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THE ROLE INTERNAL STAKEHOLDERS PLAY IN INNOVATION IN LARGE

CORPORATIONS

by

HELOÍSA BENEVIDES PONTES ARAGÃO

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Supervising Committee:

Liliana Pérez-Nordtvedt, Ph.D. (Chair)

Courtney Hart, Ph.D. (Internal member)

Mahmut Yasar, Ph.D. (External member)

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DEDICATION

I dedicate my dissertation to my whole family. To my wonderful husband, Aragão, who has unconditionally loved and supported me every single day of this incredible journey. He embraced my dream and made everything possible to make it come true. I do not know how I can ever thank him for so much. Also, to my beautiful daughters, Lina and Marina, who mean everything to me. They brought me joy and peace every time I faced a challenge during my PhD experience. I am the luckiest and happiest mother in the whole world. I hope you have understood through my experience the real importance of education and knowledge in anyone's life. To my parents and sister, who are my source of inspiration. I owe everything I am and conquered in life to them. Even though we are 4500 miles apart, they were at my side every single moment during the last 4 years. I love you all with all my heart.

ABSTRACT

THE ROLE INTERNAL STAKEHOLDERS PLAY IN INNOVATION IN LARGE

CORPORATIONS

Heloísa Benevides Pontes Aragão

The University of Texas at Arlington, 2023

Supervising Professor: Liliana Pérez-Nordtvedt

Despite the vast existing literature on innovation, the investigation of work conditions that support the generation of ideas to feed the innovative process remains elusive. Holding the assumption that the entire organization is responsible for innovation, not only a specific department or set of experts, I aim to investigate the role two internal stakeholders play in innovation – employees and CEO. I empirically examine the relationship between voice climate – or the workforce perception about its participation in current discussions with ideas, suggestions, and thoughts - and explorative and exploitative innovation. Further, I consider the impact of CEO attributes (origin – insider versus outsider and duality) on developing a climate that promotes employee voice. Using secondary data from firms listed in the Fortune 500 publication, I expect to contribute to (1) innovation literature identifying the impact of voice climate on the firm's breakthrough and incremental knowledge base, (2) to upper echelons and agency theories by assessing to what extent CEO characteristics (origin and duality) impacts exploitative and explorative innovation through voice climate, and (3) to organizational voice studies by assessing the influence of voice climate on organizational outcomes. This study finds

support for the relationship between voice climate and exploitative innovation. Thus, as voice climate increases, employees will be willing to express their ideas, suggestions, and thoughts regarding work-related issues, which leads to incremental innovation. The results also show that CEOs are important actors in building (or destroying) voice climates.

Keywords: Innovation, exploitation, exploration, voice climate, upper echelons, CEO origin, CEO duality.

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CHAPTER 1
INTRODUCTION

Innovation has been a topic of innumerous research in social science literature for many years. In fact, a quick search using the term "innovation" on the Web of Science database returns over 400 thousand records, distributed in many different fields, such as management, economics, and environmental studies to name a few. In the management field alone, there is a strong growth trend over the years, showing continuous interest in the topic. The constant search for the desired competitive advantage leads organizations to foment an environment to promote the generation of ideas aiming at innovation. Regardless of the degree of newness of innovations (i.e., incremental vs. disruptive), innovation represents an opportunity to obtain a greater profit margin and perform better than the competition. Assuming that the entire organization is responsible for innovation to happen (Birkinshaw, Bouquet, & Barsoux, 2011), this dissertation reveals the role that two internal stakeholders, employees and CEO, play in innovation through the development of an environment that fosters employee participation with ideas, suggestions, and thoughts – voice climate.

As a multidisciplinary construct (Crossan & Apaydin, 2010), innovation is complex (du Plessis, 2007; Popa, Soto-Acosta, & Palacios-Marqués, 2021), chaotic, and dynamic (Baregheh, Rowley, & Sambrook, 2009). It is a necessary process for organizations (Baregheh, Rowley, & Sambrook, 2009), essential for their survival (Francis & Bessant, 2005; Popa et al., 2021), renewal (Danneels, 2002; Jansen, Van Den Bosch, & Volberda 2006), and adaptation (Benner & Tushman, 2003). Because innovation can be a source of competitive advantage (Crossan & Apaydin, 2010; Popa et al., 2021; Zhou & Wu, 2010), it is therefore an important determinant of firm performance (He & Wang, 2009; Mueller, Rosenbusch, & Bausch, 2013). Most importantly,

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innovation benefits the general society when inventions are implemented and adopted over the years (Schumpeter, 1934).

As a "multi-stage process whereby organizations transform ideas into new/improved products, service or processes" (Baregheh et al., 2009: 1334), innovation starts with the generation of an idea (input) and finishes with the development of a new product, service, or process (output). Even though there is no consensus about all the exact stages in the innovation process, idea generation is commonly understood as the initial phase (Keum & See, 2017). This dissertation focuses on idea generation and innovation creation. "Creating new ideas is fundamental to firms as they constitute the starting point of innovation endeavors" (Björk, Boccardelli, & Magnusson, 2010: 386). Innovation can be externally or internally conceived (Crossan & Apaydin, 2010), as ideas can be originated from inside and outside the organization. Ideas are externally conceived when firms work with external partners in the development of innovations. For example, relationships between major corporations and universities (e.g., RedHat and Philips Healthcare partnering with Boston University) (Lutchen, 2018) can lead to new innovations. In fact, using the telecommunication equipment industry, Phelps (2010: 890) found that the "diversity of a firm's alliance partners increases its exploratory innovation". When it comes to internal sources, the innovation literature has primarily devoted attention to the organization's internal research and development (R&D) activities (Gopalakrishnan & Damanpour, 1997), and internal programs dedicated to promoting innovation. On the one hand, R&D consist of the scientists and employees specifically dedicated to the innovation activity. On the other hand, internal programs that promote innovation include contests, hackathons, ethnographic research, focus group, and others (Cooper & Edgett, 2008; O'Reilly & Binns, 2019) that are designed to explore non-R&D employees' spontaneous ideas, suggestions, and

thoughts, regardless of the job position these employees hold. In other words, these programs foster innovation outside of the R&D unit. Following Birkinshaw et al.'s, (2011) perceptive, the entire organization is responsible for innovation, not only a specific department or set of experts.

In performing their job tasks, employees acquire specific knowledge and experience that allow them to "often generate promising process improvements and business opportunities" (Cornelius, Gokpinar, & Sting, 2021: 1) that may not be clear to others (i.e., managers). This knowledge is seen as a driver in the generation of ideas as non-R&D employees are familiar with their firms' operations, strategic goals, and challenges. For instance, a non-R&D employee's idea can help improve internal processes leading to higher productivity. This was the case at Starbuck's when one of its baristas had the idea of writing customers' names on cups for the purpose of more accurately delivering the orders to customers. Similarly, non-R&D employees can suggest new products. For example, Sony junior engineer Ken Kutaragi proposed the idea to create a new gaming console - Sony PlayStation. Employees can also generate ideas by verbalizing customers' needs. As frontline employees work closely with customers, they gain valuable and immediate customer information, allowing them to better understand or identify a problem or a need (Lages & Piercy, 2012).

Regardless of whether they stem from R&D units or other parts of the organization, employees' sharing of ideas resembles the concept of voice. Voice is defined by Morrison (2014, 174) as "informal and discretionary communication by an employee of ideas, suggestions, concerns, information about problems, or opinions about work-related issues to persons who might be able to take appropriate action, with the intent to bring about improvement or change" (Morrison, 2014, p.174). From the definition, four aspects should be considered. First, voice generates ideas from internal sources – that is, employees. Importantly, all employees, regardless

of their job position or hierarchical level, can communicate their ideas, suggestions, and thoughts. Second, voice literature assumes that the ideas, suggestions, and thoughts generated will be communicated for further evaluation to people who are in the position and have the discretion to act upon the idea. Third, employees can generate all sorts of ideas (i.e., good or bad), but those that advance the innovation process will ultimately lead to improvement or change. Lastly, ideas originated from voice are freely given as an extra-role behavior, based on employees' own decisions (LePine & Van Dyne, 1998; Tangirala & Ramanujam, 2008). It differs from ideas originated from the idea generation phase of innovation, which are associated to both in-role (i.e., from R&D departments) and extra-role behaviors (i.e., from any department or unit). Note that, even though R&D engineers' main role is to generate ideas for the purpose of designing and developing new products – that is, the generation of ideas is one of their duties - they can also provide ideas about any other organizational matter with the intention to bring an improvement or change. Further, these kinds of ideas will only be shared according to organizational and situational factors.

According to the voice literature, employees will only participate in the organizational dialogue – that is, voicing new ideas - if they perceive their contribution will not bring along risks to them (Edmonson, 1999). Therefore, employees are willing to speak up when they perceive it is safe to engage in such behavior. Furthermore, they will only voice their ideas, suggestions, and thoughts if they understand their contribution will matter. This means that they will only speak up if their organizations are open to listening and benefiting from employees' ideas (Edmonson, 1999; Morrison, Wheeler-Smith, & Kamdar, 2011). Under those circumstances, it is necessary for organizations to develop an internal climate that values employee communication and open dialogue to organizational members that can act upon

employees' ideas, suggestions and thoughts. I call this *voice climate*. As per Brykman and Maerz (2022: 3), voice climate represents "employees' shared perception about the extent to which voice is encouraged through shared and vicarious learning experiences, such as collectively witnessing and discussing how their leader reacted to salient voice events." In this dissertation, I propose that voice climate drives the employee's generation of ideas, therefore the innovation process. In other words, I see the generation of ideas as stemming from employees' ideas, suggestions, and thoughts, and voice climate as a necessary condition for this to happen. For that reason, I propose that voice climate allows employees' participation in recommending ideas, suggestions, and thoughts, increasing the potential to develop new or improved products or services.

I suggest that employees will generate all sorts of ideas to the extent that their organizations have developed a voice climate. As a result, for innovation to take place, it is necessary for organizations to build an environment that values employee communication to organizational members with the discretion to act upon those ideas. In the presence of a high-voice climate, the internal environment encourages employees' participation which in turn supports the innovation process through the easy flow of ideas, suggestions, and thoughts. Employees will voluntarily express ideas, suggestions, and thoughts because they perceive it is safe and effective to do so. Because a voice climate permeates the entire organization, anyone can propose ideas when voice climate is high. On the other hand, when voice climate is low, employees will intentionally refuse to share valuable ideas that could be useful to the organization because they fear they may be punished, have negative consequences associated with this kind of behavior, or have their ideas ignored (Milliken, Morrison, & Hewlin, 2003). Even employees from the R&D department become less comfortable expressing their ideas,

especially if the ideas are high in radicalness (Silva & Oldham, 2012). If the work environment does not allow the employees to freely express their ideas and discourage their participation, a climate of silence is established (Morrison & Milliken, 2000). In this case, I argue that the organization's innovativeness ability is at risk. In this light, my first research question is:

Research Question 1: Does voice climate influence the production of innovations?

In addition, ideas can have incremental and disruptive overtones (Crossan & Apaydin, 2010), which can lead organizations to engage in two different kinds of innovative approaches. On the one hand, incremental ideas can lead organizations to engage in developing exploitative innovations. Exploitative innovation leads to the development of products and services that follow the existing knowledge trajectory of the organization (Jansen et al., 2006). On the other hand, disruptive ideas can lead organizations to develop explorative innovations. Explorative innovation focuses on experimentation and values breakthrough ideas and the discovery of new knowledge domains (Benner & Tushman, 2003; Nie, Yu, Zhai, & Lin, 2022). "Firms that focus more on exploitative innovations often find themselves disrupted by new entrants; firms that only pursue explorative innovation may fail to leverage their existing capabilities" (Ngo, Bucic, Sinha, & Lu, 2019). While exploitative innovations focus on an efficient innovation process, explorative ones focus on an effective innovation process. In general, however, it is recognized that both exploitative and explorative innovations are necessary and vital to organizations to sustain their current success and seek paths for their future (Benner & Tushman, 2003). Yet, these two types of innovation compete for limited resources (March, 1991). The ability to integrate the two types, instead of selecting one over the other, benefits organizations in search of better performance results (He & Wang, 2009; Mueller et al., 2013; Tushman & O'Reilly, 1996).

Importantly, these two types of innovation approaches involve varying degrees of risk. Because exploitative innovation relies on the refinement of the existing body of knowledge, it is typically associated with less risk, and greater stability and specialization (Barrutia & Echebarria, 2019; Nie, Yu, Zhai, & Lin, 2022). Exploitative innovation allows the organization to capitalize on the success of its current products or services, maintain them refreshed for its customer base, and remain viable in the short-term. Because explorative innovation generates new knowledge and emphasizes experimentation, it is typically associated with higher risk and flexibility (Barrutia & Echebarria, 2019; Nie et al., 2022). Explorative innovation allows the organization to explore new product or service paths that can enable viability in the long-term as markets shift and change their preferences. It is unclear if an increase in voice climate will lead to an increase in workforce participation by confirming current knowledge (i.e., an exploitative approach), generating new knowledge (i.e., an explorative approach), or both. On the one hand, as employees' current knowledge drives the generation of ideas, such ideas are likely to be primarily incremental, suggesting that voice climate is likely to generate more exploitative innovation. In fact, research shows that voice can be reactive and support the status quo as employees speak up providing incremental suggestions to the current body of knowledge. This view of voice is one where employees avoid any internal conflict and is known as a supportive voice (Burris, 2012). Yet, voice can have defiant nature, in which employees' ideas, suggestions, and thoughts question the status quo. This view of voice is known in the literature as a challenging voice (Morrison, 2011; Sherf, Parke & Isaakyan, 2021; van Dyne, Ang, & Botero, 2003; Tangirala & Ramanujam, 2008). A challenging voice view would suggest that voice climate is likely to generate more explorative innovation. This lack of clarity on the causal

impact of voice climate on innovation shows a gap in the innovation literature that needs to be fulfilled. Thus, my second research question is:

Research Question 2: Does voice climate challenge or reinforce the current body of knowledge?

Despite great progress made when it comes to voice at the individual level, voice has been neglected at the organizational level of analysis (for a few exceptions, see Börnfelt, 2021; Della Torre, 2019; Greenberg & Edwards, 2009). Although voice is understood to have a positive impact on organizations (Van Dyne & Le Pine, 1998), research on collective voice is yet to be developed. This leaves room to further research to explore voice at the organizational level of analysis. To this day, voice has emerged as a significant construct by industrial relations scholars, and it has been mainly expressed as the presence of formal and informal mechanisms that verbalize employees' demand changes (Batt, Colvin, & Keefe, 2002; Meardi, 2007). Within this field, however, the matters discussed as ideas, suggestions, and thoughts are mainly related to labor issues and employment relations. When it comes to climate, the management literature recognizes the important role leaders play in establishing and nurturing organizational climate (Ostroff, Kinicki, & Muhammad, 2013). Indeed, the top executive team can shape and foster climate toward a strategic direction (Schneider, Ehrhart, & Macey, 2013). The CEO, who holds the highest status in the organization, is a role model and is pivotal to establishing the organization's voice climate. Answering the call for voice studies to involve macro dimensions and multidisciplinary fields (Kaufman, 2015), in this dissertation, I explore how organizations can build an environment that encourages employees' participation with ideas, suggestions, and thoughts – voice climate.

But what fosters a voice climate in organizations? I propose that CEOs, as the most important leaders in organizations, can create a voice climate in their organizations. Due to the position they hold, CEOs guide and command organizational actions and behaviors and influence a variety of organizational outcomes (Hambrick & Mason, 1984). The impact of corporate executives on organizational strategy has inspired scholars for decades. Research in this area is basically grounded on two theoretical perspectives: Upper Echelons Theory and Agency Theory (Jensen & Zajac, 2004). Under the rubric of upper echelons theory (Hambrick & Mason, 1984), attributes related to CEO personality, demographics, experience, and compensation have been extensively investigated to reveal the extent to which organizations are the reflection of their CEOs and other top executives (Carpenter et al, 2004; You et al., 2020). Considering the agency theory lens, the corporate governance structure is fundamental to understanding the potential influence a CEO exerts on organizational outcomes (Jensen & Meckling, 1976). With the intention to capture the influence of the CEO using both perspectives on voice climate, I will investigate the impact of CEO origin and CEO duality on voice climate. CEO origin relates to CEO experience, which follows an upper echelons theory lens. CEO origin represents where the CEO comes from. CEOs can be insiders or outsiders. The insider CEO is hired from within the organization while the outsider CEO is hired from a different organization (Zhang, 2008). CEO duality refers to CEO power, which follows an agency theory lens. CEO duality refers to whether the CEO assumes the roles of CEO and board chairperson at the same time (Rechner & Dalton, 1991). Furthermore, I propose voice climate mediates the relationship between CEO origin and CEO duality and innovation. That is, CEO origin and CEO duality influence innovation through the development of an environment that encourages employees'

participation with ideas, suggestions, and thoughts. Thus, my third and fourth research questions are:

Research Question 3: What is the role of the CEO in the developing a climate that promote employee voice?

Research Question 4: Do CEO experience and power impact innovation through their effect on voice climate?

Specifically, I expect to find that, when compared to insider CEOs, outsider CEOs are positively associated with higher levels of voice climate because outsiders lack firm-specific knowledge (Balsmeier & Buchwald, 2015). When assuming the CEO position, they need to listen to what the organization needs to say in order to build their leadership plan and establish new social ties. Stimulating a voice climate gives the outsider CEOs a chance to learn about the organization and better understand the new challenges they are facing. When a voice climate is developed, employees' participation increases, and so do employees' ideas, suggestions, and thoughts. Furthermore, I expect to find a stronger indirect effect of outsider CEOs on explorative innovation rather than exploitative innovation because their experience and knowledge base differ from the organization's current knowledge trajectory (Hambrick & Mason, 1984) and they tend to bring strategic change to organizations (Greiner & Bhambri, 1989). Through voice climate, outsider CEOs acquire firm-specific knowledge that will support them to implement strategic changes to the organization. Therefore, I expect a stronger indirect effect of outsider CEOs on explorative innovation rather than exploitative innovation because they bring new ideas and are prone to changes.

I also suggest a negative association between CEO duality and voice climate. When holding both CEO and chairman roles, the governance mechanisms of control weaken, and the

power of the CEO increases (Donaldson & Davis, 1991). On the one side, CEO power represents the unity of command that leads to a clear line of authority, facilitates decision-making, and signals to stakeholders that the leadership is empowered to achieve an agenda efficiently (Finkelstein & D'aveni, 1994). On the other side, research suggests that as CEOs become more powerful, they also become less open and less collaborative with others (Keltner, 2016). Called by Keltner (2016: 2) as the *power paradox*, "people rise on the basis of their good qualities, but their behavior grows increasingly worse as they move up the ladder." Empathy, collaboration, and openness are examples of qualities toward others that dim as CEOs embrace more power (Keltner, 2016). For example, Galinsky, Magee, Inesi, and Gruenfeld (2006: 1068) conducted three experiments on the relationship between power and perspective-taking and found that "power was associated with a reduced tendency to comprehend how other people see, think, and feel." They explained that as powerful people have more control over resources, they also depend less on others to achieve their goals. In addition, as they gain more power, they engage in more activities that demand their attention. Therefore, they are not able to support and look for everything and everyone under their control. Lastly, power increases the psychological distance between the CEO and employees. With this in mind, the formal power held by CEOs on a duality model tends to shift their behaviors in a way that they care less about what the workforce has to say. In addition, the power and the hierarchical distance between the CEO and ordinary employees generate "stress and anxiety among their colleagues, diminishing rigor and creativity in the group and dragging down team members' engagement and performance" (Keltner, 2016: 3), influencing employee's perception of whether they should voluntarily express their ideas. Overall, then, I expect to find a negative effect of CEO duality on voice climate, when compared

to CEO nonduality, as the unification of roles empowers the CEO and consequently diminishes the CEO's need to listen to what the workforce wants to voice.

In this dissertation, I will examine organizations listed in the Fortune 500 publication gathering data from multiple secondary sources, such as BoardEx, the United States Patent and Trademark Office, Compustat, Indeed.com, the United States Department of Labor, Form 10-k annual report, and National Center of Employee Ownership. Each source represents a well-known repository of reliable organizational data. The use of online reviews (e.g., Indeed.com or Glassdoor.com) has received much attention from academic scholars as the Internet becomes stronger every day, allowing "information and most of the behaviors of users to be captured and stored in a huge database further enhancing the visibility, accessibility, and legibility of data" (Cheung & Thadani, 2012: 468). The good quality of the data obtained from Indeed.com can be explained by the spontaneous and anonymous employee participation and by the breadth of employee participation, in which the instruments used (website) is available to all (Sainju, Hartwell, & Edwards, 2021).

The paper will make several important contributions to innovation, upper echelons, agency, and voice literature. First, the paper examines the role played by two internal stakeholders, the employees and CEOs, in the generation of new knowledge in form of innovation. More specifically, the role of individual employees in innovation, grounded in an organizational climate that encourages employee participation through voice. By empirically testing the relationship between voice climate and explorative and exploitative innovation, this study will show how employees' ideas, suggestions, and thoughts contribute to the production of innovation. Furthermore, I will assess whether voice climate enhances exploitation of the firm's current body of knowledge or exploration into new knowledge domains. I expect to find a

positive association between voice climate and both explorative and exploitative innovation, contributing to the innovation literature. Furthermore, I also expect to find a stronger relationship between voice climate and exploitative innovation than between voice climate and explorative innovation. My empirical investigation will show if exploration and exploitation coexist under different levels of voice climate and how a contextual factor (voice climate) influences an organizational phenomenon (innovation).

Second, my dissertation extends the upper-echelons and agency literature by assessing to what extent CEO characteristics impact voice climate. I will explore in particular CEO origin and CEO duality, as they represent major characteristics commonly found in large corporations (Rechner & Dalton, 1991; Zhang & Rajagopalan, 2003), to better understand how CEOs influence the development of a voice climate, which ultimately leads to innovation. I expect to find that outsider CEOs have a direct relationship with voice climate. I also expect to find that CEO duality is negatively associated with voice climate.

Third, it contributes to the organizational voice studies literature by assessing the influence of voice climate on organizational outcomes. As voice studies have been largely explored through a micro perspective, I aim to emphasize how employees' shared perception of voice – voice climate - influences organizational outcomes – that is, innovation. I also aim to develop a measure of voice climate using secondary sources (i.e., databases and websites) that can aid future investigation.

This dissertation is organized into six chapters. Chapter 2 will provide a review of the literature on innovation, voice climate, and upper echelons and agency constructs. First, chapter 2 will discuss the innovation definition, categorization, and process, then present the two distinct approaches to innovation, which are exploitative and explorative innovations. Also, it will

elaborate on the potential sources of innovative ideas, devoting emphasis to the research on the role of organizational members. In addition, Chapter 2 will present research on voice, from the introduction of the construct at the individual level of analysis and its transition to the group and organizational levels of analysis. Finally, a review of CEO origin and CEO duality will be elaborated. Chapter 3 will explain the model development and six hypotheses will be proposed. To answer the first and second research questions, which relate to the role of employees in the generation of ideas and the influence of voice climate on the production of innovation, the first, second, and third hypotheses propose a direct relationship between the voice climate and the different types of innovation. To understand the role of the CEO in the development of a climate that promotes voice, I considered both CEO attributes and corporate governance structure. While investigating the effect of CEO origin on both explorative and exploitative innovations through voice climate in the fourth and fifth hypotheses, I aim to understand how CEO experience and his knowledge base promote the generation of ideas. Considering the corporate governance structure and the existing control mechanisms, the power obtained by the CEO is under investigation, and the sixth hypothesis checks the effect of CEO duality on voice climate. In Chapter 4, I discuss the research setting, data, operationalization of the variables, and statistical model to be used to test empirically all hypotheses proposed in Chapter 3. Chapter 5 brings the results for each hypothesis proposed in this dissertation. Lastly, in Chapter 6, I will discuss the findings described in the previous chapter and elaborate on the theoretical contribution, management implications, possible limitations, and possible ways forward in future studies.

CHAPTER 2

LITERATURE REVIEW

In this chapter, I aim to explore the current status of innovation, voice climate, and upper echelons, and agency theories in the organizational literature to better support the understanding of my proposed model. First, I begin by briefly examining the definition of innovation, its classification, and its process. Next, I discuss the difference between explorative and exploitative innovation. In particular, I review their characteristics and contradictory nature. Then, I examine voice climate in an organizational setting going from a micro to a macro perspective. Finally, I carry out a brief review of CEO origin and CEO duality constructs through upper echelons and agency theories.

2.1. Innovation

2.1.1. Innovation Definition

Innovation is a topic that has been vastly explored and overly conceptualized throughout the years by different disciplines (Baregheh et al., 2009; Crossan & Apaydin, 2010). For instance, using an economic view, Love and Roper (2004: 379) defined innovation as "the process that connects technological progress with commercial activity and economic growth". They discussed that innovation contributes not only to organizational performance and growth but also to economic development. Using the knowledge management view, both Harkema (2003) and Du Plessis (2007) conceptualized innovation based on the generation of new knowledge that leads to valuable organizational outcomes. Harkema's (2003: 341) definition of innovation is "knowledge process aimed at creating new knowledge and geared towards the development of commercial and viable solutions" while Du Plessis's (2007: 21) definition is "the creation of new knowledge and ideas to facilitate new business outcomes, aimed at improving

internal business processes and structures and to create market driven products and services".

Likewise, using a technological perspective, Smits (2002: 865) conceptualized innovation as "a successful combination of hardware, software and orgware, viewed from a societal and/or economic point of view", treating innovation as new scientific and technological knowledge. One other stream comes from marketing scholars, which emphasizes the conception of new products, and it refers mainly "to new product-related breakthroughs" (Han, Kim, & Srivastava, 1998: 32). It is clear that each discipline elaborates the concept based on its particularities.

Many scholars emphasized the value of new ideas when defining innovation, topic that will be further developed in this dissertation. Høyrup (2012: 144) simply defined innovation "as the successful exploitation of new ideas," while Aiken and Hage (1971: 64) defined innovation as "the generation, acceptance, and implementation of new ideas, processes, products, or services ... for the first time within an organization setting".

Research has shown a great diversity of organizational, environmental, and technological factors that have a causal impact on innovation. For instance, leadership (You et al., 2020), ordinary workers (Høyrup, 2010), networks (Barrutia & Echebarria, 2019; West & Bogers, 2017), organizational structure (Jansen et al., 2006), HR practices, intellectual capital, environmental dynamism (Popa et al., 2021), the use of power (Fan, Wang, & Tang, 2022), and strategic alliances (Phelps, 2010), to name a few, have been identified as important factors that facilitate innovation. As it relates to outcomes, innovation is associated with organizational survival (Francis & Bessant, 2005; Popa et al., 2021; Zahra and Covin, 1994), renewal (Danneels, 2002; Jansen et al., 2006), adaptation (Benner & Tushman, 2003), and organizational performance (He & Wang, 2009; Jansen et al., 2006; Mueller, Rosenbusch, & Bausch, 2013).

2.1.2. Types of Innovation

Innovation has been broadly classified under different categories. One of the initial models proposed by Knight (1967) involves four domains: (1) administrative or technical, based on the final outcomes of the process, in a way that new social structures are related to administrative and new products, services, or processes are related to technical; (2) radical or incremental, based on the degree of newness, in a way that fundamental changes are related to radical and improvements or small changes are related to incremental; (3) product or process, based on the target, in a way that product innovation refers to new products or services targeted to customers and process innovation changes the operation of the organization (internal processes); and (4) people, based on a diversity of changes on employees.

Analyzing the market's competitive pressures, Abernathy and Clark (1985) categorized innovation into four different types: architectural, niche creation, regular, and revolutionary. Architectural innovation refers to "new technology that departs from established systems of production, and in turn opens up new linkages to markets and users" enabling the creation of new industries or the remodeling of old ones (Abernathy & Clark, 1985: 7). Architectural innovation becomes stronger when individuals have large experiences in important technologies and when the market requests something new. Niche creation innovation deals with new market opportunities grounded on existing technology. It involves a change, improvement, or refinement of existing technology to fit the need of a new niche in the market. Regular innovation "involves change that builds on established technical and production competence and that is applied to existing markets and customers. The effect of these changes is to entrench existing skills and resources" (Abernathy & Clark, 1985: 12). It relates to minor changes over time that have an overall significant contribution. Revolutionary innovation "disrupts and renders established

technical and production competence obsolete, yet it is applied to existing markets and customers" (Abernathy & Clark, 1984: 12).

A more recent classification involves product, process, position, and paradigm factors, which correspond to changes to things, changes in the way things are created, changes in the context in which things are implemented, and finally changes in mental models, respectively (Francis & Bessant, 2005; Rowley, Baregheh, & Sambrook, 2011).

One other classification widely used in the management literature, and the one adopted in this dissertation, is exploitative and explorative innovation, based on "the proximity to existing technologies, products or services and the proximity to existing customer or market segments (Benner & Tushman, 2003; Jansen et al., 2006). Exploitative innovation is associated with incremental technological innovation built upon existing knowledge and targeting the current needs of existing customers. In this case, the knowledge trajectory persists. On the other hand, explorative innovation is related to radical innovation in which new knowledge is acquired and the potential outcomes target emergent customers or markets. In this instance, there is a change in the knowledge trajectory. Exploitative and explorative innovation will be further explored in the next section.

2.1.3. Innovation Process

Innovation is considered a process by many scholars (Baregheh et al., 2009; Adams, Bessant, & Phelps, 2006; Harkema, 2003; Love & Roper, 2004). As a "multi-stage process whereby organizations transform ideas into new/improved products, services or processes " (Baregheh et al., 2009: 1334), innovation follows a series of steps to transform the original ideas into the desired output.

According to Keum and See (2017), there is no consensus in the literature about the stages of the innovation process (neither order nor number). In fact, many stages have been discussed in the literature. For instance, Tushman (1977) described the innovation process in three simple steps. The first, idea generation, refers to the generation of ideas that would match specific needs. The second, problem solving, relates to the research, development, and reengineering of the solution chosen from the previous step. Lastly, the implementation phase, represents the stage that employs the solution, either by bringing it to use (internally) or by delivering it to the market (externally). Also, Rice and Rogers (1980) identified five innovation subprocesses: (l) agenda-setting, in which a general problem is identified and understood, (2) matching, the stage that generates solutions for the problem identified, (3) redefining, in which the solution chosen is analyzed and its attributes defined, (4) structuring, in which the organizational structure will become available to the application of the solution, and (5) interconnecting, in which the innovation is implemented and becomes functional. In addition, Narvekar and Jain (2006) proposed a framework to understand the technological innovation process and cited only 3 stages, which are ideation, incubation, and demonstration. A different perspective is proposed by Mariello (2007) with 5 different stages: idea generation and mobilization, advocacy and screening, experimentation, commercialization, and diffusion and implementation. Lastly, Baregheh et al., (2009) analyzed the definition of innovation from 1934 until 2007 around organizational studies and summarized the innovation process in five different stages: creation, generation, implementation, development, and adoption. This dissertation focuses on idea generation and innovation creation.

Regardless of the innovation process or the number of stages proposed, the literature agrees that ideas represent a starting point for and a fundamental role in innovation (Keum &

See, 2017). That is, "[i]deas are the raw material that eventually become innovations" (Hua, Harvey, & Rietzschel, 2022: 624). Therefore, ideas are the key to innovation, as they represent the input that feeds innovation creation (Björk et al., 2010). The role of individuals as a potential source of organizational ideas has been explored for decades (Steiner, 1995; Høyrup, 2012; Kesting & Ulhøi, 2010). Employees, scientists, engineers, executives, and customers, to name a few, are powerful and potential sources of ideas that lead to innovation (Doig & Hargrove, 1987; Steiner, 1995).

Ideas can be internally or externally conceived (Crossan & Apaydin, 2010). Ideas can be developed by purposeful, spontaneous in-house research and development (R&D) activities employee participation, or both (Narvekar & Jain, 2006). When investigating the role of employees in innovation, studies tend to investigate employees allocated in R&D departments who are expected to perform tasks related to innovation. And, indeed, R&D activities are strongly related to innovation as they increase the organizational stock of knowledge (Griliches, 1979). Yet, the investigation of the role of an ordinary worker (i.e., non-R&D employees) to innovation is undervalued (Høyrup, 2012). Non-R&D employees can and do provide valuable ideas that lead to incremental and radical innovation (Høyrup, 2012; Kesting & Ulhøi, 2010). For instance, the operational knowledge and experience acquired over the years drive non-R&D employees to better identify opportunities that may not be clear to managers and supervisors (Cornelius et al., 2021). Also, the number of non-R&D employees is much bigger than R&D employees, meaning that the potential for new ideas is also higher (Kesting & Ulhøi, 2010). Yet, the extent to which ordinary workers participate with ideas is not automatic. It depends on the support they receive from the management team and on an environment that values their contributions (Kesting & Ulhøi, 2010; Voxted, 2018).

Likewise, "outside sources of knowledge are often critical to the innovation process" (Cohen & Levinthal, 1990; 128). Research shows that customers are recognized as the major external source of ideas for innovation as the generation of new products and services is driven by current and potential customers' needs (Mahr, Lievens, & Blazevic, 2014). Other external sources are strategic alliances and acquisitions (Phelps, 2010; Vanhaverbeke, Duysters, & Noorderhaven, 2002), universities (Laursen & Salter, 2004), suppliers (Homfeldt, Rese, & Simon, 2019), new ventures (Homfeldt et al., 2019), among others. Most importantly, organizations must develop the skill to identify valuable information outside of their boundaries that can drive innovation. Ideally, internal and external sources of innovation complement each other, and the combination is a powerful source of competitive advantage (Cassiman & Veugelers, 2006; Rigby & Zook, 2002).

A new or updated product, service, process, program, technology, and knowledge are the typical outputs of the innovation process (Damanpour, 1996; Narvekar & Jain, 2006).

2.1.4. Exploitative and Explorative Innovation

The notion of exploitation and exploration was introduced by March (1991) as a stream of organizational learning and strategy literature, and it has flourished since then. Exploration refers to the search for new knowledge, while exploitation relates to the refinement of the existing body of knowledge. On the one hand, exploration emphasizes experimentation, being associated with higher risk and flexibility. On the other hand, exploitation focuses on the further development of skills and competencies accumulated over time, being associated with stability and specialization (March, 1991). Assuming that organizations have limited resources, strategic decisions that balance exploration and exploitation are necessary to achieve specific goals and obtain a competitive advantage (Benner & Tushman, 2003; He & Wong, 2004) The equilibrium

between the search for new knowledge (increase in risk and degree of newness) and refinement of the current knowledge (decrease in risk and degree of newness) impacts positively organizational results in such a way that organizations profit from both short- and long-term opportunities and develop a broad sense of competences to support future actions (Benner & Tushman, 2003; March, 1991). Currently, the definition of exploration and exploitation seems to reach a consensus, however, there was a time when scholars argued about the exploitation concept. Scholars agreed that exploration refers to the search and acquisition of new knowledge, however, there was a debate around exploitation in which the re-use of past knowledge (absence of learning) idea was disputed against the use of new knowledge under an existing trajectory (presence of learning). Ultimately, scholars agreed that both contradictory organizational approaches lead to learning (Gupta, Smith, & Shalley, 2006). Bringing the concept of exploitation and exploration to the innovation literature, the two approaches differ in the extent of the use of the existing resources, mainly the current body of knowledge. These concepts explain how organizations pursue their growth (Danneels, 2002), whether promoting innovation by improving their knowledge or by exploring new domains.

A representative but not comprehensive list of the exploration and exploitation innovation definitions, antecedents, and moderators can be found in Table 1.

Table 1. Exploitative and Explorative Innovation definitions, antecedents, and moderators.

Authors	Exploitative Innovation	Explorative Innovation	Antecedents	Moderator
Danneels (2002)	"Developing a product that draws on existing resources" (p. 1099)	"Developing a product that requires new resources" (p. 1099)	Existing technological and market knowledge → (+) Exploitative innovation New technological and market knowledge, more strategic and visionary criteria → (+) Explorative innovation	
Benner and Tushman (2003)	"Incremental technological innovations and innovations designed to meet the needs of existing customers are exploitative and build upon existing organizational knowledge" (p. 243)	"radical innovations or those for emergent customers or markets are exploratory, since they require new knowledge or departures from existing skills" (p. 243)	Process management → (+) Exploitative innovation Process management → (-) Explorative innovation	
O'Reilly and Tushman (2004)	"incremental innovations, small improvements in their existing products and operations that let them operate more efficiently and deliver ever greater value to customers" (p. 3)	"radical advances like digital photography that profoundly alter the basis for competition in an industry, often rendering old products or ways of working obsolete" (p. 3)		
Jansen, Van Den Bosch, and Volberda (2006)	"incremental innovations and are designed to meet the needs of existing customers or markets … build on existing knowledge and reinforce existing skills, processes, and structures" (p. 1662)	"radical innovations and are designed to meet the needs of emerging customers or markets … require new knowledge or departure from existing knowledge" (p. 1662)	Centralization → (-) Explorative innovation Formalization → (+) Exploitative innovation Connectedness → Exploitative and explorative innovation	dynamism and competitiveness
Narvekar and Jain (2006)	"reflects on organizational routines that value the improvement of existing products and processes" (p. 179)	"reflects organizational routines that value long-term interests and the development of new products and process" (p. 179)		

Authors	Exploitative Innovation	Explorative Innovation	Antecedents	Moderator
Phelps (2010)		"innovation embodying knowledge that is novel relative to the firm's extant knowledge" (p. 890)	Technological diversity of a firm's alliance partner → (+) Explorative innovation	Network density among a firm's alliance partners
Zhou & Wu (2010)	"the use and refinement of existing knowledge and skills in product development" (p. 548)	"refers to the search and pursuit of completely new knowledge and skills in product development" (p. 548)	Technological capability → (+) Exploitative innovation Technological capability → U-shaped effect on exploitative innovation	Strategic flexibility
Barrutia and Echebarria (2019)	"those that are close to the existing knowledge base and practices of the municipality, involving little discontinuity and controlled risk" (p. 449)	"require significant departure from the existing knowledge base and practices of the municipality, involving more radical changes and high risk" (p. 449)	Upward collaboration → (+) Exploitative innovation Inward collaboration → (+) Explorative innovation Outward collaboration → (+) Explorative innovation	
Bao, Yuan, Bao, and Olson (2022)	"exploitation of existing knowledge and competencies" (p. 2386)	"exploration of new knowledge and competencies" (p. 2386)	CEO ambivalence → U-shaped effect on organizational ambidexterity	Technological capability
Fan, Wang, and Tang (2022)	"based on intensive search refers to the improvement, implementation and extension of existing knowledge and products" (p. 3)	"rooted in extensive search involves the discovery, creation and pursuit of new knowledge and products" (p. 3)	Possessed power → (+) exploitative, explorative, and collaborative innovation Realized power → U-shaped effect on exploitative, explorative, and collaborative innovation	Financial slack
Luo, Xiong, and Mardani (2022)	"emphasizes the improvement based on current knowledge to make profits in the short term" (p. 455)	"emphasizes the development of new products and new markets in the long run by going beyond the existing knowledge" (p. 455)	Environmental information disclosure → (+) exploitative and explorative innovation	Media attention
Nie, Yu, Zhai, and Lin (2022)	"the refinement and extension of existing competences, technologies, and paradigms" (March, 1991: p. 85)	"experimentation with new alternatives" (March, 1991: p. 85)	CEO humility → (+) Exploitative and explorative innovation CEO narcissism → (-) Exploitative innovation	Market dynamism

Reviewing Table 1, the conflicting nature of the exploitative and explorative innovation is evident, confirming the existing paradox of the two innovation strategies. There is no doubt, however, that tension exists between exploration and exploitation due to their opposing nature (Bao, Yuan, Bao, & Olson, 2022; Crossan & Apaydin, 2010; Andriopoulos & Lewis, 2009; Lavie, Stettner, & Tushman, 2010). Exploitation is associated with refinement, increment, reinforcement, improvement, or extension of the existing resources, knowledge, technologies, skills, or competencies. It emphasizes the needs of existing customers and markets and enhances effectiveness. There is an *evolution* in the knowledge base since only a gradual development of knowledge happens. The risk of pursuing this kind of innovation tends to be low. On the other hand, explorative innovation is associated with experimentation, radical changes, or disruption of the current resources, knowledge, technologies, skills, or competencies. It targets new or emerging customers and markets. There is a *revolution* in the knowledge base, in a manner that new knowledge replaces old one. It is mainly characterized by a change in the knowledge trajectory. The risk of pursuing this kind of innovation tends to be high.

The tradeoff between "old" or existing versus new, short versus long-term, the focus on the present versus future, and stability versus flexibility depend primarily on the resources available and strategic goals to be achieved, as each side promotes different outcomes. Yet, research has also shown that one can promote the other, as exploration can bring new organizational knowledge that can be further exploited, and exploitation can finance future investments in exploration (Lavie et al., 2010).

Organizations suffer at different levels when adopting one path of innovation at the expense of the other (Gupta et al., 2006). "While too much exploitation fosters structural inertia and competency trap, too much exploration reduces efficiency and increases risks" (Bao, Yuan,

Bao, & Olson, 2022: 2386). To avoid such negative consequences, organizations must balance between exploration and exploitation. Research has shown organizations can employ two feasible mechanisms to achieve the desired balance (Gupta et al., 2006). First, organizations must be ambidextrous by simultaneously pursuing of "both exploration and exploitation via loosely coupled and differentiated subunits or individuals, each of which specializes in either exploration or exploitation" (Gupta et al., 2006: 693). Organizations must also employ punctuated equilibrium, which refers to the alternance of the innovative approaches, switching from exploitation to exploration and vice-versa from time to time, cyclically, maximizing the returns in each distinct period (Gupta et al., 2006).

The tension between exploration and exploitation was tested empirically by He and Wong (2004). They found a positive impact of exploitation/exploration interaction effect on the sales growth rate, confirming that the imbalance between exploration and exploitation is detrimental to organizational performance. Their findings showed that explorative strategies impact product but not process innovation and exploitative strategies influence both product and process innovation. They also signaled to managers the importance of simultaneously devoting attention and resources to both exploration and exploitation. He and Wong's (2004) findings were supported by Benner and Tushman's (2003) proposal that, regardless of their complexity, ambidextrous organizations must be nurtured, and management must develop mechanisms to coordinate both strategic choices concurrently. The pressure the top management team suffers to deal with strategic contradictions, such as explorative and exploitative innovation, was explored by Smith and Tushman (2005). With limited resources, the top management teams make strategic decisions navigating between the improvement and extension of existing products and the emergence and rise of new products considering the possible consequences to the firm's

performance, balancing resources, and creating synergy. With this in mind, Smith and Tushman (2005) developed a "model of balancing strategic contradiction" to enlighten the top management team on how to deal with such oppositional tendencies. Yet, ambidexterity is not achieved easily. In fact, research has shown that exploitative innovation is prioritized over exploration because the results come in the short term, the knowledge domain is known, the necessary resources are found internally, it involves less risk, and, in general, less investment is required (Luo, Xiong, & Mardani, 2022; Phelps, 2010).

2.2. Voice

According to Della Torre (2019), the concept of voice was introduced more the two hundred years ago by Adam Smith and became stronger after the publications of the Exit-Voice-Loyalty Theory by Hirschman (1970), which emphasized individual voice behavior, and the work of Freeman and Medoff (1984), which highlighted the notion of collective voice.

To this day, voice studies have been largely explored in the management field at the individual level of analysis (Della Torre, 2019; Greenberg & Edwards, 2009), mainly by organizational behavior and human resource management scholars. Although the construct's main assumptions rely heavily on the positive impact on organizations (Van Dyne & Le Pine, 1998), research on collective voice (team and organizational level of analysis) has not followed the same pace (Della Torre, 2019). Voice as a macro construct has emerged as a significant topic among industrial relations scholars, and it is mainly represented by the presence of formal (e.g., unions, councils, and joint consultative committees) and informal (e.g., informal discussions, one-to-one meetings) mechanisms that verbalize employees' demands for change (Batt, Colvin, & Keefe, 2002; Bryson, Willman, Gomez, & Kretschmer, 2013, Gittell, Von Nordenflycht, & Kochan, 2004; Meardi, 2007). According to Della Torre (2019: 398), the development of voice

studies emphasizing the individual level of analysis became stronger to the detriment of the collective view because of "the declining role and power of unions in Western economies", "the emergence and success of the high-performance work system (HPWS) approach" that "fostered a tendency to analyze (direct) employee voice as a part of the wider HRM system", and researchers' increasing "focus on the emergence of different mixes of employee voice mechanisms in the same workplaces and on their potential outcomes." However, Brewster, Croucher, Wood, and Brookes (2007) found empirical evidence from the UK, Germany, and Sweden that collective voice continues to be an important mechanism in large organizations. Therefore, a deep understanding of organizational context and voice mechanisms are both relevant and necessary.

Initially, voice became known as employees' complaints about managerial power, employees' contributions to the decision-making process, or both (McCabe & Lewin, 1992). Later, other studies identified and examined different types of voice. For example, Van Dyne et al., (2003) classified voice as acquiescent, defensive, and prosocial based on the motive that drives the behavior. Acquiescent voice is based on resignation. Defensive voice is motivated by fear and relates to self-protection. Finally, prosocial voice is based on cooperation with a constructive nature. Similarly, as a result of a qualitative study, Dundon, Wilkinson, Marchington, and Ackers (2004) identified four different forms of voice: (1) as individual dissatisfaction – that is, when employees express their opinions and thoughts about problems or how to prevent one, (2) as collective organization, demonstrating a countervailing force commonly represented by unions – collective bargains, (3) as mutuality, showing a supporting force to the management team grounded on the existing relationships, and (4) as contributing to managerial decision-making, representing the essence and widespread understanding of voice as

employees' contribution to management in search for improvements in the work environment. Also, Burris (2012) suggested that different types of voice will affect managers in different ways and distinguished voice as challenging or supportive. A challenging voice suggests change to the status quo. A supportive voice intends to preserve whatever is already in place, avoiding conflicts.

Regardless of the motivation, voice is identified as "informal and discretionary communication by an employee of ideas, suggestions, concerns, information about problems, or opinions about work-related issues to persons who might be able to take appropriate action, with the intent to bring about improvement or change" (Morrison, 2014, p.174). In other words, voice represents the behavior to engage in the organizational dialogue with the purpose to contribute and to improve work-related issues (Morrison, 2014). Also known as speaking up, voice is a *voluntary* behavior in which employees express their opinions, thoughts, suggestions, and considerations and participate in the existing discussions in the work environment, with the intention to contribute (Morrison, 2014). On the other hand, employees' omission from the organizational debate diminishes the number of existing alternatives for actions to be taken. When intentionally refusing to share potential information that could be useful to the organization, employees engage in silence behavior (Morrison, 2014). Voice is considered an extra-role behavior (LePine & Van Dyne, 1998; Tangirala & Ramanujam, 2008) as it is freely given, based on the employee's own decision. Voice has a challenging nature because opinions or concerns tend to question the status quo, which tends to produce changes (Morrison, 2011; Sherf et al., 2021; van Dyne et al., 2003; Tangirala & Ramanujam, 2008). Employees analyze critically the existing risks and benefits before making a decision to speak up. There are positive and negative consequences associated with voice that depends on the message, the target, and the

organizational climate (Brykman & Raver, 2019; Detert & Burris, 2007; Milliken et al., 2003; Tangirala & Ramanujam, 2008). Most importantly, voice has a constructive and positive personality, with a clear purpose for improvement (Morrison, 2011; Sherf et al., 2021; van Dyne et al., 2003; Tangirala & Ramanujam, 2008), which differs from whistleblowing, complaints, and criticism (Morrison, 2011; Tangirala & Ramanujam, 2008).

Voice behavior is grounded on Social Exchange Theory (SET) (Blau, 1964), in which the social relationships within the organization are regulated by self-interest and people tend to reciprocate on different levels depending on the quality of the relationship that is perceived. Consequently, voice can be viewed as a reciprocal action (LePine & Van Dyne, 1998). To this matter, when employees perceive a safe and supportive environment of work, they will feel free to express their opinions and thoughts (reciprocate through constructive voice) (Walumbwa & Schaubroeck, 2009). Voice can be predicted by employee satisfaction (LePine & Van Dyne, 1998), psychological safety (Detert & Burris, 2007; Walumbwa & Schaubroeck (2009), ethical leadership (Walumbwa & Schaubroeck, 2009), management openness and transformational leadership (Detert & Burris, 2007), and situational factors such as group size and style of management (LePine & Van Dyne, 1998). When it comes to organizational outcomes, employee voice has been empirically found to be associated with organizational innovation, adaptation, and growth (Brykman & Maerz, 2022), creative idea generation (George & Zhou, 2001), flow experience (Xie, Chang, & Singh, 2021), organizational learning (Argyris, 1997; Edmondson, 2003; Levine, 2001), turnover (Bryson et al., 2013), and organizational performance (Detert et al., 2013; Frazier & Bowler, 2015).

The leadership role represents a good proportion of the existing body of literature on voice. Because leaders have the power and resources available to act on one's suggestions and

also hold the authority to reward or punish one's performance, they are perceived as fundamental to the decision to freely express one's opinions and suggestions (Burris, 2012; Detert & Burris, 2007). Every leader's action is a cue that will be considered by employees during the voice calculus (analysis of pros and cons of speaking up) and directly influences the extent to which employees perceive a supportive and safe environment to collaborate with opinions, thoughts, or suggestions (Detert & Burris, 2007).

2.2.1. Voice Climate

Voice climate has been widely explored (Brykman & Maerz, 2022; Cheng, 2020; D'Innocenzo, Luciano, Mathieu, Maynard, & Chen, 2016; Duan, Xu, & Frazier, 2019; Frazier & Fainshmidt, 2012). Voice climate is subsumed under organizational climate. Organizational climate deals with a relatively temporary state, that can be somewhat controlled or manipulated grounded on policies, practices, and procedures, also known as employees' perception or atmosphere (Ostroff, Kinicki & Muhammad, 2013). "The shared perceptions and meanings that arise from employees' interactions with one another, in particular, are a key element of climate" (Edwards, Ashkanasy, & Gardner, 2009: 100). Climate then refers to employees' perception about work-related matters that influence their motivation and future behaviors (Ostroff et al., 2013). Studies in the management literature suggest that organizational climate is key to the achievement of organizational outcomes. In particular, voice climate relates to employees' shared perception "about the extent to which voice is encouraged through shared and vicarious learning experiences, such as collectively witnessing and discussing how their leader reacted to salient voice events." (Brykman & Maerz, 2022: 506). This definition not only emphasizes the extent to which voice is encouraged but also the common understanding shared among the workgroup about their leader's openness to ideas, suggestions, and thoughts. It captures the

employees' overall experience in which the climate is shaped not only by individual's

experiences but by their peers' experiences as well. Besides voice climate, there are many

different climates considered to be a part of organizational climate. For instance, diversity

climate was explored by Hajro, Gibson, and Pudelko (2017), service climate by Mayer, Ehrhart,

and Schneider (2009), ethical climate by Simha and Cullen (2012), affect climate by Parke and

Seo (2017), and innovation climate by Zuraik and Kelly (2018).

Even though voice and silence are considered distinct constructs in the voice literature

(Knoll & Redman, 2016; Sherf et al., 2021; Van Dyne et al., 2003) as they have different

antecedents and outcomes, and operate using distinct mechanisms, voice climate and climate of

silence are considered ends of a continuum (Morrison et al., 2011; Morrison & Milliken, 2000).

Under a high-voice climate, employees share the perception that it is safe and worth to speak up,

but under a low-voice climate, employees share the perception that is dangerous and futile to

speak up, which leads them to engage in silence behavior rather than voice. Defined by Morrison

and Milliken (2000) as "widely shared perceptions among employees that speaking up about

problems or issues is futile and/or dangerous", climate of silence is often used to represent the

lack of voice climate.

Morrison et al. (2011) conceptualized voice climate based on two dimensions: voice

safety beliefs – that is, psychological safety - and voice efficacy – that is, capability to voice. The

first dimension, psychological safety, was first introduced by Edmondson (1999: 354) as "a

shared belief held by members of a team that the team is safe for interpersonal risk taking". It

involves an assessment of what is safe and what is dangerous. Most importantly, psychological

safety "involves but goes beyond interpersonal trust" (Edmondson, 1999: 354). It is

characterized by "mutual respect in which people are comfortable being themselves"

(Edmondson, 1999: 354). Employees will be open to speak up when they perceive their contribution will not bring any associated risk (Edmonson, 1999). The second dimension of voice climate, voice efficacy, relates to a shared belief that an employee's input will be taken seriously by managers and supervisors. Furthermore, employees will express themselves if they believe their ideas, suggestions, and thoughts will be taken into account, and, once evaluated, may ultimately benefit the organization (Morrison et al., 2011). Voice efficacy relates to the shared belief that it is worth the effort to speak up because the ideas, suggestions, and thoughts will not be heard.

Grounded on the sense-making literature (Schneider & Reichers, 1983), voice climate is developed "as a result of social interactions" by which employees exchange information and create a common "understanding of workplace demands, constraints, and outcome contingencies" (Morrison et al., 2011: 185). Voice climate can be promoted within organization (Ostroff et al., 2013). Therefore, and key to this dissertation, middle and upper managers can actively work to support such atmosphere.

Much attention has been given in the literature to voice climate for teams within the organization, with a need for further development the construct at the organizational level of analysis. Today, voice climate is known to impact team behaviors, such as team voice behaviors (Brykman & Maerz, 2022); team resilience (Brykman & King, 2021); team learning (Brykman & King, 2021), team decision-making effectiveness (Duan et al., 2019); team innovation (Duan et al., 2019), team empowerment (Frazier & Fainshmidt, 2012; D'Innocenzo et al., 2016), and team performance (Frazier & Bowler, 2015). It is also known that voice climate is influenced by supervisor undermining (Frazier & Bowler, 2015), supervisor voice seeking (Cheng, 2020), democratic leadership (Börnfelt, 2021), and team-member exchange (Duan et al., 2019). To my

knowledge, only one study has been developed to explore voice climate at the organizational

level of analysis. A combined qualitative and quantitative study conducted by Börnfelt (2021) in

Sweden's healthcare and educational sectors identified a high organizational voice climate

associated with a democratic leadership orientation. In this scenario, employees identified

themselves as part of the decision-making process and emerged in an environment that values

dialogue based on support, trust, and respect. Table 2 brings a review of the voice climate

literature including definition, level of analysis, research instrument, sample, measurement, and

key takeaways of voice climate publications. As depicted in Table 2, there is a consensus on the

definition of voice climate but not in the measurement.

Table 2. Literature Review on Voice Climate

Author(s)	Level of analysis	Voce Climate Definition	Instrument	Sample	Voice Climate Measurement	Take away
Liang & Tang (2010).	Team level	"The degree to which employees within the unit speak up about work-related issues as a whole" (p. 543)	Survey	267 individuals 59 stores Chinese retailing company	Aggregated from voice at individual-level (Liang & Farh, 2008)	Transformational leadership and supportive peer relations as voice climate antecedents
Morrison et al. (2011)	Team level	"Shared beliefs about speaking up on voice behavior within work group" (p. 184)	Survey	253 individuals 42 groups Division of a large, multinational, chemical company in India	2 dimensions: Voice safety ("members of your team feel it is safe to do each of the following") and Voice efficacy ("members of your team feel they are capable of effectively doing each of the following"). Used 6-item scale developed by LePine and Van Dyne (1998) for each dimension.	Voice behavior is shaped by group level believes. Introduce the voice measure based on two dimensions: safety and efficacy.
Wei, Zhang, & Chen (2015)	Team level	"The extent to which group members share the perception that free expression of doubts regarding organizational practices is supported within the work group" (p. 1643)	Survey	262 individuals 66 groups Average group size 3.97	Adapted from 3-item scale of "freedom to express doubts" by Lovelace et al. (2001)	"Group voice climate weakens the positive relationship between superficial harmony and perceived risk of prohibitive voice" (p. 1641)
Frazier & Bowler's (2015)	Team level	"The shared perceptions among group members of the extent to which their work group is encouraged to engage in voice behaviors" (p. 843)	Survey	54 work groups Average group size of 6.93	"The members of my work group are encouraged to develop and make recommendations concerning issues that affect the group" six-item adapted from Van Dyne and LePine (1998)	Supervisor undermining have a (-) effect voice climate. "Voice climate predicts group voice behavior and also has a significant influence on group performance" (p. 841)

Author(s)	Level of analysis	Voce Climate Definition	Instrument	Sample	Voice Climate Measurement	Take away
D'Innocenzo, Luciano, Mathieu, Maynard, & Chen (2016)	Unit level	"Shared perception among unit members regarding the extent to which they are encouraged to speak up and make suggestions" (p. 1291)	Survey	544 individuals 78 units	Modified from Morrison et al. (2011). Items clustered into two substantive subscales: (1) voice efficacy and (2) voice safety	Unit voice climate leads to unit empowerment
Hsiung & Tsai (2017)	Team level		Survey	305 real-estate sales agents 66 workgroups Taiwan Average group size 7.66	Morrison et al.'s (2011) assessing team voice safety and team voice efficacy	Voice climate help to "reduce the anxieties of voice behaviors and delivering favorable environmental cues" (p.494)
Duan, Xu, & Frazier (2019)	Team level	"Shared perceptions of the extent to which speaking up and sharing ideas is encouraged on the team" (p. 200)	Questionnaire	294 students 73 entrepreneur teams Entrepreneurial competition	Morrison et al.'s (2011) assessing team voice safety and team voice efficacy	Voice climate is significantly related to decision-making effectiveness and innovative performance.
Ohana & Stinglhamber (2019)	Team level	"Shared perception regarding how individuals who work together within the same unit and who do not have formal authority over each other judge the ability to participate in decision making inside teams" (p. 395)	Paper-and-pencil questionnaires	183 individuals 31 teams French health and social services	Individual voice was measured using Ohana's (2016) and then aggregated to group level	Voice climate influences the quality of social exchange within teams which in turn leads to higher individual affective commitment.
Cheng (2020)	Team level	"Shared perceptions among group members of the extent to which their work group is encouraged to engage in voice behavior" (p. 246)				Supervisory voice seeking shapes voice climate within groups

Author(s)	Level of analysis	Voce Climate Definition	Instrument	Sample	Voice Climate Measurement	Take away
Börnfelt (2021)	Firm level	People feel safe to speak about work-related concerns	Semi structured interviews	89 individuals 90 workplaces Healthcare and educational sector	"In line with interview studies by Loyens (2013) and Milliken et al. (2003) the respondents have been asked to describe actual episodes when they or their colleagues have raised concerns, the reactions of their manager, and what actions, if any, their manager has taken to solve problems highlighted by the concern" p. 444	Five voice climates emerged from the study: A high voice climate, a moderate voice climate, a restrained voice climate, a resignation silence climate, and a silence and fear climate.
Brykman & King (2021)	Team level	"Shared perceptions within a team of the extent to which voice is encouraged" (p. 739)	Survey	265 individuals 48 teams	Used Frazier and Bowler's (2015) 6-item scale	Voice climate as an important antecedent that builds team resilience capacity
Xie, Chang, & Singh, (2021)	Team level		Questionnaire	166 individuals 42 teams Service industry	Adapted from van Dyne and LePine's (1998) to reflect the context of the research	No significant correlation between emotional intelligence voice climate
Brykman & Maerz (2022)	Team level	"Voice climate reflects shared team perceptions about whether voice is encouraged and supported in the team" (p. 3)	Experiment	154 students 42 teams Large Canadian business school	Adapted from Frazier and Bowler's (2015) six-item voice climate scale	"Leaders' prior reactions to voice affects their team's voice intentions via voice climate" (p. 15)

For voice climate to be considered as an organizational construct, it must describe the organizational perception rather than individual or team members' views. The macro perspective is rooted in its sociological origins. It assumes that there are substantial regularities in social behavior that transcend the apparent differences among social actors" (Kozlowski & Klein, 2000: 5). Even though it may be argued that the macro perspective neglects the individual's differences in favor of a general view, the aggregate or collective perception emphasizes contextual factors that strongly promote similar behaviors within the organization. Please note that organizations are social systems and that the standards applied to the existing relationships (including both individuals and teams) generate a coherent whole. Because people interact over time, they are exposed to similar conditions and experiences, sharing their thoughts and making sense of the events experienced. Their interpretation of the work environment leads to a similar consensual point of view (Kozlowski & Klein, 2000). In this regard, the voice climate construct that has been mainly used at the team-level of analysis can be yielded to apply to the organization as a whole.

Regardless of contextual situations, voice climate represents "shared beliefs about speaking up" (Morrison et al., 2011: 184). For the purposes of this dissertation, I will use Brykman & Maerz's (2022: 506) definition of voice climate as "employees' shared perception about the extent to which voice is encouraged through shared and vicarious learning experiences, such as collectively witnessing and discussing how their leader reacted to salient voice events". A high-voice climate refers to a work environment grounded on mutual trust and respect. The participatory atmosphere is spread across the organization and the work environment offers a comfortable setting for people to speak up and contribute to each other. People feel comfortable detecting problems and proposing changes, talking about errors, asking for help or providing

support to each other, and sharing information, which therefore promotes the flow of valuable information across different organizational levels.

2.3. Corporate Governance Theories

The impact of the main decision makers on organizational strategy and outcomes has inspired scholars for decades. This line of research is grounded primarily on two theoretical perspectives: upper echelons theory and agency theory (Jensen & Zajac, 2004). Upper echelons literature findings have vastly demonstrated that CEOs impact organizational outcomes by examining CEO personalities, demographics, experiences, and values (You et al., 2020). Those findings confirm Hambrick and Mason's (1984) proposal that not only psychological but also observable CEO characteristics to influence organizational outcomes as they work as filters through which CEOs process information and make decisions.

Agency theory, on the other hand, states that the analysis of the corporate governance structure is fundamental for the understanding of the potential influence a CEO exerts on organizational outcomes (Jensen & Meckling, 1976). In other words, agency theory states that corporate governance mechanisms and the board of directors' composition determine CEOs' ability to align (or not) his/her interests with those of shareholders and act in their best interests.

A third theoretical perspective is that of stewardship theory. It suggests there is no conflict of interest between CEO and shareholders, therefore there is no need for implementation of corporate governance mechanisms to protect shareholders' interest and to scrutinize CEO's actions. An individual holding both CEO and chairman roles (duality model) is self-motivated and behaves ethically (Donaldson & Davis, 1991).

CEOs have the responsibility to guide organizational actions to achieve strategic goals. "As top decision makers for their firms, CEOs have the ultimate responsibility to utilize their

perspectives for strategy formulation and implementation" (Weng & Lin, 2014). Particularly, acknowledging the relevance of the theoretical perspectives described above, I specifically focus on two CEO characteristics. First, grounded on upper echelons theory, I review the literature on CEO origin as a reflection of his/her experience. Second, grounded on the agency theory, I review the literature on CEO duality as a reflection of his/her role played on the corporate governance structure.

2.3.1. CEO Origin

According to the CEO succession literature, the origin of the CEO has potential consequences to organizational outcomes (Zajac & Westphal, 1996; Zhang & Rajagopalan, 2003). For example, literature findings have shown that CEO origin explains a significant portion of corporate investment behaviors (Balsmeier & Buchwald, 2015). CEO origin refers to where CEO comes from. CEO's can be insiders or outsiders. Insider CEOs are hired from within the organization while outsider CEOs are hired from different organizations (Zhang, 2008). An alternative approach was added to the literature by Zhang and Rajagopalan (2003: 327). In their view, CEO origin can be categorized as intrafirm represented by the insiders, as intraindustry outsiders (CEOs who "come from within the hiring firms' industries") and as outside-industry ("others are chosen from outside their industries"). For the purposes of this dissertation, I will use the well-established dichotomous classification of insiders vs. outsiders as CEO origin.

CEO origin has implications for firm strategies. On the one hand, the literature suggests that insiders are associated with continuation or perpetuation of existing strategies (Hambrick & Mason, 1984). Insiders have a unique understanding about the organization's strategy, accomplishments, history, and the industry, which give them an advantage compared to outsiders. More importantly, the board of the directors already known the insider, which means

there is less information asymmetry (Berns & Klarner, 2017) during the succession process. Insiders also have a stronger knowledge about organization's social context and had developed robust social connections because they had gone through social and relational activities during their careers within the organization (Weng & Lin, 2014). Insiders have also adopted organizational values and culture (Weng & Lin, 2014). Organizations seek candidates within their boundaries for CEO for different reasons. Insiders are chosen as a reflection of their loyalty, to promote organizational confidence, to value the existing knowledge, to profit on insider's experience and social networks, and to increase the odds of having a better fit once the insider's skills and abilities are already known (Zhang & Rajagopalan, 2003). Also, organizations may decide to promote someone internally as a result of an institutionalized CEO succession rules and policies, that guarantee continuity (Ocasio, 1999), regardless of other factors. Considering a high-performance context, investors are prone to react negatively to insiders' nomination at the time of the announcement because an insider may signal an extension or persistence of the previous CEO administration which may lead to barriers for future strategy reorientation (Lubatkin, Chung, Rogers, & Owers, 1989).

On the other hand, outsiders are associated with adaptability, openness to innovation, and willingness to take risks because there are no established ties to the hiring organization. As a result, outsiders are less committed to organizational strategies and values (Hambrick & Mason, 1984). They also have fewer social connections, and there is a desire to fortify their new administration (Hambrick & Mason, 1984). Outsiders tend to differ from the status quo (Hambrick & Mason, 1984, Zajac & Westphal, 1996) and to initiate strategic change (Greiner & Bhambri, 1989). Outsiders bring organizational change, and also a chance to align organizational strategy and operations with stockholders' interests which are controlled by the board of

directors (Ocasio, 1999). Outsiders bring external and new knowledge to the organization, which promotes organizational learning (Zhang & Rajagopalan, 2003). The announcement of an outsider also signals to stakeholders the intention to change (Zhang & Rajagopalan, 2003). Even in a high-performance context, investors react positively to an announcement of an outsider because it may signal the organization's intention to continue pursuing a growth pathway (Lubatkin et al., 1989). The lack of potential internal successor and the need for change, new ideas, directions, and perspectives are the main reasons organizations search for new CEOs outside their boundaries (Zhang & Rajagopalan, 2003).

2.3.2. CEO Duality

CEO duality refers to "the practice of a single individual serving as both CEO and board chair" (Krause, Semadeni, & Cannella, Jr., 2014: 256). Duality has been explored in the management field for decades (Krause et al., 2014; Lewellyn & Fainshmidt, 2017). CEO duality is conceptualized as "a governance mechanism conferring structural power and board discretion upon a CEO" (Lewellyn & Fainshmidt, 2017: 1603). CEOs that are also board chairs centralize the power inherent in both roles - CEO and chairman position – which allows them to receive less pressure from corporate governance control systems. CEO duality deals with two opposing structures for corporate governance – centralized versus decentralized command. The debate about having a unity of command with the CEO occupying simultaneously the executive and chairmanship positions versus an independent board of directors is grounded on two theoretical perspectives: agency theory and stewardship theory, respectively (Donaldson & Davis, 1991; Krause et al., 2014; Lewellyn & Fainshmidt, 2017).

Agency theory examines mainly the contract between principal (owners) and agent (executives) in modern corporations, in which the ownership is held by many shareholders

(Jensen & Mecklin, 1976). By the contract, agents are expected to make decisions on behalf of the principals with the purpose to maximize the principals' potential returns. The agents, however, do not receive the wealth effects of the decisions made (Jensen & Mecklin, 1976). Agents are considered to be self-interested and opportunistic. As a result, the use of control devices (i.e., boards of directors, incentive compensation, executive labor market) by the organization is argued to constrain agents to make decision on the principals' benefit (Canella & Monroe, 1997). Agency theory mainly assumes that principal and agent differ in relation to their interest, goals, and risk preferences, which generates a conflict of interest and agency cost (Eisenhardt, 1989). Because of this divergence, it is rare to assume that agents will make decision that will bring the maximum return for the principals. This brings the idea of a cost associated with the relationship between principal and agent known as agency cost (Jensen & Mecklin, 1976). In sum, agency cost involves the cost associated with control devices plus the difference between the maximum potential return expected by the principal minus the returned realized.

Agency theory also assumes that principal and agent hold different information - information asymmetry (Eisenhardt, 1989). Agency theory treats the information in a singular way, as a commodity, which means "it has a cost, and it can be purchased" (Eisenhardt, 1989: 64). In that manner, information is a strategic organizational resource, and organizations gain in effectiveness as the information is shared and distributed across the stakeholders.

One major control device that helps organizations to mitigate existing conflicts (interest, goals, and risk), monitor and control the alignment between principal and agent, and reduce the information asymmetry is the board of directors (Donaldson & Davis, 1991). It is a key governance structure that monitors the agents' actions and behaviors in the name of the

principals. Agency theory recommends that board members should be independent from the top executive team to avoid dysfunctional behaviors and guarantee CEO performs in agreement with principal's interest, goals, and risk preferences (Donaldson & Davis, 1991). Thus, an independent board must be elected to provide advice and guidance to executive team, safeguard organizations against executive misbehaviors or also to evaluate CEO against performance standards (Boivie, Bednar, Aguilera, & Andrus, 2016). The separation of the leadership structure aims to protect the interest of the shareholders and functions as a checks and balances mechanism.

In general, organizations adopting a non-duality model suffer with less responsiveness rates because decisions take longer to be made as the CEO needs to present performance results, ask for advice, or actively advocate for any strategic change to the board of directors for their approval. The flow of information from the CEO to the board of directors is important to diminish the existing information asymmetry, guarantee transparency, and comply with monitoring mechanisms (Boivie et al., 2016). Yet, such information flow is delayed. In sum, the independency of the board members that is characteristic of the CEO non-duality model relates to agency cost reduction, information asymmetry, more control mechanisms, less CEO power, less flexibility, and less responsiveness rates, which therefore may impact organizational effectiveness and performance. Overall, CEO duality runs against agency theory recommendations.

On the opposite side, stewardship theory suggests that principal's interests are maximized when CEO holds the role of board chair. This theory contends that duality does generate a conflict of interest between principal and agent but instead an alignment of goals in which the CEO is empowered and behaves as "a good steward" of the corporation's assets (Donaldson &

Davis, 1991; 51). Under stewardship theory, the assumption sits that there is no conflict of interest between principal and agent. Instead, CEOs (agents) "are team players, and the optimal structure is one that authorizes them to act, given that they will act in the best interests of owners" (principal) (Donaldson, 1990: 377). Agents are not driven by self-interest, they are far from being opportunistic, but considered good stewards (Donaldson, 1990). According to stewardship theory, the unification of command increases the knowledge shared between the organization and the board allowing a better dialogue and provides a reward in the form of higher status to the CEO (Donaldson, 1990).

Information is also considered a strategic resource. However, it is not used for the agent's self-interest purpose, but to support and enhance organizational effectiveness. Undoubtedly, the CEO has valuable knowledge regarding the business operations, relationships, internal challenges and strengths, strategic opportunities and threats as a result of his/her acquired experience and job position. As CEO retains unparalleled firm-specific knowledge, the cost of information decreases when the unity of command is adopted because the information flows easily from the management to the board of directors and vice-versa (Brickley, Coles, & Jarrell, 1997). Following the CEO duality model "the command becomes unified, removing role ambiguities and conflicts that could otherwise arise where power is shared" (Donaldson, 1990). This means that unity of command provides a clear focus, eliminates confusion and potential conflict, leading to higher speed on the decision process, as the CEO has the authority to make not only strategic decisions but also to answer as the leader of the board of directors. In sum, stewardship theory supports CEO duality model.

CEO duality is related to cost reduction, better information flow between management and board of directors, weakening of control mechanisms, empowerment of the CEO, higher

responsiveness rates, which therefore may impact on organizational effectiveness and performance. In addition, CEO duality increases the CEO's agenda and informational control. As the CEO power increases, it may inhibit the monitoring and control of the board over the executive team. Under duality, the CEO also may influence board composition with the ability to nominate directors that fit the CEO's best self-interest (Joseph, Ocasio, & McDonnell, 2014; Krause et al., 2014). The lack of independent and knowledgeable members on the board of directors can be a risk to the development of a well-established governance process (Joseph et al., 2014).

CEO duality is associated with firm size as large firms are more likely to adopt CEO duality (Linck, Netter, and Yang, 2008), with an increase in CEO accountability as CEO has more power and responsibilities (Harrison, Torres, & Kukalis, 1988), with CEO succession as the relative power of previous CEO may influence future decisions (Zajac & Westphal, 1996), with less attention to monitoring (Tuggle, Sirmon, Reutzel, & Bierman, 2010), and with less risky strategies (Ellstrand et al., 2002). In relation to organizational performance, the findings are mixed. While some scholars have not found any significant effect (Dahya, 2004; Dalton, Daily, Ellstrand, & Johnson, 1998), others have found positive ones (Brickley, Coles, & Jarrell, 1997; He & Wang, 2009), yet others have found a negative effect (Jensen, 1993; Worrell, Nemec, & Davidson, 1997).

CHAPTER 3

MODEL DEVELOPMENT

The role that two internal stakeholders, employees and the CEO, play in innovation through the development of an environment that fosters employee participation with ideas, suggestions, and thoughts - voice climate - is examined in this dissertation. Employees and CEOs are one of the most relevant stakeholders of firms (Donaldson & Preston, 1995). I argue that they are also key in influencing the production of innovation, but that they do it in distinct ways. While employees represent a strong source of ideas, CEOs have the potential to promote voice climate within the organization so that employee ideas are passed on to people with discretion to use those ideas.

In this dissertation, I propose that voice climate promotes innovation through the generation of ideas from the workforce and I argue that voice climate's impact on innovation will be stronger for exploitative forms of innovation than for explorative ones. Further, I argue that CEO characteristics, such as CEO origin and duality, matter to the development of voice climate. Both of these characteristics represent important CEO attributes that are likely to drive or hamper the development of voice climate in organizations. Further, I argue that voice climate mediates the CEO characteristics-innovation relationship. Figure 1 illustrates the proposed model. I will elaborate on this model in the sections below.

Figure 1. Proposed Theoretical Model
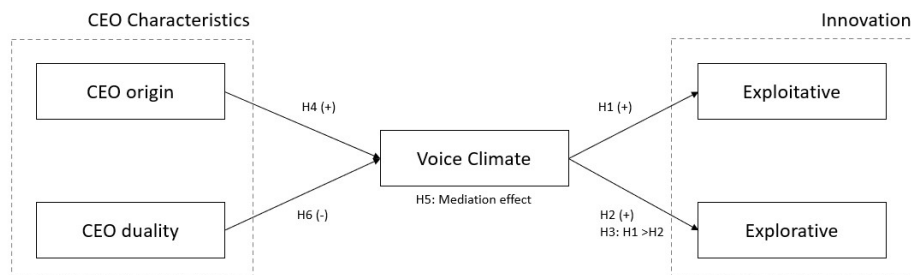
3.1. The Role of Employees on Innovation

In this dissertation, I investigate the role that non-R&D employees play in innovation. Specifically, I suggest that through voice climate, employees drive exploitative and explorative innovation. Voice climate relates to employees' shared perception "about the extent to which voice is encouraged through shared and vicarious learning experiences, such as collectively witnessing and discussing how their leader reacted to salient voice events" (Brykman & Maerz, 2022: 506). A voice climate exists when employees perceive that their work environment is safe and that it is worth it to express their voice (Morrison et al., 2011). Under a high-voice climate, employees will be willing to express their ideas, suggestions, and thoughts regarding work-related issues, which in turn may lead to innovation.

3.1.1. Ideas as Input to Innovation

Through the innovation process, organizations transform ideas into a range of outcomes (i.e., products, services, processes, and knowledge, to name a few). In the innovation literature, ideas are identified as the starting point (Björk et al., 2010). Ideas are considered the input, the raw material (Hua et al., 2022), or the primary resource needed that feeds into the innovation process (Høyrup, 2012). "The idea generation stage at the beginning of the innovation process often involves a complex problem that cannot be solved with extant organizational devices (e.g., routines, standard operating procedures, or technology), and thus requires the generation of novel alternatives" (Keum & See, 2017: 657). Ideas, in the form of good and bad alternatives, may arise when employees suggest possible solutions for existing problems. Not all ideas necessarily lead to the development of new products or services (Keum & See, 2017). Nonetheless, the generation of ideas is a necessary pre-condition for the innovation process to begin (Björk et al., 2010). New

ideas are then vital to innovation. When sharing their ideas about work-related problems, employees communicate something new that would require a change(s) in the organization.

In other words, I suggest that the ideas, suggestions, and thoughts generated though voice by non-R&D employees can feed into the idea generation phase of the innovation process. While some of the ideas will be useful for innovation and considered, others will be irrelevant and/or discarded. Thus, not all ideas lead to innovation. Yet, and most importantly, it is my main thesis in this dissertation that because voice climate encourages employees to speak up, at least some of the ideas generated through voice will lead to innovation. Therefore, under a high-voice climate, I expect to see more input, in the form of ideas, feed into the innovation process, consequently leading to more innovation.

3.1.2. Employees as Internal Source of Ideas

Ideas can be originated from outside the organization, inside the organization, or both. External sources of ideas can vary but primarily relate to the partnerships the organization has (Lutchen, 2018; Phelps, 2010). For instance, Lutchen (2018) explored the partnership between universities and corporations. This kind of collaboration brings benefits to both universities (in the form of funding and proximity to the community) and corporations (with the emergence of new products or services). Companies, such as RedHat and Philips Healthcare, have partnered with Boston University and achieved innovation in technology and in the medical industry, respectively (Lutchen, 2018). Another example is the partnership between the biotechnology organization called Biogen and the University of Zurich, which resulted in the development of a new drug to treat leukemia and hepatitis C (Rothaermel & Deeds, 2004). Likewise, Phelps (2010) investigated how strategic alliances benefit in the generation of novel products. He found that network technological diversity (the degree to which the technologies hold by each business

partner differ) and networks density (the degree to which business's alliance partners are connected) of organizations positively impact the development of exploratory innovation. According to Ardito, Petruzzelli, and Albino (2019), strategic alliance is a means to be explored by organizations seeking both exploitative and explorative innovation. To this end, organizations "may simultaneously engage in upstream alliances—which have a specific focus on exploration— and downstream alliances—which have instead a specific focus on exploitation" (Ardito et al., 2019): 370). Above all, strategic alliances and partnerships in search of innovation should always consider the existence of complementarity (Frenken, 2000).

When it comes to internal sources, which is the focus of this dissertation, employees are the main source because they hold specific job knowledge and experience that allow them to better elaborate on work-related issues (Cornelius et al., 2021). The proximity to problems allows employees to better find alternatives and opportunities for improvements or changes. Internal ideas that lead to potential innovation can come from R&D employees, non-R&D employees or both. In other words, the whole workforce can contribute to innovation by generating ideas (Birkinshaw et al., 2011). This suggests that organizations could promote the generation of ideas strategically (Cooper & Edgett, 2008; Hua et al., 2022; O'Reilly & Binns, 2019) through voice. Voice is mainly generated internally as it represents employees' expression (Morrison, 2014). All employees, regardless of their job position or hierarchical level, can express their ideas, suggestions, and thoughts regarding work-related issues. For employees assigned to the R&D department, it represents an expected behavior, but the extent to which they communicate their ideas, suggestions, and thoughts may vary. For non-R&D employees, expressing their ideas, suggestions, and thoughts is primarily a discretionary behavior (Morrison, 2014). Thus, they will

only express themselves if they perceive it is safe and worth it to do so (Morrison et al., 2011). In this case, it represents an extra-role behavior (LePine & Van Dyne, 1998).

An important aspect of voice is that the ideas, suggestions, and thoughts generated by employees are directed at individuals who have the authority to act upon them. Those individuals with discretion can evaluate the content of those ideas, suggestions, and thoughts and decide if action should be taken. When employees perceive a high-voice climate, more ideas are generated from non-R&D employees. Some of these ideas will be examined and used. Others will be set aside or rejected. Nonetheless, it is my contention that as the sheer number of ideas increases, the chances to have ideas that lead to the innovation process also increase. In this scenario – that is, under high voice climate - all organizational members can contribute to innovation, not just R&D employees. On the other hand, if employees perceive a low-voice climate, non-R&D employees will likely make a decision not to express their ideas to protect themselves from retaliation or to avoid any other kind of negative consequences (Milliken et al., 2003). In addition, even if some employees express their ideas, suggestions, and thoughts under low voice climate, their ideas will likely be ignored (Milliken et al., 2003). In this scenario, the innovation process will rely solely on R&D employees.

The ideas generated by employees through voice have the intent to improve or change a work-related matter. Employees' knowledge and experience support their critical analysis of current work situations which leads to the identification of potential opportunities to exploit or work-related problems that need solving. That said, ideas generated by employees through voice carries a constructive and positive personality, with the clear purpose of improvement (Morrison, 2011; Sherf et al., 2021; van Dyne et al., 2003; Tangirala & Ramanujam, 2008). That is, voice differs from criticism, complaint, and whistle-blowing (Morrison, 2011; LePine & Van Dyne,

1998). Criticism refers to an expression of dissatisfaction about a matter "simply offering an objective assessment" (Kowalski, 1996: 180). Complaint also reflects an expression of dissatisfaction, but "the speaker is experiencing an internal feeling," meaning that a complaint involves a subjective experience (Kowalski, 1996: 180). Whistle-blowing refers to a form of criticism in which employees express their concerns and opinions through channels that avoid the organizational hierarchy (Near & Miceli, 1987). Criticism, complaint, and whistle-blowing are not constructive in nature. They do not necessarily include suggestions for change (Kowalski, 1996; LePine & Van Dyne, 1998). By contrast, voice entails a positive contribution shared through organizational hierarchical channels. When speaking up, employees intend to "bring about improvement or change" (Morrison, 2014: 174) with the goal to contribute to organizational growth. When a high-voice climate is perceived, employees will feel free to express their ideas, suggestions, and thoughts with a clear purpose to change or improve a work-related matter (Hua et al., 2022, Morrison, 2014). This is why these ideas are shared with people with discretion in the organization to do something about them. When these ideas are related to products or services, the chances to have ideas that lead to the innovation process also increase. In this case, employees have the potential to contribute to innovation.

According to the voice literature, there is a risk associated with voice behavior (Detert & Burris, 2007). Employees will voice new ideas when they perceive it is safe to do so. They must perceive their ideas will not bring along negative consequences for them. Employees also expect that their new ideas will be considered by the organization (Milliken et al., 2003) and that their effort in formulating and sharing these ideas will not be wasted. With that in mind, it is important to create an environment where employees feel safe to engage in such behavior. In the voice literature, this environment can be reached when a voice climate is developed. However, this has

been done at the team level of analysis. Team voice climate has been associated with team voice behavior (Frazier & Bowler, 2015; Morrison et al., 2011), team performance (Frazier & Bowler, 2015), team empowerment (D'Innocenzo et al., 2026), decision-making effectiveness and innovative performance (Duan et al., 2019), resilience capacity (Brykman and King, 2021). As antecedents, leader's prior reaction (Brykman & King, 2021) and transformational leadership (Brykman & King, 2021) have been identified in the literature.

In this dissertation, I propose that such voice climate can also exist at the organizational level of analysis. In this case, Börnfelt (2021) studied voice climate at the organizational level using a mixed method approach, and from semi structured interviews across 90 workplaces proposed five types of voice climate: high voice climate, moderate voice climate, restrained voice climate, resignation silence climate, and silence and fear climate. There is indeed a need for empirical investigation on organizational voice climate. Overall, I suggest that because voice climate at the organizational level promotes employees' participation through voice, it also drives employees' generation of ideas, some of which will feed into the organization's innovation process.

3.1.3. Voice Climate and Types of Innovation

Voice climate represents employees' perception of how the organization will receive their ideas, suggestions, and thoughts (Brykman & Maerz, 2022). Management's reaction to those ideas, suggestions, and thoughts is crucial for the employees' judgment in deciding whether to speak up. If employees perceive it is safe for them to communicate freely, they will increase their generation of ideas. However, if they perceive it can bring any kind of risk, they will likely opt to remain quiet and their potential ideas will not be shared (Morrison & Milliken, 2000). In the presence of a high-voice climate, I suggest that employees will generate all sorts of ideas with the

potential to lead to innovation since employees' purpose is to bring about improvement or change. Again, while not all ideas expressed through voice may be useful to the idea generation step in the innovation process, some of these ideas will be, and voice climate can enhance the volume of their generation. However, under a low-voice climate, I suggest employees will not communicate and share their ideas to avoid risky situations for themselves. Because ideas will be evaluated, employees will refuse to express them as they will likely fear they may be punished, may suffer negative consequences, or their ideas will likely be ignored (Milliken et al., 2003). Employees will withhold ideas even if their purpose is to genuinely benefit the organization. I argue then that voice climate stimulates employee participation in sharing all kinds of ideas, suggestions, and thoughts. Such increase in ideas, suggestions, and thoughts will consequently lead to an increase in information flow, some of which can be beneficial for the innovation process. As the organization's climate encourages voice, employees will question current assumptions and provide ideas on how to improve/change the status quo for the better. In addition, with increased voice climate, discussions among employees will be promoted, likely leading to more ideas being generated through employees' collaborative efforts. Also, when high voice climate exists, people in the organization with discretion to make changes will implement new practices and routines that will signal to employees that their voices are being heard, encouraging even greater participation in the generation of ideas. Voice climate then allows greater participation of employees in discussions regarding work-related issues and problems. In other words, I suggest that an environment that encourages employees' participation (high-voice climate) increases the overall number of ideas generated. Because innovation starts with the generation of ideas, the innovation process receives more input or raw material and consequently has the potential to

increase the generation of new or improved products or services. Therefore, I propose that voice climate has a positive impact on innovation.

The type of output generated by the innovation process can relate to improvements on existing products, processes, and knowledge or can depart from everything that is already known within the organization, bringing a radical change. These two types of innovation are known as exploitative innovation and explorative innovation, respectively. Exploitative innovation refers to the refinement of the existing body of knowledge and is associated with less risk, stability, and specialization (Barrutia & Echebarria, 2019; Nie et al., 2022). Explorative innovation examines new knowledge domains and is associated with higher risk, flexibility, and experimentation (Barrutia & Echebarria, 2019; Nie et al., 2022). Under the expectation that voice climate promotes the generation of all sorts of ideas with the potential to lead to innovation, I propose that voice climate has a positive impact on both exploitative innovation and explorative innovation. Formally,

> *Hypothesis 1: Voice climate is positively associated with exploitative innovation.*
> *Hypothesis 2: Voice climate is positively associated with explorative innovation.*

Although the purpose of voice climate is to bring about improvement or change, the question remains of whether the employees' contribution in the form of ideas, suggestions, and thoughts would have a greater effect on exploitative or explorative innovation. The ideas, suggestions, and thoughts shared by employees may, on the one hand, confirm the current knowledge (exploitation) or, on the other hand, may propose new knowledge domains (exploration). As voice climate is spread across the entire organization, the entire workforce will perceive a safe environment to speak up. Yet, while experimentation and the search for new knowledge domains are common activities performed by R&D employees (Benner & Tushman,

2003; Nie, Yu, Zhai, & Lin, 2022), the same may not be true for the remaining of the workforce as these employees are expected to perform their core duties. That is to say that non-R&D employees mainly perform their in-role activities, leaving little space for them to experiment on things that are not related to their particular role. However, improvements in daily processes and in products or services can stem from these employees. For instance, it is recognized that employees "increasingly create value not only by performing their core duties but by contributing to broader organizational objectives such as competitiveness and innovation." (Cornelius et al., 2021: 9). Overall, I expect that when one considers the entire workforce and its role in the innovation process, employees' ideas, suggestions, and thoughts likely tend to contribute and relate more to refinements rather than experiments. In other words, while voice climate enhances both exploitative and explorative innovation as I proposed in hypotheses 1 and 2, I expect that the positive effect of voice climate will be greater on exploitative innovation than on explorative innovation. I expect this to be the case for two reasons.

First, by performing their core duties, employees typically gain more experience with the organization and its current knowledge base, likely driving them to generate ideas more closely related to this knowledge. For instance, while executing their jobs, the knowledge and experience accumulated with time allow employees to better understand the products or services produced, the current processes in place, and the existing challenges and problems being faced by the organization. As employees perform their jobs, they obtain in-depth understanding of how and why things are done the way they are. By performing day-to-day activities, employees gain valuable tacit knowledge (Cornelius et al., 2021), knowledge that is more closely related to what the organization is currently doing. Overall, I expect that the knowledge and experience acquired by employees over the years on the existing products or services bring them closer to the existing

current body of knowledge. That proximity leads to the generation of ideas that are likely more closely associated with improvements and refinements of products rather than on radical new ideas.

Second, even under a high-voice climate condition, voice involves some degree of risk (Burris, 2012; Detert & Burris, 2007), leading employees to reinforce the status quo. Studies have shown that for safety reasons employees may engage in a more supportive voice rather than in a challenging voice (Burris, 2012; Morrison & Milliken, 2000). While the former provides incremental suggestions, the latter questions the status quo. As a result, I expect that, to minimize risk, most voice expressed by employees will suggest improvements to the current body of knowledge that are more closely related to its core. In addition, the more likely presence of a supportive voice will take place because managers view employees who engage in more challenging forms of voice as worse performers (Burris, 2012). Further, managers also endorse more ideas from those employees who engage in supportive forms of voice (Burris, 2012). To avoid conflict and negative consequences, employees would then be more likely to engage in more supportive than challenging voice. Given the above, I expect voice climate will drive exploitative innovation more strongly than explorative innovation. I formally suggest:

Hypothesis 3: The positive association between voice climate and exploitative innovation will be stronger than the positive association between voice climate and explorative innovation.

3.2. The Role of CEOs on Innovation

In this section, I will examine the role played by another key stakeholder in firms, the CEO (Donaldson & Preston, 1995), in innovation. Grounded on upper echelons theory and agency theory, I propose an investigation into how CEO experience (CEO Origin) and CEO

power (CEO duality) promote voice climate. Furthermore, I will also explore how CEOs impact

innovation through their effect on voice climate.

3.2.1. CEO Origin and Voice Climate

Upper echelons theory (Hambrick & Mason 1984) emphasizes the role leaders play in

organizational outcomes, as organizations are seen as reflections of their top executives in this

theory. According to the theory, CEO characteristics can promote/deter certain organizational

actions and behaviors. I specifically argue that, when it comes to the promotion of voice climate,

CEO origin and CEO duality likely play important roles. CEO origin relates to the experience

held by the CEO. CEOs can originate from the inside or from the outside of the organization.

Insider CEOs are those who are hired from within the organization. As such, they were employees

of the organization in another capacity prior to becoming the CEO. In general, insider CEOs were

typically responsible for major organizational unit(s) or were part of the executive-level

management as chief financial officer, chief operating officer, chief technology officer, to name

some possibilities (Porter, Lorsch, & Nohria, 2004). As a result, insider CEOs hold firm-specific

valuable knowledge acquired over time (Balsmeier & Buchwald, 2015), and their image is

strongly associated with the organization's past decisions and achievements. Because of their

tenure within the organization, insider CEOs hold great knowledge about the organization's social

context and have strong social networks within the organization (Berns & Klarner, 2017). Thus,

due to the work they had performed in the organization in a different capacity, insider CEOs store

unique and valuable firm-specific knowledge, have important relationships, and are familiar with

the organization's current conditions. As a result, insider CEOs are, in general, unlikely to find a

need to encourage a voice climate. That is, they already understand the organization well enough

to find it necessary to develop a new flow of information. In addition, they are likely to stay the course and will be happy with the status quo.

On the other hand, outsider CEOs refer to CEOs hired from another organization (Zhang, 2008). Even though outsider CEOs can carry strong knowledge and experience about the industry, they lack firm-specific knowledge (Balsmeier & Buchwald, 2015). Outsider CEOs bring to organizations external and new knowledge (Zhang & Rajagopalan, 2003). Also, although they may have great social capital outside the organization, outsider CEOs have fewer internal social connections when compared to insiders (Weng & Lin, 2014), as they have not had the chance to develop those relationships. As a result, outsider CEOs need time to develop their internal social network. Because they need to gain firm-specific knowledge and establish new social ties within the organization, it is important for outsider CEOs to embed themselves in the organization. With this in mind, I hypothesize that, unlike insider CEOs, outsider CEOs will promote a voice climate because they have an urge to know more about how the organization operates. Outsider CEOs need to listen to what the organization has to say in order to learn more about the organization. Enabling employees to execute their voice and taking their ideas, suggestions, and thoughts also allows the outsider CEO to develop relationships throughout the organization and build internal social capital. Thus, as voice climate is developed, outsider CEOs have the opportunity to gather more internal information and establish new and strong relationships. When developing a high-voice climate, outsider CEOs will be able to listen to employees' voice as their participation in current dialogue increases. Therefore, I propose that:

Hypothesis 4: Outsider CEOs are positively associated with higher levels of voice climate.

According to Porter et al. (2004), CEOs are always sending messages to the organization. Every CEO's move, decision, behavior, and even the absence of them is analyzed and interpreted by the entire organization. To engage in such a constant analysis, employees rely on initial premises, which are developed upon the CEO announcement (Porter et al., 2004). "People develop assumptions and expectations based on the CEO's background and previous experiences" (Porter et al., 2004: 6). In addition, as CEO and employees are socially distant (Galinsky et al., 2006), that initial profile perception persists over time. Based on those initial assumptions, employees build their perceptions about the work environment. With that in mind, the CEO's background and previous experience influence employees' perception of work-related matters. As voice climate relates to employees' shared perception about the degree to which voice is promoted, employees will consider CEO's background and previous experience while they interpret the internal environment.

Therefore, as voice climate develops through the appointment of an outsider CEO and employees perceive it as safe and worth to express their ideas, suggestions, and thoughts, they will do so by engaging in particular forms of voice. That is, outsider CEOs are more likely to be assumed by employees to desire novelty and out-of-the box thinking. This is because outsider CEOs are associated with changes and novel behaviors, as they bring a new direction to the organization, based on their own past experiences (Sariol & Abebe, 2017). In fact, they are typically appointed to bring about transformation to the organization (Zhang & Rajagopalan, 2003). Because outsider CEOs' background and previous experiences are associated with intellectual capital outside the organization (Zhang & Rajagopalan, 2003), novel and unique ideas are welcome. Employees will see an outsider CEO appointment as a signal to engage in a challenging voice rather than in a supportive voice. Therefore, I propose that employees will

participate with ideas, suggestions, and thoughts aimed at bringing radical change to the organization. Employees will tend to suggest ideas that challenge the status quo as they understand they are allowed to do so. For employees, the work environment will be perceived as embracing ideas that differ from the existing body of knowledge. This scenario will favor explorative innovation, as more ideas are generated that differ from the organization's current knowledge. Therefore:

Hypothesis 5: Voice climate mediates the relationship between outsider CEOs and innovation, in such a way that the impact of outsider CEOs through voice climate will be greater on explorative innovation than exploitative innovation.

3.2.2. CEO Duality and Voice Climate

Agency theory suggests that the structure of corporate governance may assume distinct formats (Jensen & Meckling, 1976). When it comes to the board of directors' structure, the practice of a CEO assuming both the highest-ranking executive role of the organization and the chairman of the board role simultaneously, known as CEO duality, is an important topic that has received strong research investigation (Krause et al., 2014). CEO duality relates to "governance mechanisms conferring the structural power and board discretion upon a CEO" (Lewellyn & Fainshmidt, 2017). Structural power is formal power given by the organization to the CEO and is established by the unity of command (Lewellyn & Fainshmidt, 2017). Board discretion concerns the freedom given to the CEO to act in the name of the organization and is the result of the weakness of governance mechanisms of control (Lewellyn & Fainshmidt, 2017). Under the CEO duality structure, the CEO controls the agenda of the board, and the board of directors' main functions (e.g., CEO monitoring and disciplining) are compromised. Together, structural power and board discretion lead to a strong line of authority, facilitate strategic decisions, and indicate to

stakeholders that the CEO is empowered to achieve an agenda efficiently (Finkelstein & D'aveni, 1994). On the contrary, the non-duality model separates the roles of CEO and chairman, on which the power of the CEO is limited and corporate governance mechanisms (e.g., board of directors) protect organizations against executive misbehaviors (He & Wang, 2009).

Research suggests that as individuals become more powerful, they also become less open and less collaborative with others (Keltner, 2016). The *power paradox* (Keltner, 2016) states that power can shift individuals' behavior toward others and can make them less likely to exhibit behaviors like empathy, collaboration, and openness. This change of behavior is not conscious but a psychological state, which means that individuals do not deliberate ignore others, but subconsciously believe that the position of power they hold already envelops absolute knowledge (Galinsky et al., 2006). For instance, an empathic CEO is more likely to cultivate trust with employees (Huy, 2002), and he/she is also more likely "to consider others and their opinions, concerns, and feelings in their decision-making" (König, Graf-Vlachy, Bundy, & Little, 2017: 18). However, as empathetic CEOs gain more power, their empathetic quality dims because powerful people "are more likely than other people to engage in rude, selfish, and unethical behavior" (Keltner, 2016: 1).

The association of power with a reduction in the ability to better comprehend "how other people see, think, and feel" (Galinsky et al., 2006: 1068) can be explained by three distinctive rationales. I will discuss each in turn. First, as CEOs gain more power, they also gain more control over all kinds of resources available in the organization. That is, powerful CEOs do not need to rely on others for financial resources, human, or social capital. The power CEOs possess gives them the authority to manipulate all the necessary resources to achieve specific goals. Therefore, powerful people depend less on others because they have gained more control over the

resources available. Therefore, they do not need to negotiate, collaborate, or compromise anything with anyone to achieve their objectives.

Second, as CEOs gain more power, they also gain more responsibilities in the organization. Powerful CEOs have constant demands from all sorts of stakeholders (i.e., top management team, board members, shareholders, politicians, journalists, industry representatives, among others). As these demands increase, the time once devoted to others decreases. "It's simply not possible for any one person to oversee every facet of a large company, even if he [or she] were willing to put in a 100-hour week" (Porter et al., 2004). Therefore, powerful people oversee several activities simultaneously, diminishing their capacity to devote their attention to everything and everyone. As a result, they may ignore what others need and have to say to accomplish their job.

Third, as CEOs gain more power, the hierarchical distance between CEOs and employees widens. Powerful people become more psychologically distant from others (Galinsky et al., 2006). "The inbuilt psychological distance increases one's sense of self-importance compared to those below" (Fleming, 2019). Thus, the disassociation from others makes powerful people aloof of others' feeling or needs. Again, it is important to note that this behavioral change is not deliberate (Galinsky et al., 2006). Regardless, the power differential diminishes the open sharing that can occur among organizational members, and they will likely feel less safe in expressing their ideas, suggestions, and thoughts (Bunderson & Reagans, 2011).

Overall, as the CEO power continues to increase, studies suggest that organizations become susceptible of abuses of power. In this case, instead of employees perceiving their workplace as a trustful and safe environment, they will feel greater stress and anxiety (Keltner, 2016). That is, CEO duality influences employees' negative perception of voluntarily expressing

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their ideas. This perception of insecurity compromises employees' "risk-taking and experimentation" (Bunderson & Reagans, 2011: 1186).

Considering the above arguments, I expect to find a negative effect of CEO duality on voice climate. The formal power held by CEOs on a duality model tends to shift their behaviors in a way that they care less about what the workforce has to say. The "formal power changes how they relate to subordinates" (Fleming, 2019: 1310). Therefore, I propose that:

Hypothesis 6: CEO duality is negatively associated with voice climate.

CHAPTER 4

METHODOLOGY

In this chapter, I explain the sample used in this dissertation, including the sources from which I draw the data and how the data are extracted. In addition, I discuss the measures for the variables included in my models. Finally, I talk about the methodological approach I use to test the proposed hypotheses.

4.1. Sample

4.1.1. Sampling Population

The research sample includes all publicly traded companies listed in the Fortune 500 publication for the year 2020. The sample is composed of large corporations well distributed throughout the United States territory, across multiple industries, and with a large variation in size and age. For instance, the difference in size can be exemplified by the total number of employees, where Pacific Life has 3,861 employees while Wells Fargo has 247,848 employees. Regarding age, the sample brings both young ventures, such as Westrock founded in 2015 after a merger of MeadWestvaco and RockTenn, as well as long-time established companies such as Procter & Gamble founded in 1837.

4.1.2. Sample Sources

Because the focus of this dissertation is at the organizational level and the sample size is composed of 500 organizations, the use of data from secondary sources is justified (Hakim, 1982). The data are gathered from seven major data sources: BoardEx, the United States Patent and Trademark Office (USPTO), Compustat, Indeed.com, the United States Department of Labor (USDOL), Form 10-K Annual Report, and National Center of Employee Ownership (NCEO).

The data on CEO origin, CEO duality, CEO tenure, CEO age, and CEO gender comes from the BoardEx database. BoardEx offers individual data on firm's top executives and board of director members for public and private companies (Faleye, Kovacs, & Venkateswaran, 2014). BoardEx has been used extensively in the upper echelons (e.g., Zhu, Hu, & Shen, 2020; Tasheva & Nielsen, 2020; Post, Lokshin, & Boone, 2022) and corporate governance literatures (e.g., Krause, Withers, & Semadeni, 2017; Akbar, Kharabsheh, Poletti-Hughes, & Shah, 2017; McGuire, Oehmichen, Wolff, & Hilgers, 2019), and its use has been published in top journals in management (e.g., Academy of Management Journal, Journal of International Business Studies, Strategic Management Journal). Data from this database include all the roles performed by the CEO within the organization, the time period for each role assigned, and CEO demographic information.

USPTO is an agency of the U.S. Department of Commerce. USPTO's main functions are (1) to "examine applications and grant patents on inventions when applicants are entitled to them", (2) to "publish and disseminate patent information", (3) to "record assignments of patents", (4) to "maintain search files of U.S. and foreign patents", and (5) to "maintain a search room for public use in examining issued patents and records" (USPTO, 2022). USPTO has been used extensively in the innovation literature (e.g., Katila & Ahuja, 2002; Phelps, 2010; Huang & Li, 2019; Markman, Gianiodis, & Phan, 2009), and papers using its data have appeared in prominent management journals (e.g., Academy of management journal, Journal of International Business Studies, Journal of Management Studies). USPTO maintains a complete database with records regarding patents, trademarks, service marks, and copyrights issued in the United States. For the purpose of this dissertation, data on patents will be analyzed.

NCEO is a "nonprofit organization that has been supporting the employee ownership community" with the mission "to help employee ownership thrive" (NCEO, 2022). NCEO has been identified as a source of employee benefit plans in the industrial labor relation literature (Blasi, Conte, & Kruse, 1996) and published in journals such as Industrial and Labor Relations Review.

Compustat Fundamentals (Compustat hereafter) provides standardized financial and market data for publicly traded companies in North America (S&P Global, 2022). Compustat has been used extensively in the strategic management literature (e.g., Jensen & Zajac, 2004; Zhu et al., 2020; Zhang & Rajagopalan, 2003; Weng & Lin, 2014), and papers using Compustat data have appeared in prominent journals (e.g., Strategic Management Journal, Academy of Management Journal, Journal of Management). Compustat database will be used to gather firm characteristic data such as R&D intensity, firm performance, firm age, and firm size.

Indeed.com is a job and recruiting website with global impact on business nowadays (Sainju et al., 2021). Indeed.com is classified as a crowdsourced employer branding platform (Suen, Hung, & Tseng, 2020) with 250 million unique monthly visitors, 320 million total ratings and reviews, and ratings of 10 jobs posted every second worldwide (Indeed.com, 2020). The use of this platform has received much attention from academic scholars as the Internet's influence continues to escalate. Furthermore, "information and most of the behaviors of users will be captured and stored in a huge database further enhancing the visibility, accessibility, and legibility of data" by platforms such as indeed.com (Cheung & Thadani, 2012: 468). Indeed.com obtains data from current and former employees through spontaneous and anonymous participation. It is also characterized by the breadth of employee participation (Sainju et al., 2021). As a mode for collecting employee feedback, Indeed.com allows current and former employees to express their

opinions about the organization on a wide range of topics using surveys. Indeed.com then

displays all information gathered about each company including ratings and reviews. Specifically,

the ratings reflect the experience of employees with their firms and the final scores support job

seekers during their job search process. That is, job seekers then use these ratings to determine

whether a particular firm is a good fit for them.

A complete list of all ratings measured by Indeed.com with their respective questions can

be found in Table 3. Each rating is measured using a 5-point Likert-type scale with scores ranging

between 1 (strongly disagree) and 5 (strongly agree). Ratings are calculated by "taking the mean

of responses on the 1–5 agreement scale and multiplying by 20—giving a score that is shown to

job seekers as an integer between 20 and 100" (Ward, 2022: 39). In this dissertation, I use the

Support, Trust, Inclusion, Management, Purpose, and Satisfaction ratings only.

Table 3. List of ratings available at Indeed.com

Rating	Item
Satisfaction	Overall, I am completely satisfied with my job.
Purpose	My work has a clear sense of purpose.
Happiness	I feel happy at work most of the time.
Stress-free	I feel stressed at work most of the time.
Compensation	I am paid fairly for my work.
Support	There are people at work who give me support and encouragement.
Appreciation	There are people at work who appreciate me as a person.
Trust	I can trust people in my company.
Belonging	I feel a sense of belonging in my company.
Management	My manager helps me succeed.
Inclusion	My work environment feels inclusive and respectful of all people.
Flexibility	My work has the time and location flexibility I need.
Energy	In most of my work tasks, I feel energized.
Achievement	I am achieving most of my goals at work.
Learning	I often learn something at work.

Data on union are gathered from USDOL and Form 10-K Annual Report. USDOL

belongs to the United States government and its purpose is to "foster, promote, and develop the

welfare of the wage earners, job seekers, and retirees of the United States; improve working conditions; advance opportunities for profitable employment; and assure work-related benefits and rights." (USDOL, 2022). USDOL is a common source of labor relations, wage, benefits, and rights data for social science research (e.g., Charlton and Castillo, 2021; Koppel and Kolencik, 2018). Form 10-K is the report filed annually with the U.S. Securities and Exchange Commission (SEC) by U.S. publicly traded companies. It provides "a detailed picture of a company's business, the risks it faces, and the operating and financial results for the fiscal year." (SEC, 2023). In this report, companies disclose information on human capital, detailing employees' representation by labor unions.

4.1.3. Data Collection

Data from the BoardEx, Compustat, USPTO, NCEO, USDOL, and Form 10-K databases were manually downloaded using each database's individual interface. Because Indeed.com does not offer a research arm in which historic data can be downloaded for research purposes at specific time periods, the data are obtained by web-scraping Indeed.com website.[1] The Indeed.com data collection happened in the month of July for the year 2021.

4.2. Measures

The measures used in this dissertation to empirically investigate the relationships proposed are described in this section.

4.2.1. Dependent Variables

I plan to investigate the effect of CEO characteristics on voice climate, the effect of voice climate on innovation, and the mediation role of voice climate as described in the proposed

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[1] A script is codified using the company name as the input parameter and it returns all the ratings listed in Table 2 as the output.

model. That said, I identify innovation and voice climate as the dependent variables. While hypotheses 1, 2, 3, and 5 examine exploitative and explorative innovation, hypotheses 4 and 6 consider voice climate as dependent variable.

4.2.1.1. Innovation

In this dissertation, exploitative innovation and explorative innovation are proposed as dependent variables. Similar to Katila and Ahuja (2002), Phelps (2010), and Zhao, Shao, and Wu (2019), exploitative innovation and explorative innovation will be assessed using patent data. These data have consistently been used to represent an organization's development of existing knowledge (exploitative innovation) or its endeavor in search of new knowledge (explorative innovation). Also, patent data represent well-established measures of "novel inventions externally validated through the patent examination process" (Phelps, 2010: 897). According to USPTO (2022), it takes an average of 22.5 months for a patent to be granted or dismissed, but this time may vary significantly depending on pending issues in the course of the process. For that reason, in this dissertation, patent applications will be considered as a proxy for innovation. Patent applications reflect a change in knowledge and innovation activities (Balsmeier & Buchwald, 2015). Following Phelps' (2010) approach, I use one-year lag time between independent and dependent variables. In other words, data on voice climate are lagged one year relative to exploitative and explorative innovation, as voice climate may need one period to be reflected in the number of formal patent requests at a patent office. Exploitative innovation and explorative innovation data are measured as described below and are gathered from the USPTO database for each organization for the year 2022.

4.2.1.1.1 Exploitative Innovation

When an organization applies for a patent at USPTO office, all technologies that were already in existence and which helped shape the new invention are identified as citations. As organizations cite existing technologies in the conception of new patents, these citations show whether organizations are further expanding existing knowledge. The frequency of use of the same citation signals that organizations are staying within the same existing stream of knowledge in their innovations. Therefore, this measure demonstrates how organizations engage in the refinement of the existing knowledge and focus on increasing their knowledge depth within their current body of knowledge (Katila & Ahuja, 2002). In sum, exploitative innovation refers to the creation of new products or services based on the organization's existing knowledge base that remain within that same knowledge domain. Exploitative innovation is measured as the degree to which firms repeat citations within the preceding five years (Katila & Ahuja, 2002; Zhao et al., 2019). In this dissertation, as represented in Equation 1, I follow Katila and Ahuja's (2002) approach to measure exploitative innovation. Using the same example illustrated by Katila & Ahuja (2022: 1187), consider "a firm with ten patents. Each of the ten patents further cites ten other patents. On the average, eight out of the ten citations are new to the firm; that is, it has not used them during the past five years. Of the remaining two old citations in each patent, on the average, the firm has used one of them twice and the other three times." The firm's exploitative innovation in this case is 0.5, where the sum of the repetition count is 5 and the total citations are 10. Specifically,

$$Exploitative\ Innovation_{it} = \frac{\sum_{t-5}^{t-1} repetition\ count_{it}}{total\ citations_{it}} \qquad (1)$$

Where,

$Repetition\ Count_{it}$ = Number of times each citation is repeated for organization i during

the years *t-1 and* year *t-5*

$Total\ Citations_{it}$ = Total number of citations for organization i in year t

i = organizations in the sample (1, 2, ..., 500)

t = time (year 2022)

Because the previous five years citations are accounted in the equation above (Katila &

Ahuja, 2002; Zhao et al., 2019), the data are gathered from the USPTO database from years 2017

until 2022.

4.2.1.1.2 Explorative Innovation

As organizations cite novel technologies – that is, as they use citations that have not been

used in the last five years on the conception of new patents - they indicate that they are exploring

new knowledge streams. New citations signal that organizations are drawing new knowledge

independent from the existing body of knowledge. Therefore, this measure demonstrates how

organizations pursue innovation by experimenting with different areas of knowledge (Katila &

Ahuja, 2002; Phelps, 2010). Brand new citations reflect that the organization is seeking breadth,

rather than depth, in knowledge. In sum, explorative innovation refers to the creation of new

products or services that are new to the organization. Explorative innovation is measured "as the

degree to which firms cite patents that they have not cited in prior patent applications within the

preceding five years" (Zhao et al., 2019: 772). In this dissertation, as represented in Equation 2, I

follow Katila and Ahuja's (2002) approach to measure explorative innovation. Using again the

same example illustrated by Katila & Ahuja (2022: 1187), consider "a firm with ten patents. Each

of the ten patents further cites ten other patents. On average, eight out of the ten citations are new

to the firm; that is, it has not used them during the past five years". The firm's exploitative

innovation in this case is 0.8, where new citations are 8 and the total citations are 10. Specifically,

$$Explorative\ Innovation_{it}\ =\frac{new\ citations_{it}}{total\ citations_{it}} \qquad\qquad (2)$$

Where,

$New\ Citations_{it}$ = Number of new citations for organization i in year t

$Total\ Citations_{it}$ = Total number of citations for organization i in year t

i = organizations in the sample (1, 2, ..., 500)

t = time (year 2022)

Because the citations are considered new when not cited within the previous five years (Katila & Ahuja, 2002; Zhao et al., 2019), the data are gathered from the USPTO database from years 2017 until 2022.

4.2.1.2. Voice Climate

Voice climate is examined as an independent, dependent, and mediator variable in the proposed model. Voice climate represents the employees' shared perception of how safe the environment is and how effective employee participation in expressing opinions is (Morrison et al., 2011). As previously discussed in Chapter 2, in the presence of high-voice climate, the internal environment encourages employees' participation. A high-voice climate is characterized by a work environment grounded on mutual trust and respect. Therefore, voice climate captures the extent employees perceive that is safe and worth to express their ideas, suggestions, and thoughts. For voice climate to be captured at the organizational level of analysis, the participatory atmosphere needs to be spread across the organization.

Previous studies on voice climate have used surveys, interviews, or experiments (Börnfelt, 2021; Milliken et al., 2003; Milliken et al., 2011; Brykman & Maerz, 2022) to gather data, using

both quantitative and qualitative approaches. In this dissertation, I do not rely on instruments such as surveys, interviews, and questionaries which have been broadly used to assess team voice climate (see Table 2). I do not adapt scale(s) that were originally developed to individual-level of analysis (Frazier & Bowler, 2015; Van Dyne & LePine, 1998; Xie et al., 2021), nor replicate different scales used on team/group-level of analysis (Börnfelt, 2021; Brykman & Maerz, 2022). I indeed avoid such adaptation and replication for two reasons.

The first reason relates to sample size. In particular, voice climate scales developed to the team level of analysis, in average used samples composed of 50 teams and 200 employees (see Table 2). To increase the power of the empirical examination for organizational level of analysis, the sample size must increase (Hair, Black, Babin, Anderson, & Tatham, 2014). The difficulty of assessing a good sample representation from the companies listed in the Fortune 500 publication is at least complex. As mentioned previously in the "sampling population" section, organizational size for 500 Fortune companies varies from thousands to hundreds of thousands of employees. With that said, the use of surveys, questionaries, and interviews as previously used in the literature for team level of analysis does not represent a good alternative at the organization level. For that reason, secondary data are adopted. I gather the data from Indeed.com ratings as Indeed.com allows the assessment of a wide breadth of employee participation (Sainju et al., 2021). Therefore, as a researcher, I do not have the freedom to prepare the instrument and collect data, but to make use of reliable existing databases.

The second reason involves the transferability of assumptions used at the team level to the organizational level of analysis. As team voice climate refers to the shared perception about how voice is encouraged among the members in a team (Brykman & Maerz, 2022; D'Innocenzo et al, 2016; Frazier & Bowler, 2015; Ohana & Stinglhamber, 2019), it does not represent a sufficient

consensus across the entire organization. Team voice climate "is theorized to converge within teams" (Brykman & Maerz, 2022: 3). It represents shared belief and perception based on individual's experience with immediate and close environment. For that reason, I propose the use of proxy to represent the macro variable.

However, when adopting Indeed.com to gather data, I do understand the lack of specificity in the questions for each rating. In search for construct validity, I propose to account for the existence of formal voice mechanisms adopted by organizations (e.g., union presence and employee stock ownership), as they ensure employees the possibility to participate in organizational matters (Aubert, Kern, & Hollandts, 2017; Batt et al., 2002; Bryson et al., 2013; Gittell et al., 2004; Meardi, 2007). There are numerous other types of voice mechanisms used by organizations (e.g., open door policy, internal surveys, and feedback systems). However, they represent common practice in today's work environment and no organization in the sample will ever state they do not implement such mechanisms (Detert & Burris, 2016). Therefore, adding the other types of voice mechanisms to the investigation does not bring variance.

In this dissertation, I propose the development of an index to measure voice climate construct, which is named voice climate index. The voice climate index is formed considering a combination of eight items, which will be further detailed below. The proposed index captures the overall employees' fear of consequences, the overall employees' sense of worth, and the well-established voice mechanisms used by organizations – unions association and employee stock ownership.

As stated by Detert and Burris (2016: 2), "leaders use a variety of tools to get people to speak up, like "climate" surveys and all-staff feedback sessions. Many of these efforts focus on improving communication up and down the hierarchy. But they usually fall short, regardless of

good intentions, for two key reasons: a fear of consequences (embarrassment, isolation, low performance ratings, lost promotions, and even firing) and a sense of futility (the belief that saying something won't make a difference, so why bother?)". The employees' fear of consequences represents the extent to which the environment does not offer associated risk to voice behavior (Morrison & Milliken; 2000). In line with Börnfelt (2021), Milliken et al. (2003), Milliken et al. (2011), and Brykman and Maerz (2022), I will assess how truthful, respectful, and supportive the environment is through employees' eyes, emphasizing interpersonal characteristics (Edmondson, 1999). The employees' fear of consequences can be expressed by Trust, Inclusion, and Supportive ratings from Indeed.com. Questions for these ratings are "I can trust people in my company", "my work environment feels inclusive and respectful of all people", and "there are people at work who give me support and encouragement" respectively. These ratings are broad, suggesting that they comprise all sorts of relationships. An environment in which employees can trust peers and supervisors and that is considered respectful and supportive, signals to employees that sharing their ideas, suggestions, and thoughts will not bring associated risk.

The employees' sense of worth represents the extent to which employees perceive it is worth to express their ideas, suggestions, and thoughts. Also called as "futile factor" by Detert and Burris (2016), it signals to employees their participation is considered and their contribution matters. First, it is important to assess the interpersonal relationship between employees and managers, since employees' ideas, suggestions, and thoughts are directed to managers who have the power to act upon them (Morrison, 2014). Management rating will address the extent to which managers help and support employees. The question for this rating is "My manager helps me succeed". However, receiving support from managers is not enough. The employees' sense of worth also needs to capture that employees recognize their contribution matters. It can be

expressed by Purpose and Satisfaction ratings from Indeed. com. Questions for these ratings are "My work has a clear sense of purpose" and "Overall, I am completely satisfied with my job". In other words, employees identify a clear purpose in their job role and feel satisfied with their contribution. An environment in which employees understand their importance and are satisfied with their contribution signals to employees that sharing their ideas, suggestions, and thoughts is worth the effort. In addition, as previously mentioned, formal voice mechanisms will be considered. The presence of labor unions represents a formal mechanism that verbalizes employees' demands for change (Batt et al., 2002; Bryson et al., 2013; Gittell et al., 2004; Meardi, 2007). The unions are recognized proxies in the voice literature, and it signals that employees have formal mechanisms in place that ensure they can speak up together (Batt et al., 2002; Gittell et al., 2007). The extent to which employees are represented by labor unions is measured on a three-point scale: zero-points if the workforce has no association with any labor union; one-point scale if some portion of the workforce is unionized; and two-points if the full or majority of employees (more than 70%) are represented by labor unions. Another formal voice mechanism that empowers employees to speak up and participate in organizational matters is the participation of the workforce on employee stock ownership plan (ESOP). As a type of compensation plan, EOSP is a form in which employees can own organization stocks. It represents a strategy used by organizations to align the interests of employees and shareholders. EOSP increases employees' wealth, involvement, and power (Aubert et al., 2017). EOSP gives employees voice in corporate governance (Faleye, Mehrotra, & Morck, 2006), especially when employee participation increases. The extent to which employees participate in such ESOP influences employees' involvement in work-related matters, as they become more or less empowered. ESOP is captured as the ratio of the number of active employees who own stock to

the total number of employees. ESOP can range from zero (no employee ownership) to one (the entire workforce owns some form of stock). Table 4 summarized the proposed items to be used in the voice climate index.

Table 4. Voice Climate Index

Item	Question/Description	Scale
Trust	I can trust people in my company.	20 - 100
Inclusion	My work environment feels inclusive and respectful of all people.	20 - 100
Support	There are people at work who give me support and encouragement.	20 - 100
Management	My manager helps me succeed.	20 - 100
Purpose	My work has a clear sense of purpose.	20 - 100
Satisfaction	Overall, I am completely satisfied with my job.	20 - 100
Unions	Employees' association to labor unions	1 - 3
EOSP	Employees' ownership	0 - 1

To ensure the selection of the items described above is adequate, I perform Principal Component Analysis. It is important to understand the data structure behind each items' values (Hair et al., 2014). Once the loading factor matrix is available, it is possible to analyze the significance of its values and verify if there is any cross-loading situation or need for variable removal (Hair et al., 2014). Confirmatory Factor Analysis is then performed to test the coherence among the indicators to form the voice climate index as identified in theory (Nunnally, 1978). Lastly, to calculate the voice climate index, I first standardize all items and then calculate the simple mean. Voice climate index is lagged one year relative to exploitative and explorative innovation, as it may need one period to result in patent applications. Data are gathered from Indeed.com, USDOL, Form 10-K, and NCEO for the year 2021.

4.2.2. Independent Variables

CEO origin and CEO duality are the two independent variables in the proposed model. I expect to find different effects on voice climate and innovation as CEO origin and CEO duality assumes different values.

4.2.2.1. CEO Origin

CEO origin refers to where the CEO comes from. CEOs can be insiders or outsiders. The insider CEO is hired from within the organization (Zhang, 2008). The outsider CEO is hired from a different organization (Zhang, 2008). CEO origin is measured as a dummy variable. It is coded as 1 when the CEO is brought in from outside the organization – outsider CEO - and 0 when the CEO comes from inside the organization – insider CEO (Balsmeier & Buchwald, 2015). CEO origin is lagged one year relative to voice climate, as it may need one period to be perceived in the voice climate. Data are gathered from the BoardEx and Compustat databases for the year 2020.

4.2.2.2. CEO Duality

CEO duality refers to whether the CEO assumes the roles of CEO and board chairperson at the same time (Rechner & Dalton, 1991). CEO duality will also be captured as a dummy variable. It will be coded as 1 when the CEO also holds the chair of the board position and 0 otherwise (Li & Yang, 2019; Finkelstein & D'Aveni, 1994). CEO duality is lagged one year relative to voice climate, as it may need one period to be perceived in the voice climate. Data are gathered from the BoardEx and Compustat databases for the year 2020.

4.2.3. Control Variables

Additional factors may influence the proposed relationships proposed in this dissertation. As a result, a total of eight variables will be included in the model to account for any additional variance that may explain the role played by CEO characteristics on voice climate, and the role of CEO characteristics and voice climate on innovation. Both firm-level variables and managerial

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characteristics are included in the models as explained below. At the firm level, I control for firm size, firm age, firm performance, and R&D intensity. At the individual level, I control for the following managerial characteristics: CEO tenure, CEO age, and CEO gender.

4.2.3.1. Firm Size

An increase in organizational size brings complexity to organization's formalized systems and structure which in turn impacts organizational outcomes (Wiersema & Bantel, 1992), such as innovation. Also, research has shown a positive association between firm size and the resources dedicated to innovation (Balsmeier & Buchwald, 2015; Bantel & Jackson, 1989). In addition, it is important to control and investigate the effect of firm size because voice climate represents employees' shared perception (Morrison et al., 2011) and is a result of social interaction (Schneider & Reichers, 1983). That said, the size of the organization can potentially influence the development of any organizational climate, which in this dissertation I specifically focus on voice climate. As the size of the organization increases, the complexity also increases. Firm size is measured as the firm's total number of employees (Barker III & Mueller, 2002; Rajagopalan & Datta, 1996). Data are measured in thousands and collected from the Compustat database for the year 2021.

4.2.3.2. Firm Age

Firm age is a relevant control variable to account for because, in this dissertation, I am investigating the effect of voice climate on types of innovation – exploitative and explorative innovation. On the one side, "firms' innovative abilities may improve with time" (Balasubramanian & Lee, 2008: 1020). Thus, older organizations likely have greater innovation abilities because they have more experience with innovation and have acquired knowledge as to how to innovate with time. These innovation skills likely drive both exploitative and explorative

innovation. On the other side, as organizations grow, they will become staler and innovate less, particularly in the explorative realm. Organizations "do not find it economically optimal to engage in large adjustments to their capabilities" (Balasubramanian & Lee, 2008: 1021), suggesting that this will lead to inertia in their innovation processes. In this scenario, exploitative innovation will be favored. Also, research has shown that firm age relates to organizational culture types, in which older companies are associated with hierarchy culture (Tsui, Wang, & Xin, 2006). The hierarchy organizational culture type underlines a controlled, stable, and conservative environment, and emphasizes standardization and formalization of rules and procedures (Cameron & Quinn, 2011). With that said, older firms tend to have more rigid communication and value hierarchy levels which may lead to less voice. Firm age is measured as the firm's number of years since its founding (Weng & Li, 2014). Data are measured in years and collected from Compustat for the year 2021.

4.2.3.3. Firm Performance

Organizational performance is an important control variable that signals how well-managed the organization is and it may affect the decision to invest resources in innovation (Balsmeier & Buchwald, 2015; Barker III & Mueller, 2002). Firm Performance is commonly used as a control variable (Barker III & Mueller, 2002) as it influences the amount invested in R&D (Hitt, Hoskisson, Ireland, & Harrison1991). Positive profitability not only increases the R&D investments in American companies but also drives confidence in management (Hundley et al., 1996). When it comes to voice climate, as positive firm performance increases confidence in management, CEOs may assume the knowledge they hold is broad and sufficient (Galinsky et al., 2006). This perception may lead them to rely less on others. The opposite is also valid. Facing negative firm performance, CEO would promote more collaboration in search of alternatives.

Thus, CEOs would rely more on the support of others. In this dissertation, firm performance is assessed through *Tobin' Q* which measures the company's market performance. This measure has been widely used as a proxy for performance in the recent management literature (Tehrani, 2016). Data to *Tobin' Q* are gathered from the Compustat database for the year 2021 and are lagged by one year. It is measured following Chung and Pruitt (1994)'s approach as described in Equation 3:

$$Q\_Tobin_{it} = \frac{(MV_{it} + PS_{it} + DT_{it})}{TA_{it}} \tag{3}$$

Where,

MV_{it} = Closing Price of Share$_{it}$ x Number of Common Shares Outstanding$_{it}$

PS_{it} = Liquidating Value of Preferred Stock$_{it}$

DT_{it} = (Current Liabilities$_{it}$ − Current Assets$_{it}$) + Book Value of Inventories$_{it}$ + Longterm Debt$_{it}$

TA_{it} = Book Value of Total Assets$_{it}$

i = organizations in the sample (1, 2, ..., 500)

t = time (years 2021)

4.2.3.4. R&D Intensity

The amount invested by the firms in R&D of new products or services refers to the intention of the firm to invest in the development of new products and services through the investment in human capital and physical capital (Tyler & Steensma, 1998). R&D expenditure has been "widely used in the literature as a measure of corporate investment in strategic innovation" (Faleye et al., 2014: 2014). Organizations with higher R&D intensity are more willing to invest in the creation of new knowledge, apart from the existing body of knowledge – explorative innovation (Martínez-Noya & García-Canal, 2021). Also, as the search for new knowledge increases, both internal and external environments are assessed. That said, the

encouragement of employees' collaboration tends to increase, as employees represent powerful internal source of ideas (Cornelius et al., 2021). R&D intensity is estimated as the ratio of R&D expenditure to total sales (Faleye et al., 2014; Martínez-Noya & García-Canal, 2021). R&D intensity data are gathered from the Compustat database for each organization for the year 2021.

4.2.3.5. CEO Tenure

CEO tenure refers to the number of years the CEO has been holding this officer position in the organization. Studies suggest that, when compared to short tenured CEO, long tenured CEOs are highly associated with the organization's values and are more committed to the status quo (Wiersema & Bantel, 1992). In addition, research has also found that long tenured CEOs acquire more firm-specific knowledge than short tenure CEOs (Balsmeier & Buchwald, 2015). Furthermore, the time devoted to the organization by long tenured CEOs enables them to develop more internal social relationships than short tenured CEOs (Weng & Lin, 2014). In addition, long-tenured CEOs tend to disconnect or to lose touch with their firm's external environments (Miller, 1991), and therefore may not invest in communication with employees. When it comes to the relationship between CEO tenure and innovation, research shows mixed results (You et al., 2020). For instance, Barker III and Mueller (2002) did not find a significant relationship between CEO tenure and innovation. However, Balsmeier and Buchwald (2014) found a negative relationship. CEO tenure data are measured in years and are gathered from BoardEx database for each CEO for the year 2020.

4.2.3.6. CEO Age

Representing an important CEO demographic, research shows that older CEOS tend to be more conservative (Hambrick & Mason, 1984) while younger CEOs invest more in R&D because they want to show the market their capabilities (Prendergast & Stole, 1996). Also, younger CEOs

tend to engage more in innovation than old CEOs because old CEOs are more committed to the status quo and emphasize financial and career security than risk-taking (Barker III & Mueller, 2002; Hambrick & Mason, 1984; You et al., 2020). When it comes to the relationship between CEO age and voice climate, research shows that older CEOs "may have greater difficulty grasping new ideas and learning new behaviors" than younger CEOs (Barker III & Mueller, 2002; 785). This fact may impact the development of voice climate as it may represent a barrier to voice effectiveness. CEO age data are measured in years and are gathered from the BoardEx database for the year 2020.

4.2.3.7. CEO Gender

Another relevant CEO demographic characteristic to be used as a control variable is CEO gender. There are controversial findings related to CEO gender and innovation (You et al., 2020). On the one side, female CEOs are positively associated with innovation as gender diversity increases the levels of creativity and brings different points of view to decision-making and problem-solving processes (Wiersema & Bantel, 1992). On the other side, there are also findings that show that females are more risk averse and less confident to make strategic investment decisions (Strohmeyer, Tonoyan, & Jennings, 2017). When it comes to voice climate, research has shown that, in general, "females are more nurturant and interpersonally oriented than are males" (Eisenberg & Lennon, 1983: 100). Because behaviors toward others are expected to be higher in females than in males (Brunyé, Ditman, Giles, Mahoney, Kessler, & Taylor, 2012), CEO gender needs to be accounted for. CEO gender data are gathered from the BoardEx database for the year 2020. CEO gender data are measured as a dummy variable coded as 1 when the CEO is female and 0 otherwise.

4.3. Analysis

Descriptive statistics and correlations are examined and reported in search of variance and multicollinearity in the sample and to measure the strength of the relationship between the variables. I apply two different research methods in this study depending on the dependent variable. Due to the count structure of the data (zero and positive observations), whenever the dependent variable relates to exploitative or explorative innovation, I use Poisson Pseudo Maximum Likelihood (PPML) (Santos Silva & Tenreyo, 2006). More specifically, I estimate the correlation coefficients using the ppml function in STATA. Otherwise, I use the linear regression analysis since the sample is set at a specific time period– cross-sectional data. In this case, I estimate the correlation coefficients using regress function with robust results in STATA.

CHAPTER 5

RESULTS

In this chapter, I present and examine the results of the empirical analysis. I first describe and discuss the results of the principal component analysis (PCA) and the confirmatory factor analysis (CFA) for the development of the voice climate measure. Then, I explore the descriptive statistics of all variables proposed in the theoretical model. Later, I provide the results regarding all the hypotheses proposed in this dissertation. Lastly, I perform a post hoc analysis on the voice climate measure.

5.1. Principal Component Analysis

In order to investigate the role that employees and CEOs play in innovation; I started the empirical analysis by evaluating the measurement proposed to assess voice climate using STATA. Again, voice climate is the workforce perception about its participation in current discussions with ideas, suggestions, and thoughts. I first analyze the correlation between the items. The correlation matrix is presented in Table 5. The correlation table shows significant correlations between the items collected from Indeed.com – that is, trust, inclusion, support, management, purpose, and satisfaction. However, the correlation table shows low and non-significant correlations between union and employee stock ownership plan (ESOP) presence and the other items from Indeed.com. Since the items come from three different sources, it is expected to have items from the same source with a higher degree of correlation.

Table 5. Correlation matrix

	Trust	Inclusion	Support	Mgmt	Purpose	Satisfaction	Union	ESOP
Trust	1							
Inclusion	0.97**	1						
Support	0.96**	0.96**	1					
Mgmt	0.94**	0.94**	0.94**	1				
Purpose	0.91**	0.90**	0.91**	0.88**	1			
Satisfaction	0.87**	0.85**	0.86**	0.85**	0.89**	1		
Union	- 0.05	- 0.08*	- 0.03	- 0.02	0.04	0.06	1	
ESOP	- 0.01	- 0.01	- 0.01	- 0.02	-0.01	0.00	0.03	1

Note. ** $p < 0.05$; * $p < 0.10$; Mgmt = Management.

I performed PCA with the purpose of understanding the underlying structure of the data and evaluating its appropriateness (Hair et al., 2014). Bartlett's Test of Sphericity shows that there are enough correlations in the sample and that they are significant at the .0001 level. The KMO test creates an overall measure of sampling adequacy and the value of .925 is above the acceptable level (above .50). Results reveal two factors representing 83.24% of the variance of the remaining variables. All factor loadings display values above the threshold (>0.50). One of the factors involves all items from Indeed.com. The other factor involves union and ESOP, which are common voice mechanisms used by organizations (Aubert et al., 2017; Batt et al., 2002; Bryson et al., 2013; Gittell et al., 2004; Meardi, 2007).

Since the proposed measure for voice climate is theoretically grounded on strong and solid theory (Aubert, Kern, & Hollandts, 2017; Batt et al., 2002; Brykman & Maerz, 2022; Bryson et al., 2013; Gittell et al., 2004; Meardi, 2007; Milliken et al., 2011), CFA is then performed to verify if the items of such measure are consistent with the theory under only one dimension (Nunnally, 1978). By performing CFA, I can test how well voice climate comes together to indeed describe the construct. CFA verifies the structure of the construct grounded on theory and allows the examination of latent variables (Nunnally, 1978). The CFA results suggested that the

proposed index demonstrates a good fit for the data. Following Hair et al.'s (2014) orientation, the goodness of fit must rely on at least one absolute fit index and one incremental fit index, in addition to the χ^2 results. Results show that the standardized root mean square residual (SRMR) value is 0.02, which is below the 0.05 guideline. The comparative fit index (CFI) has a value of 0.96 and Tucker-Lewis index (TLI) has a value of 0.95. Both are above the cutoff level of 0.90. The convergent validity of the index is often assessed by examining the Average Variance Extracted (AVE) and Composite Reliability (CR) (Fornell-Larcker, 1981). The AVE measures the amount of variance that is captured by the construct when compared to the amount of variance captured by measurement error. The AVE magnitude is 0.70 which is above the acceptable level of 0.50, suggesting adequate convergence. The CR measures the internal consistency of the items. The CR value is 0.93 which exceeds the threshold of 0.70, suggesting the eight items consistently represent the same measurement. Furthermore, I examine Cronbach alpha as a second measure to evaluate the consistency of the new index ($\alpha = 0.888$). The Cronbach alpha's conventionally accepted lower limit is 0.7, indicating that the items included in the measurement display internal consistency and are a reliable measure of voice climate (Nunnally, 1978). As described in Table 6, not all the loadings are above the threshold of 0.50, and only six out of eight factor loadings are statistically significant. However, this does not invalidate the voice climate measure as a holistic analysis is crucial for assessing measurement validity. Lastly, following the same approach used by Chatterjee and Hambrich (2007), I calculate the simple mean of standardized values of the eight items to obtain the voice climate index. Similar results are obtained when I compute the voice climate index using the factor scores associated with each item. Therefore, an organization that averages one standard deviation above (or below) the mean would receive a voice climate score of 1.00 (or -1.00).

Table 6. Measurement Model for Voice Climate Construct

Items	Standardized Factor Loadings	p-value	Variance (error)
Trust	0.9875	0.000	0.0247
Inclusion	0.9832	0.000	0.0331
Support	0.9857	0.000	0.0283
Management	0.9734	0.000	0.0523
Purpose	0.9321	0.000	0.1311
Satisfaction	0. 8899	0.000	0.2079
Union	-0.0447	0.377	0.9979
ESOP	-0.0071	0.888	0.9999

Model Fit Statistics: $\chi^2 = 184.92$*** df = 20; CFI = 0.96; TLI = 0.95; RMSEA = 0.14, 90% CI: [0.12, 0.16]; SRMR = 0.02

Note. *** $p < 0.01$.

5.2. Descriptive Analysis and Correlation

The mean, standard deviation, and correlations for all dependent, independent, and control variables are shown in Table 7. After accounting for missing data using listwise deletion and publicly traded companies, 247 organizations were considered in the final sample. The organizations have on average 64,615 employees, ranging from 1,330 to 2,200,000 employees. They have been in operation for 78 years on average, ranging from 4 to 248 years. Moreover, the R&D intensity for the year 2022 is on average 0.022, ranging from 0 to 0.31. Performance is assessed through Tobin's Q which measures the company's market performance (Tehrani, 2016). Performance shows that on average firms are well managed (1.51), as values greater than 1 relate to better managed firms. The voice climate is on average 0.03, varying from -1.91 to 2.08. As voice climate is a standardized variable, the variable was rescaled to have a mean of zero and a standard deviation of one. Therefore, on average, the organizations in the sample have a better level of voice climate (0.03 is above the mean). Of the total of 372 CEOs, 95.6% are men. CEOs' age ranges from 42 to 84 and is 58.83 on average. The data show that on average CEOs hold the position for 16.22 years, ranging from four months to 53 years. 84.55% of CEOs in the final sample are promoted to this level internally (CEO insiders). Regarding the role performed,

42.64% of the CEOs in the sample also hold the chairman role (CEO duality). Finally, 57% of the organizations in the sample applied for patents in the year 2022. A value of zero entered for innovation in the sample simply suggests that the organization did not apply for patents with USPTO. This does not mean that there was no innovation for the year 2022 for these firms as there are other types of innovation that do not result in patent applications. There may be cases where companies deliberately choose not to apply for patents. For instance, they may choose not to apply for a patent to keep their innovations as trade secrets (Hussinger, 2006; Lobel, 2013). Also, they may not apply for a patent because they lack experience in such process or may have found other means to protect their intellectual property (Hussinger, 2006). In addition, organizations may decide to gain first mover advantages and avoid the time it takes to file for a patent (Arundel & Kabla, 1998). Additionally, patent filing is not free. As a result, organizations may decide not to incur patent filing costs (Blind, Edler, Frietsch, & Schmoch, 2006; Lobel, 2013). Also, many organizations may engage in open innovation which engages internal and external sources of ideas (e.g., customers and suppliers) in the generation of innovations (Chesbrough, 2006). These organizations are unlikely to engage in patenting processes. Lastly, in industries where technical complexity of products is high and product introductions are frequent (e.g., aerospace), it is unlikely that organizations would devote the time and resources to apply for patents of products that are costly to be copied by competition (Arundel & Kabla, 1998). And, in other industries, patents may not be the norm (Blind et al., 2006; Hussinger, 2006).

Correlation among the dependent, independent, and control variables using Pearson pairwise are exhibited in Table 7. Correlation results show significant correlations between (1) voice climate and exploitation innovations, and (2) outsider CEO and voice climate. However, Table 7 results show a non-significant correlation between (3) CEO duality and voice climate, and

(4) voice climate and exploration innovation. In addition, the correlation matrix shows that the correlation coefficients are low in magnitude. The low correlations suggest that multicollinearity would not be an issue. However, below I analyze the variance inflation factors to assess whether multicollinearity is an issue.

I also examined heteroscedasticity to verify the variance of the error term in the regression models. If heteroscedasticity is detected, the results will be biased (Wooldridge, 2016). To detect heteroscedasticity, I performed the Breusch-Pagan test having voice climate, exploitation innovation, and exploration innovation as dependent variables. Heteroscedasticity is detected in the regressions including exploitation and exploration innovation as dependent variables. As a result, I will manage this issue by using Poisson Pseudo Maximum Likelihood (PPML) (Santos Silva & Tenreyo, 2006).

Regarding endogeneity, it is important to verify that there is no correlation between the independent variables and the error terms, to avoid the omission of exploratory variables in the models, resulting in inaccurate estimates (Wooldridge, 2016). Yet, as I employ Poisson regression to empirically test the model proposed in this dissertation, endogeneity does not become a major issue to be treated. According to Santos Silva and Tenreyo (2006, p. 646), "the Poisson regression emerges as a reasonable compromise, giving less weight to the observations with larger variance than the standard linear least square estimator, without giving too much weight to observations more prone to contamination by measurement error." Nonetheless, I make use of lagged exploratory variables to address endogeneity matters. Lastly, endogeneity is critical for causality inference, which is not the purpose of this dissertation. The empirical investigation in this dissertation examines the correlation among the variables at only one time period, using cross-sectional data.

Table 7. Means, standard deviations, and correlations.

	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Firm Exploitation	0.23	0.62	1											
(2) Firm Exploration	0.22	0.37	0.11	1										
(3) Voice Climate	0.03	0.72	0.18**	-0.03	1									
(4) CEO Age	58.83	6.36	-0.00	-0.05	-0.01	1								
(5) CEO Duality	0.46	0.49	0.04	0.03	0.01	0.23**	1							
(6) CEO Gender	0.05	0.22	0.07	-0.03	0.07	-0.06	-0.05	1						
(7) Outsider CEO	0.21	0.40	-0.06	0.10	-0.13**	0.09*	-0.10**	-0.06	1					
(8) CEO Tenure	16.22	10.90	0.04	-0.16**	0.05	0.24**	0.17**	-0.01	-0.37**	1				
(9) Firm Age	78.88	52.18	0.08	0.06	0.04	-0.02	0.22**	-0.00	-0.14**	0.07	1			
(10) Firm Performance	1.51	1.30	0.06	0.08	0.17**	-0.13**	-0.03	0.03	-0.07	0.09	-0.07	1		
(11) Firm R&D Ratio	0.02	0.05	-0.01	0.19**	0.26**	-0.11**	-0.01	-0.01	-0.06	-0.01	-0.06	0.36**	1	
(12) Firm Size	64.61	138.39	0.02**	0.08	0.02	-0.01	-0.01	-0.01	-0.01	0.10	0.03	0.07	0.00	1

Note: ** $p < 0.05$; * $p < 0.10$; SD = Standard Deviation.

5.3. Hypotheses Testing

In this dissertation, the results of the hypotheses testing are displayed in Tables 8-12 in which Model 1 represents the base model with all control variables while Model 2 represents the proposed model with the inclusion of the independent variables. When using PPML, I adopt R-squared, Δ R-squared, RESET Test, Akaike's Information Criteria (AIC) and Bayesian information criteria (BIC) as the goodness of fit measure. R-squared is a coefficient of determination. It represents the proportion in the dependent variable that is explained by the independent variables. A significant R-squared is expected. The Δ R-squared represents the difference between R-squared obtained in Model 1 (model using control variables only) and R-squared obtained in Model 2 (model using independent and control variables). A positive and significant difference is expected to confirm an improvement in the model change, as the higher the R-squared, the better the model. RESET test indicates the adequacy of the model, ensuring that omitted variables are not causing model misspecification (Santos Silva & Tenreyro, 2006). RESET test shows if the change in R-squared is statistically significant. An insignificant result is expected. AIC and BIC are predictive indices that account for the number of parameters in use (Akaike, 1973; Wooldridge, 2009). They are commonly used to compare competing models. A lower AIC and BIC are expected as they imply a better-fitting model (Wooldridge, 2009). When using linear regression analysis, I adopt R-squared and Δ R-squared as the goodness of fit measure.

In addressing the first and second research questions regarding the influence of voice climate on innovation, I used PPML estimator regression (Santos Silva & Tenreyo, 2006) for two main reasons. First, Poisson regression is an appropriate method to be used when the dependent variables are counts (i.e., discrete data with non-negative values). Second, PPML is able to

properly remedy the heteroscedasticity of data previously detected (Santos Silva & Tenreyo, 2006).

For hypothesis 1, which suggests a positive association between voice climate and exploitative innovation, the results show a positive and significant association between voice climate and exploitative innovation ($\beta = 0.59$, $p < 0.05$) (see Model 2 Table 8). Therefore, hypothesis 1 is supported. For hypothesis 2, which suggests a positive association between voice climate and explorative innovation, the results show a non-significant association between voice climate and explorative innovation ($\beta = -0.06$, $p > 0.10$) (see Model 2 Table 9). Therefore, hypothesis 2 is not supported. Because hypothesis 1 is supported and hypothesis 2 is not, I can state that the association between voice climate and exploitative innovation is stronger than the association between voice climate and explorative innovation, therefore hypothesis 3 is also supported. For hypothesis 1, the results reveal a significant improvement to the model's prediction with the inclusion of voice climate in the base model. The RESET test supports a significant and positive R-squared change. R-squared indicates that 3% of the variation in exploitative innovation is explained by the proposed model. AIC and BIC results confirm improvement to the model's prediction (see Model 2 Table 8). For hypothesis 2, the RESET test supports a slight significant and positive R-squared change, while AIC and BIC indicate there is no significant improvement (see Model 2 Table 9).

Table 8. The Effect of Voice Climate on Exploitative Innovation

	Model 1			Model 2		
Variable	β	Robust SE	p-value	β	Robust SE	p-value
Constant	-3.86	6.00	0.519	-2.34	6.45	0.717
Log (Firm Age)	0.16	0.32	0.598	0.15	0.31	0.620
Firm Performance	0.10	0.12	0.403	0.11	0.12	0.349
Firm R&D Ratio	-6.05	0.12	0.482	-5.85	9.04	0.518
Log (Firm Size)	0.13	0.11	0.227	0.09	0.12	0.422
Log (CEO age)	-0.08	1.38	0.949	-0.34	1.46	0.816
CEO gender	0.60	0.45	0.184	0.45	0.46	0.324
Log (CEO tenure)	0.19	0.16	0.232	0.15	0.16	0.361
Voice Climate				0.59**	0.29	0.044
R-squared	0.01			0.03		
Δ R-squared				0.02**		
RESET test				2.13		0.144
AIC	321.92			313.12		
BIC	350.03			344.74		

Notes: $N = 248$. ** $p<0.05$; SE = Standard Error.

Table 9. The Effect of Voice Climate on Explorative Innovation

	Model 1			Model 2		
Variable	β	Robust SE	p-value	β	Robust SE	p-value
Constant	-2.23	3.72	0.548	-2.33	3.73	0.532
Log (Firm Age)	0.15	0.13	0.279	0.15	0.14	0.271
Firm Performance	0.05	0.09	0.574	0.05	0.09	0.583
Firm R&D Ratio	10.49***	3.48	0.003	10.49***	3.38	0.002
Log (Firm Size)	0.16*	0.09	0.082	0.16*	0.09	0.077
Log (CEO age)	-0.28	0.89	0.749	-0.28	0.89	0.750
CEO gender	-0.27	0.43	0.520	-0.25	0.43	0.563
Log (CEO tenure)	-0.21	0.09	0.023*	-0.20	0.09	0.029*
Voice Climate				-0.06	0.13	0.616
R-squared	0.06			0.06		
Δ R-squared				0.003**		
RESET test				1.28		0.257
AIC	273.07			274.94		
BIC	301.18			306.56		

Notes: $N = 248$. *** $p<0.01$; ** $p<0.05$; * $p<0.10$; SE = Standard Error.

As I expect the variables to be correlated, to assess multicollinearity among the independent variables I measured the strength of the correlation using the variance inflation factor (VIF) (Mansfield & Helms, 1982). All the VIF values show a low correlation among the

variables as they vary from 1.02 to 1.41 and are well below the 10 threshold. Therefore, multicollinearity does not represent an issue in the analyses.

To empirically examine Hypotheses 4 and 6, I used linear regression analysis with robust standard errors. For hypothesis 4, which suggests that outsider CEOs are positively associated with higher levels of voice climate, the results show a negative and mildly significant association at the 0.1 level (β = -0.19, p = 0.070) (see Model 2 Table 10). This result suggests that outsider CEOs are related to voice climate. However, contrary to my predictions, there is a negative relationship between outsider CEOs and voice climate. Therefore, hypothesis 4 is not supported. For hypothesis 6, which suggests that CEO duality is negatively associated with voice climate, the results show a non-significant association (β = -0.03, p > 0.10) (see Model 2 Table 10). Therefore, hypothesis 6 is not supported. The results also reveal a significant improvement to the model's prediction with the inclusion of outsider CEO and CEO duality to the base model. R-squared indicates that 11% of the variation in voice climate is explained by the proposed model (see Model 2 Table 10). Again, VIF values range between 1.01 to 1.21 in all models. Therefore, multicollinearity does not represent a problem in the regression models.

Table 10. The Effect of Outsider CEO and CEO Duality on Voice Climate

Variable	Model 1			Model 2		
	β	Robust SE	p-value	β	Robust SE	p-value
Constant	-1.50	1.46	0.304	-2.05	1.58	0.194
Log (Firm Age)	0.02	0.04	0.658	0.01	0.04	0.688
Firm Performance	0.03	0.02	0.221	0.03	0.02	0.225
Firm R&D Ratio	3.43***	0.82	0.000	3.48***	0.83	0.000
Log (Firm Size)	0.06**	0.03	0.037	0.06**	0.03	0.049
Log (CEO age)	0.12	0.35	0.732	0.30	0.38	0.427
CEO gender	0.25**	0.13	0.049	0.23*	0.13	0.082
Log (CEO tenure)	0.06	0.04	0.150	0.01	0.05	0.731
Outsider CEO				-0.19*	0.10	0.070
CEO Duality				-0.03	0.08	0.664
F-statistic	5.74***			5.05***		
R-squared	0.10			0.11		
Δ R-squared				0.01***		

Notes: $N = 372$. *** $p<0.01$; ** $p<0.05$; * $p<0.10$; SE = Standard Error.

Lastly, to address the fourth research question which examines if CEO experience and power impact innovation through their effect on voice climate, I performed a mediation analysis. Hypothesis 5 suggests that voice climate mediates the relationship between outsider CEOs and innovation, in such a way that the impact of outsider CEOs through voice climate will be greater on explorative innovation than exploitative innovation. To test hypothesis 5, I used two different approaches: Sobel test (Sobel, 1982) and causal steps approach (Baron & Kenny, 1986). Following the Sobel approach, the product of the coefficients found for (1) the relationship between the independent variable and mediator and (2) the relationship between the mediator and dependent variable is examined to obtain the significance of the mediator (Sobel, 1982). The effect of outsider CEO on exploitative innovation through voice climate according to the Sobel test is 1.38, with standard error of 0.08, and p-value of 0.1649. The effect of outsider CEO on explorative innovation through voice climate according to the Sobel test is 0.44, with standard error of 0.02, and p-value of 0.6537. Both results are statistically insignificant as evidenced by a p-value greater than 5%. Therefore, Sobel test results do not support the proposed mediation

effect. Following the causal steps approach proposed by Baron and Kenny (1986) three outcomes are needed for mediation to be supported. Therefore, I will examine three distinct relationships. First, I check the relationship between outsider CEOs (X) and explorative innovation (Y) and exploitative innovation (W) in search of a significant result. This is a necessary condition because for mediation to happen this association needs to either disappear or weaken. Then, I check the relationship between outsider CEOs (X) and voice climate (M) in search of a significant result. This is another necessary condition for voice climate to have the potential to moderate the relationship between independent and dependent variables. Lastly, the relationship between outsider CEOs (X) and voice climate (M) jointly and explorative innovation (Y) and exploitative innovation (W) also need to be examined. This last step searches for any change in the relationship between the independent variable and the moderator found in step 1. If the effect of outsider CEOs and explorative innovation and exploitative innovation disappears or at least becomes weak when voice climate is included, then mediation exists. Figure 2 illustrates the three steps to be followed using exploitative innovation (a) and explorative innovation (b) as the dependent variable.

Figure 2. Graphic representation of mediation analysis.

(a)

Step 1.

Outsider CEO (X) ⟶ Exploitative Innovation (Y)

Step 2.

Outsider CEO (X) ⟶ Voice Climate (M)

Step 3.

Outsider CEO (X) ⟍
                        Exploitative Innovation (Y)
Voice Climate (M) ⟋

Voice Climate (M)

a   b

Outsider CEO (X) —— c ——→ Exploitative Innovation (Y)

(b)

Step 1.

Outsider CEO (X) ⟶ Explorative Innovation (W)

Step 2.

Outsider CEO (X) ⟶ Voice Climate (M)

Step 3.

Outsider CEO (X) ⟍
                        Explorative Innovation (W)
Voice Climate (M) ⟋

Voice Climate (M)

a   b'

Outsider CEO (X) —— c' ——→ Explorative Innovation (W)

As described in Model 2 Table 11 and Model 2 Table 12, the association between outsider CEO and exploitative and explorative innovation is not significant (step 1). As previously mentioned, the relationship between outsider CEO and exploitative and explorative innovation is a required condition for mediation to happen. Therefore, hypothesis 5 is not supported because there is nothing to be mediated. I found similar results using both Sobel's (1982) and Baron and Kenny's (1986) approaches.

Table 11. The Effect of Outsider CEOs on Exploitative Innovation

| | Model 1 | | | Model 2 | | |
Variable	β	Robust SE	p-value	β	Robust SE	p-value
Constant	-3.86	6.00	0.519	-4.13	6.00	0.491
Log (Firm Age)	0.16	0.32	0.598	0.16	0.32	0.622
Firm Performance	0.10	0.12	0.403	0.10	0.12	0.396
Firm R&D Ratio	-6.05	8.61	0.482	-5.89	8.64	0.495
Log (Firm Size)	0.13	0.11	0.227	0.13	0.11	0.257
Log (CEO age)	-0.08	1.38	0.494	0.02	1.41	0.986
CEO gender	0.60	0.45	0.184	0.58	0.47	0.218
Log (CEO tenure)	0.19	0.16	0.232	0.15	0.17	0.365
Outsider CEO				-0.17	0.46	0.714
R-squared	0.018			0.018		
Δ R-squared				0.002**		
RESET test				1.96		0.161
AIC	321.92			323.77		
BIC	350.03			355.39		

Notes: *N* = 248. SE = Standard Error.

Table 12. The Effect of Outsider CEOs on Explorative Innovation

| | Model 1 | | | Model 2 | | |
Variable	β	Robust SE	p-value	β	Robust SE	p-value
Constant	-3.86	6.00	0.519	-1.90	3.70	0.607
Log (Firm Age)	0.15	0.13	0.279	0.16	0.13	0.248
Firm Performance	0.05	0.09	0.574	0.04	0.09	0.615
Firm R&D Ratio	10.49**	3.48	0.003	10.11***	3.50	0.004
Log (Firm Size)	0.16*	0.09	0.082	0.17*	0.09	0.070
Log (CEO age)	-0.28	0.89	0.749	-0.43	0.90	0.631
CEO gender	-0.27	0.43	0.520	-0.23	0.43	0.588
Log (CEO tenure)	-0.21*	0.09	0.023	-0.16	0.11	0.164
Outsider CEO				0.19	0.29	0.509
R-squared	0.06			0.06		
Δ R-squared				0.002**		
RESET test				1.59		0.207
AIC	273.07			274.84		
BIC	301.18			306.46		

Notes: *N* = 248. *** p<0.01; ** p<0.05; * p<0.10; SE = Standard Error.

In summary, two out of six hypotheses are supported. This summary appears in Table 13.

The results are discussed in Chapter 6.

Table 13. Summary of Hypotheses Test

Hypotheses	Significance	Results
(**H1**) Voice climate is positively associated with exploitative innovation.	Significant	Supported
(**H2**) Voice climate is positively associated with explorative innovation	Not Significant	Not Supported
(**H3**) The positive association between voice climate and exploitative innovation will be stronger than the positive association between voice climate and explorative innovation.	Significant	Supported
(**H4**) Outsider CEOs are positively associated with higher levels of voice climate.	Significant	Not Supported
(**H5**) Voice climate mediates the relationship between outsider CEOs and innovation, in such a way that the impact of outsider CEOs through voice climate will be greater on explorative innovation than exploitative innovation.	Not Significant	Not Supported
(**H6**) CEO duality is negatively associated with voice climate.	Not Significant	Not Supported

5.4. Post Hoc Analysis

PCA results reveal two factors representing 83.24% of the variance of the data. The two factors suggest a separation between the items captured from Indeed.com and the items Union and ESOP – the two well-established voice mechanisms used by labor relations and corporate governance literature respectively (Aubert et al., 2017; Batt et al., 2002; Bryson et al., 2013; Gittell et al., 2004; Meardi, 2007). As previously mentioned, because the items come from three different sources, it is expected to have higher correlations among items from the same source. As described in Table 5, significant correlations are found only for items from Indeed.com. Because PCA findings are not aligned with the existing literature, CFA is performed to verify if the proposed items for voice climate are consistent under only one dimension as expected. CFA results demonstrate a good fit for the data.

With the purpose to confirm the choice made to aggregate all the proposed items (see Table 4) to generate one index, in this section, I retest all hypotheses, replacing the voice climate index with three different measures with the potential to represent the same construct. Then, I

can compare the findings. This extra examination has the potential to clarify whether the new measures are similar to or different from voice climate. The three new measures are chosen based on the results of the PCA. The first measure represents one of the factors suggested by the PCA and is formed by the set of items from Indeed.com (trust, inclusion, support, management, purpose, and satisfaction) as they show high correlation among them. The first measure represents managerial aspects that influence the development of a safe and worth work environment and is named *voice management*. I calculate voice management as the simple average of standardized items. The second factor suggested by the PCA is formed by Union and ESOP items. However, they do not correlate to each other (see Table 5) and both are recognized proxies for voice in the labor relations and corporate governance literature. With that in mind, Union and ESOP will be tested individually. Therefore, the second measure represents the extent to which employees are associated with labor unions, which I named *voice labor relations*. It is calculated by the standardized value of the single item Union. Voice labor relations signals that employees have formal mechanisms in place that ensure they can speak up together (Batt et al., 2002; Gittell et al., 2007). Lastly, the third measure represents the extent to which employees own shares in the organization, which I named *voice governance*. It is calculated by the standardized value of the single item ESOP. Employee stock ownership gives employees voice in corporate governance (Faleye, Mehrotra, & Morck, 2006), especially when employee participation increases.

It is important to note that different specifications for the same construct can influence the goodness of the fit of the data. "Researcher should be sure that all model specifications should be done to best approximate the theory to be tested rather than hopefully increase model

fit" (Hair et al., 2014: 584). With that in mind, I do not intend to run this post hoc analysis to find the model with the best fit but to compare the results identifying similarities and differences.

Hypothesis 1 suggests a positive association between voice climate and exploitative innovation. When using voice labor relations and voice governance as the independent variable, the results show a non-significant association with exploitative innovation. However, using voice management as the independent variable, the results show a positive and significant association ($\beta = 0.47$, $p < 0.05$) (see Table 14). When compared with voice climate's results (see Table 8), voice management results are lower in magnitude. In sum, hypothesis 1 found support only for voice management as the independent variable. For hypothesis 2, which suggests a positive association between voice climate and explorative innovation, the three new measures show a non-significant association with explorative innovation (see Table 15). Similar results are found when using voice climate as the independent variable. Again, hypothesis 2 is not supported. Because hypothesis 1 is only supported when using voice management as the independent variable and hypothesis 2 is not supported at all, I can state that hypothesis 3 is only supported for voice management. The results reveal a significant improvement in the model's prediction from Model 1 to Model 2. The RESET test supports a significant and positive R-squared change. Similarly, AIC and BIC results confirm improvement to the model's prediction (see Model 2 Table 14 and Table 15).

Table 14. The Effect of Voice Management, Voice Labor Relations, and Voice Governance on Exploitative Innovation

Variable	Model 1			Model 2		
	β	Robust SE	p-value	β	Robust SE	p-value
Constant	-3.86	6.00	0.519	-1.00	6.93	0.885
Log (Firm Age)	0.16	0.32	0.598	0.11	0.31	0.717
Firm Performance	0.10	0.12	0.403	0.08	0.12	0.462
Firm R&D Ratio	-6.05	0.12	0.482	-5.97	9.08	0.510
Log (Firm Size)	0.13	0.11	0.227	0.07	0.11	0.512
Log (CEO age)	-0.08	1.38	0.949	-0.54	1.56	0.729
CEO gender	0.60	0.45	0.184	0.38	0.50	0.449
Log (CEO tenure)	0.19	0.16	0.232	0.15	0.17	0.3380
Voice Management				0.47**	0.23	0.046
Voice Labor Relations				0.01	0.17	0.917
Voice Governance				0.01	0.06	0.820
R-squared	0.01			0.04		
Δ R-squared				0.03**		
RESET test				0.49		0.483
AIC	321.92			310.34		
BIC	350.03			348.21		

Notes: $N = 231$. ** $p<0.05$; SE = Standard Error.

Table 15. The Effect of Voice Management, Voice Labor Relations, and Voice Governance on Explorative Innovation

Variable	Model 1			Model 2		
	β	Robust SE	p-value	β	Robust SE	p-value
Constant	-2.23	3.72	0.548	1.42	4.13	0.731
Log (Firm Age)	0.15	0.13	0.279	0.06	0.14	0.643
Firm Performance	0.05	0.09	0.574	0.01	0.10	0.862
Firm R&D Ratio	10.49***	3.48	0.003	12.77***	3.48	0.000
Log (Firm Size)	0.16*	0.09	0.082	0.14	0.09	0.128
Log (CEO age)	-0.28	0.89	0.749	-1.05	0.98	0.285
CEO gender	-0.27	0.43	0.520	-0.16	0.43	0.711
Log (CEO tenure)	-0.21**	0.09	0.023	-0.19**	0.09	0.033
Voice Management				-0.07	0.09	0.420
Voice Labor Relations				0.11	0.10	0.305
Voice Governance				0.02	0.05	0.681
R-squared	0.06			0.08		
Δ R-squared				0.02**		
RESET test				0.72		0.396
AIC	273.07			267.63		
BIC	301.18			305.50		

Notes: $N = 231$. *** $p<0.01$; ** $p<0.05$; SE = Standard Error.

Hypothesis 4 suggests that outsider CEOs are positively associated with higher levels of

voice climate. The results show a non-significant association between outsider CEO and voice

management index (see Model 2 Table 16). The results also show a significant association

between outsider CEO and voice labor relations (β = -0.38, p < 0.05) (see Model 2 Table 17),

and voice governance (β = -0.12, p < 0.10) (see Model 2 Table 17). However, contrary to my

predictions, the relationships found are negative. Therefore, hypothesis 4 is not supported.

Regarding CEO duality and its association with voice climate (hypothesis 6), the results show

non-significant associations between CEO duality and voice management (see Model 2 Table

16), voice management (see Model 2 Table 17), and voice management (see Model 2 Table 18).

Similar results are found when using voice climate as the dependent variable.

Table 16. The Effect of Outsider CEO and CEO duality on Voice Management

Variable	Model 1			Model 2		
	β	Robust SE	p-value	β	Robust SE	p-value
Constant	-1.06	1.95	0.586	-1.64	2.09	0.433
Log (Firm Age)	0.00	0.06	0.946	0.00	0.06	0.912
Firm Performance	0.05	0.03	0.137	0.05	0.03	0.143
Firm R&D Ratio	5.04***	1.96	0.000	5.09***	1.07	0.000
Log (Firm Size)	0.05	0.04	0.204	0.05	0.04	0.221
Log (CEO age)	0.02	0.47	0.952	0.20	0.51	0.687
CEO gender	0.41**	0.18	0.024	0.39*	0.18	0.032
Log (CEO tenure)	0.07	0.05	0.159	0.04	0.06	0.504
Outsider CEO				-0.15	0.14	0.298
CEO Duality				-0.06	0.10	0.524
F-statistic	6.35***			5.15***		
R-squared	0.11			0.12		
Δ R-squared				0.01**		

Notes: *N* = 354. *** p<0.01; ** p<0.05; * p<0.10; SE = Standard Error.

Table 17. The Effect of Outsider CEO and CEO duality on Voice Labor Relations

	Model 1			Model 2		
Variable	β	Robust SE	p-value	β	Robust SE	p-value
Constant	-2.68	2.09	0.201	-2.80	2.14	0.191
Log (Firm Age)	0.03	0.06	0628	0.00	0.06	0.938
Firm Performance	-0.00	0.04	0.898	-0.00	0.04	0.947
Firm R&D Ratio	-1.75*	0.91	0.057	-1.74*	0.91	0.059
Log (Firm Size)	0.17***	0.04	0.000	0.16***	0.04	0.001
Log (CEO age)	0.24	0.50	0.625	0.40	0.52	0.437
CEO gender	-0.13	0.23	0.578	-0.15	0.24	0.531
Log (CEO tenure)	-0.07	0.05	0.196	-0.17**	0.06	0.010
Outsider CEO				-0.38**	0.15	0.012
CEO Duality				0.15	0.10	0.161
F-statistic	3.11***			3.81***		
R-squared	0.05			0.07		
Δ R-squared				0.02		

Notes: $N = 372$. *** $p<0.01$; ** $p<0.05$; * $p<0.10$; SE = Standard Error.

Table 18. The Effect of Outsider CEO and CEO duality on Voice Governance

	Model 1			Model 2		
Variable	β	Robust SE	p-value	β	Robust SE	p-value
Constant	-4.49	1.88	0.018	-4.80*	2.63	0.069
Log (Firm Age)	0.11**	0.04	0.016	0.11*	0.06	0.073
Firm Performance	-0.05	0.03	0.173	-0.05	0.04	0.202
Firm R&D Ratio	-0.40	0.33	0.231	-0.37	0.36	0.306
Log (Firm Size)	-0.00	0.02	0.899	-0.00	0.02	0.810
Log (CEO age)	0.97**	0.46	0.037	1.08*	0.63	0.086
CEO gender	-0.01	0.11	0.917	-0.02	0.12	0.832
Log (CEO tenure)	0.09	0.06	0.188	0.06	0.08	0.432
Outsider CEO				-0.12*	0.06	0.077
CEO Duality				-0.01	0.18	0.936
F-statistic	2.46**			4.77***		
R-squared	0.03			0.03		
Δ R-squared				0.002**		

Notes: $N = 370$. ** $p<0.05$; * $p<0.10$; SE = Standard Error.

Lastly, hypothesis 5 suggests that voice climate mediates the relationship between outsider CEOs and innovation, in such a way that the impact of outsider CEOs through voice climate will be greater on explorative innovation than exploitative innovation. Using Sobel's approach, I test the mediation effect for the three measures. The effect of outsider CEO on exploitative innovation through voice management is -0.94, with standard error of 0.07, and p-

value of 0.3426. Also, the effect of outsider CEO on explorative innovation through voice climate is 0.62, with standard error of 0.01, and p-value of 0.5290. Both results are statistically insignificant, therefore hypothesis 5 is not supported when using voice management. Regarding voice labor relations as a mediator, the effect of outsider CEO on exploitative innovation is -0.05, with standard error of 0.06, and p-value of 0.9531. In addition, the effect of outsider CEO on explorative innovation through voice labor relations is -1.00, with standard error of 0.04, and p-value of 0.3129. Again, both results are statistically insignificant and hypothesis 5 is not supported. Lastly, the effect of outsider CEO on exploitative innovation through voice governance is -0.24, with standard error of 0.004, and p-value of 0.8040. Furthermore, the effect of an outsider CEO on explorative innovation through voice governance is -0.39, with standard error of 0.006, and p-value of 0.6948. One more time, both results are statistically insignificant and hypothesis 5 is not supported when using voice governance.

In summary, as shown in Table 19, when compared to voice climate, voice labor relations and voice governance show different results for the hypotheses testing while voice management shows similarity. However, for hypothesis 4, as voice climate results show significant coefficients, voice management results do not. They all differ from each other. Interestingly, whenever explorative innovation assumes the role of the dependent variable, the results from all four measures show a positive significant association with R&D intensity and a negative significant association with CEO tenure. Also, data reveal a positive significant association between R&D intensity and female CEO with voice climate and voice management.

Table 19. Summary of Hypotheses Testing in the Post Hoc Analysis

Hypotheses	Voice Climate Results	Voice Management Results	Voice Labor Relations Results	Voice Governance Results
(**H1**) Voice climate is positively associated with exploitative innovation.	Supported	Supported	Not Supported	Not Supported
(**H2**) Voice climate is positively associated with explorative innovation	Not Supported	Not Supported	Not Supported	Not Supported
(**H3**) The positive association between voice climate and exploitative innovation will be stronger than the positive association between voice climate and explorative innovation.	Supported	Supported	Not Supported	Not Supported
(**H4**) Outsider CEOs are positively associated with higher levels of voice climate.	Not Supported	Not Supported	Not Supported	Not Supported
(**H5**) Voice climate mediates the relationship between outsider CEOs and innovation, in such a way that the impact of outsider CEOs through voice climate will be greater on explorative innovation than exploitative innovation.	Not Supported	Not Supported	Not Supported	Not Supported
(**H6**) CEO duality is negatively associated with voice climate.	Not Supported	Not Supported	Not Supported	Not Supported

CHAPTER 6

DISCUSSION

In this chapter, I discuss the empirical results of this dissertation. I elaborate on the findings and analyze what the data reveal in terms of employees and CEO contributions to two forms of innovation: explorative and exploitative. I aim to discuss all the research questions, emphasizing all theoretical contributions. In addition, I provide potential managerial implications, limitations, and future research avenues.

6.1. Major Findings Discussion

In this section, I discuss the development of voice climate measure. Then, I elaborate on the role played by employees and CEOs in innovation.

6.1.1. Voice Climate Construct

In this dissertation, to assess voice climate - the workforce perception about its participation in current discussions with ideas, suggestions, and thoughts, I propose the use of multiple items from three different sources to create a unique index. The principal components analysis reveals an underlying structure with two dimensions. However, this is not consistent with previously forwarded theoretical arguments. Because the proposed voice climate measure is theoretically grounded on strong and solid theory from management, labor relations, and corporate governance fields (Aubert, Kern, & Hollandts, 2017; Batt et al., 2002; Brykman & Maerz, 2022; Bryson et al., 2013; Gittell et al., 2004; Meardi, 2007; Milliken et al., 2011), voice climate should then be assessed as a unidimensional construct. The confirmatory factor analysis shows an adequate and good fit to the data according to the fit statistics when using only one factor for the construct. Results from confirmatory factor analysis, average variance extracted, and post hoc analysis show adequate convergent and discriminant validity, revealing that all the

items converge to represent the proposed construct (Fornell-Larcker, 1981). Also, results from composite reliability and Cronbach alpha show good internal consistency, providing evidence of homogeneity (Fornell-Larcker, 1981; Nunnally, 1978).

In sum, the results show a variation in voice climate among organizations, in which I theorize high-voice climate relates to a work environment in which voice participation is encouraged, while low-voice climate relates to a work environment that does not motivate the employees to freely express their ideas and discourage their participation, similar to the definition proposed by Morrison and Milliken (2000) for climate of silence. In addition, the results show that voice climate can be measured as an organizational construct. Using a holistic approach, voice climate encompasses the existing literature found in the management (Morrison et al., 2011), labor relations (Batt et al., 2002; Bryson et al., 2013; Freeman & Medoff, 1984; Gittell et al., 2004), and corporate governance (Aubert et al., 2017) fields.

6.1.2. The Role of Employees on Innovation

Research has shown a great diversity of factors that have a causal impact on innovation such as leadership, organizational structure, environmental dynamism, and existing networks (e.g., Barrutia and Echebarria, 2019; Fan et al., 2022; Høyrup, 2010; Jansen et al., 2006; Phelps, 2010; Popa et al., 2021; You et al., 2020; West and Bogers, 2017). When looking at the effect that human capital has on innovation, research has primarily devoted attention to the organization's internal R&D activities (Gopalakrishnan & Damanpour, 1997). However, the role that other kinds of employees play in innovation has not been investigated. In this study, I suggested that non-R&D employees can also enable firms to innovate through exercising their voice. I found support for this argument as there is a relationship between voice climate and exploitative innovation. Specifically, I found that as voice climate increases, the development of

incremental innovation also increases. While performing their in-role activities, non-R&D employees obtain more knowledge about current products, services, and customers, leaving little space for them to experiment and envision new things that are apart from their current roles. With that said, they tend to provide ideas closely related to what they are familiar with, which leads to exploitative innovation. In addition, as voice behavior involves some degree of risk (Burris, 2012; Detert & Burris, 2007), employees carefully evaluate the environment before making decisions about speaking up. I argued that when providing incremental ideas that are aligned with the current body of knowledge, employees face less risk. On the other hand, when suggesting breakthrough and radical suggestions that are defiant in nature and question the existing body of knowledge, the risk increases. Therefore, as proposed in the theoretical model, employees may participate with more incremental ideas rather than radical ones when they perceive an environment that encourages their participation. As shown in the empirical results, an increase in voice climate leads to an increase in exploitative innovation.

Contrary to my expectations, I did not find support for the relationship between voice climate and explorative innovation. This could have happened because of the cross-sectional nature of this study. Even though explorative innovation is lagged by one year relative to voice climate, the data in this study were collected at one time period. As per Danneels (2002), exploitative and explorative innovation have different dynamics. Because exploitative innovation improves the existing body of knowledge, organizations are already familiar with the features of the products or services, customers, market, and technology. Therefore, deciding on the viability of an improvement in products or services is relatively easy and requires less time. On the other hand, explorative innovation brings radical and disruptive ideas apart from the existing body of knowledge. In this case, organizations need to develop new competencies, explore new

technologies, understand the market potential and customers' needs that are yet unclear.

Therefore, explorative innovation is more complex and involves more time to happen. Similarly,

Luo et al., (2022) differentiates exploitative from explorative innovation based on timing. They

argue that exploitative innovation is associated with short-term achievements while explorative

innovation is associated with long-term ones. Furthermore, they state that, in general, "corporate

managers usually prioritize exploitative innovation due to their shortsightedness, leading to

insufficient input into exploratory innovation." (Luo et al., 2022: 455). With that said, I believe

that one year lag period used in the empirical analysis is not long enough to identify a significant

effect of voice climate on explorative innovation.

To conclude, this study reveals that indeed voice climate does influence the production of

innovations (answer to the first research question), albeit only of the incremental kind. I argue

that organization's innovativeness ability increases as voice climate is promoted. Organizations

innovate more as more incremental ideas about work-related issues are freely generated and

shared by employees. The results show that voice climate reinforces the current body of

knowledge possessed by the organization (answer to the second research question) as a

correlation between voice climate and exploitative innovation is found.

6.1.3. The Role of CEOs on Innovation

I theorize that outsider CEOs would be positively associated with higher levels of voice

climate. The results show the opposite. In fact, the data reveal that outsider CEOs are negatively

associated with voice climate. There are two reasons that may jointly explain this finding. First,

organizations may decide to hire someone from outside to bring change to organizations (Ocasio,

1999). As outsider CEOs hold external and new knowledge (Zhang & Rajagopalan, 2003), they

are expected to enhance "the resource-base of the firm through the transfer of external

knowledge and information." (Georgakakis & Ruigrok, 2017: 62). Contrary to the argument I used in this dissertation, instead of being prone to listen to what the organization has to say, outsider CEOs may be prone to talk to the organization by offering their knowledge, sharing their previous experience, and ultimately improving the knowledge base the organization. As a result, voice climate is not encouraged, as outsider CEOs are appointed to the new position to deliver and not to consume knowledge. The second reason relates to the fact that outsider CEOs have great social capital outside the organization, but fewer internal social connections (Weng & Lin, 2014). Even when outsider CEOs are intentionally open to listen to what employees have to say to get to know more about the organization, the lack of internal social network compromises the extent to which employees perceive a safe and worth environment to speak up, as bonds of trust and respect have not been yet developed. As per Edmondson (1999), trust and respect are two important attributes in the development of voice climate. That said, outsider CEOs' efforts to promote employee participation may not be perceived by employees, which leads to low voice climate.

I also theorize that voice climate would mediate the relationship between outsider CEOs and innovation. In contrast to what I expected, I did not find support for that hypothesis because the relationship between outsider CEO and exploitative and explorative innovation is not significant. And this is an essential condition for mediation to happen.

Finally, I theorize that CEO duality is negatively associated with voice climate. Contrary to the *power paradox* (Keltner, 2016), which states that as individuals become more powerful, they also become less open and less collaborative with others (Keltner, 2016), the data do not reveal a significant relationship between CEO duality and voice climate. Under the duality model, the results show that the unity of command does not interfere with the development of a

work environment in which employees' participation in current discussions with ideas, suggestions, and thoughts is encouraged.

To conclude, this study reveals that CEOs play an important role in developing a climate that promotes employee voice (answer to the third research question), however not in the expected ways. Similar to Hambrick and Mason (1984), I argue that CEOs, as the organization's main leaders, influence how organizations act and behave. Therefore, CEOs are important actors in building (or destroying) voice climates. The results also show that CEO attributes (such as origin) do not impact innovation through their effect on voice climate (answer to the fourth research question). Such a mechanism requires further investigation.

6.2. Theoretical Contributions

I make several theoretical contributions in this dissertation. I will elaborate on the three major contributions I make to the literature on innovation, upper echelon, and voice. First, this study adds to the innovation literature by identifying the potential impact of voice climate on the firm's breakthrough and incremental knowledge base. This study identifies voice climate as a valuable antecedent for innovation. More specifically, the findings display a positive relationship between voice climate and incremental innovation, in which new knowledge is built upon existing knowledge (Benner & Tushman, 2003; Jansen et al., 2006). In this case, the development of new products and services is grounded in the existing technology, customers, and market. The knowledge trajectory persists, and the body of knowledge grows gradually as a sum of actions. Similar to the style of leadership (You et al., 2020), the organizational structure (Jansen et al., 2006), the HR practices (Popa et al., 2021), and the use of strategic alliances (Phelps, 2010), voice climate is identified as an important factor that facilitates exploitative innovation.

Second, this study adds to the upper echelons literature by identifying the relationship between CEO origin and voice climate. In general, the impact of the origin of the CEO has been explored in relation to organizational outcomes (Zajac & Westphal, 1996; Zhang & Rajagopalan, 2003). The literature has also explored the effects of CEO characteristics on the strategy adopted by the organization (Hambrick & Mason, 1984). When it comes to the CEO's origin in particular, besides its influence on strategy, there is also a stream of research that investigates the impact of CEO origin on external stakeholder behaviors, such as investors, as CEO succession has the potential to communicate future pathways to be followed by the organization (Lubatkin et al., 1989). In this study, in particular, I bring a novel approach, in which CEO origin relates to voice climate by creating an environment that is safe for and worthy of employee participation.

Third, this study contributes to voice studies by identifying antecedents and outcomes of voice climate. Previous research explored voice climate as a construct for teams within the organization (Brykman & Maerz, 2022; Cheng, 2020; D'Innocenzo et al., 2016; Duan et al., 2019; Frazier & Fainshmidt, 2012). To the best of my knowledge, there is only one study that has examined voice climate at the organizational level of analysis (Börnfelt, 2021). This study used semi-structured interviews across 90 organizations in the healthcare and educational sectors to assess voice climate by examining the degree of openness, trust, and support among peers and managers. Only one respondent was interviewed for each organization. In this dissertation, voice climate is assessed using a larger sample, collecting feedback from hundreds of employees, considering multiple industries, and including existing voice mechanisms such as union participation and ESOP that were not examined before. It advances the understanding of the overall employee perception of the environment that encourages voice. Results indicate that voice climate indeed exists as a shared organizational perception. Beyond its impact on

exploitative innovation, voice climate is likely to have the potential to impact multiple other organizational outcomes such as sustainability (Barr, 2004), turnover (Brsyon et al., 2013), and learning (Bashshur & Oc, 2015). This dissertation extrapolates voice studies to the organizational level, joining an emergent stream of research (Börnfelt, 2021). While not a theoretical contribution, this dissertation develops a measure of voice climate using secondary sources (i.e., databases and websites) that can aid future scholars interested in the impact of voice climate on other organizational level outcomes.

6.3. Managerial Implications

This study provides two important managerial implications. First, this study empirically shows that voice climate has a positive association with exploitative innovation. As a result, it reveals that under a high-voice climate, employees perceive an environment that is safe and worth to participate. Such an environment allows employees to express their ideas, suggestions, and thoughts regarding work-related issues. It promotes the generation of all sorts of ideas with the potential to lead to incremental innovation. The data reveal that the promotion of such environment has a positive association with the production of incremental innovation. This is important information for organizations to consider. As an organizational climate can be somewhat controlled or influenced by policies, practices, and procedures (Ostroff et al., 2013), managers and executives would benefit from implementing programs that reinforce voice climate since this can lead to the development of new products and services that more closely fit the current organizational knowledge. Today, the voice literature mainly emphasizes the impact of voice climate on team behaviors (Brykman & King, 2021; D'Innocenzo et al., 2016; Duan et al., 2019; Frazier & Fainshmidt, 2012) in which leadership plays an essential role (Brykman & King, 2021; Liang & Tang, 2010). By promoting voice climate through policies, practices, and

procedures, organizations may achieve outcomes (exploitative innovation) that extend beyond teams' boundaries and leadership domains. By nurturing voice climate to all levels across the entire organization, managers and executives are stimulating the generation of all sorts of ideas with the potential to become an input into the innovation process.

Second, the results of this study provide valuable insights for CEOs and boards of directors regarding the alignment of the CEO's message with strategic goals. In particular, the findings reveal that outsider CEOs have a negative relationship with voice climate. Directors on the board need to be aware that appointing outsider CEOs can be problematic for voice climate. Additionally, outsider CEOs should be more open to listening to what organizational members have to say. For instance, since outsider CEOs have fewer internal social connections (Hambrick & Mason, 1984), it is imperative for them to develop an environment that allows employees to express their ideas, suggestions, and thoughts about work-related issues to strengthen their administration. Such environment may result in an increase in exploitative innovation. For this purpose, outsider CEOs should intentionally foster an environment that brings employees close to them, grounded in support, trust, and respect. To increase innovative actions, CEOs, as the most important leaders in organizations, should communicate not only with the R&D department, but also with the entire organization. The CEO's message to non-R&D employees should be to encourage them to speak up and their message to management at all levels in the organizational hierarchy should be to focus on the benefits of listening to what employees have to say. Furthermore, the management team must understand the importance of acting upon ideas that may surge in their domains.

6.4. Limitations

There are several limitations in this dissertation. I will elaborate on four of them. First, the empirical investigation is cross-sectional. As per Cook and Campbell (1986), even though the results found in cross-sectional settings are realistic, they only indicate a correlation. Therefore, they cannot be used to infer causality. Thus, the hypotheses supported in this study exhibit a correlation or association between the explanatory and response variables only.

Second, to empirically test the theoretical model proposed in this dissertation, I collected data from three different years (2020, 2021, and 2022). That is, each one of the independent variables needed to be lagged one year relative to the dependent variable. I did this since the predictor variables may need one period to be reflected in the outcome variable. For example, I lagged voice climate by one year relative to exploitative and explorative innovation to allow voice climate to have one year to be reflected in the number of formal patent requests at a patent office. As a result, data on the CEO level (CEO origin, CEO duality, CEO age, CEO tenure, and CEO gender) were collected for the year 2020, data on voice climate were collected for the year 2021, and data on the organizational level (exploitative and explorative innovation, firm age, firm size, firm performance, and firm R&D ratio) were collected for the year 2022. Those three years represent a period following the COVID-19 pandemic outbreak. While the full impact of the COVID-19 pandemic on organizations is still under investigation, some findings show a major change in innovation process (The Economist, 2020), and an increase in the complexity and number of challenges faced by CEOs to address such unparalleled situation (Forbes, 2021). For instance, the generation of radical innovative solutions in the healthcare sector was unprecedented. On the contrary, the air travel industry faced huge barriers to implement any sort of innovation (The Economist, 2020). With that said, the innovation process was hugely impacted by external forces. During this period, the innovation process emphasized the role

played by external sources, such as government agencies and customers, to the detriment of inputs from internal sources, such as employees and CEOs. In addition, employees faced job insecurity and feared for their own health and well-being (Neely-Barnes, Hunter, Meiman, Malone, Hirschi, & Delavega, 2021), which had a potential impact on their perception of the work environment. Therefore, the study period corresponds to a time of significant disruption and challenges to organizations and individuals.

Third, to measure voice climate, this study makes use of several indicators from Indeed.com that are collected from the same respondent at the same time, which may generate common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Although my voice climate measurement also includes other indicators from different sources (i.e., Indeed.com, NCEO, USDOL, and Form 10-K annual report) and the data collected by Indeed.com are characterized by spontaneous and anonymous employee participation and by the breadth of employee participation (Sainju et al., 2021), there is still a risk that the results are, to a certain degree, influenced by common method variance.

Lastly, Katila and Ahuja's (2002) approach to measure exploitative and explorative innovation based on patent applications does not fully measure all forms of innovation. There are innovative actions that simply do not result in patent applications or organizations that deliberately choose not to apply for patents (Arundel & Kabla, 1998; Blind et al., 2006; Hussinger, 2006; Lobel, 2013). With that said, some of the organizations in the sample applied for patents in the year 2022, while others did not, which resulted in observations with zero values for exploitative or/and explorative innovation. Nonetheless, to remedy this situation, I use a specific econometric method - Poisson Pseudo Maximum Likelihood (PPML) (Santos Silva &

Tenreyo, 2006) to ensure the estimator remains consistent even with the presence of zero values in observations.

6.5. Future Research

This study offers several avenues for future research. One worthwhile path to follow is the development of a longitudinal study that validates and further investigates the relationships proposed in this dissertation. As discussed in the limitations section, a cross-section study cannot be used to infer causality. Therefore, this study urges future research to examine the proposed theoretical model making use of panel data.

Scholars recognized that both exploitative and explorative innovation lead to learning (Gupta et al., 2006). Organizations can pursue their goals by exploring one of the two approaches. However, research shows better outcomes when implementing both approaches simultaneously (Benner & Tushman, 2003; He & Wong, 2004). As organizations suffer at different levels when adopting one path of innovation at the expense of the other (Gupta et al., 2006), another potential area of research relates to the examination of potential moderators (e.g., rewards, compensation, and human resources practices) that may change the relationship between of voice climate and innovation. Identifying potential moderators that may increase/decrease the voice climate effect on one or both exploitative and explorative innovation will have important managerial consequences.

In addition, in this dissertation, I investigate the relationship between outsider CEO and voice climate, and the results yield a negative significant correlation. Considering that 84.55% of CEOs in the final sample are promoted from within the organization, there is room for future investigations into the effect of insider CEOs on voice climate. More specifically, it would be interesting to investigate the difference between insider CEOs who followed a retired CEO

(followers) and insider CEOs who followed a dismissed CEO (contenders) (Shen & Cannella, 2002). The influence of the insider CEO on voice climate may differ under these circumstances, as follower CEOs tend to be more committed to previous management and maintain the status quo, while contender CEOs are less likely to follow their predecessor's strategies and are open to changes (Shen & Cannella, 2002). With that said, to propose and implement organizational changes, contenders CEOs would encourage voice climate to obtain employees' ideas, suggestions, and thoughts on work-related issues. By promoting voice climate, contender CEOs would also reinforce existing relationships throughout the organization that are necessary to support the implementation of future changes.

Lastly, as organizational climate can be somewhat controlled or influenced by policies, practices, and procedures (Ostroff et al., 2013), another possibility of future research relates to the identification of the effectiveness of such mechanisms on voice climate. The results of such research have the potential to bring strong practical implications to organizations.

6.6. Conclusion

Understanding how organizations can increase the generation of innovation is fundamental. With a sample of 248 large corporations in the United States well distributed across multiple industries, this study investigates the role of two internal stakeholders play in innovation - employees and CEO. Regarding the employees' role, the results reveal a positive relationship between voice climate and exploitative innovation. In other words, as employees perceive a work environment that encourages their participation in current discussions, the generation of ideas, suggestions, and thoughts increases, which leads to an increase in incremental innovation. It allows the organization to take advantage of the success of its current products or services, reinforcing the existing skills, processes, and structures (Jansen et al., 2006), and improving their

portfolio of products or services (Narvekar & Jain, 2006). Regarding the role of the CEOs, as the main leader of the organizations, results show that CEOs influence how organizations act and behave (Hambrick & Mason, 1984), in such a way that they can build (or destroy) voice climates. The findings suggest valuable managerial insights with the potential to guide organizations to enhance the generation of innovation. In sum, voice climate matters to innovation, particularly that which is exploitative. Therefore, the promotion of an environment that encourages employees' participation becomes important to achieve organizational goals.

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