este estudo diferencia-se dos demais por procurar estabelecer relações diretas entre as dimensões da inteligência emocional e a liderança transformacional em vez de tratar o conceito em bloco. A sua aplicabilidade no setor tecnológico português também é um fator de diferenciação pela falta de literatura no referido setor. O estudo diferencia-se de forma geral pela pouca literatura existente relacionando os constructos.

**Palavras chave:** Inteligência Emocional, Inteligência Social, Liderança Transformacional, Setor Tecnológico Português, Modelo das Equações Estruturais (MEE).

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## **List of abbreviations**

EI – Emotional Intelligence

IQ – Intelligence coefficient

OEA – Others' Emotional Appraisal

RE – Regulation of Emotions

SEA - Self-Emotion Appraisal

SI – Social Intelligence

UE – Use of Emotions

## INTRODUCTION

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Nowadays, the business world is more competitive than ever, leading to the increasing importance of organizations to be aware and constantly improving organizational culture to keep their workers motivated and their productivity high (Goleman, 2020). In this order, organizational leaders play a crucial role in influencing the emotional and organizational experience of the employees, as emotions affect critical cognitive tasks, including information processing and decision making (Gilar-Corbi et al., 2019). Formerly, organizations believed that an unavoidable absence of emotions, how to feel about something, what is done or how tasks are shared, is unusual and unwanted. However, according to this author, in the past decade, the “emotion-free” environment has been replaced by the idea that emotions are part of both individuals and organizations, affecting the overall performance.

According to Christensen (2012), formulating an organizational culture aligned with the organization’s strategy is essential to the success of an organization. Rahim et al. (2019) state that a leader’s social skills are critical to creating a comfortable work environment. Hunter (2020) and Daniel Goleman (2020) also argue that emotional competencies differentiate a good leader from a top leader, not neglecting the importance of the intelligence coefficient (IQ) in the process.

Bass (1990) identified good leaders as individuals who can better understand and interact with their followers, evaluate their feelings and those of others, and adapt their behavior appropriately to a specific situation. Good leaders show empathy to understand their followers’ needs, spend time assessing group attitudes and motivations and meet their degree of satisfaction (Özdemir, 2020).

This new paradigm assumes that if the individuals have enough academic qualifications and technical knowledge to get a job, personal skills such as initiative, empathy, adaptability, and persuasiveness are the key to professional excellence, especially leadership (Goleman, 2020). These skills are a strong indicator of satisfaction and high performance in the business context (O’Boyle, 2011).

Transformational leaders are in charge of sharing personal and organizational moral values with the employees, increasing their inherent motivation (Tran & Vu, 2021). According to Sehgal et al. (2021), motivated employees move beyond self-interest and commit themselves to the organization’s goals, performing beyond expectations.

The emotional intelligence of leaders is a key determinant in ensuring the effective functioning of the organizational environment, depending on their abilities and inputs (Zhu et al., 2021). According to this author, these leaders with a higher level of emotional intelligence can clarify the value of work and the relationships between individuals and organizations, so they are more inclined to share resources and communicate to achieve common goals

Therefore, prior empirical research has shown that emotional intelligence is responsible for identifying situations that need more attention and managing them using social skills to get the best out of relationships with peers, colleagues, leaders, and followers (Gonzaga & Rodrigues, 2018). Human behavior is highly interested in scientific studies on emotion and how it enhances leadership (Gonzaga, 2009). However, no empirical studies were done regarding the relationship between these constructs in the Portuguese technological sector. Moreover, the objective of this study is to analyze the relationship between the different dimensions of emotional intelligence.

This study is a response to some researchers who encouraged the analysis of how emotional intelligence dimensions' influence leadership behaviors in the technological organizational environment (Alavi & Leidner, 2001; Butler & Chinowsky, 2006; Sunindijo et al., 2007; Taouab & Issor, 2019; Rose, 2018; Zhu et al., 2021).

Thus, considering the intention of this study to explore the relationship between the emotional intelligence dimensions and transformational leadership, the following research questions are formulated:

*RQ1. How does self-emotion appraisal influence transformational leadership?*

*RQ2. How do others' emotional appraisals influence transformational leadership?*

*RQ3. How does the use of emotions influence transformational leadership?*

*RQ4. How does the regulation of emotions influence transformational leadership?*

The present study consists of 6 chapters: in chapter 1, a theoretical framework is presented, and the constructs are contextualized; in chapter 2 is presented the research model, objectives, and hypothesis of the paper; then in chapter 3, the methods used during the empirical study are described; in chapter 4, the results of the survey are presented and discussed, in chapter 5, the conclusions of the paper are made; finally, in chapter 6 the bibliography used is presented.

### 1.1 Intelligence p

#### 1.1.1 Concept and Evolution

The concept of intelligence has been defined as the ability to get and apply knowledge and skills to collect information of military or political value (Oxford, 2019). There is still some disagreement about this definition, as the search for a solid one has not been facilitated by divergent views on what should constitute its fundamental elements (Falode, 2021). Even though there is no consensual definition of what intelligence is or should be, there is a substantial settlement on its intention: to supply relative reassurance and minimize risk (Falode, 2021).

Sternberg (1997) originally defined intelligence as the ability to form and understand higher-level or more abstract concepts, including the mental skills necessary to adapt to any environment. Also, according to Sternberg (1997), intelligence is reactive to the environment and active in information by that definition. It provides people with the possibility of being flexible in demanding situations. At the time, rational intelligence was the only intelligence named and only related to each personality's cognitive aspects (Okeke et al., 2021).

Thus, Sternberg (1997) argues that intelligence performs at least two main functions in an individual's life, setting up (1) external correspondence and (2) internal consistency as people obtain external correspondence when their beliefs about an event are true – when they understand the cause and effect and people achieve internal consistency when their knowledge and beliefs on a phenomenon are clearly and reliably connected so that they do not contradict themselves.

Okeke et al. (2021) defined intelligence as an essential ability for various activities, including mental thinking, reasoning, problem-solving, thinking rationally, analyzing, figuring out cause-effect relationships, thinking abstractly, using language, visualizing things, and understanding different phenomena.

Through reason, we find which emotion we are feeling, discover the beliefs and values that gave rise to it, and decide what action to take in the face of it (Locke, 2005). The notion that some people are intelligent is widespread, with various associated terms easily defined with examples of behaviours and characteristics justifying the use of the selected term (Neisser,

1979). Byington and Felps (2010) follow this reasoning by suggesting that IQ helps individuals enhance their learning skills while participating in work-related training programs. According to Locke (2005), intelligence should be highly distinguished from rationality. The first refers to the ability to grasp abstractions. The second refers to how a person uses his mind; a person can simultaneously be highly intelligent and very irrational.

The perspective that emotions are more than physiological reactions and are part of what we conceive as reason was a real revolution in understanding human behaviour (Gonzaga & Rodrigues, 2018). According to Nanda and Randhawa (2022), intelligence includes two sources: cognition and emotion. The first has a more sizeable perception than the role of emotions toward a person's intelligence.

Rahim et al. (2018) defend that people commonly associate intelligence with rational intelligence (IQ), a measure of cognitive, academic, or mathematical–logical intelligence; however, it was acknowledged that rational intelligence is not a reliable predictor of someone's success or effective leadership.

Damásio (1996) challenged common sense by advocating that rationality depends on our emotions. Without emotions, we cannot make subjective assessments of reality, which can compromise our judgment and essential executive activities of our brain (de Souza et al., 2018). Based on this theory, recent research defends that we have two “minds” that act in parallel: our instinctive and emotional mind, which is fast and perceives many things at the same time, and our logical and rational mind, which comprises our “working memory” or, in other words, the domain of our consciousness (de Souza et al., 2018). Goleman (2020) goes further and states that rational intelligence and emotional intelligence are different but not opposed skills, given that we all use them simultaneously throughout our daily lives.

### **1.1.2 Emotional Intelligence**

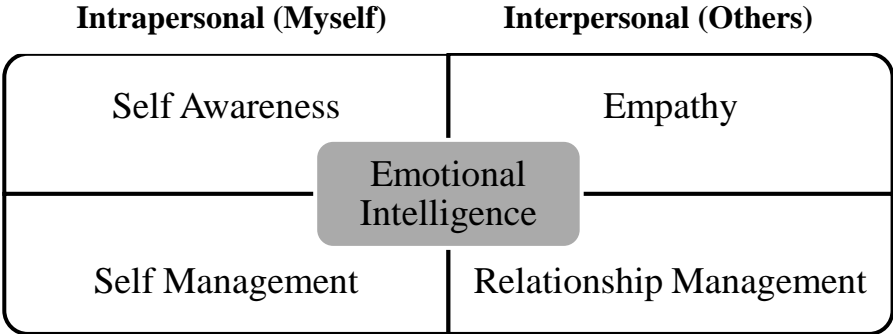
Although the origin of the concept of emotional intelligence (EI) remounts to Thorndike (1920), that identifies three dimensions of intelligence: mechanical intelligence, abstract intelligence, and social intelligence. It was Salovey and Mayer (1990) that firstly defined emotional intelligence as a subcategory of social intelligence that implies the capability to (1) supervise one's own and others' emotions, (2) distinguish among them, and (3) to use this information to guide one's thinking and actions. Later, Salovey and Mayer (1997) defined emotional intelligence as the mental process associated with emotions and problem-solving capabilities, including observing emotions, accessing, and generating emotions to support

thoughts, comprehending emotions, and successfully regulating emotions to encourage emotional and rational development.

The conceptualization of emotional intelligence includes three main areas of investigation (Dhoopar et al., 2022). The first one considers emotional intelligence as a collection of interrelated mental capacity for using emotional knowledge (Mayer et al., 1997). The second domain is considered a collection of traits for adjusting and enduring, comparable to the models of dispositional traits and personality (Bar-On & Parker, 2000). The third domain is behavioural capabilities, which combine emotional and cognitive skills (Boyatzis & Boyatzis, 2009; Mahon et al., 2014).

Emotional intelligence was defined as the capability to recognize and regulate emotions in ourselves and others (Cherniss & Goleman, 2005), attributing a large part of personal and professional success to four main EI competencies identified in Figure 1: self-awareness, self-management, internal motivation, and empathy. Self-awareness involves (a) knowing your inner emotional state, (b) having confidence in yourself and yourself, and (c) realistically analyzing your skills; self-management means being able to manage your (i) emotions and (ii) impulses; internal motivation regulates the goals inherent to the entrepreneur and his ability to achieve them; social awareness or empathy is the understanding of emotions and reactions, both one’s own and others’, reacting in the most assertive way possible (Goleman, 2020). Later, this scholar added relationship management ability to the dimensions highlighting the importance of communication used with others to obtain positive responses from the addressee.

Figure 1 Model of Emotional Competencies of EI



Source: Own elaboration.

Still, on the competencies included in Figure 1, it is essential to emphasize that translation can be made differently, and all competencies are identical (Gonzaga & Rodrigues, 2018). Self-awareness is also referred to as self-perception from an intrapersonal perspective and self-management can be referred to as self-regulation or internal motivation (Gonzaga & Rodrigues,

2018). From an interpersonal perspective, empathy is sometimes referred to as social perception or social awareness, and relationship management can be referred to as social skills, relationship management, or social aptitudes (Gonzaga & Rodrigues, 2018). Further considerations about the conceptualization of the variables are brought in Table 1.

Table 1. Competencies (Harvard's EI model)

<b>Emotional skills - Intrapersonal perspective</b>
<p><b>Self-awareness</b> Recognize signs of one’s feelings as they occur. Perceive the influence of different emotional states on their cognitive performance or work performance.</p>
<p><b>Self-management</b> Flexibility to deal with different situations and people, ability to disconnect from negative emotions, and persistence in realizing what is positive, to achieve better results.</p>
<b>Social skills - Interpersonal perspective</b>
<p><b>Empathy</b> Empathy for other people’s feelings, understanding of what may be subliminal to their behaviours and attitude.</p>
<p><b>Relationship Management</b> Ability to resolve conflicts, and positive influence on others. Interest in developing others and sharing tasks and activities in groups.</p>

Source: Adapted from Gonzaga and Rodrigues (2018).

Table 1 shows that emotional and social skills are part of Goleman’s emotional intelligence model (2001). This model is based on the perspective that all interpersonal behaviour is initiated from an emotional perspective. In other words, not every emotion can be a behaviour, but all behaviour in society (in interaction with others) is part of an emotional perspective (Gonzaga & Rodrigues, 2018).

Learning and practising emotional skills prepare the human being to direct impulsive behaviour, becoming progressively directed and conscious; in this way, proficiency in our behaviour is something to be understood and learned (Gonzaga & Rodrigues, 2018). Individuals with a higher EI can handle emotions and adjust behaviours in reaction to emotional situations more easily than individuals with a low EI because of their ability to be team players ((Dhoopar et al., 2022).

However, emotional intelligence only is not sufficient for the creation of successful relations with others, it was further claimed that the concept of social intelligence is necessary for analyzing interactions with others (Boyatzis, 2009). Several authors defend that the emotional intelligence's concept has evolved to be an emotional and social intelligence that implicates the ability to monitor feelings and emotions, both own and others, discriminate against them, and use this information to guide one's own or others' thinking and behaviour to enhance intellectual growth (Salovey & Mayer, 1990; Goleman, 2020; Zhu et al., 2021).

### **1.1.3 Social Intelligence**

The concept of social intelligence emerges in the literature within the emotional intelligence concept (Molina et al., 2019). Recent research indicates that the concept is unsatisfactory in clarifying how some individuals have more facilities to connect with others (Genc & Gulertekin Genc, 2018). According to Rahim et al. (2018), social intelligence is distinguished from emotional intelligence, but these concepts have some similarities.

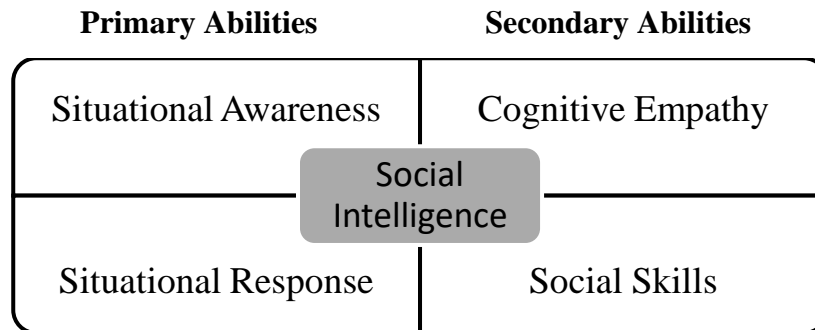
John Dewey (1909) presented the concept of social intelligence for the first time and defined it as the ability to observe and understand social situations. Later, Thorndike (1920) identified three elements of intelligence: abstract as the capability to understand and deal with concepts and representations; mechanical as the capability to learn how to understand and deal with matters; and social as the capability to deal with all types of human being and behave sensibly in social relationships. Also, Sternberg (2002) defended three types of intelligence essential to someone's success – creative, analytical, and practical intelligence.

Nowadays, social intelligence is conceptualized as a set of intersocial skills such as social environment awareness and empathy regarding the other's needs and emotions, which facilitate social interactions, including the aptitude to deduce the mental and emotional states of others, recognize their needs and desires, and expect their behaviours and actions (Goleman, 2020; Myznikov et al., 2021; Rahim et al., 2019). On this basis, personal skills are applied when (1) displaying feelings in public, (2) expressing emotions, and (3) emotional contagion with others (Goleman, 2020).

Molina et al. (2019) point out social intelligence as the combination of empathy for the needs and concerns of others, making the time with others enjoyable, with an approach of kindness, respect, care, and the capability to interact with others in any place. According to Brown et al. (2019), the capability to recognize the mental situations of other individuals and

properly translate social relations is considered crucial, from the schoolyard to the meeting room of an organization.

Figure 2. Emotional Competencies of the SI model



Source: Adapted from Rahim et al. (2019).

According to Rahim et al. (2019), the four components identified in Figure 2 are essential to effective entrepreneurship and are expected to be positively connected to business performance. The model is divided between (1) Primary Abilities – Situational Awareness and Situation Response, identified in the literature as solid motivators for someone’s success in life or even in successful leadership and (2) Secondary Abilities – Cognitive Empathy and Social Skills that are identified as helpful in interpreting social situational contexts and help the individual maintain awareness of the environment (Rahim et al., 2019). Further considerations about the conceptualization of the variables are brought into Table 2.

Social intelligence is the aptitude to be conscious of pertinent social situational contexts; it allows one to deal with the circumstances or challenges effectively, to understand others’ apprehensions, spirits, and emotional states, and to speak clearly and credibly perceptive of what to say, when to say it and how to say it; and to build and preserve positive relationships with others (Rahim et al., 2019). Based on this definition, the description of the four identified competencies of social intelligence in Table 2 was made.

Table 2. Social Intelligence Competencies

<b>Primary Abilities</b>
<p><b>Situational Awareness</b></p> <p>Someone’s capacity to understand relevant social situational contexts such as people, objects, events, or other types of situational that are known to affect human performance.</p> <p>Individuals with this capacity are capable to gather and evaluate pertinent data and make proper use of information for the identification of a situation promptly.</p>

<p><b>Situational Response</b></p> <p>Someone’s capacity to adapt to or deal with any social situation effectively is also identified as the decision-making competence of leaders.</p>
<p><b>Secondary Abilities</b></p>
<p><b>Cognitive Empathy</b></p> <p>Someone’s capacity to understand others and take an active interest in them, recognize, and respond to changes in their emotional states and understand others’ feelings.</p> <p>Can be a tool to improve an entrepreneur’s perception of the emotions and needs of employees and peers as well as individuals from outside the organization.</p>
<p><b>Social Skills</b></p> <p>Someone’s capacity to speak clearly and understand when to say it, and how to say it.</p> <p>Social skills also consist of structure and preserving positive relationships, acting accurately in human interactions, dealing with challenges without demeaning those who work with him or her, and cooperating and being able to manage conflict with direction and peacekeeping.</p>

*Source: Adapted from Rahim et al (2019).*

According to Özdemir, (2020) social intelligence can be analyzed under two cognitive dimensions: (1) the capacity to understand others, and (2) the capacity to manage others. Based on this perspective, the competencies in Table 2 were defined as primary abilities or cognitive capacity as crucial to effective leadership, and secondary abilities or behavioural capacity as responsible for improving the first group of abilities (Rahim et al., 2019). Literature has confirmed the positive impact of social intelligence on the leadership of an organization (Özdemir, 2020). People with social competence have a large circle of knowledge and can find relatable subjects between different people, leading them to develop a vast network of contacts (Goleman, 2020). It is essential for individuals who are social beings to have elevated levels of social intelligence and the capacity to use it effectively in relationship management leading to an adequate response to other individuals’ reactions, in the relationship between leader and employee (Özdemir, 2020).

Social intelligence has been extensively associated with leadership effectiveness (Halliwell et al., 2021). As is clear that individuals are the main driving force behind a functional business and cannot be treated like machines, determined to make rational decisions, and leadership should encourage them to do their best (Mura et al., 2021).

Goleman (2020) states that leaders need to manage their relationships effectively, considering that one of their primary functions is to get their subordinates to work towards the organization's common goal. Also, Özdemir (2020) highlighted that social intelligence is essential for effective leadership; this connects a person to situational conditions and discusses social perspectives and behavioural flexibility as the two personality traits of leadership.

## **1.2 Leadership**

### **1.2.1 Concept and Evolution**

One of the most significant changes in recent years is the consideration of human resources as a key resource for managing and achieving an organization's goals and physical space, capital, and work (Goleman, 2020). When these resources are managed effectively, they become a competitive advantage and a sign of influence from leaders on their followers (Goleman, 2020). As leadership implies effective relations with others and knowledge-based decision-making, making deductions, and promoting the development of the performance of our followers (Özdemir, 2020).

Goleman (2020) defends that effective leadership is genuinely related to developing a genuine interest in the people around us and generating positive feelings in those same people, not so much with the ability to control situations with social skills. For Uddin et al. (2018), leadership refers to the ability to encourage, provoke and enable individuals to support organization goals since leaders can positively influence the conduct and posture of subordinates. Goleman (2020) shows that leaders plan strategies, motivate others, create assignments, and build an organizational culture to achieve results.

These elements of good leadership can be traced back to social intelligence, as leaders who use these skills can build strong subordinate relationships, identify commonalities among their peers, and trust their co-workers through active listening and positive attitude (Özdemir, 2020). Hurduzeu (2015) argues that when a leader assumes an efficient leadership style, it promotes standards of excellence and professional development among the organization's members. A true leader gives the group guidance and leads followers to the right goals (Yucel, 2021), achieving universal recognition among the people (Leite, 2021).

In this order, leadership can be defined as personal behaviours when leading a group's activities toward the target and involves two different types of styles of leadership behaviour: task-based behaviours and relationship-based behaviours; however, relationship-based leaders

tend to build higher-quality relationships, have more positive feelings, support, and treat the people they work with equally (Özdemir, 2020). The behaviours indicate that leadership has social and functional attributes, and that social intellect is linked to the social components of leadership (Özdemir, 2020).

Leadership can be recognized as the suggestion system, with influence over a group of employees to perform their tasks with maximum efficiency to achieve collective goals (Yukl, 2012). While conventional leadership studies concentrate on why leaders are influencers, more recent research has placed more importance on the “how” and “why” followers are willing to be inspired by leaders (Dansereau et al., 2013).

Organizations rely on their leaders to show effective leadership behaviour, positively impacting employee innovation (Sehgal et al., 2021). Dealing with changes effectively requires leadership behaviour that matches the organization’s work, as they are increasingly exposed to market uncertainty and volatility (Asrar-ul-Haq & Kuchinke, 2016).

According to Goleman et al. (2013), a leader cannot build trust but can create the conditions for developing trust. Leadership should promote openness, even if it positions leaders in a position of greater vulnerability, and it has to bear the consequences of divergences and not-so-favourable results (Gonzaga & Rodrigues, 2018). Only an inspiring leadership can promote autonomy, self-esteem, and healthy relationships in an organization to keep focus and hope in the future, on long-term strategies, learning from the mistakes and difficulties of the past, but leaving them behind where and when they occurred (Gonzaga & Rodrigues, 2018).

The era of transformational leadership is the most promising phase in developing leadership theory, with intrinsic motivation being identified as one of the most notable improvements (King, 1990). Transformational leadership is considered one of the main leadership styles, and it is characterized as a crucial element in achieving a competitive advantage (Alqatawenh, 2018). This is through a process in which there is mutual help between leaders and followers to increase motivation and behaviour (Hunt & Fedynich, 2019).

Kim (2022) defends that transformational leaders must transmit organizations’ values and vision to their followers, to inspire, create a better work environment, and call employees to act.

### **1.2.2 Transformational Leadership**

The transformational leadership style has been demonstrated to play a vital role in encouraging performance improvements in followers, and that emotion plays a crucial part in the leadership process (Waglay & Becker, 2020).

Transformational leaders make their followers aware of how their work is meaningful for the organization, recognize employees' personal growth, and dedicate time to coaching, teaching, and developing employee strengths to reach their full potential (Sehgal et al., 2021). They are the ones that consistently question old assumptions and ways of doing things, encourage creativity, emphasize the use of knowledge, and inspire new viewpoints and ways of working with others (Yucel, 2021).

Transformational leaders also need to influence their followers; they seek to be empathetic toward them, offering a future vision that meets their needs and desires, communicating this vision, and motivating them (Khan Waglay & Becker, 2020). The knowledge that every person has different abilities and needs requires personal attention to feel valued (Yucel, 2021).

A transformational leadership style contributes to individual development, creative thinking, and a sense of belonging, leading to better individual performance and, consequently, the organization (Leite, 2021). The leader should use an innovative leadership style that encourages employees to think independently and improve their performance (Yucel, 2021). By communicating elevated expectations, transformational leaders help their followers to develop competencies such as responsibility and enthusiasm for the organization's vision, mission, and long-term goals (Sehgal et al., 2021).

Ehrnrooth et al. (2021) conceptualized transformational leadership as a set of particular leadership manners by which leaders can encourage and influence followers, that is, by acting, encouraging, communicating, and providing. Thompson et al. (2021) defend that the transformational leadership construct is based on four dimensions, usually labelled as the four I's: (1) Idealized influence is the ability to be seen as a role model by your followers, (2) Inspirational motivation describes the ability to inspire your followers, (3) Intellectual stimulation represents when followers feel that their leader recognizes and encourages their efforts to be innovative and creative in approaching different situations, and, finally, (4) Individualized consideration is when leaders are observant to their followers' individual needs, elevating them to the mentor title (Yucel, 2021). These competencies are conceptualized in Table 3.

*Table 3. Transformational Leadership Competencies*

Idealized Influence	Leaders' capacity to clearly articulate their vision in a way that is reachable to everyone (Ehrnrooth et al., 2021).
	Leaders' capacity to go beyond their self-interest for the group's greater good, making personal sacrifices for others' benefit. (Yucel, 2021).
	Followers perceive leaders as individuals with extraordinary capabilities, persistence, and determination, with self-confidence and a willingness to take risks to achieve the collective goal (Thompson et al., 2021).
Inspirational Motivation	Leaders' capacity to act as an appropriate role model to their peers and followers, conquering their respect and attention (Ehrnrooth et al., 2021).
	Leader's capacity to transmit a concept with confidence and fluency in a significant way, energizing others and increasing their enthusiasm as well as optimism for future tasks (Yucel, 2021).
	Leaders display positivity and excitement and predict an appealing future by communicating an attractive and inspiring vision to followers and setting elevated expectations (Thompson et al., 2021)
Intellectual Stimulation	Leader's capacity to conquer the acceptance of the overall group (Ehrnrooth et al., 2021).
	Leader's capacity to stimulate follower creativity by challenging the status quo as well as questioning assumptions (Yucel, 2021).
	Leader's capacity to think about logic, rationality, intelligence, and careful problem-solving in organizations (Dionne et al. 2014).
	Leaders who can help and challenge others to question assumptions, reframe problems, and encourage creative thinking (Thompson et al., 2021).
Individualized Consideration	Leader's capacity to attend to and support the individual followers' needs (Yucel, 2021).
	Leaders' capacity to understand the needs of their followers and provide intellectual stimulation and individualized concern to achieve high-performance expectations.
	Leaders listen to followers' concerns, add insight, and develop opportunities for growth (Thompson et al., 2021).

*Source: Adapted from Thompson et al. (2021), Yucel (2021) and Dionne et al. (2014).*

From a theoretical point of view, it is possible to identify the correlation between the four competencies leading to a more challenging task of defining each concept. However, we can observe that the difference between inspirational motivation and idealized influence is less

evident because charismatic leaders often tend to encourage people with their ideas; the difference between individualization and intellectual stimulation can be difficult once both refer to the growth of employees (Yucel, 2021).

Transformational leaders use less authority than traditional leadership models, representing a mentoring role to their followers instead of leading to an intimate relationship (Jyoti & Bhau, 2015). This has a positive impact on organizational performance. It is essential for organizations that are willing to anticipate essential changes before. They can encourage the willingness of the workers and departments to recognize and implement those changes effectively (Antonakis, 2012; Yucel, 2021).

Researchers have pointed out transformational leadership as the most influential leadership concept in organizational behaviour research (Gottfredson & Aguinis, 2017; Thompson et al., 2021). According to Tran and Vu (2021), leadership has been addressed as a significant factor in diverse dimensions of business performance as team effectiveness and team performance. Wanasida et al. (2021) propose that leaders influence organizational results and identify idealized influence as a crucial factor in increasing business results, including performance outcomes such as innovative behaviour, creativity, product development, and organizational performance.

## **1.3 Portuguese Technological Sector**

### **1.3.1 Concept and Evolution**

The Organization for Economic Co-operation and Development (OECD) defines the technology sector as a combination of product and service industries that capture, transmit and present data and information electronically (OECD, 2011), such as information systems companies.

From an accounting point of view, the entities operating in this sector have the Economic Activity Classification Code (CAE) number 62 and respective branches, so in this study, we will focus on companies operating in Portugal with this CAE.

The Portuguese technology sector has grown constantly in recent years, being internationally referenced as a reference country in this sector. This can be measured through the turnover growth and the number of workers by about 50% from 2014 to 2018 (SABI, 2018). A trend that came from behind and by all indications will only continue to grow, as it was demonstrated in the first month of 2022, with 4,263 companies raised in Portugal, which represents an increase of 23% compared to January of last year (2021), which was marked by the beginning of the second period of confinement because of Covid-19 (Larguesa, 2022).

According to Silva et al. (2020), the organic growth of this sector has been boosted by Portuguese and European policies for the distribution of subsidies and support for innovation, resulting in a growing importance of information systems in society and companies.

Gabriel Coimbra (2022), general director of IDC Portugal, affirms that there was an inverse correlation between the economy and investment in technology for the first time in history. While the economy fell by 5% worldwide, investment in technology grew by 3%. Portugal was no exception as the drop in GDP was even more significant, and the IT market grew by almost 2%.

During the pandemic, it was possible to observe that, with thousands of people (or millions in the world) at home, between confinement and teleworking, a good part of the economy could only continue to function based on digitalization or online services, such as e-commerce and other cloud solutions. Many companies had to invest in the structures they already had to allow remote work; others, to survive, even had to find new solutions in areas in which they had not yet ventured, such as virtual stores and electronic ordering apps (Coimbra, 2022).

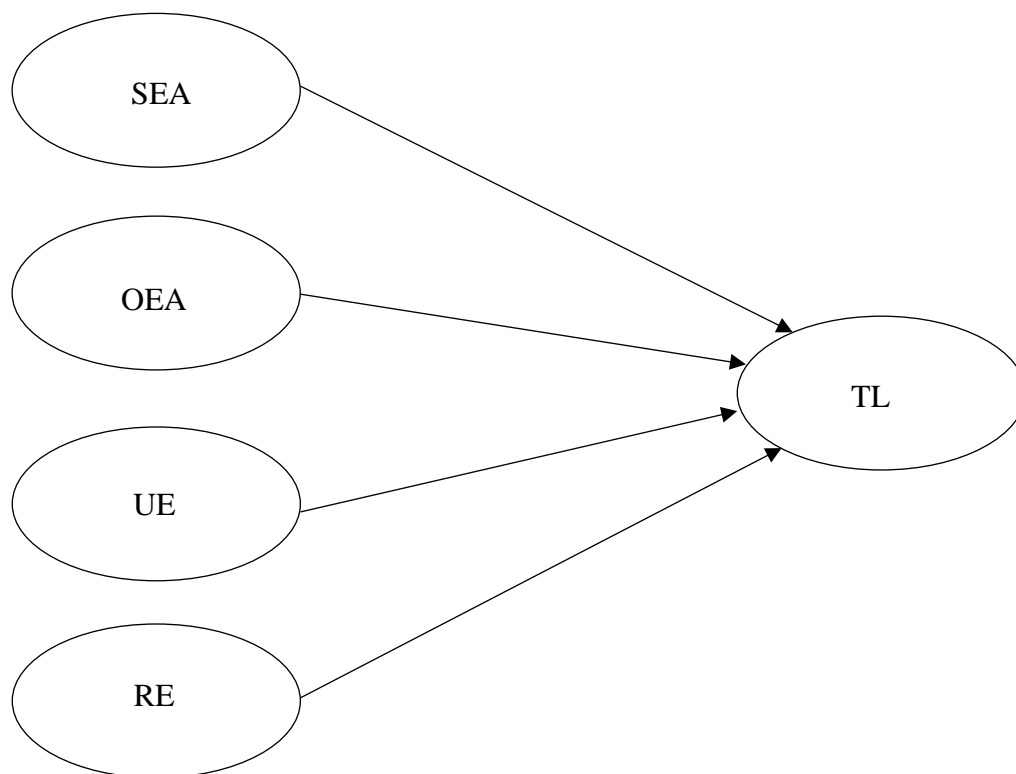
## CHAPTER II – RESEARCH MODEL, QUESTIONS, OBJECTIVES, AND HYPOTHESES

### 2.1 Research Model

For Klein (2015), the theoretical model is a simplified representation of reality through a systematic set of hypotheses that translate into logical relationships between the constructs, which seek to confirm theoretical explanations of the observed phenomena.

The model developed is based on other previously referenced models and proposes a more detailed analysis of the concept of transformational leadership, allowing us to understand how emotional intelligence practices can influence the strategies used by transformational leaders. The research model is presented in Figure 3. Five variables were selected: (1) self-emotion appraisal, (2) other's emotional appraisal, (3) use of emotions, (4) regulation of emotions – emotional intelligence dimensions' - and (5) transformational leadership.

*Figure 3. Conceptual Research Model*



Key: SEA - Self-Emotion Appraisal; OEA - Other's emotional appraisal; UE - Use of emotions; RE - Regulation of emotions; TL – Transformational Leadership.

*Source: Own elaboration.*

### 2.2 Research Questions

Research questions are qualitative studies' main focus and critical step (Yin, 2001). After reviewing the most relevant aspects of the literature and the respective authors who mention them, we considered a set of essential questions to which we sought answers (Table 6).

Table 4. Research Questions

Research Question	Authors
<i>RQ1. How does self-emotion appraisal influence transformational leadership?</i>	
<i>RQ2. How others' emotional appraisals influence transformational leadership?</i>	Alavi & Leidner, 2001; Taouab & Issor, 2019; Rose, 2018; Butler and
<i>RQ3. How does the use of emotions influence transformational leadership?</i>	Chinowsky, 2006; Sunindijo et al., 2007; Zhu et al., 2021;
<i>RQ4. How does the regulation of emotions influence transformational leadership?</i>	

Source: Own elaboration.

### 2.3 Research Objectives

Nowadays, we find ourselves in a highly volatile business environment, exposed to external factors that make organizations more susceptible to failure (Rose, 2018). To face this, organizations depend on the ability of their leader to organize and deliver the available resources and do things better, faster, and at low prices to achieve effective performance (Alavi & Leidner, 2001; Taouab & Issor, 2019).

For a long time in organizations, the notion of balance in relationships between teams and leadership was based on a certain absence of emotions (Gonzaga & Rodrigues, 2018). With the changes in organizations' structure and increased shared activities and autonomy of work teams, the notion of a free emotions' environment has been replaced by the idea that the emotions will be present and impact employees' performance. It becomes crucial to perceive and manage emotions, in itself and in others, which brings emotional intelligence to the centre of the equation of emotions (Gonzaga & Rodrigues, 2018).

According to Goleman, Boyatzis, and Rhee (2002) emotional and social intelligence is the main differentiator by which professionals and leaders should support their behavioural skills. Therefore, the main objective of this study is to investigate how emotional intelligence dimensions can impact transformational leadership.

The specific objectives formulated are:

- (1) explore the concepts of emotional intelligence and transformational leadership.
- (2) analyze the relationship between emotional intelligence and transformational leadership.

## **2.4 Research Hypotheses**

Organizational leaders play a crucial role in influencing the emotional and organizational experience of the employees, as emotions affect critical cognitive tasks, including information processing and decision making (Gilar-Corbi et al., 2019). Leadership styles are diverse and can differ in different situations. However, the most influential leaders are similar in one critical aspect: their degree of emotional intelligence (Goleman, 2020). Based on this theory, several authors defend that emotional intelligence affects different leadership styles and behaviours and is specially related to transformational leadership (Butler and Chinowsky, 2006; Sunindijo et al., 2007).

Leaders with more emotional intelligence can promote team members' collaboration and balance project resource allocation (Su-fang, 2014) through a good understanding and regulation of their emotions and those around them (Zhu et al., 2021). Leaders' capacity to manage positive and negative emotions benefits motivation, optimism, innovation, and problem resolution in the organizational environment (Gilar-Corbi et al., 2019).

The emotional intelligence of leaders has been a key determinant in ensuring the effective functioning of the organizational' environment, depending on their abilities and inputs (Zhu et al., 2021). These leaders with a higher level of emotional intelligence can clarify the value of work and the relationships between individuals and organizations, so they are more inclined to share resources and communicate to achieve common goals (Zhu et al., 2021).

According to Gilar-Corbi et al. (2019), emotional intelligence competencies are actively involved in defining organizational objectives, planning, organizing work activities, maintaining cooperative interpersonal relationships, and receiving the support needed to achieve organizational goals. Hierarchically, emotional intelligence helps leaders understand emotions, facilitate thoughts, and regulate the emotions of oneself or others (Zhu et al., 2021). According to Pawlak (2019), the most effective decisions can be made by sharing implicit knowledge within a group. It positively impacts organizational intelligence and requires self-management and relationship management skills (Mura et al., 2021).

Therefore, leaders with high emotional intelligence will encounter fewer cognitive barriers when dealing with problems and are more likely to understand and maintain relationships (Zhu et al., 2021). On the other hand, emotional competencies are crucial characteristics that individuals who occupy leadership positions must have (Gilar-Corbi et al., 2019). Thus, we intend to test the following hypotheses.

*H1. Self-emotion appraisal has a positive impact on transformational leadership.*

*H2. Other's emotional appraisal has a positive impact on transformational leadership.*

*H3. The use of emotions has a positive impact on transformational leadership.*

*H4. The regulation of emotions has a positive impact on transformational leadership.*

### **3.1 Methodological Approach**

The first part of the research presented the literature review to understand the concepts and definitions of the main themes as emotional intelligence and transformational leadership to understand and consolidate the theoretical fields of these variables.

In the second part of the research, it will be presented the empirical research. Characterized by the observation and analysis of the gathering data through the research methods. After reviewing the literature that allows the development of the theoretical framework, an empirical investigation presupposes that it moves to the empirical study, called “fieldwork” (Hill & Hill, 2008), thus establishing the link between the theory and practice. This data analysis will allow reaching new conclusions and prove or dispute the theory studied through the proposed objectives and hypotheses. This empirical study adopted the quantitative methodology, having carried out an exploratory, descriptive, and cross-sectional study. This choice was linked to the fact that it better fits the proposed objectives, that is, finding relationships between variables attesting a model research concept previously defined. This methodological approach is justified by research purposes related to phenomena observation and hypotheses testing.

### **3.2 Measures**

The measurement instrument adopted is the online questionnaire inquiry. A questionnaire is a set of questions created to generate the necessary data to achieve a particular research project (McDaniel & Gates, 2013). The applied inquiry covers three measurement scales, one for each construct, which will be distinguished below.

#### **3.2.1 Emotional Intelligence Scale**

Wong and Law’s (2006), which was subsequently translated into the research of Zhu et al. (2021), developed a 16-item Emotional Intelligence scale (WLEIS). This instrument was selected due to being specifically developed for work settings. According to (Zhu et al., 2021, p. 475), “a true measure of emotional intelligence must place respondents in a context where they can experience the emotions that they are asked to respond to”. The WLEIS was originally designed to evaluate the following four dimensions of emotional intelligence identified in the

literature: self-emotion appraisal, other’s emotion appraisal, use of emotion, and regulation of emotion (Zhu et al., 2021).

Each of the dimensions presented is evaluated through a 5-point Likert scale, which varies between 1 (completely disagree) and 5 (completely agree). The dimension and items are as follows (Table 7)

*Table 5. Emotional Intelligence Scale*

<b>DIMENSION</b>	<b>ITEM</b>
Self-Emotion Appraisal	EI1. Most of the time, I know why I experience a particular feeling.
	EI2. I understand my emotions very well
	EI3. I understand what I feel
	EI4. I always know whether or not I am happy
Other’s emotional appraisal	EI5. I always know the emotions experienced by others from their behaviour
	EI6. I am good at detecting the emotions of others
	EI7. I understand the emotions of the people around me
Use of emotions	EI8. I always set goals for myself and do my best to reach them
	EI9. I always tell myself I am a capable person
	EI10. I am a self-motivated person
	EI11. I always encourage myself to do my best
Regulation of emotions	EI12. I can control my temper and handle problems wisely
	EI13. I am particularly good at controlling my emotions
	EI14. When I am truly angry, I always calm down quickly
	EI15. I can control my emotions well

*Source: Adapted from Zhu et al. (2021).*

### **3.2.2 Transformational Leadership Scale**

To evaluate transformational leadership, the use of the logic presented in the study by Podsakoff et al. (1990), was subsequently translated into the studies of Rezende (2010) and Araújo (2011). This study examined the impact of transformational leaders on organisational citizenship behaviours, mediated by the role played by the trust and satisfaction of the subordinates. The authors support the existence of several key behaviours associated with

transformational leaders, and soon created a scale consisting of twenty-three items. Thus, the dimensions considered in this study are as follows (Table 8):

- a) Identifies and articulates vision: five items.
- b) Provides a suitable model: three items.
- c) Promotes acceptance of group objectives: four items.
- d) High-performance expectations: three items.
- e) Promotes individualized support: four items.
- f) Intellectual Stimulation: four items.

Each of the dimensions presented is evaluated through a 5-point Likert scale, which varies between 1 (completely disagree) and 5 (completely agree). It should be noted that questions 16 and 19 of the questionnaire have an inverted quotation.

*Table 6. Transformational Leadership Scale*

<b>DIMENSION</b>	<b>ITEM</b>
Identifies and articulates a vision	TL1. Illustrates, for the group, a remarkably interesting picture of the future
	TL2. It has a clear understanding of “where we will”
	TL3. Influence others with their plans for the future
	TL4. It can involve others in your ideals
	TL5. It is always looking for new opportunities for the organization
Provides a suitable model	TL6. More than say, leads by doing.
	TL7. Seek to be a good model to follow
	TL8. Leaders by example
Promotes acceptance of group objectives	TL9. Encourages collaboration between working groups
	TL10. Encourages employees to be “part of a team”
	TL11. It involves the group working toward a common goal
	TL12. Develops spirit and team attitude among employees
High-performance expectations	TL13. Shows everyone who waits a lot from us
	TL14. Insists only in the best performance
	TL15. Not content to be the second-best
Promotes individualized support	TL16. Acts regardless of the interest of others
	TL17. Demonstrates respect for the feelings of others

	TL18. Attentively behaves regarding the personal needs of employees.
	TL19. Treats others without considering your feelings
Intellectual stimulation	TL20. Challenges to thinking about new paths for old problems
	TL21. Formulate questions to make others think
	TL22. Stimulates rethinking how things do
	TL23. Has ideas that lead to re-examining some of the assumptions about the work.

*Source: Adapted from Podsakoff et al. (1990).*

Podsakoff et al. (1990) identified these behaviours as an essential element in the transformational leadership process. Several of these behaviours gather the consensus of researchers (e.g., “identifies and articulates vision”), while others were only defended by Bass and Avolio (e.g., “intellectual stimulation”).

### **3.3 Population, sample, and data collection**

The participants of this study will be leaders of Portuguese enterprises belonging to the technological industry with CAE 62090.

In Portugal, there are 10,909 active companies dedicated to the technological industry. For our empirical study, only companies with their electronic address in the SABI database were considered to send the survey to them. Thus, 4,045 companies with their email are available on the above-mentioned platform.

We contacted companies via email with the link to the questionnaire, where the study in question was presented and cooperation was requested. The response to the questionnaire was entirely anonymous, so no questions were asked that could break anonymity or that could require confidential responses. Additionally, it was mentioned in the email that, if they so wished, companies could request access to the conclusions reached through the data resulting from the questionnaire. Thus, data was collected and organized through the Google Forms platform after confirming consent between May 5<sup>th</sup> and June 17<sup>th</sup>, 2022.

At the end of the application of this questionnaire, it was found that the sample of this study is comprised of 180 responses from leaders of different companies in the technological industry. Considering the availability of company leaders to answer the questionnaire within

the required time interval and the impossibility of verifying whether the present sample represents the entire population, the sample is non-probabilistic for convenience.

## CHAPTER IV – DATA ANALYSIS AND DISCUSSION

### 4.1 Descriptive Analysis

The reliability analysis was performed using Cronbach's alpha; the analysis guaranteed the consistency and stability of the answers while considering the heterogeneity of the respondents and their opinions (Pestana & Gageiro, 2008). The sample reliability was excellent for all variables (0.958).

Table 10 shows the descriptive statistics of the sample's demographics.

Table 7. Descriptive analysis

Item	%
Gender:	
Male	71,1
Female	28,9
Age (years old):	
<20	5,0
20-30	12,2
31-40	45,6
41-50	30,6
51-60	6,7
> 60	0,0
Academic qualifications:	
Basic studies	1,1
Secondary studies	10,6
vocational qualification	1,1
Bachelor's degree	61,1
Master's degree	22,2
PhD	2,2
Post-PhD	0,6
Other	1,1
Professional experience (years):	
0-1	6,1
2-3	6,1
4-5	10,0
6-10	17,8
>10	60,0
Location:	
Porto	16,7
Lisboa	38,3
Vila Nova de Gaia	2,8
Matosinhos	3,9
Sintra	2,2
Almada	1,7

Braga	3,9
Mafra	1,7
Amadora	1,7
Maia	1,7
Faro	2,2
Aveiro	4,4
Oeiras	2,8
Leiria	3,9
Vila Nova de Famalicão	0,6
Valongo	1,7
Évora	1,7
Coimbra	2,2
Santarém	2,2
Setúbal	1,7
Viana do Castelo	0,6
Guimarães	0,6
Portalegre	0,6
Viseu	0,6

*Source: Own elaboration, Smart PLS3.*

## 4.2 Partial least square structural equations modelling (PLS-SEM)

PLS-SEM was used to evaluate the hypotheses with SmartPLS 3.0 software (Hair et al., 2016). PLS-SEM was best suited to estimate the research model as (1) this research focuses on prediction and explanation of the variance of the model's constructs (in this case, five), (2) the research model has a complex structure, (3) the relationship between emotional intelligence dimensions' and transformational leadership can be measured directly, (4) the study uses first and second-order reflective constructs, and (5) the sample (n=180) is relatively small. Reflective constructs were used to estimate PLS parameters to maximize the variance explained in observed measures (Anderson & Gerbing, 1988).

### 4.2.1 Evaluation of the measurement model

The results showed that the measurement model met all general requirements. First, all reflective items have a load higher than 0.707, which means that the reliability of individual indicators (loadings) was higher than 0.5. Second, all-composite reliability values and Cronbach's alpha values were above 0.7, suggesting acceptable model reliability. Third, the average variance extracted (AVE) values of all constructs were higher than 0.50, indicating adequate convergent validity and implying that the indicators represent the same underlying constructs (Hair et al., 2016).

In addition, the composite reliability coefficient was used to evaluate the constructs' validities (Chin, 1998). Gefen and Straub (2005) advocate a minimum of 0.6 when the variables exceed the reference value. Fornell and Larcker's (1981) criterion was used in this study, proposing that AVEs must have a minimum value of 0.5 to prove convergent validity. All the constructs reached this value (Table 8).

Table 8. Standardized factor analysis loadings, CR and AVE

First-order constructs	Item	Loadings	CR	AVE
<b>Emotional Intelligence</b>				
<b>SEA</b> ( $\alpha = 0,847$ )			0,898	0,690
	EI2	0,872		
	EI3	0,834		
	EI1	0,786		
	EI4	0,741		
<b>OEA</b> ( $\alpha = 0,837$ )			0,902	0,755
	EI7	0,874		
	EI6	0,850		
	EI5	0,801		
<b>UE</b> ( $\alpha = 0,755$ )			0,845	0,580
	EI10	0,835		
	EI9	0,785		
	EI11	0,745		
	EI8	0,730		
<b>RE</b> ( $\alpha = 0,858$ )			0,902	0,697
	EI13	0,858		
	EI15	0,852		
	EI14	0,788		
	EI12	0,703		
<b>Transformational Leadership</b>				
( $\alpha = 0,908$ )			0,920	0,538
	TL22	0,854		
	TL12	0,792		
	TL4	0,789		
	TL24	0,783		
	TL11	0,768		
	TL19	0,774		
	TL8	0,773		
	TL5	0,770		
	TL13	0,760		
	TL9	0,754		
	TL17	0,752		
	TL10	0,751		
	TL6	0,747		
	TL23	0,742		

TL18	0,730		
TL15	0,729		
TL16	0,728		
TL21	0,724		
TL7	0,718		
TL20	0,716		
TL14	0,704		
TL1	0,701		
TL22	0,854		
TL12	0,792		

Source: Own elaboration, Smart PLS3.

The discriminant validity of the model was demonstrated as the results showed that the constructs with no theoretical relation were, indeed, not significantly correlated; this can be gauged from the principle that all cross-loadings cannot be higher than the loading of each indicator (Hair et al., 2016). Based on Chin’s (1998) classification of explanatory power as being moderate/substantial, the data in Table 8 show that the discriminant validity results were satisfactory; the measures of the constructs showed they were significantly different.

The Fornell-Larcker (1981) criterion (FLC) specifies that the AVE should be greater than the variance between constructs of the same model. Henseler et al. (2015) proposed a new and advanced criterion (Heterotrait-Monotrait Ratio – HTMT) to assess discriminant validity. They accept that the FLC is still an acceptable method for evaluating discriminant validity. However, the FLC fails to assess the lack of discriminant validity in various research situations. Therefore, the present study used the HTMT to evaluate the constructs’ discriminant validity; these values are presented in Table 12. All values were less than 0.9.

Table 9. Discriminant validity and HTMT

<b>FLC</b>	<b>1.</b>	<b>2.</b>	<b>3.</b>	<b>4.</b>	<b>5.</b>
1. TL	0,581				
2. OEA	0,368	0,869			
3. RE	0,397	0,296	0,835		
4. SEA	0,548	0,373	0,462	0,830	
5. UE	0,652	0,240	0,379	0,437	0,762
<b>HTMT</b>	<b>1.</b>	<b>2.</b>	<b>3.</b>	<b>4.</b>	<b>5.</b>
1. TL					
2. OEA	0,418				
3. RE	0,438	0,346			
4. SEA	0,615	0,437	0,531		
5. UE	0,760	0,312	0,452	0,535	

Source: Own elaboration, Smart PLS3.

#### 4.2.2 Evaluation of the structural model

The significance of the model was assessed based on path coefficients, *t*-values, and standard errors. The hypotheses were tested for main and indirect effects through the bootstrapping procedure (Ringle et al., 2005).

Based on Chin's (1998) criterion that the minimum structural coefficient should be 0.2, the effects proposed in the hypotheses were shown to be significant. SEA had a significant and positive relationship with TL ( $\beta=0,260$ ,  $t=3,412$ ; LL=0,126, UL=0,414); thus, H1 was supported as the lower and upper limits included the value zero, indicating that the relationship was significant. OEA had a significant and positive effect on TL ( $\beta=0,139$ ,  $t=2,188$ ; LL=0,012, UL=0,263); thus, H2 was supported. UE had a significant and positive relationship with TL ( $\beta=0,485$ ,  $t=8,660$ ; LL=0,377, UL=0,600); thus, H3 was supported. Moreover, RE had not a significant and positive effect on TL ( $\beta=0,053$ ,  $t=0,793$ ; LL=-0,073, UL=0,175; thus, H4 was not supported.

Table 10. PLS direct effects

Hypotheses	Original Sample (O)	Sample Mean (M)	Standard Error (STERR)	T-Statistics (O / STERR)	L.L.	U.L.	Result
H1. SEA -> TL	0,260	0,265	0,076	3,412*	0,126	0,414	Supported
H2. OEA -> TL	0,139	0,140	0,064	2,188**	0,012	0,263	Supported
H3. UE -> LT	0,485	0,487	0,056	8,660*	0,377	0,600	Supported
H4. RE -> LT	0,053	0,054	0,066	0,793***	-0,073	0,173	Non-Supported

Notes: \*  $p<0,001$ ; \*\*  $p<0,05$ ; \*\*\* non-significant.

Source: Own elaboration, Smart PLS3.

#### 4.3 Discussion

The main objective of this study is to investigate how emotional intelligence can impact transformational leadership, in particular the effect of the dimensions of (1) self-emotion appraisal, (2) other's emotion appraisal, (3) use of emotions, and (4) regulation of emotions. To accomplish this were formulated specific objectives: (a) to explore the concept of emotional intelligence and transformational leadership and (b) to analyze the relationship between the emotional intelligence dimensions' - self-emotion appraisal, other's emotion appraisal, use of emotions and regulation of emotions - and transformational leadership.

The theoretical framework of this study allowed the theoretical analysis of the concepts of emotional intelligence and transformational leadership, making it now necessary to consider and reflect on the data and results achieved from the empirical study realized in the

technological sector. In light of the results obtained, we will analyze the research hypotheses derived from the theory.

Firstly, the results positively supported the relationship between the dimension Self-Emotion Appraisal (SEA) and Transformation Leadership (H1).

According to Cherniss and Goleman (2005), self-awareness or self-emotion appraisal involves understanding your inner emotional state, having confidence in yourself, and realistically analyzing your skills. This is in line with the concept of transformational leadership as leaders' capacity to manage positive and negative emotions benefits motivation, optimism, innovation, and problem resolution in the organizational environment (Gilar-Corbi et al., 2019).

It is impossible to solve a problem when we do not know the problem. The same happens with our emotions, and a wide range of vocabulary regarding this theme can be a powerful tool for any leader. The ability to identify our emotions leads to more positive management of both positive and negative emotions which benefits the motivation, optimism, innovation, and problem resolution in the organizational environment (Gilar-Corbi et al., 2019). This is in line with the proposed studies (Görgens-Ekermans & Roux, 2021a; Nguyen et al., 2019; Pekaar et al., 2018) and allows us to answer the question: how does self-emotion appraisal influence transformational leadership? (RQ1).

Later, the positive and significant effect of other's emotion appraisal (OEA) in transformational leadership (H2) was supported by the results and is in line with the previous studies (e.g., Butler & Chinowsky, 2006; Sunindijo et al., 2007; Zhu et al., 2021; Goleman, 2020). According to Goleman (2020), others' emotion appraisal or empathy is the capability to understand the emotions and reactions of the others around us, reacting in the most assertive way possible (Goleman, 2020). This is closely related to individualized consideration as the leader should support the individual followers' needs and the capability to understand their followers' needs and provide intellectual stimulation and individualized concern to achieve high-performance expectations (Yucel, 2021). Leaders should listen to followers' concerns, add insight, and develop growth opportunities (Thompson et al., 2021).

When the leader correctly identifies the emotions of their workers, can more easily influence them to a more productive and optimistic line of thinking, leading to a quicker problem resolution capability and pleased employees. For that, the leader needs to be empathic to others' emotions, which allows answering the question of how others' emotion appraisal influence transformational leadership? (RQ2).

The relationship between the use of emotions (UE) and transformational leadership was supported and is in line with previous studies (Gonzaga & Rodrigues, 2018). According to Gonzaga and Rodrigues (2018), flexibility to deal with different situations and people, the ability to disconnect from negative emotions, and the persistence in realizing what is positive to achieve better results are some characteristics of a transformational leadership style.

To conquer that level of leadership, the wise use of emotions is crucial as leaders with higher self-esteem and confidence can motivate their employees more efficiently. This allows us to answer the question of how does the use of emotions can impact transformational leadership? (RQ3).

Finally, the results did not support the relationship between regulation of emotions (RE) and transformational leadership; however, the literature supports the contrary (Goleman, 2020; Görgens-Ekermans & Roux, 2021b). Regulation of emotions or self-management includes achievement orientation, adaptability, emotional self-control, and a positive outlook (Görgens-Ekermans & Roux, 2021b). These are crucial elements for efficient leadership. According to Ehrnrooth et al. (2021), leaders' capacity to act as an appropriate role models to their peers and followers, conquer their respect and attention, making easier a positive influence on the organizational outcomes.

Even though the results did not support the relationship between regulation of emotions and transformational leadership, this allows answering the question of how regulation of emotions can affect transformational leadership (RQ4). Therefore, leaders with high emotional intelligence will encounter fewer cognitive barriers when dealing with problems and are more likely to understand and maintain relationships (Zhu et al., 2021). On the other hand, emotional competencies are crucial characteristics that individuals who occupy leadership positions must have (Gilar-Corbi et al., 2019). This supports the relationship between the concepts of emotional intelligence and transformational leadership.

### 5.1 Final Remarks

Considering the existing literature and the growing importance that this topic has been gaining among the scientific community, this research aimed to explore the relationship between the emotional intelligence dimensions and transformational leadership in the Portuguese technological sector. The results supported a positive relationship between three emotional intelligence dimensions' (SEA, OEA and UE) and transformational leadership. This study proved that globally emotional intelligence positively influences transformational leadership.

The technology industry aims to differentiate itself through technological innovation, investment in people, and the development of new processes, expertise, and skills (Industry 4.0), one of the fastest-growing sectors in recent years. Thus, a bet on the main dimensions of emotional intelligence (self-emotion appraisal, other's emotion appraisal, use of emotions, and regulation of emotions), combined with transformational leadership, can contribute to obtaining a competitive advantage.

The Portuguese technology sector has grown constantly in recent years, being internationally referenced as a reference country in this sector. According to Silva et al. (2020), the organic growth of this sector has been boosted by Portuguese and European policies for the distribution of subsidies and support for innovation, resulting in a growing importance of information systems in society and companies.

During the pandemic Covid-19, many companies had to invest in the structures they already had to allow remote work. Others, to survive, even had to find new solutions in areas in which they had not yet ventured, such as virtual stores and electronic ordering apps (Coimbra, 2022), which led to an increase in the importance of the technology sector in our daily lives.

We can, therefore, conclude that the technology industry is in one of its most challenging phases, with several external and internal factors influencing its success. The emotional intelligence of transformational leaders can be a key determinant in ensuring the effective functioning of the organizational environment of these companies, depending on their abilities and inputs (Zhu et al., 2021). These transformational leaders with a higher level of emotional intelligence can clarify the value of work and the relationships between individuals and organizations, so they are more inclined to share resources and communicate to achieve common goals (Zhu et al., 2021).

## **5.2 Theoretical and Practical Implications**

The present study advances with significant contributions to theory and practice. It not only responds to some gaps mentioned by different scholars but also presents relevant results for business managers and private and public entities.

It explores the dynamics of the relationship between emotional intelligence and transformational leadership related to the technological sector. As mentioned before, understanding the impact of emotional intelligence in developing a transformational leadership style is essential for effective organizations development. The discovery of methods that improve how we deal with our emotions and the others around us, indirectly affecting the organizational performance of the technological sector, is an essential task for today's leaders.

## **5.3 Research Limitations**

This research has some limitations regarding the methodology and methods used to analyze the data and results obtained since there are alternatives capable of presenting other types of conclusions.

(1) We used a 5-point Likert scale in the empirical study. To better understand the respondents' perceptions and opinions, future studies have to use, for example, a 7-point Likert scale.

(2) Although the reliability analysis was particularly good for all variables, it is necessary to consider that the answers given may not correspond precisely to companies' reality regarding their emotional intelligence and transformational leadership.

(3) Finally, control variables such as age and educational qualifications of the respondents and company size or location were not considered in the investigation, which can also be seen as a limitation of the study.

## **5.4 Future Lines of Research**

The business world is more competitive than ever, increasing the importance of organizations being aware and constantly improving organizational culture to keep their workers motivated and their productivity high (Goleman, 2020). In this order, organizational leaders play a crucial role in influencing the emotional and organizational experience of the employees, as emotions affect critical cognitive tasks, including information processing and decision making (Gilar-Corbi et al., 2019).

Previous literature has studied the influence of emotional intelligence on leadership and, consequently, organizational performance. However, there is a literature lack on the effect of emotional intelligence dimensions on transformational leadership, establishing in this way the validity of the study.

Moreover, this study focused on the influence of emotional intelligence and transformational leadership in the technological sector, which means that the results are not extended to other sectors of activity. In this order, future research should apply this study to different business areas such as furniture, footwear, and communication.

We recommend future studies developing the relationship between emotional intelligence, transformational leadership, and organizational performance because this relationship has not yet yielded results that can be generalized to all contexts, as well as questions about how and why leadership affects organizational performance (Hurduzeu, 2015). For this reason, this study could be applied to different sectors and countries in the future so that the relationship between the variables in question begins to gain greater clarity.

Finally, it would be interesting also to develop studies where emotional intelligence or transformational leadership can mediate the relationship between other constructs (e.g., knowledge, intellectual capital, open innovation, employee performance) (Ehrnrooth et al., 2021; Nguyen et al., 2022).

## CHAPTER VI - BIBLIOGRAPHICAL REFERENCES

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## Appendix I – Questionnaire

# Liderança Transformacional e Desempenho Organizacional: O papel da Inteligência Emocional

## I. Apresentação

Este estudo é desenvolvido no âmbito do Mestrado de Empreendedorismo e Internacionalização, do Instituto Superior de Contabilidade e Administração do Porto (ISCAP), sob orientação do Prof. Doutor Orlando Lima Rua, subordinado ao tema de Liderança Transformacional e Desempenho Organizacional: O papel da Inteligência Emocional.

Agradeço, antecipadamente, a disponibilidade para responder ao questionário seguinte como líder de uma organização do setor tecnológico, o qual não tomará mais de 15 minutos do seu tempo.

## II. Dados confidenciais do questionado

As questões a seguir são para informações de referência. Todas as informações recolhidas sobre os participantes serão tratadas de forma confidencial e apenas os dados resumidos serão relatados como resultados académicos. Em caso de dúvida, pode contactar-me através do e-mail [joanamoreira.5@hotmail.com](mailto:joanamoreira.5@hotmail.com)

 [joanaafam@gmail.com](mailto:joanaafam@gmail.com) (não partilhado) [Mudar de conta](#) 

\*Obrigatório

1. Tomei conhecimento e compreendi a informação acima descrita, sendo <sup>\*</sup> que aceito participar neste estudo e preencher o questionário que se segue, de livre vontade

- Sim
- Não

2. Considerando-se a si mesmo, indique para cada item o seu grau de concordância

\*

	Discordo Completamente	Discordo	Nem concordo/ Nem discordo	Concordo	Concordo Completamente
1. A maior parte das vezes, entendo o porquê de estar a experienciar um sentimento em específico	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Entendo as minhas emoções muito bem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Entendo o que sinto	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Sei quando estou feliz ou não	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Reconheço as emoções de outros através dos seus comportamento	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Sou bom a reconhecer as emoções de outros	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Entendo as emoções dos que me rodeiam	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. Defino objetivos pessoais e dou o meu melhor para os alcançar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Reconheço-me como uma pessoa capaz	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Reconheço-me como uma pessoa auto-motivada	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Procuro encorajar-me para fazer o meu melhor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Consigo controlar o meu temperamento e gerir conflitos assertivamente	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Sou particularmente bom a controlar as minhas emoções	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Quando estou realmente zangado, sou capaz de me acalmar rapidamente	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Consigo controlar as minhas emoções muito bem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Liderança Transformacional

3. Considerando-se a si mesmo como líder, indique para cada item o seu grau de concordância

	Discordo Completamente	Discordo	Nem concordo / Nem discordo	Concordo	Concordo completamente
1. Ilustra, para o grupo, um quadro muito interessante no futuro	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Tem um entendimento claro a respeito de 'para onde nós vamos'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Influencia os outros com os seus planos para o futuro	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. É capaz de envolver os outros nos seus ideais	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Está sempre à procura de novas oportunidades para a organização	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Mais que dizer, lidera pelo fazer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Procura ser um bom modelo a ser seguido	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Lidera pelo exemplo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Encoraja a colaboração entre os grupos de trabalho	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Incentiva os colaboradores a serem 'parte de uma equipa'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Envolve o grupo a trabalhar por um objetivo comum	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Desenvolve espírito e atitude de equipa entre os colaboradores	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Mostra a todos que espera muito de nós	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Insiste somente no melhor desempenho	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Não se contenta em ser o segundo melhor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Atua, independentemente dos interesses dos outros	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Demonstra respeito pelos sentimentos dos outros	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Comporta-se de maneira atenciosa com respeito às necessidades pessoais dos colaboradores	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. Trata os outros sem considerar os seus sentimentos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Desafia a pensar sobre novos caminhos para velhos problemas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Questiona de forma a fazer os outros pensarem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Estimula a repensar a maneira como fazem as coisas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. Tem ideias que levam a reexaminar alguns dos pressupostos sobre o trabalho	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Desempenho Organizacional

4. Para cada uma das opções, indique o desempenho da sua empresa em relação à sua concorrência, nos últimos 3 anos

	Muito abaixo da média	Abaixo da média	Dentro da média	Acima da média	Muito acima da média
1. Volume de vendas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Crescimento no volume de vendas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Quota de mercado	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Crescimento na quota de mercado	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Margem de lucro	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Retorno sobre o capital investido	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Lucro líquido	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Informação geral

5. Qual o seu género? \*

- Feminino
- Masculino
- Outra: \_\_\_\_\_

6. Qual a sua idade? \*

- Menos de 20 anos
- 20-30 anos
- 31-40 anos
- 41-50 anos
- 51-60 anos

7. Qual o seu grau de escolaridade? \*

- Ensino Básico (9º ano de escolaridade)
- Ensino Secundário (12º ano de escolaridade)
- Cursos de Especialização Tecnológica (CET)
- Cursos Técnicos Superiores Profissionais (TeSP)
- Licenciatura
- Mestrado
- Doutoramento
- Pós-Doutoramento
- Outra: \_\_\_\_\_

8. Há quanto tempo se encontra na atual entidade patronal? \*

- 0-1 anos
- 2-3 anos
- 4-5 anos
- 6-10 anos
- Mais de 10 anos

9. Em que concelho se encontra a sua empresa? \*

A sua resposta

10. Qual é a dimensão da sua empresa? \*

- Micro empresa
- Pequena empresa
- Média empresa
- Grande empresa

11. Há quantos anos a sua empresa iniciou atividade? \*

- Menos de 5 anos
- Entre 6-10 anos
- Entre 11-15 anos
- Mais de 15 anos

[Anterior](#)

[Enviar](#)

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