

The influence of the CEO's confidence on the distinctiveness of the strategy

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PREFACE

Over the last 5 months, I have worked hard to write a master thesis that answers the question: *“To what extent does CEO confidence influence the strategic distinctiveness of an organization when institutional investor dedication and CEO power are taken into account.”* The reason why I chose this subject is clear. I believe 100% that confidence is needed to realize dreams and create new opportunities. Confidence is needed to grow and to be different. However, this confidence should not jump to overconfidence or arrogance, as this could lead to opportunistic behavior. In that case, the question is: “Who is going to stop this overconfident CEO?”. This master thesis might give you a little hint.

Furthermore, this study is interesting to read for all listed firms in Europe that want to avoid heavy competition for resources, as strategic distinctiveness could help them with this problem. In addition, it is also an interesting study for all the academics that want to know more about the causes of strategic distinctiveness. I hope that this study inspires more academics/master students to examine strategic distinctiveness, as there is still much information to gain. I do have to admit, that writing a master thesis was more difficult than initially thought. Contrasting my experience at the applied sciences university HAN, I had to learn a new statistical software, new ways of writing and read a lot of articles before I could start writing this study. I am looking forward to completing my Master Strategic Management at The Radboud University and using all this knowledge in the work field. I look back on a great academic journey!

Furthermore, I wish to thank dr. Koen F. van den Oever, who was my supervisor for this master thesis, as he helped me so much with optimizing my master thesis. I never would have thought that a master thesis supervisor would have so much interest in a study of a master thesis student. I also would like to express my appreciation to Dr. Monic M.E.M. Lansu for giving great feedback on my research proposal. I took these feedback comments very seriously and various have been incorporated into this study.

Moreover, I would like to express my gratitude to the library data team which includes Jarno Roenhorst, Maarten Gubbels, and Robin Burgers. They helped me with gathering all the data and they taught me how to work with STATA. Sometimes the data was even too big for Excel, but together we managed to merge all the data and make a great dataset.

With confidence, I present to you, my master thesis. Hopefully, you enjoy and learn when reading.

Bas Visser

Utrecht, June 2022.

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ABSTRACT

Although many studies investigated the influence of CEO confidence on strategic decision-making, less is known about the influence of CEO confidence on strategic distinctiveness. Building upon prior literature and the upper echelons theory, this research proposes that confident CEOs are more inclined to pursue a distinctive strategy than CEOs with lower confidence. Based on a panel data sample from 2009 to 2018 with firms of all European stock indexes, this study concluded that the level of CEO confidence does not affect the strategic distinctiveness of a firm. In addition, I theorized how the positive relation between CEO confidence and strategic distinctiveness is strengthened by the CEO's power, yet mitigated by the institutional investor dedication. This study found support for the moderation effect of CEO power, indicating that CEOs with low and high confidence with much power create more distinctive strategies, but both in a different manner. Further, no support is found for the moderation effect of institutional investor dedication, meaning that dedicated institutional investors do not intervene when confident CEOs pursue a distinctive strategy. The findings of this study contribute to the strategic leadership literature, the upper echelons theory and strategic distinctiveness.

Keywords: Strategic distinctiveness, CEO confidence, institutional investors, strategic leadership, strategic decision making, upper echelons, adverse selection

1 | INTRODUCTION

It is important for firms to be strategic different and strategically similar at the same time (Deephouse, 1999; Gong, 2019; Pan et al., 2019; Zhao et al., 2017). The former is important because it reduces the competition for resources and gives firms more freedom with strategic decisions. The latter is important as organizations need organizational legitimacy within the institutional context. According to Upper Echelons theory, mainly the top executives have great influence on the firm's strategy (Hambrick & Mason, 1984). In fact, the influence of top executives, e.g. Chief Executive Officers (CEOs), has increased in recent years (Quigley & Hambrick, 2015). Some studies also describe how CEO characteristics influence strategic distinctiveness (Delgado-Garcia & De la Fuente-Sabate, 2010; Hiller & Hambrick, 2005; Kang et al., 2021). Nevertheless, the direct influence of CEO confidence on strategic distinctiveness has never been empirically measured. With regard to predicting the extent of strategic distinctiveness, prior literature treated CEO confidence as a moderator variable (Kang et al., 2021), assumed CEO confidence to be rather low (Oehmichen et al., 2021), or saw CEO confidence as a part of CEO narcissism (Zhu & Chen, 2015a), yet never as an independent variable.

This is remarkable, as it is plausible that less/more confident CEOs are inclined to pursue less/more strategic distinctiveness (Hiller & Hambrick, 2005) — the degree to which a firm's strategy and practices differ from the more “normal perceived” strategies and practices of other firms in the same industry (Duran & Kremp, 2016; Kang et al., 2021) — because of the following reason: A distinctive strategy is typically viewed as more uncertain than an industry average strategy, since it isn't tested by other firms (Malmendier & Tate, 2008). Hence, a CEO, should believe that he/she could realize firm objectives when there is more uncertainty. More confident CEOs do have this tendency (Chen et al., 2015; Li & Tang, 2010), as they believe that they are better at tackling difficult challenges (Zhu & Chen, 2015a, 2015b) and often perceive lower risks when pursuing an uncertain strategy (Hiller & Hambrick, 2005; Malmendier & Tate, 2008). Accordingly, a lower/higher degree of CEO confidence could plausibly explain why some firms have less/more strategic distinctiveness than others. Taking into consideration that CEOs have great influence on a firm's strategy (Quigley & Hambrick, 2015) and that confidence is needed to pursue an uncertain strategy (Chen et al., 2015), it is crucial to examine the direct effect of CEO confidence on strategic distinctiveness, instead of considering it as a moderator variable.

Furthermore, it is important to consider institutional investor dedication as a boundary condition, since these investors have influence on the strategic decision-making process (Aggarwal et al., 2011; Borochin & Yang, 2017; McCahery et al., 2016). Building upon the agency theory (Ross, 1973), this study investigates how institutional investor dedication may exhibit a negative moderating effect on the relation between CEO confidence and strategic distinctiveness. According to Bushee (1998), there are “dedicated institutional investors”, which have a long-term orientation, focused portfolio holdings and low portfolio turnover, and there are “transient institutional investors”, which have a short-term orientation, diversified portfolio holdings, and high portfolio turnover (Bushee, 1998;

Connelly et al., 2010; Shi et al., 2017). Oehmichen et al. (2021) argue that institutional investor dedication directly affects the strategic distinctiveness level of an organization. In contrast, this study argues that the dedication of institutional investors negatively moderates the positive relationship between CEO confidence on strategic distinctiveness. Oehmichen et al. (2021) suggest that CEOs shy away from a unique strategy because of career concerns that occur because of a discount in the evaluation of unique strategies by institutional investors. The main reason why dedicated institutional investors have a positive influence on strategic distinctiveness is that they could take away concerns from the CEO, so he/she feels more confident to pursue a more unique strategy. However, a CEO with more confidence feels less institutional pressure (Hiller & Hambrick, 2005) and thus have less need for an institutional investor to take away his/her concerns, as this confident CEO believes he/she is more capable than peers to achieve the objectives of the organization when there is more uncertainty (Chen et al., 2015; Li & Tang, 2010). Thus, the real reason why dedicated institutional investors positively influence strategic distinctiveness is because of the confidence level of the CEO, which is increased for CEOs with low confidence. Furthermore, according to the upper echelons theory (Hambrick & Mason, 1984), it is the CEO and the top executives who primarily make the strategic decisions, not the institutional investor. So it should be evident that a CEO's characteristic has a better direct effect on a strategic decision than a characteristic of an institutional investor.

Next to institutional investor dedication, CEO power is also an important boundary condition, because the CEO power determines the extent to which the CEO could pursue his/her strategic wishes without being held back by the board of directors (board) (Finkelstein & D'Aveni, 1994). This is supported by the Upper Echelons theory (Hambrick & Mason, 1984), which argues that CEOs have a great influence on the firm's strategy, but there are also other decision-makers on the board (Hambrick & Mason, 1984). Therefore, it is very plausible that lesser CEO power results in a less distinctive strategy, even though CEO confidence is high. Consequentially, in addition to the situation in which institutional investor dedication is high (dedicated investors), a lower degree of CEO power could possibly generate a negative relationship between CEO confidence and strategic distinctiveness.

The relationships described above could be crucial to know for a board of directors, (institutional) shareholders, and competitors of a particular firm. In the case of CEO succession, the board has to be careful with picking a confident CEO, as too much strategic distinctiveness could decline the firm performance (Deephouse, 1999; Gong, 2019). Hence, it is interesting for the board to know which variables could positively or negatively moderate the relation between CEO confidence and strategic distinctiveness. For competitors, it is also important information, because less strategic distinctiveness, means more severe competition for the same resources (Pan et al., 2019). For shareholders and institutional investors, the value of the shares is at stake, as the degree of strategic distinctiveness influences firm performance (Wu & Salomon, 2016). In fact, the degree of strategic distinctiveness matters for the whole business ecosystem of a firm, as firms with different business

models can create a higher degree of complementarities, which eventually add more value to the concerning organizations, but also the consumers (Jacobides et al., 2018).

Taking everything into account, this research intends to explain how a certain CEO characteristic could be an antecedent of strategic distinctiveness, taking into account that the effect size of the relationship could be reduced or increased by institutional investor dedication and/or CEO power. Therefore, the research question is: *“To what extent does CEO confidence influence the strategic distinctiveness of an organization when institutional investor dedication and CEO power are taken into account.”*

A quantitative study is performed to answer this research question based on all the companies in the BoardEx database, which are 850 listed firms in European stock indexes. Strategic distinctiveness will be measured along six dimensions (Finkelstein & Hambrick, 1990; Geletkanycz & Hambrick, 1997; Kang et al., 2021): (1) advertising intensity, (2) inventory level, (3) plant and equipment newness, (4) research and development (R&D) intensity, (5) nonproduction overhead and (6) financial leverage. Institutional investor dedication will be measured by subtracting all the shareholdings of dedicated investors from transient investor shareholdings, per firm per year. The CEO's confidence will be measured by the CEO compensation gap (Gamache et al., 2019) and the net buyer proxy (Malmendier & Tate, 2005). Finally, CEO power is measured along 5 dimensions (Crossland et al., 2014; Finkelstein, 1992; Finkelstein et al., 2009; Finkelstein & D'Aveni, 1994): (1) Board duality – the CEO is also chairman of the BOARD (2) relative CEO tenure (3) CEO ownership of company shares (4) how many top executives are also in the BOARD (5) Institutional ownership.

This study aims to bring forth three theoretical contributions. First, I examine a relationship that contributes to the strategic leadership literature, by explaining under which conditions CEO confidence can directly influence the strategic distinctiveness of a firm. In so doing, this study aims to rectify prior research of Kang et al. (2021) which assumed that CEO confidence is a moderator variable for the direct relationship between the name uncommonness of a CEO and strategic distinctiveness. This is problematic, since Kang et al. (2021, p. 466) also describe that “CEOs with uncommon names also tend to have the confidence of exhibiting their difference from peers.” Consequently, it could thus be the confidence of a CEO that has a direct effect on the strategic distinctiveness. Secondly, I also aim to do a contribution to the upper echelons theory (Hambrick & Mason, 1984), by explaining how the confidence of a CEO (a psychological characteristic) and CEO power (an observable characteristic) as an interaction influence the strategic distinctiveness of a firm. Prior strategic management research found that observable and psychological characteristics could influence each other and mitigate or strengthen the preference for certain strategic decisions (Hambrick, 2007; Kang et al., 2021). However, prior research neglected the interaction effect of CEO power and CEO confidence on preferences for certain strategic decisions. Finally, I intend to contribute to the corporate governance literature by showing that more dedicated institutional investors might interfere when confident CEOs try to pursue a distinctive strategy out of their own interest (Aggarwal, 2011; Lartey & Danso, 2022). Oehmichen et

al. (2021) namely called for further research on the relation between CEOs and institutional investor dedication. Oehmichen et al. (2021) might have overestimated the direct effect of institutional investor dedication on strategic distinctiveness, as top executives have the greatest influence on strategic decision-making (Hambrick & Mason, 1984) and institutional investors mainly monitor and sometimes interfere (Aggarwal et al., 2011; Desender et al., 2012). Therefore, this research will incorporate institutional investor dedication as a moderator variable for the direct relationship.

2 | THEORETICAL BACKGROUND AND HYPOTHESES

2.1 | Upper echelons theory and the influence of CEO characteristics on strategic distinctiveness

An important paradox within strategic management and organization theory is how firms strategically manage the demand of both being “similar” and “different from” other organizations in their industry (Deephouse, 1999). Being strategically different means that a firm chooses to deviate from the practices and approaches that are perceived as normal within an industry (Duran & Kremp, 2016). Being strategically similar means the opposite. Previous research has shown that being strategically different has key implications for the acquisition and competition for resources (Lounsbury & Glynn, 2001; Pan et al., 2019), corporate governance (Zajac and Westphal, 1994), firm and stakeholder attention (Ocasio, 1997), reputation (Basdeo et al., 2006), and financial performance (Deephouse, 1999). Nevertheless, research has shown that a balance between strategic difference and strategic similarity is the best for firm performance (Deephouse, 1999).

Since firms can choose whether to be different or similar in comparison with their industry peers, it is important to know who makes strategic decisions within organizations (Duran & Kremp, 2016). According to the Upper Echelons theory, the top executives (e.g. CEOs) are the ones who have the most influence on strategic choices (Hambrick & Mason, 1984). Top executives influence strategic choices, as they are an important factor in the board and co-decide over strategic questions like the strategic direction the organization has to take (Finkelstein & D’Aveni, 1994; Hambrick & Mason, 1984). Furthermore, upper echelons theory assumes that experiences, values, and characteristics greatly influence their interpretations of situations they face (Hambrick, 2007). Because of different interpretations between CEOs, different CEOs, facing the same situation, could make other strategic choices than their CEO peers (Hambrick & Mason, 1984). To understand how CEO characteristics and values eventually influence strategic choices, two interconnected dimensions of the Upper echelons theory need to be considered.

First, dissimilar CEOs interpret a strategic situation differently, based on their values and characteristics. According to Hambrick and Mason (1984), these values and characteristics could be divided into 2 dimensions: (1) psychological characteristics and (2) observable characteristics. These 2 dimensions together are the “cognitive frame” of the CEO. Psychological characteristics are attributes

of a CEO that determines his/her character, like confidence, narcissism, and emotional stability (Hambrick, 2007). Observable characteristics are more measurable sociodemographic, socioeconomic attributes of a CEO that determines his/her character, like age, group characteristics, financial position, and functional tracks (Hambrick & Mason, 1984). For this study, “CEO power” is seen as an observable characteristic, as various observable characteristics (like group characteristics, financial position, and age/experiences) could be seen as an indicator of CEO power. Hence, due to different characteristics, different CEOs will interpret the same strategic situation differently.

Second, The preferred strategic choice of a CEO is based on his/her own interpretation of the concerning strategic situation. The upper echelons theory explains this behavior with the concept of “bounded rationality” (Cyert & March, 1963). This concept states that most strategic situations are uncertain and complex, which makes them not objectively knowable, but they can only be interpreted because CEOs cannot possess and analyze all the information there is (Mischel, 1977). Hence, different CEOs make different strategic choices as they possess less, more, or other information (Hambrick, 2007). One important strategic choice a CEO has to make is the degree of strategic distinctiveness (Deephouse, 1999). Due to bounded rationality in the interpretation of the CEOs, different CEOs will make different strategic choices. (Hambrick, 2007).

According to research by Kang et al. (2021), some observable variables like CEO power, career variety, degree, age, and CEO outsidership do not influence strategic distinctiveness directly, but other variables like CEO gender, work experience, and CEO ethnicity do directly influence strategic distinctiveness. In addition, some studies found that these observable characteristics could be important moderators for the direct relation between psychological attributes and strategic distinctiveness (e.g. Kang et al., 2021; Lee et al., 2014). This is supported by the upper echelons theory (Hambrick & Mason, 1984), as this theory assumes that psychological characters and observable characteristics of CEOs together with bounded rationality eventually influence strategic choices. As is shown in previous examples, the upper echelons theory could explain why CEOs with certain characteristics are more inclined to pursue a more distinctive strategy than peer CEOs. Hence, organizations with different CEOs could pursue different strategies when confronted with the same strategic situation.

2.2 | Agency theory and strategic decision-making

A more economic theory that is of importance for this study is the agency theory. Agency theory explains how to organize business relationships when one determines the work (the principal), and another undertakes it (the agent) (Eisenhardt, 1989; Mole, 2002; Shane, 1998;). Ross (1973) described the agency problem as follows: "an agency relationship has arisen between two (or more) parties when one, designated as the agent, acts for, on behalf of, or as representative for the other, designated the principal, in a particular domain of decision problems." (p. 134). According to Bendickson et al. (2015), it is the pursuit of different interests between the CEOs/managers (agents) and shareholders/owners (principals), that causes the problem. The agency theory assumes that the agents are hired to pursue the principal's

interests, but that agents often pursue their own interests. Furthermore, agency theory assumes that in most strategic situations there is information asymmetry/incompleteness and uncertainty, which results in the three main agency problems: adverse selection, moral hazard, and hold-up (Shane, 1998). For this study, only the first two problems are examined, as these could influence the direct relationship between CEO confidence and strategic distinctiveness.

2.2.1 The influence of adverse selection on strategic distinctiveness

A perspective that is important concerning the influence of institutional investors on the strategic decision-making of organizations is “adverse selection”. Adverse selection is caused by information asymmetry and originates from agency theory (Akerlof, 1970). Adverse selection and agency theory share a lot of assumptions like bounded rationality, risk aversion, and information asymmetry (Akerlof, 1970; Bendickson, 2015). Adverse selection describes how principals, the institutional investors in this study, react to information asymmetries concerning the agents, in this research the CEOs. The agent in this case has more information than the principal, causing adverse selection (Oehmichen et al., 2021). Adverse selection is an important concept in this study, as it influences the decision of institutional investors whether to invest in an organization or not. Below is explained what an institutional investor is and how different types of institutional investors try to mitigate the adverse selection problem.

According to Johnson et al. (2010), institutional investors are the most active type of principals, who engage with the executives (Becht et al., 2010) and initiate shareholder proposals (David et al., 2007) in order to improve the firms’ governance (Goranova & Ryan, 2014) and firm performance (Clark & Crawford, 2012). According to Bushee (1998), there are two types of institutional investors. Firstly, the “dedicated institutional investors”, which have a long-term orientation, only have investments in a few industries and have a low portfolio turnover. As dedicated investors more often engage in private conversations with the firm’s CEO (to understand the strategy of the organization) and give the CEO more independence from the short-term pressures, institutional investors are more open to uncertainty and less risk-averse to information asymmetry (Higgins & Gulati, 2006; Zhang & Gimeno, 2016). According to Oehmichen et al. (2021), these investors are therefore also more open to distinctive strategies, as these strategies are more uncertain. Secondly, “transient institutional investors”, have a short-term orientation, diversified portfolio holdings in many industries, and high portfolio turnover (Helwege et al., 2012; Kang, Luo, & Na, 2018). Transient investors more often increase the pressure on CEOs to follow more evaluated common strategies as they want to reduce uncertainty (Helwege et al., 2012; Kang, Luo, & Na, 2018) and lay pressure on the CEO to achieve short-term performance (Zhang & Gimeno, 2016). Hence, they are also less open to distinctive strategies, as these strategies are more uncertain.

The reason why distinctive strategies are more uncertain than more similar strategies for institutional investors is twofold. Firstly, distinctive strategies are hard-to-value for institutional investors. Institutional investors cannot compare the practices and approaches of this organization with

another organization as it is distinctive in the industry (Humphery-Jenner, 2014). Secondly, there is more information asymmetry. The agent knows much more about his/her business than the principal, as the principal has no comparative example. Hence, the institutional investor cannot check if the distinctive strategy is of high-quality or low quality (Benner & Zenger, 2016). This has the following consequences:

First, the capital market will evaluate the distinctive strategies with a discount, as fewer institutional investors are willing to invest in the hard-to-value organization because of information asymmetry (Akerlof, 1970; Benner & Zenger, 2016). Secondly, the adverse selection causes transient investors to avert distinctive strategies, as transient investors are primarily interested in short-term profits and short-term reactions of the capital market (which evaluates distinctive strategies with a discount) (Bushee, 1998; Zhang & Gimeno, 2016). As a consequence, risk-averse CEOs could prefer a more similar strategy, as CEOs are limited by the capital market when having a distinctive strategy. Also, CEOs are being held responsible (by the investor) for the firm's (low) performance when the distinctive strategy doesn't pay off (Oehmichen et al., 2021).

In contrast to the upper echelons theory, adverse selection and agency theory don't take into account the characteristics of CEOs (Akerlof, 1970; Bendickson, 2015). This is rather unfortunate, as previous research showed that institutional investors influence the strategic decision-making of organizations (through CEOs)(e.g. Brooks et al., 2018; Han et al., 2021; Oehmichen et al., 2021). More dedicated institutional investors have the motivation and capacity to more closely monitor the strategic decision-making of organizations (Bushee, 1998; Dharwadkar et al., 2008; Hoskisson et al., 2002). This has 3 important consequences. First, these dedicated investors reduce the information asymmetry between the principal and the agent, since they engage more with the CEO and the organization (Shi et al., 2017). Second, they reduce the risk-aversion of the principal because they can now better value the organization and they reduce the risk-aversion of the agent because they put less short-term performance pressure on the CEO (Oehmichen et al., 2021). Third, I assume that more dedicated institutional investors get to know more about the bounded rationality of the CEO and the characteristics of a CEO, as they engage more with each other (McCahery et al., 2016). This is important, as the upper echelons theory assumes that CEO characteristics determine how CEOs view and interpret a strategic situation which eventually influences which strategic choice is being made (Hambrick & Mason, 1984).

2.2.2 The influence of moral hazard on institutional investors

The second main problem within agency theory is "moral hazard" (Shane, 1998). Just as adverse selection, moral hazard is caused by information asymmetry and it also originates from agency theory (Akerlof, 1970; Amit et al., 1998). The moral hazard problem describes how an investor (principal), who invests in an organization, is not able to observe whether the CEO is working in the interest of the shareholder or whether the CEO is planning to guarantee his/her own interests (Amit et al., 1998). It furthermore describes how a principal does now know if an agent is making sensible strategic decisions

(Amit et al., 1998). Moral hazard and agency theory share a lot of assumptions like self-interest, goal conflict, and information asymmetry (Bendickson, 2015).

As principals do not know if the agent is working for its own interests or the principal's interests, principals might want to become more involved with the organization (Amit et al., 1998). Barry et al. (1990) found that more involved principals indeed mitigate the moral hazard problem. By engaging more with the CEO, they could overcome their goal conflicts. I assume therefore that due to the moral hazard problem, institutional investors have an incentive to become more dedicated to the organizations in which they invest. In addition, the moral hazard problem also explains that principals do not know if the agent is making sensible strategic decisions, because of information asymmetry (Amit et al., 1998). As a consequence, CEOs could persuade institutional investors of a certain strategic decision by telling them it's in their interest, while in fact, it is their own interest. Especially confident people are inclined to moral hazard behavior (Lartey & Danso, 2022). Aggarwal (2011) found that more dedicated institutional investors increase the transparency of the CEO and the board, which thus mitigates the moral hazard problem.

2.3 | influence of CEO confidence on strategic distinctiveness

Previous research already found that different CEO characteristics could lead to different degrees of strategic distinctiveness (Delgado-Garcia & De la Fuente-Sabate, 2010; Finkelstein et al., 2009). This is in line with the upper echelons theory which states that CEO characteristics and CEO values have a great influence on strategic choices and eventually firm performance (Hambrick & Mason, 1984). Some CEOs prefer more strategic distinctiveness compared to others. One CEO characteristic that could positively influence the strategic distinctiveness of a firm is greater CEO confidence (Hiller & Hambrick, 2005; Kang et al., 2021; Malmendier & Tate, 2008). According to Stajkovic (2006), confidence is the quality of being certain of your abilities, supported by hope, self-efficacy, optimism, and resilience. Confident people thus have hope for the future and have reason to have hope, because confident people believe that their capabilities to execute a specific task within a given, specific context are good enough (Stajkovic, 2006). Confident people also believe that they have the capabilities to cope successfully in the face of change, adversity, and risk. When faced with change, adversity, and risk, confident people stay optimistic. Thus, more confident people are more optimistic and resilient (Stajkovic, 2006). As a result, the confidence of a CEO could have a great influence on strategic distinctiveness.

However, not all CEOs have great confidence. Previous research states that it is not necessarily needed for a CEO to have great confidence in order to create more firm performance (Chamorro-Premuzic, 2012; He et al., 2021). On the other hand, prior research has also found that there is a significant relationship between more confident CEOs and the creation of more value for the firm (Bharati et al., 2016). One of the reasons why more confident CEOs could create more firm value, is

because they are more inclined to unique strategies. A certain degree of uniqueness in the strategy is namely a crucial condition for the firm's long-term value creation (Barney, 1986; Litov et al., 2012).

A more distinctive strategy is also more uncertain, as the strategy is not tested by other firms (Malmendier & Tate, 2008). More confident CEOs do care less about this uncertainty, as they believe more easily that firm objectives can be realized when there is more uncertainty (Chen et al., 2015; Li & Tang, 2010). CEOs with greater confidence also perceive lower risks when pursuing an uncertain strategy (Hayward & Hambrick, 1997; Hiller & Hambrick, 2005; Malmendier & Tate, 2008). Secondly, pursuing a distinctive strategy as an organization comes with challenges other organizations haven't faced yet. CEOs with greater confidence on average do care less about this, because they believe they are better at tackling difficult challenges and realizing the firm objectives than others (Devers et al., 2020; Zhu & Chen, 2015a, 2015b). Finally, research has shown that CEOs are inclined to imitate their CEO peers in the same industry when some CEO peers have higher charisma (Gupta & Misangyi, 2016). More confident CEOs however have less need to imitate others (Hiller & Hambrick, 2005). Confident people also have less need for validation from other people (Stajkovic, 2006). This is also shown by the fact that more confident CEOs are more innovative than less confident CEOs (He et al., 2021). For these reasons, more confident CEOs could positively influence the strategic distinctiveness of an organization.

The other way around, less confident CEOs are more inclined to more similar strategies concerning the industry average (Hiller & Hambrick, 2005). This is since less confident individuals are more likely to imitate the behavior of others (Bandura, 1977). According to Cupák et al. (2021), less confident individuals are more inclined to risk-averse financial behavior. Due to this, the less confident CEOs are more inclined to similar strategies as they are being held accountable for the (low)-firm performance. This relationship is reinforced by the fact that more unique strategies show success in the long term and not in the short term (Oehmichen et al., 2021). Less confident CEOs could therefore have career concerns when contemplating a more distinctive strategy.

Kang et al. (2021) argue that it is "the uncommonness of a CEO's name" that directly affects strategic distinctiveness and that CEO confidence is a positive moderator for this relationship. Regarding the Upper Echelons theory, this is partly correct, as the relational self-theory suggests that people with uncommon names are more comfortable with being different from peers (Chen et al., 2006). However, as Kang et al. (2021, p. 466) justly describe "CEOs with uncommon names also tend to have the confidence of exhibiting their difference from peers." And in order to pursue a distinctive strategy, a CEO should put aside institutional pressures (Hiller & Hambrick, 2005), feel more capable than others to realize firm objectives when there is more uncertainty (Chen et al., 2015; Li & Tang, 2010) and perceive lower risks when pursuing an uncertain strategy (Hayward & Hambrick, 1997; Malmendier & Tate, 2008). Having regard to the definition of Stajkovic (2006), confidence is thus needed. Therefore, it is not the name uncommonness of the CEO that has a direct influence on strategic distinctiveness, but it is the confidence of the CEO that has a direct impact on the strategic distinctiveness. An uncommon name could be a factor relating to confidence as Kang et al. (2021) describe, yet there are many other

factors that are related to confidence (Massoni, 2014). The found direct results in the study of Kang et al. (2021) of CEO name uncommonness on strategic distinctiveness are therefore not unexpected, as CEO confidence and CEO name uncommonness are related.

In contrast with the view that greater CEO confidence leads to more strategic distinctiveness, one could argue the opposite. If an organization currently has a more similar strategy and good firm performance, then a more confident CEO might not want to change this strategy, as this CEO believes in his/her own strategic judgment and leadership capabilities (Park et al., 2011). This is reinforced by the flattery and opinion conformity the CEO will get from other executives if the firm's strategy works well. This could result in path-dependency by which it increasingly becomes more and more difficult to change the strategy (Sydow et al., 2009). I argue that this opposing view is stronger when the power of the CEO is low. When the CEO for example has less power with regard to the board, it is less likely that the strategic wishes of the CEO are being pursued (Golden & Zajac, 2001). Even though a confident CEO prefers not to imitate other organizations (Hiller & Hambrick, 2005), the confident CEO still believes that he/she has the capabilities to achieve the firm objectives with a more similar strategy (Chen et al., 2015) and could handle the adversity (Stajkovic, 2006). The confident CEO could as a consequence pursue a more similar strategy.

Taking this all together, I still would argue that more confident CEOs do generate a more distinctive strategy, despite the opposing view of path dependency, as the arguments which support this statement are more profound. To further support this idea, a more confident CEO could escape the path-dependency in the light of new opportunities, since the CEO believes more easily that he/she can realize firm objectives when there is more uncertainty (Chen et al., 2015; Li & Tang, 2010). Therefore,

Hypothesis 1 (H1). *The more confident a CEO is, the greater the firm's strategic distinctiveness.*

2.4 | The moderating effect of CEO power

For the first hypothesis, this research stated that more confident CEOs create more distinctive strategies concerning the industry average. Yet, attention should be paid to the degree of power the CEO has. CEO power in this research is “the capacity of individual actors to exert their will” (Finkelstein, 1992, p. 506). The upper echelons theory suggests that the influence of psychological CEO characteristics (CEO confidence) on strategic choices should be viewed in conjunction with observable CEO characteristics (CEO power) (Hambrick & Mason, 1984). Previous research also showed that CEO power could be a good moderator for a direct relationship in which the independent variable is a psychological characteristic (e.g. Kang et al., 2021).

According to the Upper Echelons theory and also other previous research, CEOs always have a major influence on the strategic decisions of an organization (Finkelstein et al., 2009; Hambrick & Mason, 1984; Quigley & Hambrick, 2015). On the other hand, Zhu and Chen (2015b) found that the influence of CEOs on strategic decision-making is often contingent on their power (relative to the

board). This could be explained logically: if a CEO is confident and would like a more distinctive strategy, but does not have the power relative to the board, they could be held back by the board to make this strategic decision (Finkelstein & D'Aveni, 1994). Boyd (1994) supports this as he found that a powerful CEO could dampen the effect of the board's influence on strategic choices. When there is a powerful CEO, less discussion and debate takes place between the executives, and the strategic preference of the CEO predominates (Zahra and Pearce, 1989).

CEO power may manifest in several forms, such as CEO duality, which means the CEO is also the chairman of the board (Finkelstein & D'Aveni, 1994). CEO duality increases the power of the CEO as research found that these CEOs are more capable of receiving support from other directors and top executives in pursuing their strategic preferences (Finkelstein & D'Aveni, 1994). In addition, CEO tenure increases the power of the CEO, as they have personal connections with important stakeholders (Dutta et al., 2015) and have firm-specific knowledge (Finkelstein, 1992). Furthermore, a CEO could also be supported by more top executives on the board, as these top executives could support his/her arguments. (Westphal & Zajac, 2013)

While I argued in the previous section that confident CEOs tend to prefer distinctive strategies, I expect that their power will enable them to pursue this strategic preference, strengthening the effect of CEO confidence on strategic distinctiveness. Therefore,

Hypothesis 2 (H2). *CEO power moderates the relationship between CEO confidence and the firm's strategic distinctiveness, such that under high CEO power, more CEO confidence results in more strategic distinctiveness.*

2.5 | The influence of institutional investor dedication as moderator

In paragraph 2.3 is hypothesized that a CEO with low confidence would prefer a less distinctive strategy over a more distinctive strategy. In addition, this study also hypothesized that the CEO could convince the other (non-), executive board members, to pursue a less distinctive strategy if he/she has enough power. This is in line with the upper echelons theory, which found that the characteristics of CEOs and other executives have a major influence on the strategic decision-making of a firm (Hambrick & Mason, 1984). Previous research showed that institutional investors in their turn influence the strategic decision-making of organizations (through CEOs)(e.g. Brooks et al., 2018; Han et al., 2021; Oehmichen et al., 2021). For example, more dedicated institutional investors encourage CEOs to pursue a more distinctive strategy (Oehmichen et al., 2021), can change dynamics within the board (Garcia-meca et al., 2017), and put less pressure on CEOs which has as a result that CEO turnover is lower (Helwege et al., 2012).

Extant literature suggests that it is the primary goal of an institutional investor to generate a good return on investment (e.g. Borochin & Yang, 2017). Accordingly, institutional investors evaluate organizations and their strategies to find profitable investment opportunities (Benner & Zenger, 2016).

As explained in an earlier paragraph (2.2), different types of institutional investors (dedicated & transient) differ in their evaluation criteria when choosing an organization to invest in and also how to deal with the adverse selection problem. With regard to the positive relationship between CEO confidence and the firm's strategic distinctiveness, the relation is likely mitigated when the institutional investors are dedicated. This has the following reasons:

First, one concern of a CEO when contemplating a more distinctive strategy, is that they feel responsible for (low) firm performance (Aghion et al., 2013). Because of this responsibility, CEOs could have career concerns when contemplating a distinctive strategy. When the distinctive strategy doesn't pay off, a bad reputation, dismissal or less compensation could be the consequence for the CEO (Oehmichen et al., 2021). Confident CEOs are more inclined to believe that they can realize firm objectives when there is more uncertainty, but CEOs with less confidence don't (Chen et al., 2015; Li & Tang, 2010). A more dedicated institutional investor could take away this concern, as they put less short-term performance pressure on the CEOs and focus more on the long-term because successes of the distinctive strategy are then more visible (Higgins & Gulati, 2006; Oehmichen et al., 2021; Zhang & Gimeno, 2016). More dedicated institutional investors also have a higher tolerance for failure (Conelly et al., 2019), with the consequence that CEO turnover is lower with more dedicated investors (Oehmichen et al., 2021). Dedicated institutional investors are also engaging more with the CEO, causing information asymmetry and adverse selection to decrease (Benner & Zenger, 2016) and the investor gets to know the character of the CEO. This is notable, as more confident CEOs are more inclined to moral hazard and opportunistic behavior (Lartey & Danso, 2022). Thus, if a CEO wants to pursue a distinctive strategy because of their own interest, they cannot make use of information asymmetry to achieve this interest. This reduces the moral hazard problem (Amit et al., 1998; Byford, 2017). A dedicated investor could notice this opportunistic behavior and possibly intervene. In fact, previous research found that more dedicated institutional investors terminate poorly performing CEOs who strived for their own interests and have a positive influence on the transparency of the board (Aggarwal et al., 2011; Borochin & Yang, 2017). A confident CEO might thus not be able to pursue his/her distinctive strategy. This is especially the case when the CEO's power is low and thus not able to convince the board of his/her strategic wishes (Zhu and Chen, 2015b).

Second, less confident people have more need for the validation of others than confident people (Stajkovic, 2006). When contemplating the strategic distinctiveness, one could find validation in similar strategies. More dedicated institutional investors engage more with the CEO than transient investors (Becht et al., 2010). They are also more willing to understand the complex business situations an organization is in and want to be involved in strategic decision-making because they want to reduce information asymmetry (Bushee, 1998; Shi et al., 2017). When contemplating the distinctiveness of the strategy, dedicated institutional investors could thus validate the distinctive strategy of the CEO, making it more accessible for a CEO with less confidence to choose a distinctive strategy. For CEOs with high confidence who prefer a distinctive strategy and have less need for validation, it could be problematic

that the institutional investor is so involved with the strategic decisions and the sense-making of the complex business situation. Namely, more confident CEOs show more opportunistic- and moral hazard behavior (Lartey & Danso, 2022) and more dedicated institutional investors monitor and interfere when CEOs show opportunistic or/and moral hazard behavior (Aggarwal et al., 2011; Desender et al., 2012). The institutional investor could have a different cognitive frame, causing them to see and interpret the business situation differently, resulting in different strategic preferences (Hambrick & Mason, 1984). Hence, when the institutional investor is dedicated, more CEO confidence might not result in a more distinctive strategy.

Conversely, the positive relationship between CEO confidence and strategic distinctiveness is likely to be strengthened when the institutional investor is transient. Transient investors would like to have a good return on investment in a short time (Zhang & Gimeno, 2016). Causing them to pressure CEOs to achieve short-term performance (Higgins & Gulati, 2006). Research has found that the success of more distinctive strategies is visible in the long run, but less in the short term (Oehmichen et al., 2021). This knowledge and pressure could cause less confident CEOs to choose a more certain and thus less distinctive strategy. CEOs with high confidence do care less about this pressure, as they believe they can realize firm objectives, also when there is more uncertainty (Chen et al., 2015; Li & Tang, 2010).

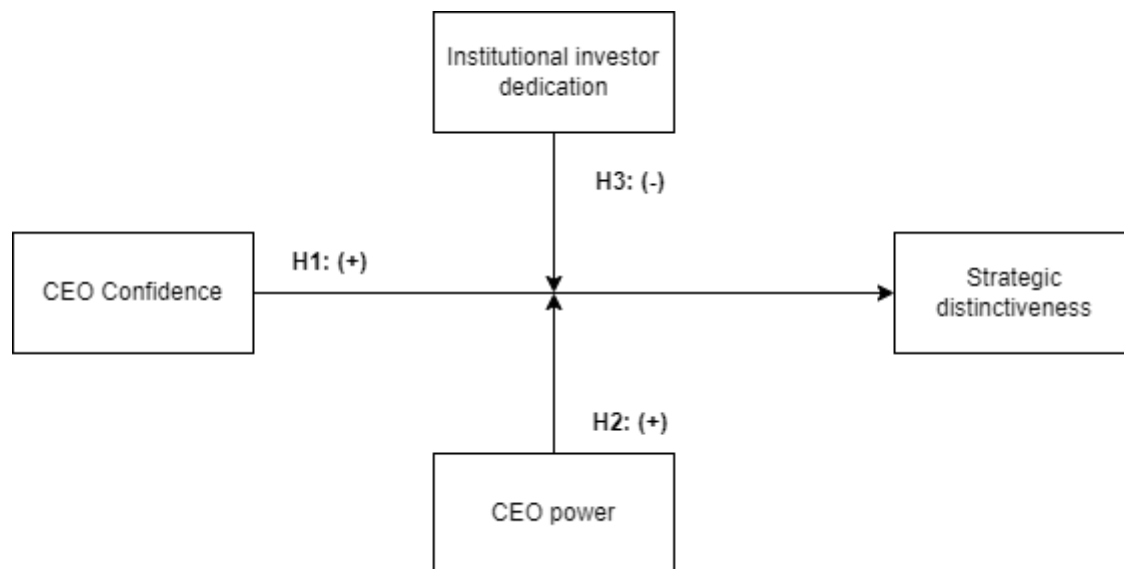
Building upon this information, I expect dedicated institutional investors to mitigate the positive relationship between CEO confidence and strategic distinctiveness. Whereas transient institutional investors are more likely to strengthen the positive relationship between CEO confidence and strategic distinctiveness. Therefore,

Hypothesis 3 (H3). *Institutional investor dedication moderates the relationship between CEO confidence and the firm's strategic distinctiveness, such that when institutional dedication is high, the direct effect is mitigated.*

2.6 | Conceptual model

Figure 1 displays how hypotheses 1, 2 and 3 form one conceptual model, based on the described literature. The conceptual model shows the direct relationship between the CEO's confidence and strategic distinctiveness. This direct relationship is contingent on the institutional investor's dedication and the power of the CEO. The direction of the effects are displayed between the brackets.

Figure 1: Conceptual model



3 | RESEARCH DESIGN

To examine whether the hypotheses could be confirmed or failed to confirm, I conducted a quantitative study based on existing databases of WRDS (BoardEx & Thomson One) and DataStream (EIKON). A quantitative study is necessary to answer the central question of this research, as it enables me to compare multiple CEOs with different levels of confidence and their unique influence on strategic distinctiveness. Furthermore, a quantitative study makes it possible to more accurately give insights into how the moderators affect the direct relation. Something crucial in this research, since more CEO confidence might not always lead to more strategic distinctiveness as suggested by (Hiller & Hambrick, 2005). In addition, with quantitative research, it is possible to increase the validity of the results by adding control variables to the data that limit the influence of confounding and other extraneous variables. Next to validity, the reliability of this study is also improved by quantitative research, as all the variables in the conceptual model are estimated with objective measures. For example, asking a CEO or a board member about the level of confidence of the CEO might have resulted in biased answers. In contrast, databases provide the same measures for each CEO. These measures however could plausibly have less face validity.

3.1 | Sample and time frame

The sample frame consists of European listed firms in the DAX 40, FTSE 250, EUROTOP 100, CAC 40, AEX (25 firms), ATX (20 firms), BCN global 100, BEL-20, IBEX 35, ISEQ overall (20 firms), LUXX (10 firms), OMX index (30 firms), OMX Helsinki 25, OX OMX 20, PSI-20, SBF 120, SMI (20 firms) and the WIG 20. WRDS (BoardEx) is needed for this study to gain insights into the individual profiles of board members of the selected firms. Unfortunately, the Radboud University has limited access to WRDS which means I only have access to the BoardEx European stock indexes. In addition to the BoardEx data, DataStream (EIKON) and WRDS (Thomson One) are used to complement the dataset. Important to note, is that the EUROTOP 100 could also cover some of the organizations in the other stock indexes, as it is the stock index of the 100 organizations in the EU with the highest market capitalization. Though, it is an important stock index, as some important European organizations might not be in the other stock indexes. These circa 850 companies are an important benchmark for the state of the economy of Europe (European Central Bank, 2007). According to Govindarajan (2019), these companies with a bigger market capitalization have more established business models and strategies. This is important, as these organizations make it possible to make a distinction between more distinctive and more similar strategies. Hence, these stock indexes form a relevant sample to answer the central question of this study. It is remarkable that this sample is hardly used in prior strategic distinctiveness studies. Some strategic distinctiveness studies are done in specific European countries (e.g. Delgado-Garcia & De la Fuente-Sabate, 2010; Ferruz et al., 2008; Sachet-milliat, 2016), but most studies include Chinese firms (e.g. Deephouse, 1999; Kang et al., 2021; Pan et al., 2019) or firms from the USA (e.g. Durand & Kremp, 2016; Oehmichen et al., 2021). This study thus gives new insights into strategic distinctiveness in the European market.

The timeframe of the data is from 2009 until 2018. Observations from 2008 and earlier are not included, as this increases the number of missing observations. Secondly, observations from beyond 2018 are not included, because there is no institutional investor dedication data for these years yet (Bushee, 2022). Observing the data of firms over a more extended period provides several important insights: First, more observations could be attained. Second, the stability of the chosen strategy could be better assessed. Third, the data is more reliable as outliers and influencers are spotted more easily. Furthermore, all the financial firms are excluded (which have a SIC code of 60 to 69), as they could bias my results (Oehmichen et al., 2021). The reason for excluding the financial firms (SIC code 60 – 69) is twofold: First, financial firms have a different business model (Fama, 1992), which has as a consequence that strategic distinctiveness could not be measured well with the described variables for strategic distinctiveness. Second, financial firms could be the institutional investor for other firms in the sample (Chen, 2021), causing biases in my data. Finally, the sampling method is “convenience sampling” as the organizations in the stock indexes are merely selected based on their market capitalization.

3.2 | Dependent variable

In this research, being *strategically distinctive* means that a firm deviates from the practices and approaches that are perceived as normal within an industry (Durand & Kremp, 2016). To empirically measure this concept, the approach of Crossland et al. (2014), Finkelstein and Hambrick (1990), and Kang et al. (2021) is followed. Strategic distinctiveness in this case is measured along six dimensions:

- a) *Advertising intensity*, which is measured by advertising expense per year/sales per year (metric measure);
- b) *Inventory level*, measured by the level of inventories per year/sales per year (metric measure);
- c) *plant and equipment newness*, measured by net plant and equipment per year/gross plant and equipment per year (metric measure);
- d) *research and development intensity*, measured by R&D expense per year/sales per year (metric measure);
- e) *nonproduction overhead*, measured by selling, general, and administrative expense per year/sales per year (metric measure);
- f) *financial leverage*, measured by total debt/equity (metric measure).

According to Finkelstein and Hambrick (1990), the concept of strategic distinctiveness is well captured by these dimensions, as they give insight into important strategic decisions that are controllable by a CEO. These dimensions are also used in many studies concerning strategic distinctiveness, which is positive as this shows the stability of these dimensions, which is important for the reliability of this research. However, in this research, strategic distinctiveness is measured based on only 5 dimensions, in which advertising intensity is not present. Even though EIKON has a lot of information about the European organizations, a pre-analysis of the data showed that there are too many missing's with regard to advertising intensity. Earlier research from Kang et al. (2021) shows the same problem. Their research showed that strategic distinctiveness could also be measured based on 4 dimensions, excluding R&D and advertising intensity, as highly consistent results were found. The missing dimension is a limitation of this study, as a missing dimension within a variable negatively affects the content validity (Heale & Twycross, 2015). On the other hand, previous studies suggest that the convergent construct validity between these dimensions is good, as the described dimensions all point to strategic distinctiveness (e.g. Crossland et al., 2014; Kang et al., 2021).

To operationalize strategic distinctiveness along each dimension, it is necessary to measure the absolute difference between the distinctiveness indicator figures of the firms and the average figure in the industry for each year in order to attain the strategic distinctiveness indicator for each dimension. Thereafter, a standardized score is created (standard deviation is 1 and the mean is 0) per firm per year per dimension of strategic distinctiveness by industry, and finally, all 5 indicators are summed up together and a composite average measure of strategic distinctiveness is computed (Crossland et al., 2014; Geletkanycz & Hambrick, 1997; Wowak et al., 2016). EIKON is used to measure the concept of strategic distinctiveness.

3.3 | Independent variable

In the literature *CEO confidence* is defined as a CEO who has the quality of being certain of his/her abilities, supported by hope, self-efficacy, optimism, and resilience (Stajkovic, 2006). To empirically measure this concept, I followed the approach of Malmendier & Tate (2005) and Gamache et al. (2019). Most studies with regard to CEO confidence have followed one popular approach of Malmendier & Tate (2005) and measured CEO confidence based on how a CEO exercises his/her stock options (Humphery-Jenner et al., 2016; Kang et al., 2021; Lee et al., 2017). The longer a CEO holds his/her unexercised options, the more confident the CEO is about the future, as the CEO thinks the options are undervalued. Next to exercising stocks, Malmendier & Tate (2005) also empirically prove that CEO confidence could be measured with the “net buyer proxy”. This is the number of company shares a CEO buys and sells in one year. If the CEO buys more shares than what he/she sells, the CEO is seen as confident. In this research, CEO confidence is measured, among others, with the net buyer proxy, as pre-analysis of the data shows that BoardEx has too much missing data concerning CEO stock options exercising. Data about the net buyer proxy is collected from BoardEx. In order to increase the reliability, CEO confidence is also measured following the approach of Gamache et al. (2019). CEO confidence, in this case, is measured by using the CEO's compensation and subtracting the compensation of the second-highest-paid top executive of the firm. Previous research shows that confident CEOs tend to create a larger gap between themselves and the other top executives (Chen et al., 2015; Hayward & Hambrick, 1997). In this study, there are thus 2 dimensions of CEO confidence: net buyer and CEO compensation gap. Previous studies showed that both dimensions measure CEO confidence, but that the convergent construct validity might be low (Hill et al., 2014). There is also less content validity, as there is a lack of evidence in proving that these 2 dimensions together adequately cover all the content that it should with regard to CEO confidence

In order to compute a composite measure of CEO confidence, a few steps are necessary. Starting with the net buyer proxy, it is necessary to measure the absolute difference between the bought and sold company stocks of the CEO per firm per year. In STATA a standardized score per firm per year is created. For the CEO compensation gap, the second-highest-paid top executive compensation is subtracted from the CEO compensation and the absolute difference is measured. Thereafter, a standardized score for each firm per year is created. Third, a one-dimensionality reliability analysis is done, to check if these 2 dimensions are measuring the same concept. This was however not the case, thus solely the CEO compensation gap measure is used, as Gamache et al. (2019) show that this indicator could measure CEO confidence on its own. Though, to examine the robustness of my findings, I used the net buyer proxy as an alternative measure of CEO confidence to validate my results. Finally, if the one-dimensionality should have been positive, the 2 standardized scores of the compensation gap and the net buyer proxy would have been summed up and a composite average measure of CEO confidence would have been made. Heale and Twycross (2015) argue that internal consistency and equivalence are important reliability indicators in quantitative research. This concept would have been measured with 2

variables that are not used together in other research studies. Therefore, the one-dimensionality reliability analysis is done. Another one-dimensionality test that is done, is a test that includes the indicators of CEO power and CEO confidence, to examine whether these indicators measure the same concept¹. This is however not the case. The results of the one-dimensionality tests are also examined by another researcher to increase the “confirmability”, which is an important aspect of reliability according to Lincoln and Guba (1985).

3.4 | Moderator variables

3.4.1 | CEO power

CEO power is the capacity of a CEO to exert his/her will (Finkelstein, 1992). To capture CEO power empirically, three commonly used formative indicators that point to this concept are used (Cannella & Shen, 2001; Sauerwald, 2014; Zhang & Rajagopalan, 2003). This includes CEO duality, CEO tenure, and the number of top executives that are also on the board. The latter indicator is officially measured as the total number of board directors who joined the board under the leading CEO (Sauerwald, 2014). This variable is very difficult to measure with WRDS (BoardEx), therefore, the third variable is replaced by the percentage of board directors who are also top executives in the organization. As described earlier, this is one of the indicators of CEO power according to Finkelstein et al. (2009). Table 1 provides an overview of the three formative indicators. In some research, CEO power is measured with 5 formative indicators, also including institutional ownership and CEO ownership of company shares (Finkelstein et al., 2009; Kang et al., 2021). These fourth and fifth indicators are not included in this research, as these indicators are too difficult to measure with the limited access I have to BoardEx. Moreover, pre-analysis of the data also shows that there is a lot of missing data when using these indicators. This is of course a limitation and it could negatively affect the content validity. Nevertheless, previous research showed that CEO power could also be measured with 3 dimensions, excluding CEO ownership and institutional ownership (Haynes and Hillman, 2010; Sauerwald et al., 2014; Zhang and Rajagopalan, 2003). According to Finkelstein (1992), these three variables are good formative indicators, as they are directly linked to the influence a CEO could have in decision making. To make a composite measure along the 3 dimensions, the scores are standardized per dimension and these standardized scores are summed up to create an average score.

¹ Thanks to my second reader, who suggested that CEO confidence and CEO power could be comparable factors in a single construct, this one-dimensionality test is employed.

Table 1: Coding scheme CEO power

<i>Variable</i>	<i>Description</i>	<i>Code</i>
<i>CEO duality</i>	The CEO is also the board chair in the same year	0 = Not board chair 1 = Board chair
<i>CEO tenure</i>	The tenure of the CEO in one specific year	Ratio number of CEO tenure
<i>Top executives on Board</i>	percentage of board directors who are also top executives in the organization	Ratio number

3.4.2 | Institutional investor dedication

The second moderator is *institutional investor dedication*. As described earlier, institutional investors are investors who not only have company shares but also engage with executives, initiate shareholder proposals, and want to improve the firms' governance. Institutional investors which are very active in these activities and have a long-term vision are called dedicated and the investors who are not, are called transient (Bushee, 1998). There are no measures needed to calculate which institutional investor is dedicated and which transient, because Bushee (2022) has an up-to-date classification of institutional investors and transient investors based on portfolio turnover and holding concentrations of institutional investors from 1998 to 2018. Most studies that include the dedication of institutional investors use this classification (e.g. Borochin & Yang, 2017; Chan et al., 2013; Oehmichen et al., 2021). When I merge this with the ownership information from WRDS (Thomson One), it becomes clear which firm has what kind of institutional investors. Similar to prior strategic management research, this study solely focused on the dedicated and transient investors, in which transient investors are coded 0 and dedicated investors 1 (e.g., Connelly et al., 2017; Zhang & Gimeno, 2016). The classification of Bushee is primarily based on the portfolio rate (how long is an institutional investor engaged with a firm) and the focus of the portfolio holdings (in how many firms did the institutional investor invest). Because an organization could have multiple transient and dedicated investors, the institutional investor dedication is measured by subtracting all the shareholdings of dedicated investors from transient investor shareholdings, per firm per year, similar to prior research (e.g. Brochet et al., 2015; Eccles et al., 2014).

3.5 | Control variables

First of all, in order to enhance the internal validity of this research, I limited the influence of confounding variables by adding multiple CEO-level variables that could influence the strategic decision-making of the CEO. The first control variable is *CEO gender* (1 is male CEO and 0 is female or another gender), as the CEO's self-conception could be influenced by gender (West & Shults, 1976). With regard to the upper echelons theory, gender could thus influence the way of interpretation, which in turn results in different strategic choices when a CEO is confident (Hambrick & Mason, 1984). For the same reason, this research controlled for *CEO age*. Yang et al. (2016) show that older CEOs feel

more institutional pressure and therefore make more conventional strategic decisions. In addition, the research by Nawaz (2021) showed that the educational background of the CEO has a great influence on the strategic choices being made. According to Nawaz (2021), this is caused by different strategic preferences, which results in different interpretations of business situations. Therefore, this study also controlled for *CEO degree* (Ph.D. set to 1, master's set to 2, bachelor's set to 3, and others set to 4).

Second, I also controlled for multiple firm-level variables that could influence the direct relation of CEO confidence and strategic distinctiveness. The first firm-level control variable is *firm age* as research by Kang et al. (2021) shows that older firms feel more institutional pressure and want to conform to conventions. In addition, this study controlled for *firm size* (measured as total sales), as larger firms feel more institutional pressure and also deal with more institutions which could create inertia. (Dass, 2000; Wu et al., 2021). Furthermore, this study controlled for *firm performance* (measured as return on assets), as organizations are more inclined to strategic innovations in response to poor firm performance (Cyert & March, 1963).

Finally, I also controlled for one institutional variable. This is the *quasi-indexer investor* variable (measured as the sum of shareholdings by quasi-indexer investors). This study controlled for this third institutional investor classification of Bushee (1998), as it could disturb the moderating effect of institutional investor dedication (Oehmichen et al., 2021). These quasi-indexer investors have low portfolio turnover (which could suggest it is a dedicated investor), but diversified portfolio holding (which points to a transient investor). The data platform DataStream (EIKON) and WRDS (BoardEx and Thomson One) provided the data for these seven control variables

3.6 | Data analysis strategy

The analyses of this study are conducted with the statistical program STATA. STATA is used instead of SPSS because the data had to be transformed in a way SPSS couldn't and some formulas were necessary to attain the variables needed for this study. Second, STATA was necessary because this program is more convenient to merge data, which is of great importance, as the data stems from DataStream (EIKON) and WRDS (BoardEx). The data of the different datasets are eventually merged on firm level. To test the hypotheses several regression techniques are used. Regression analysis is possible, as CEO confidence and strategic distinctiveness are both standardized metric variables (Hair et al., 2019). Before starting with the regression analysis, a one-dimensionality reliability analysis is conducted, as the variables of CEO confidence should measure the same concept. The concept of CEO confidence is used when Cronbach's alpha is higher than 0.6 (Hair et al., 2019). This was however not the case. With regard to the regression analysis, CEO confidence and strategic distinctiveness are both standardized on the indicator level, which are later summed up to create an average composite measure. So the variables are mean-centered, yet this is not 100% accurate as an average is taken from the standardized indicators. Mean-centered variables are convenient for the moderator variables in hypotheses 2 and 3 as with moderators in the model, the main effects are not interpretable as it was

before. The variables, other than the moderator variable that is being measured, are set to 0. Because the variables are mean-centered (because of the standardization), the regression variate is calculated with the mean of the other variables. The regression equation for the first hypothesis is (control variables excluded):

$$STRATEGIC\ DISTINCTIVENESS_{i,t} = \beta_0 + \beta_1 \cdot CEO\ CONFIDENCE_{i,t} + \epsilon_{i,t}$$

In addition, the user-controlled estimation technique “hierarchical” is employed to include the other control variables and moderator variables, to see if the direct relation is robust. The hierarchical technique is applied because it is theory-driven and user-controlled (Hair et al., 2019). The first variables included in the model are the control variables and moderator variables, in order to examine whether variation in strategic distinctiveness is caused by these variables. The second model is expanded with the independent variable. In the third model, the interaction term of CEO power and CEO confidence is added. In the fourth model, the interaction of institutional investor dedication is added, but CEO power is omitted. In the fifth model, the interaction term of institutional investor dedication and CEO confidence is added. Models 6 till 8 contain polynomials of the independent and interaction variables. The complete regression equation (without the control variables) for the first hypothesis is:

$$STRATEGIC\ DISTINCTIVENESS_{i,t} = \beta_0 + \beta_1 \cdot (X_1)CEO\ CONFIDENCE_{i,t} + \beta_2 \cdot (X_2)CEO\ POWER_{i,t} + \beta_3 \cdot (X_3)INSTITUTIONAL\ INVESTOR\ DEDICATION_{i,t} + \beta_4 \cdot X_1X_2 + \beta_5 \cdot X_1X_3 + \beta_6 \cdot X_1X_2X_3 + \epsilon_{i,t}$$

Before examining statistical and practical significance, the assumptions of regression analysis are checked (Hair et al, 2019). First, linearity is examined by looking at the polynomials. Second, constant variance is examined by looking at the scatterplot. Lastly, the normality of the error term distribution is examined by implementing a skewness and kurtosis test.

Furthermore, in model 9 a random effect model is employed. This random effect model attempts to reduce the variability of the within-group effect by pooling across groups and then focuses on the best estimate of the distribution of effects across the set of groups (Hair et al., 2019, p. 326). Therefore, it assumes that the unit-specific effects are distributed around a common mean value, which is constant across time (Date, 2022). Random effect models have more bias than fixed effects, but it is less sensitive to outliers and achieves a more stable estimate of variation. Another advantage of random effect models is, that they control better for pseudoreplication than fixed effects. Random effect models also take into account that there could be more factors/values of the independent variable than in the current sample (University of Nottingham, 2019). This research employed a random effect model instead of a fixed effect model as the Hausman test showed that this model is more appropriate (Park, 2009). The Hausman test is presented in appendix 4.

As the Hausman test displayed that random effects are more appropriate than fixed effects, it could be the case that significant cases are found, but that these are dependent on firm-specific cases

such as culture or other firm-related aspects. Fixed effect models control for these firm-specific cases, but because of the result of the Hausman test, these are not included in my models. Therefore, this study does not only take the year variables into account with the regression analysis, but also dummy variables for the variables industry and country are made. If (one of) these variables are significantly different over year, industry, or country, then the significant effect might be due to one of these variables. In this manner, compensation is made for the fact that the random effect model is chosen over the fixed effect model.

3.7 | External validity

Next to the content validity of this research, there are also limitations to the external validity. The first limitation is based on culture. In my sample, there are mainly countries with a Rhenish management style (Albert & Gonenc, 1996), and all are based in Europe. Management culture could differ per country/continent (Beugelsdijk et al., 2017) and therefore the results would probably be different in another sample. Because of this difference, variables could react differently to each other in another continent. Hence, one should be careful with projecting the results of this study to firms in another continent. Second, the results of this study are only applicable to listed firms because of the following reasons: (a) Institutional investors have an impact on the direct relation and there are scarcely institutional investors in non-listed organizations, (b) CEO confidence couldn't be measured with the CEO compensation gap and the net buyer proxy, as there could be great differences between listed and non-listed firms (Buzby, 1975), (c) CEO power could also not be measured with the current indicators as non-listed firms usually have a smaller board or do not even have a board (Chen, 2022). Finally, there is also sampling bias, as some countries are better represented in the dataset because of missing data. From some stock indexes, more information than other stock indexes could be gathered, which causes some countries to be underrepresented in the dataset. From the 850 firms in the initial sample, I could gather full observations from only 71 firms. My panel data contains 10 years, from 2009 till 2018, yet from these 71 firms, this study could gather data for only 4,5 years on average, which gives 318 observations in total. This confirms that some industries and countries have a high likelihood to be underrepresented in the sample.

3.8 | Research ethics

In this study, several principles are applied in order to ethically conduct this research. First of all, this study could be inspected by contacting the Radboud University Faculty of Management if there are any ethical questions about this study. Second of all, I made sure that there is adequate referencing to the intellectual property from other studies and data sources, by applying the principles of the American Psychological Association (APA). Not only to increase the dependability of this research but also because of ethical reasons. Furthermore, in this study, no information is falsified and no plagiarizing has taken place. In order to improve the research ethics, the limitations of this study are made clear. In this

research, only quantitative secondary data is used and the names of the CEOs are not visible in the data, so the General Data Protection Regulation (GDPR) has not been violated. Everyone with access to WRDS (BoardEx & Thomson one banker) and DataStream (EIKON) has access to this data and could replicate the study. Finally, all the people that helped me write this research have done this voluntarily.

4 | RESULTS

4.1 | Data analysis

After collecting all the data, a data examination is performed as suggested by hair et al. (2019). The first step of the data examination procedure is analyzing the missing values. The initial descriptive statistics are shown in appendix 1. This examination showed that 643 cases of 2278 cases did not have any valid values on strategic distinctiveness, so these cases could be deleted (Field, 2018). However, as I do not want to reduce the statistical power of my research, the cases are not directly deleted. Therefore, pairwise deletion is used, as this only deletes the missing value for the variable where it is missing. Next to missing values, outliers and influencers could also have a great impact on the analysis. These outliers and influencers are easily spotted as most variables are standardized. All the observations with a standard deviation above 3.29 are examined as these could impact the regression line (Field, 2018). Error outliers are immediately deleted, but interesting outliers are not, as these could simply be part of the reality (Hair et al., 2019). Also, just as in the study of Oehmichen et al. (2021) winsorizing is also applied to some variables, as some figures are in the realm of reality, yet their figure could negatively affect the regression line (Field, 2018). Winsorizing is applied to the following variables: strategic distinctiveness, CEO compensation, firm age, CEO age, and CEO tenure. In addition, every variable that scored negative on firm size is replaced with zero. The final descriptive statistics are shown in table 2.

According to Hair et al. (2019), regression analysis with a sample size above 200 is less sensitive to the violated assumption of normality. This study has a sample size of 365 firms over 10 years and every variable has more than 600 observations, so this study is also less sensitive to the violated assumption of normality. However, a violation of normality could affect the regression line and homoscedasticity. Therefore, the normality of the residuals is examined to identify problematic issues. The analysis of skewness and kurtosis showed that all variables either have skewness, kurtosis, or have both. Therefore, the confidence intervals are bootstrapped (Field, 2018).

Moreover, when examining the data, I also performed several one-dimensionality tests which are shown in Appendix 2. The first one-dimensionality test showed that CEO compensation and the net buyer proxy do not measure the same concept (Cronbach's $\alpha = .0043$). It is therefore that CEO confidence is only measured by CEO compensation. In addition, an extra one-dimensionality test is performed to examine whether CEO confidence- and CEO power indicators measure the same concept. This test confirmed that CEO confidence and CEO power are two different concepts in this study (Cronbach's $\alpha = .4101$) and CEO confidence has the lowest average interitem correlation.

Table 2: Descriptive statistics after reforming outliers

<i>Variable</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
<i>CEO confidence</i>	2278	-.0146557	.9139957	-3,223721	3,2887
<i>Strategic Distinctiveness</i>	1635	-.0008533	.2984836	-1,354586	3,29
<i>Institutional investor dedication</i>	626	-.128495	.1430048	-.7278413	.8369064
<i>CEO power</i>	2259	.0292584	.5926174	-1,14086	3,557093
<i>CEO gender</i>	2050	.9691815	.1303901	0	1
<i>CEO age</i>	2032	55,25231	7,091655	32,5	76
<i>CEO degree</i>	1530	2,383007	.986355	1	4
<i>Firm performance</i>	2143	.6323565	75,74777	-909,71	3072,11
<i>Firm age</i>	1896	31,90295	35,59596	0	149
<i>firm size</i>	2160	1.43e+07	2.50e+07	0	3.55e+08
<i>Quasi indexer investor share</i>	613	.3411918	.2880673	0	.9830459

4.2 | Estimating the results

Preparatory to conducting the regression analysis a partial correlation matrix is created, which is shown in table 3, to check for correlations in advance. This allows me to check certain theories and assumptions described earlier. This correlation matrix shows that there is no significant relationship between the variables *CEO confidence* and *strategic distinctiveness* ($r = -0,032$, $p > .1$). This is in contrast with Hambrick and Hiller (2005) who concluded that CEO confidence could lead to more strategic distinctiveness. Remarkable is that just as in the study of Kang et al. (2020) the correlation is negative. This means that when CEO confidence increases, strategic distinctive increases as firms on average score lower on the indicators of strategic distinctiveness than the average. Important to note is that a negative sign for strategic distinctiveness doesn't mean less strategic distinctiveness, as both positive values and negative values show that a firm differs from the industry average. Further examination of the data shows that only *CEO confidence* and the indicator *plant equipment newness* of strategic distinctiveness has a significant relationship ($r = -0,170$, $p < .001$). In contrast to Oehmichen et al. (2021), but in line with my assumptions, the moderator variable *institutional investor dedication* did not directly correlate with strategic distinctiveness if controlled for other variables such as CEO confidence ($r = 0,035$, $p > .1$). For the moderator variable *CEO power*, the partial correlation matrix showed that there is a negative relation between CEO power and CEO confidence ($r = -0,169$, $p < .01$). This is in line with the one-dimensionality test which showed that CEO power and CEO confidence do not measure the same concept. As both moderator variables correlate with the independent variable, multicollinearity is checked in the regression analysis. In line with Dutta et al. (2015) and Finkelstein (1992) CEO power

positively correlates with CEO degree and CEO age, as they conclude that CEOs with more (firm-specific) knowledge and experience gain more power.

With regard to the control variables, there are some remarkable results. Not all control variables have a relationship with the dependent variable. For example, there is no partial correlation between *firm age* and the dependent variable, which is in contrast with Kang et al. (2021) who concluded that older firms could experience more institutional pressure. Moreover, *firm performance* is not correlated with strategic distinctiveness. This is in contrast with Cyert and March (1963), who concluded that firms with poor firm performance are more inclined to strategic innovations. The same counts for *Firm size*, which does not correlate with the dependent variable. This is the opposite of what Wu et al. (2020) and Dass (2000) found, as they concluded that bigger firms experience more institutional pressure and also deal with more institutions which could create inertia. The control variables *CEO age*, *CEO degree*, *CEO gender*, and *Quasi indexer investor* support the described theories as they are significantly correlated ($r = -0,17, p < .01$ & $r = 0,11, p < .05$ & $r = 0,10, p < .1$ & $r = -0,10, p < .01$). To summarize, all CEO-level variables significantly correlate with strategic distinctiveness, yet none of the firm-level variables do. Therefore, other variables than CEO confidence could create a significant regression effect between CEO confidence and strategic distinctiveness. This is partly checked in the random effect model where the variables year, industry, and country are taken into account.

Table 3: Partial correlation matrix

Variable	1	2	3	4	5	6	7	8	9	10	11
1 CEO Confidence	1										
Strategic											
2 Distinctiveness	-0.032	1									
3 CEO Power	-0.169***	0.085	1								
Institutional investor											
4 dedication	0.088	0.035	-0.056	1							
5 CEO gender	-0.059	0.102*	0.008	0.073	1						
6 CEO age	0.127**	-0.170***	0.131**	0.191***	-0.030	1					
7 CEO degree	0.001	0.113**	0.126**	-0.009	-0.190***	0.050	1				
8 Firm performance	0.032	0.079	-0.005	-0.010	0.020	0.020	0.017	1			
9 Firm age	0.009	-0.050	0.070	0.027	-0.210***	-0.020	-0.174***	0.050	1		
10 Firm size	0.233***	-0.060	0.049	0.043	-0.100*	0.140**	-0.010	-0.040	0.138**	1	
Quasi indexer											
11 investor	-0.002	-0.104*	-0.012	-0.609***	-0.04	0.220***	-0.028	0.010	-0.010	-0.193***	1

Legend: * $p < .1$, ** $p < 0.05$; *** $p < 0.01$

4.3 | Testing the assumptions of regression analysis

When conducting the regression analysis, 3 assumptions of regression analysis are examined, before conducting the final regression analysis. The results are presented in appendix 3. The first assumption of regression analysis is the assumption of normality for the dependent variable. I already found that this variable is skewed and has kurtosis, yet this does not matter if a robust regression analysis is conducted, as this study has more than 1600 observations for the dependent variable. Second, homoscedasticity is also examined and the data has been found homoscedastic by the Breusch–Pagan/Cook–Weisberg ($X^2(1) = 0,01$ $p > 0.1$) as presented in Appendix 3. This is also made visible by the scatterplot which shows nicely divided points of residuals. Linearity, as the third assumption, is examined with polynomials. The polynomials showed that the overall model fit doesn't increase when these are included, as the adjusted R-squared decreases when included. The highest adjusted R2 is ($R^2 = 0.102$). The first model that includes the quadratic version of institutional investor dedication is model 6 shown in appendix 3.

Furthermore, multicollinearity is also examined, as the partial correlation matrix showed that the independent variable correlates with the moderator variables. Fortunately, All the VIF values are below 2,4 with an average of 1,45. This means that the level of multicollinearity will not decrease the total variance explained (Hair et al., 2019).

4.4 | Testing the hypotheses

In order to test the hypotheses of this study, another regression analysis is done, shown in Tables 4 and 5. In this analysis, a few things are changed with regard to the regression analysis which tested the assumptions of regression. First, only models 1 to 5 are included, as the polynomials are no longer needed. Secondly, there is homoscedasticity, but the dependent variable is non-normal. Therefore, a robust regression analysis is applied. Also, model 6 is included, which contains a random effect model.

In table 4 an overview is given of the overall model fit. This table shows that the dependent variable regresses significantly on the control variables ($F = 4,15$, $p < 0.01$). The addition of the independent variable CEO confidence however doesn't make this regression model better as the change in the F statistic is insignificant ($F = 0,18$, $p > 0.1$). The addition of the interaction term CEO power and CEO confidence (model 3) does significantly improve the model ($F = 4,25$, $p < 0.05$). The interaction term of Institutional investor dedication and CEO confidence does not increase the overall model fit significantly. This interaction term doesn't increase the overall model fit when included after model 2 ($F = 0,15$, $p > 0.1$), but also not after model 3 ($F = 0,04$, $p > 0.1$). This is also shown in table 5, which shows that after model 3, the adjusted R-squared doesn't increase anymore.

Table 4: Overall model fit

Model	F	Block df	Residual df	Pr > F	R2	Change in R2
1	4.15	9	308	0.0000	0.1119	
2	0.18	1	307	0.6704	0.1128	0.0009
3	4.25	1	306	0.0402	0.1330	0.0202
4	0.15	1	306	0.6945	0.1134	0.0007
5	0.04	1	305	0.8392	0.1331	0.0001

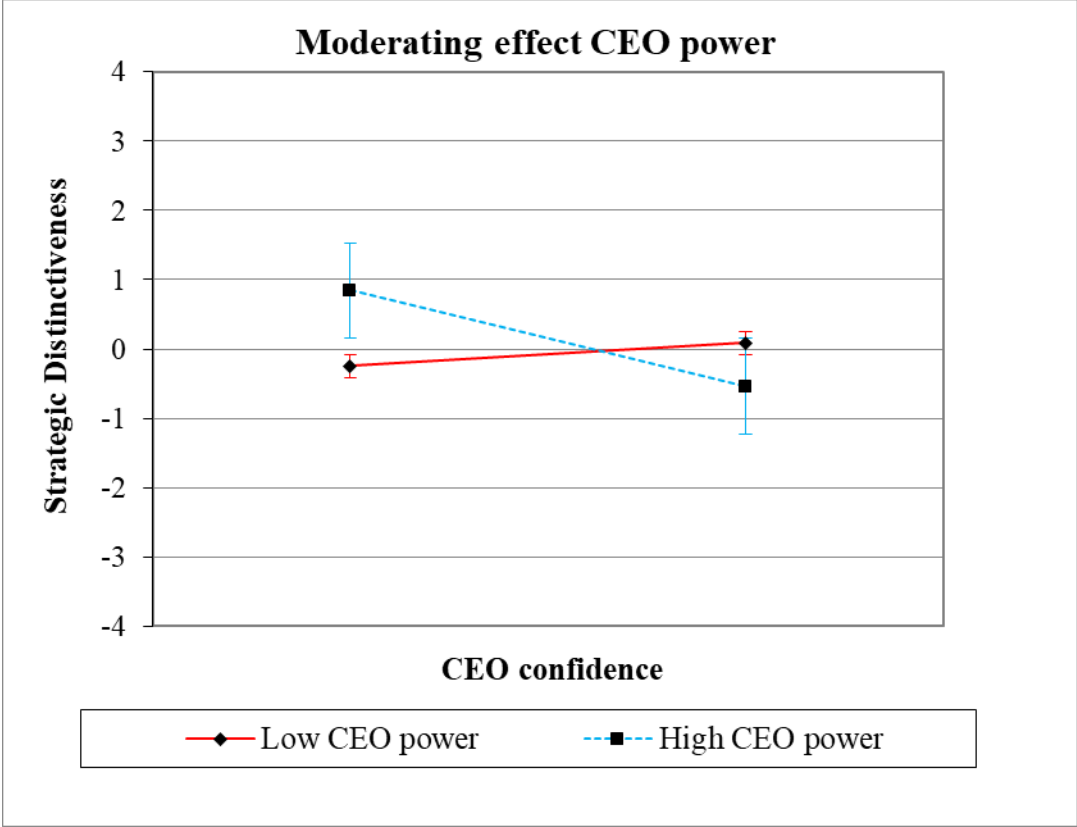
Note 1: F statistics are in reference to the previous F

Note 2: Model 4 is in reference to model 2, not model 3

The comprehensive results of the regression analysis are shown in table 5. The first model shows that the dependent variable regresses on the control variables. These control variables are taken into account in model 2 where CEO confidence is added. The first relationship tested is hypothesis 1, where the dependent variable should regress on CEO confidence. The regression analysis shows that the dependent variables does not regress on CEO confidence ($\beta = -0.007$, $p = 0.578$) in model 2. In none of the other models becomes the independent significant. Therefore, hypothesis 1 is not supported. The β for this hypothesis shows that the relationship is negative. For this dependent variable it means that if CEO confidence increases with one unit, strategic distinctiveness increases by -0.007 units. More precisely, the standardized $\beta = -0.032$. So as the confidence of the CEO increases with 1 standard deviation, strategic distinctiveness will increase by -0.032 standard deviation. As the highest and lowest values for strategic distinctiveness are 3.29 and -1.35 , it becomes clear that CEO confidence does not have that great impact and that the insignificant results are logical. (Notice that strategic distinctiveness increases, as both positive values and negative values show that a firm differs from the industry average. It only means that firms with CEO confidence in general, but not significantly, invest less in R&D, plant equipment newness, inventory, nonproduction overhead and have less debt (these measures are part of the indicators of strategic distinctiveness as described earlier)). The second relationship tested is hypothesis 2. Hypothesis 2 predicts that CEO power will strengthen the positive relationship between CEO confidence and strategic distinctiveness. In model 3 it becomes clear that when accounted for the moderator-, control and independent variables, the interaction effect of CEO power with CEO confidence is significant ($\beta = 0.055$, $p = 0.040$). This effect is still significant in model 5, when institutional investor dedication is added ($\beta = -0.056$, $p = 0.033$). Therefore, hypothesis 2 is supported at first glance, with a standardized beta $\beta = -0.154$ in model 5. Theoretically, this means that the direct relation of CEO confidence on strategic distinctiveness decreases when CEO power increases (Hair et al., 2019). However, as both negative and positive values indicate more strategic distinctiveness, it

becomes more difficult to interpret. Therefore the results of this significant relationship are shown in figure 2 below.

Figure 2: Moderating effect of CEO power



Important to note is that the independent-, dependent- and moderator- variables are not 100% accurate centered, as can be seen in the descriptive statistics. This is due to the fact that the indicators of the variable are standardized but the variable itself is not due to non-normality. The control variables are mean-centered for this graph, so that the outcome is more accurate. Figure 2 shows a cross-over interaction, which means that, holding other variables at their means, CEO power increases the magnitude of the non-significant main effect of CEO confidence on strategic distinctiveness. When CEO power is low, the strategic distinctiveness level is constantly about zero. However, when CEO power is high, given that CEO confidence is low or high, it is more likely that there is more strategic distinctiveness. This is also likely to be the case, as model 5 displays that CEO power has a small significant effect on strategic distinctiveness (($\beta = 0.051$, $p = 0.090$).

This figure also shows that strategic distinctiveness is at its highest level when CEO power is high and CEO confidence is low. This is in contrast to hypothesis 2, which predicts that CEO power increases the magnitude of the main effect in which lower CEO confidence should thus not lead to higher strategic distinctiveness. However, since high CEO power and high CEO confidence as interaction effects also increase the strategic distinctiveness level, hypothesis 2 is partly supported. Moreover, it is interesting to note that the direct effect of CEO power on strategic distinctiveness is positive, yet when

CEO confidence is taken into consideration and is high, the relation is negative. This means that CEOs with low confidence and high power relatively invest more in the indicators of strategic distinctiveness and that CEOs with high confidence and high power invest less in those indicators.

The third relationship tested is hypothesis 3. Hypothesis 3 predicts that more dedicated institutional investors will weaken the positive relationship between CEO confidence and strategic distinctiveness. Model 3 and 5 display that the interaction term of CEO confidence with institutional investor dedication is non-significant. Furthermore, model 4 shows that the relation is non-significant positive ($\beta = 0.049$, $p = 0.694$) and model 5 shows that the relation is insignificant negative ($\beta = -0.021$, $p = 0.839$). More precisely, The standardized β in model 5 of the interaction term is -0.018 . All the coefficients are thus small and insignificant. Therefore, hypothesis 3 is not supported. Also the direct effect of institutional investor dedication on strategic distinctiveness is not significant in model 5 ($\beta = 0.062$, $p = 0.571$) with an standardized β of 0.042 . This means that if the institutional investor dedication increases with 1 standard deviation, strategic distinctiveness will increase by -0.042 standard deviation. As the highest and lowest values for strategic distinctiveness are 3.29 and -1.35 , one could comfortably say that institutional investor dedication barely has an impact on the level of strategic distinctiveness. This is however in contrast with Oehmichen et al. (2021) who found that institutional investor dedication does significantly affect strategic distinctiveness. Oehmichen et al. (2021) in fact found a strong effect, in which a 1 standard deviation growth in institutional investor dedication resulted in a growth of strategic distinctiveness. It could therefore be the case that the significant found effect is true for the S&P 900, the sample of Oehmichen et al. (2021), but not for the European stock indexes. For this reason, I analyze the strategic distinctiveness levels per country, industry (and also still year) in the additional analysis to examine whether the effects could differ for these variables.

In the last model, model 6, random effects are employed to account for pseudoreplication and statistical independence. Normal nested/hierarchical regression doesn't account for this and sees each observation as an independent observation. With random effects, this study accounts for the fact that observations of firms over years are correlated with each other and not statistically independent. Comparing model 5 and model 6 with each other, one could notice that there are no big changes in these models. The most remarkable change is that strategic distinctiveness does not significantly regress on CEO power anymore ($\beta = 0.033$, $p = 0.198$). On the other hand, the interaction term of CEO power and CEO confidence remains significant in the same direction with a rather similar coefficient as in model 5 ($\beta = -0.052$, $p = 0.037$). Important to note is that fixed effects are not appropriate for this data. Therefore, I could not examine whether these interaction effects stem from differences within a firm culture. The culture of a firm could be the reason why the interaction term of CEO confidence and CEO power is true. This is an important note, as strategic distinctiveness regresses significantly on CEO-level variables. These CEO-level differences across firms could have influenced my dependent variable. The dummy variables country and industry also show some significant effects in model 9, which confirms

the idea that differences within a firm culture could have an impact on the significant found effect. These dummy variables are further interpreted in the additional analysis.

Table 5: Regression analysis of strategic distinctiveness

<i>Variables</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>	<i>Model 9</i>
<i>Variables added</i>	Control variables	Independent	Interaction term 1. CEO power	Interaction term 2. Investor dedication	Both interaction terms	Random Effects
<i>CEO degree</i>	0.022** (0.010)	0.022** (0.0100)	0.021** (0.009)	0.022** (0.010)	0.021** (0.009)	0.023 (0.015)
<i>CEO gender</i>	0.274** (0.121)	0.269** (0.122)	0.311** (0.124)	0.260** (0.119)	0.316*** (0.122)	0.270*** (0.103)
<i>CEO age</i>	-0.007*** (0.002)	-0.007*** (0.002)	-0.007*** (0.002)	-0.007*** (0.002)	-0.007*** (0.002)	-0.005* (0.003)
<i>Firm size</i>	-6.47e-10 (4.20e-10)	-5.75e-10 (4.03e-10)	-4.41e-10 (3.83e-10)	-5.63e-10 (3.98e-10)	-4.43e-10 (3.84e-10)	-5.81e-10 (4.60e-10)
<i>Firm performance</i>	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.001)
<i>Firm age</i>	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
<i>Quasi indexer investor share</i>	-0.100* (0.052)	-0.100* (0.052)	-0.080 (0.054)	-0.097* (0.053)	-0.080 (0.054)	-0.033 (0.057)
<i>Institutional investor dedication</i>	0.060 (0.107)	0.070 (0.107)	0.060 (0.107)	0.063 (0.113)	0.062 (0.108)	0.050 (0.125)
<i>CEO power</i>	0.041 (0.028)	0.039 (0.029)	0.052* (0.030)	0.041 (0.030)	0.051* (0.030)	0.033 (0.025)
<i>CEO confidence</i>		-0.007 (0.016)	-0.010 (0.0140)	-0.001 (0.023)	-0.013 (0.020)	-0.017 (0.021)
<i>Interaction term CEO confidence X CEO power</i>			-0.054** (0.027)		-0.060** (0.026)	-0.052** (0.025)
<i>Interaction term CEO confidence X institutional investor dedication</i>				0.045 (0.114)	-0.021 (0.106)	-0.030 (0.134)
<i>Constant</i>	0.089 (0.190)	0.085 (0.188)	0.047 (0.191)	0.096 (0.184)	0.0399 (0.186)	-0.033 (0.213)
<i>Observations</i>	318	318	318	318	318	318
<i>Number of boardid</i>						71
<i>Adjusted R-squared</i>	0.0859	0.0839	0.1018	0.0816	0.0990	
<i>R-squared</i>	0.112	0.113	0.113	0.133	0.133	

Legend: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note 1: Robust standard errors in parentheses

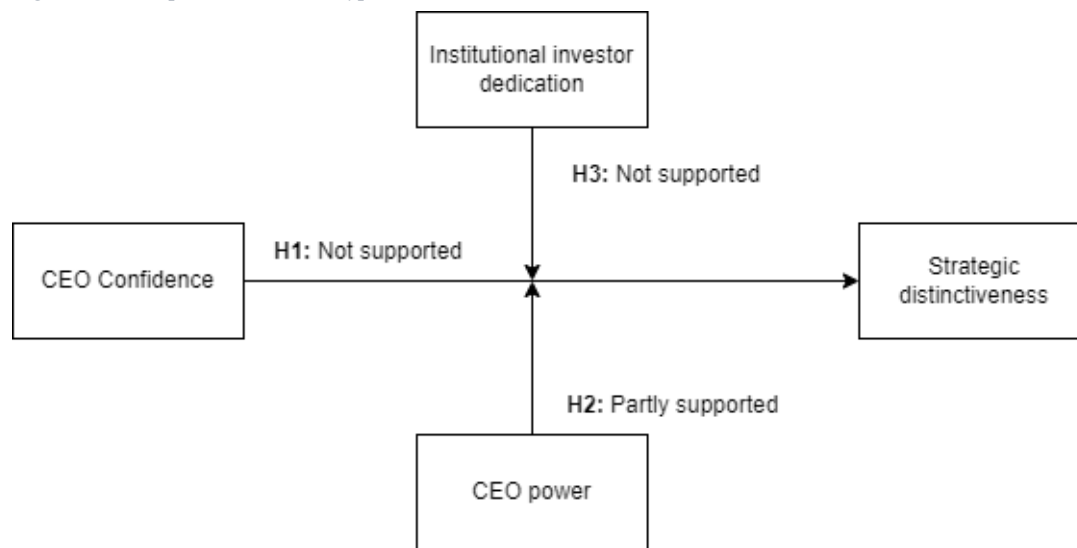
Note 2: Model 4 is in reference to model 2, not model 3

Note 3: Adjusted R-squared is measured with the non-robust option

Note 4: Firm, year, country and industry random effects are included in all models

To summarize the results of the hypotheses, figure 3 is presented below to visually display which hypotheses are confirmed and which hypotheses are failed to confirm.

Figure 3: Conceptual model with hypotheses results



4.5 | Additional analysis

Prior regression analysis made clear that hypotheses 1 and 3 are not supported and hypothesis 2 just partly. In this section, I employ and examine multiple regression analysis with fewer, other, and transformed variables to investigate in more detail why no significant results were found. All analyses are employed with hierarchical regression analysis and random effect analysis. In this section, only the full model of the hierarchical analysis is shown. In appendix 6 the overall model fit is shown per hierarchical regression and in appendix 7 the random effect models are shown for these additional analyses. Model 10 shows the regression analysis without the institutional investor variables. This model is made because this analysis has 996 full observations instead of 318. Model 11 shows the regression analysis in which the dependent variable is a square root, as this transformation showed to be the most robust option for skewness and kurtosis. Model 12 also presents a transformed dependent variable, in which no distinction is made between negative and positive values, as both indicate strategic distinctiveness. Model 13 presents the dependent variable in which R&D expenses are excluded, as most of the missing data in the strategic distinctiveness variable are related to R&D expenses which could narrow the full observation of the regression. Model 14 presents the independent variable in which CEO confidence is measured by the net buyer proxy and CEO compensation gap and model 15 presents CEO

confidence measured by only the net buyer proxy. These models, shown in table 6, could indicate why strategic distinctiveness doesn't regress on CEO confidence.

The first additional regression analysis (model 10) shows that strategic distinctiveness does regress on CEO confidence when institutional investors are left out of the analysis ($\beta = -0.026$, $p = 0.000$). This is likely the result of more statistical power as the full observations increased from 318 to 996. However, the random effect model shows that no significant result is found when statistical independence is taken into account. More remarkable is that the interaction term CEO confidence with CEO power is highly significant in the hierarchical regression ($\beta = -0.033$, $p = 0.005$), but is non-significant when statistical independence is taken into account. This is remarkable, as a larger sample indicates that there is no significant effect, which could mean that hypothesis 2 is not robust and also not partly supported.

Second, model 11 shows that strategic distinctiveness regresses on institutional investor dedication when the dependent variable is square rooted ($\beta = 0.327$, $p = 0.000$). The standardized beta also shows that it is the most strong effect after firm size (Standardized $\beta = 0.290$). This significant effect is also supported by the random effect model. The found significant effect is notable, as the observations are less (120 instead of 318), which means less statistical power. Because of the square root, some observations went missing for unclear reasons in the dataset. This result could therefore mean that strategic distinctiveness regresses on institutional investor dedication in some countries or/and industries. This could explain why Oehmichen et al. (2021) found significant results. In addition, the interaction term CEO confidence with CEO power is significant in this model and also when statistical independence is taken into account ($\beta = -0.033$, $p = 0.021$). CEO power as a direct effect is marginally significant, but this isn't supported by the random effect model ($\beta = -0.045$, $p = 0.082$).

Third, model 12 shows that when strategic distinctiveness is measured with only positive indicators, it regresses even better on the control variables. These control variables all have the direction as expected by the theory, especially CEO gender. This regression analysis shows that when the CEO gender goes from women to men, the strategic distinctiveness increases strongly to the negative side ($\beta = -0.414$, $p = 0.000$). However, as only 4% of the CEOs are female in this sample, caution is needed with the interpretation because of representativity reasons (Hair et al., 2019). Furthermore, the regression analysis shows that (just as 4 out of 6 of these additional analyses) strategic distinctiveness regresses on CEO power ($\beta = -0.065$, $p = 0.008$). The interaction term of CEO confidence with CEO power is however not supported by this additional analysis, in which this analysis stands alone. Besides, no notable differences could be found between the hierarchical models and random effect models in this analysis.

Fourth, model 13 shows that there is barely a difference between measuring strategic distinctiveness with 5 indicators (including R&D expenses) and with four indicators (excluding R&D expenses). The interaction term of CEO confidence with CEO power is just as in the main analysis significant, however, in this analysis, it is more strongly significant ($\beta = -0.068$, $p = 0.002$). This

regression result is also found significant by the random effect model. There are no further notable relations, indicating that strategic distinctiveness could also be measured with 4 indicators, just as Kang et al. (2021) found.

Fifth, model 14 confirms that there is no use to measure CEO confidence with the CEO compensation gap and net buyer proxy, as these 2 indicators do not measure the same concept as described earlier and provide no interesting significant effects. If CEO confidence is measured with 2 measures the direct effect is non-significant ($\beta = -0.033$, $p = 0.541$) and the interaction effects with CEO power ($\beta = -0.084$, $p = 0.241$) and institutional investor dedication ($\beta = -0.056$, $p = 0.852$) are non-significant.

Finally, the results of model 15 are the most interesting. It shows that if CEO confidence is measured with the net buyer proxy, a significant effect could be found ($\beta = 0.000$, $p = 0.031$). In fact, this regression is the strongest in the model with a standardized beta of $\beta = 0.263$. This means that if the net buyer proxy increases with 1 standard deviation, strategic distinctiveness will increase by 0.263 standard deviations. Two things are remarkable next to the fact that this direct effect is significant. First, this relation shows that if the net buyer proxy increases, the indicators of strategic distinctiveness also increase. This is remarkable, as the main analysis shows that if there should be a significant effect, this should be a negative one. Both indicate strategic distinctiveness in this case, but it changes the manner of strategic distinctiveness as described earlier. Second is the effect size of this relation, which is the greatest in this particular model. Even though a significant effect is found, it is not sure if the net buyer proxy is a better estimator than the CEO compensation gap for measuring the concept of CEO confidence. As recommended by Hill et al. (2014), this study accepts that both indicators could measure a different aspect of CEO confidence and I acknowledge therefore that this variable has its limitations.

Taken this all together, the additional analysis found that strategic distinctiveness could plausibly still regress on CEO confidence if measured in a more accurate/different manner. Second, strategic distinctiveness regresses significantly on intuitional investor dedication when measured with less observation and a square-rooted dependent variable. Indicating that the regression results could differ per country, industry, and/or a year or other firm-specific variables, as the results differ too much with the main analysis to be just dependent on the square root transformation. To examine this, dummy variables are made of the industry and country variables. Further analysis in the random effect model of the main analysis shows that most differences in the strategic distinctiveness level could be found at country and industry levels. There are no years in which the strategic distinctiveness level significantly differs, but in 4 out of 10 countries (France, Germany, Spain, and the United Kingdom) there is significantly more strategic distinctiveness than the average, and also in 4 out of 25 industries (Beverages, Diversified Industrials, Leisure & Hotels, and Renewable Energy). Meaning, that the results are dependent on which countries and industries are most represented in the sample. This could possibly explain why institutional investor dedication was significant in the small sample, as it might just contained the countries and industries in which a significant effect is more easily found. In appendix 5

the random effect model of the main analysis is shown in which per year, industry and country becomes clear if strategic distinctiveness levels are significantly different.

Third, in none of the models, a significant effect is found for the interaction term of institutional investor dedication and CEO confidence. A random effect model regression with only CEO confidence, institutional investor dedication, and the interaction term shows that strategic distinctiveness levels are significantly bigger in 3 out of 14 countries, indicating that there might be a significant interaction effect in some countries. Finally, the additional analysis confirmed that it is very plausible that there is a significant interaction term of CEO confidence with CEO power. Notable is that this interaction term is not significant in the biggest sample with the random effect model.

Table 6: Additional analysis with final hierarchical models

<i>Variables</i>	<i>Model 10</i>	<i>Model 11</i>	<i>Model 12</i>	<i>Model 13</i>	<i>Model 14</i>	<i>Model 15</i>
<i>Model explanation</i>	No institutional investors	dependent variable square rooted	dependent variable positive values	R&D expense out dependent variable	CEO confidence 2 indicators	CEO confidence NBP
<i>CEO degree</i>	0.011 (0.007)	0.017* (0.010)	-0.019** (0.008)	0.015 (0.010)	0.002 (0.015)	0.003 (0.014)
<i>CEO gender</i>	0.022 (0.054)	-0.183 (0.119)	-0.414*** (0.113)	0.363** (0.140)	0.191 (0.141)	0.147 (0.133)
<i>CEO age</i>	-0.006*** (0.001)	-0.005*** (0.002)	-0.004*** (0.002)	-0.008*** (0.002)	-0.005* (0.003)	-0.006** (0.003)
<i>Firm size</i>	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000 (0.000)	-0.000* (0.000)	-0.000* (0.000)
<i>Firm performance</i>	0.001 (0.001)	0.000 (0.001)	-0.002** (0.001)	0.002 (0.002)	0.001 (0.002)	0.001 (0.002)
<i>Firm age</i>	-0.000*** (0.000)	-0.002*** (0.000)	-0.001*** (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.001)
<i>Quasi indexer investor share</i>		-0.073 (0.055)	-0.046 (0.045)	-0.112** (0.053)	-0.074 (0.087)	-0.081 (0.082)
<i>Institutional investor dedication</i>		0.327*** (0.088)	0.081 (0.073)	0.111 (0.130)	0.083 (0.149)	0.056 (0.122)
<i>CEO power</i>	0.005 (0.011)	-0.045* (0.026)	-0.065*** (0.025)	0.045 (0.029)	0.077* (0.043)	0.077* (0.043)
<i>CEO confidence (compensation gap)</i>	-0.026*** (0.007)	-0.014 (0.011)	-0.011 (0.016)	-0.021 (0.020)		
<i>Interaction term CEO confidence X CEO power</i>	-0.033*** (0.012)	-0.033** (0.014)	0.011 (0.023)	-0.068*** (0.022)		
<i>Interaction term CEO confidence X institutional investor dedication</i>		0.090 (0.088)	0.016 (0.093)	-0.070 (0.116)		

<i>CEO confidence (full)</i>					-0.033	
					(0.050)	
<i>Interaction term full CEO confidence X CEO power</i>					-0.084	
					(0.072)	
<i>Interaction term full CEO confidence X institutional investor dedication</i>					-0.056	
					(0.301)	
<i>CEO confidence (Net Buyer Proxy)</i>						0.000**
						(0.000)
<i>Interaction term NBP CEO confidence X CEO power</i>						0.000
						(0.000)
<i>Interaction term NBP CEO confidence X institutional investor dedication</i>						0.001
						(0.001)
<i>Constant</i>	0.268***	0.941***	0.986***	0.091	0.142	0.211
	(0.078)	(0.206)	(0.138)	(0.218)	(0.240)	(0.238)
<i>Observations</i>	996	120	318	333	206	207
<i>R-squared</i>	0.076	0.549	0.188	0.155	0.109	0.111

Legend: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note 1: Robust standard errors in parentheses

Note 2: Firm, year, industry and country random effects are included in all models

5 | DISCUSSION

In this chapter, the results of the relationships are interpreted (based on the random effect models shown in chapter 4 and appendix 7) and theoretical contributions, practical implications, limitations, and opportunities for future research are described

5.1 Interpretation of the results

5.1.1 The direct effect of CEO confidence

Based on the upper echelons theory (Hambrick & Mason, 1984), a base hypothesis is formulated that predicts that more CEO confidence would lead to a more distinctive strategy. Previous studies showed that confident CEOs care less about uncertainty in business situations and that these CEOs have the optimism to believe they could achieve the firm objectives in uncertain situations (Chen et al., 2015; Li & Tang, 2010). Logically, a more confident CEO could be more easily inclined towards a distinctive strategy than a less confident CEO, as previous studies show that more distinctive strategies are more uncertain (Malmendier & Tate, 2008). This reasoning is also supported by Hiller and Hambrick (2005). Strikingly, no significant result is found. Below, the 2 main reasons are described as why no significant effect is found.

First, based on the results, CEO compensation could be the wrong measure for CEO confidence or could not be a standalone indicator for CEO confidence, in contrast to what Gamache et al. (2019) argue. In this study, strategic distinctiveness does significantly regress on the net buyer proxy and the net buyer proxy does not measure the same concept as CEO compensation, as displayed by the one-dimensionality test and predicted by Hill et al. (2014). More specific, the CEO compensation gap could be the wrong measure for this sample, as the CEO compensation gap differs per country (Greckhamer, 2015). In some countries a high CEO compensation gap is institutionalized. Meaning, that the CEO compensation gap is the wrong measure for a sample with multiple countries, as the absolute CEO compensation gap in one country could be extraordinary and measure CEO confidence, yet in another country, this absolute CEO compensation could be regarded as normal. Second, in contrast to Hiller and Hambrick (2005), but based on the self-efficacy theory of Bandura (1977), greater CEO confidence should not per se result in more strategic distinctiveness. One of the 4 factors affecting self-efficacy is “vicarious experience”, meaning that confident people could look at other people’s achievements, because they are more competitive than less confident people (Fu et al., 2015), and believe they can achieve them as well. For confident CEOs, this could mean that he/she wants to show that they can achieve the same (or more). As the CEO sees the other CEO as an example, he/she might want to look at the strategy of the other CEO (Gupta & Misangyi, 2016), which eventually results in less strategic distinctiveness. Furthermore, if the firm performance is good, the CEO receives flattery and opinion conformity from other executives. This is a second factor affecting self-efficacy called “social persuasion” (Bandura, 1977), which reinforces his/her motivation for the current strategy. This will

make it more and more difficult to change to a more distinctive strategy (Sydow et al., 2009). Third, more confident CEOs more often underestimate the competition (Moore & Cain, 2007), so they might not see the necessity for a distinctive strategy.

5.1.2 The moderation effect of CEO power

When a more confident CEO has the preference to pursue a more distinct strategy, theory suggests that he/she needs the power to pursue his/her strategic preferences (Boyd, 1994; Finkelstein & D'Aveni, 1994; Zhu & Chen, 2015b). Therefore, this study predicted that the positive relationship between CEO confidence and strategic distinctiveness would increase if CEO power is high. The results only partly confirm this hypothesis. More confident CEOs with high power do indeed have more distinctive strategies, however, CEOs with low confidence and high power do also have more distinctive strategies. Even more interesting, the strategic distinctiveness levels are higher and positive when CEO confidence is low and CEO power is high, and strategic distinctiveness levels are less high and negative when CEO confidence is high and CEO power is high.

A potential explanation might be found in the study of Stajkovic (2006) about confidence and the self-efficacy theory (Bandura, 1977). According to Stajkovic (2006), people with less confidence will validate their thoughts by other people. In this case, CEOs will possibly validate their ideas and thoughts by other top executives and board members, even though they have the power. Another reason for them to do this is career concerns (Oehmichen et al., 2021). Logically, if they share their strategy ideas with other top executives, it is not only the CEO to blame, as other executives have validated the strategy. This does have a consequence for the strategy. Every top executive has their own interest in the organization. (For example, the R&D top executive would like more budget for R&D and the facility manager more budget for plant and equipment.) Following this reasoning, one would get positive levels of strategic distinctiveness, as the CEO intends to invest in every indicator of strategic distinctiveness and he/she also has the power to do this. The self-efficacy theory supports the idea that CEOs with low confidence could have distinctive strategies, as this theory argues that people with low confidence and in charge of making a decision are unpredictable. One reason why CEOs with high confidence and high power have negative values on strategic distinctiveness is that these CEOs invest more in their own compensation than in the strategy distinctiveness indicators. This is however a bold claim which needs caution, as there could be a spurious relationship. These confident CEOs could also choose this kind of strategy as they need less validation of their strategy ideas and choose a distinctive strategy for which they think competition on resources is lower and thus cheaper (Pan et al., 2019).

5.1.3 The moderation effect of institutional investor dedication

My final prediction for this study was that the direct effect of CEO confidence on strategic distinctiveness would be mitigated by institutional investor dedication, because of (decreasing) information asymmetry. This hypothesis is partly in contrast with the hypothesis of Oehmichen et al.

(2021) who found that institutional investor dedication has a direct effect on strategy uniqueness. Remarkably, both hypotheses are found non-significant. For both an explanation follows.

First, institutional investor dedication as a moderation effect is non-significant in every model that is made. This is remarkable, as a recent study shows that dedicated institutional investors intervene, when an overconfident person is a CEO, in order to prevent future firm risks (Ali & Tauni, 2021). This excludes the option that institutional investors just do not intervene when a CEO is (too) confident, also supported by Aggarwal et al. (2011). So it could be that institutional investors are primarily interested in their main goal, which is generating a good return on investment (e.g. Borochin and Yang, 2017). As previous literature shows (Aggarwal et al., 2011; Ali & Tauni, 2021), it is very plausible that dedicated institutional investors are less frightened by lower return on investment figures than transient ones, as they do intervene more in the strategy making. However, a good strategy is not always more distinctive or more similar, as it differs per firm how much strategic distinctiveness is needed (Deephouse, 1999), it is a matter of strategic balance. Therefore, an institutional investor might not intervene as more distinctive/similar strategies could be the most profitable strategy. However, a core assumption of Oehmichen et al. (2021) is that strategy uniqueness is an important factor in creating firm value and economic rent.

Second, this study failed to confirm the hypothesis of Oehmichen et al. (2021). Two possible explanations are given. To begin with, strategy uniqueness is measured differently than strategy distinctiveness, as Oehmichen et al. (2021) do take a general strategy benchmark as an indicator (similar to this study) and a sales distribution as an indicator, which emphasizes firm sales as an important uniqueness indicator (different to this study). The second explanation is that the preferred strategy of institutional investors differs not only per firm, but also per country and industry. In model 11, which has the lowest observations (120), strategic distinctiveness regresses strongly and positively on institutional investor dedication. However, strategic distinctiveness levels differ significantly per country and industry. A more specific random effect model, only including institutional investor dedication, shows the same effects, meaning that strategic distinctiveness levels among others differ for institutional investor dedication. The sample of Oehmichen et al. (2021) only includes S&P firms from the United States of America and this study only contains European stock indexes. Concluding, institutional investor dedication does plausibly have a significant effect on strategic distinctiveness in particular countries and industries. To further elaborate on this, in multiple countries some industries are more profound than other industries (IAPMEI, 2006). Some industries have higher needs for (higher levels of) complementarities (Jacobides et al., 2018), which benefit from multiple distinctive strategies, as these firms can complement each other. (For example, a firm that invests more in R&D could complement a firm that invests more in plant and equipment and vice versa.) In fact, Aïssaoui et al. (2021) found that some European countries are more open to collaboration and complementation than other European countries. More specifically, the research of Aïssaoui et al. (2021) found that especially France and the United Kingdom are at the forefront of collaboration. This is interesting, as this study

shows that exactly these two countries have the highest levels of strategic distinctiveness. This confirms the assumption that institutional investors are especially interested in their primary goal.

5.2 | Theoretical contributions

Based on the theoretical arguments and (not-)supporting findings, this study brings forth three theoretical implications. The first contribution is to the strategic leadership literature. As described earlier, prior research by Kang et al. (2021) described how CEO confidence could be a moderator variable for the direct relationship between CEO name uncommonness on strategic distinctiveness. Yet, no research has empirically examined whether there is a direct relationship between more CEO confidence and more strategic distinctiveness, even though this is theoretically more logical. This study however found that those confident CEOs do not directly pursue more distinctive strategies. On the contrary, this study found that CEOs with lower confidence are more inclined to distinctive strategies than more confident CEOs if CEO power is set as a boundary condition. In fact, this study shows that CEOs with lower confidence are more inclined to invest in the indicators of strategic distinctiveness and that CEOs with higher confidence retrench on the indicators of strategic distinctiveness. This is notable, as a previous study by Hiller and Hambrick (2005) predicted, based only on theoretical arguments, that the confidence of a CEO would positively impact the distinctiveness of a firm's strategy, as these CEOs need less validation from others and feel less institutional pressure. These unexpected results could be the starting point for other scholars to study the complex relationship between CEO characteristics and their tendency to pursue distinctive strategies.

Second, a contribution to the upper echelons theory of Hambrick and Mason (1984) is made by providing specific insights into how CEO confidence (as a psychological characteristic) and CEO power (as an observable characteristic) as an interaction influence strategic distinctiveness. Prior studies show that observable and psychological characteristics can influence each other and mitigate or strengthen certain behavior (Hambrick, 2007; Kang et al., 2021). This study shows that CEO confidence and CEO power in themselves will not influence the distinctiveness of a firm. However, if CEO power is set as a moderator for the direct relationship of CEO confidence and strategic distinctiveness, significant effects are found. This is an indication that more aspects (and combinations of psychological- and observable characteristics) within the cognitive frame of the CEO could give interesting results when put in a relationship with strategic distinctiveness. For example, Kang et al. (2021) found that the name uncommonness of a CEO influences the strategic distinctiveness of a firm.

Third, this study contributes to the corporate governance literature, with regard to the influence of institutional investors on the strategic decision-making of CEOs. The study of Oehmichen et al. (2021) called for additional investigation into how institutional investors relate to the CEOs of firms. Oehmichen et al. (2021) might have overestimated the direct effect of institutional investor dedication on strategic distinctiveness, as top executives have the greatest influence on strategic decision-making (Hambrick & Mason, 1984) and institutional investors mainly monitor and sometimes interfere

(Aggarwal et al., 2011; Desender et al., 2012). Therefore, institutional investor dedication is a moderator for the described direct relationship in this study. However, this study found that it doesn't matter whether an institutional investor is dedicated or transient, with regard to less/more confident CEOs pursuing a less/more distinctive strategy. This is remarkable, as previous research found that more dedicated institutional investors reduce agency costs, as they monitor and interfere when CEOs show opportunistic or/and moral hazard behavior (Aggarwal et al., 2011; Desender et al., 2012; Shi et al., 2019) and more confident CEOs show more opportunistic- and moral hazard behavior (Lartey & Danso, 2022). Also when CEO confidence is measured with the net buyer proxy, and a relationship with strategic distinctiveness is found significant, no significant moderating effect of institutional investor dedication is found. This means that whether confident CEOs are or are not more inclined to distinctive strategies, institutional investors (transient or dedicated) do not intervene. These extraordinary results call for other scholars to examine more precisely which CEO characteristics are dangerous for the firm performance in the eyes of the institutional investors. Also, this is an invitation for other scholars to examine in which strategic decisions institutional investors want to intervene.

5.3 | Practical implications

Next to theoretical implications, this study has also implications for managerial practice. The findings in this study are particularly interesting for the board of directors and the shareholders (institutional investors). This study could help the board of directors to understand and predict the CEO's strategic decisions. The findings in this study implicate that more confident CEOs do not per se pursue more distinctive strategies. However, if a CEO with low or high confidence is given power, more distinctive strategies are chosen. Here it becomes also interesting for the top executives in the firm and the shareholders, as the findings suggest that CEOs with lower confidence and high power invest more in the indicators of strategic distinctiveness. This study suggests that CEOs with low confidence and high power seek validation for their strategy ideas from other top executives and these could thus influence the CEO to invest more in certain business aspects. This study is therefore also interesting for the institutional investors, as they should monitor opportunistic- and moral hazard behavior, to increase the firm performance. This study also helps the institutional investors to better understand these strategic decisions made by the CEO. On the other hand, this study suggests that CEOs with high confidence and high power also pursue distinctive strategies (but less than low confidence CEOs), but invest less in the indicators of strategic distinctiveness than average. Top executives and managers should thus take into account that there is a greater chance that they should implement distinctive strategies with fewer investments. Based on this information, the board of directors should decide how much power to give to the CEO, considering the preferred degree of strategic distinctiveness. In addition, the board should also take into consideration how great the compensation gap between the CEO and second-highest earner may be, when increased investing in the indicators of strategic distinctiveness is deemed necessary. CEO confidence is namely measured by the CEO compensation gap and CEOs with thus a

smaller compensation gap and more power are more inclined to invest more in these indicators of strategic distinctiveness. Next to insiders, this information is also informative for competitors and collaborators of firms, as they could expect a higher chance of uncommon strategic moves when the CEO has low or high confidence with much power. For both collaborators and competitors, this could be positive, as distinctive strategies often mean less competition for resources and collaborators could expect different or more advanced manners of collaboration.

5.4 | Limitations and future research

Besides the contributions of this study, one should also note that this study has some limitations that invite other scholars for future research. The first limitations are concerning the direct effect of CEO confidence on strategic distinctiveness. To start with, CEO confidence is measured quantitatively with only one indicator. This brings forth multiple limitations. First, the internal validity of this study declines, as this study might not have measured the complete concept of CEO confidence. CEO confidence is assessed as a concept that could be measured with a greater compensation gap between the CEO and the second-highest earner. This could of course be an indicator of CEO confidence as it is also applied in other studies to measure CEO confidence (e.g. Gamache et al., 2017; McCarthy, 2016), yet the face validity is low. This is supported by Hill et al. (2014), who found that measures of CEO confidence do not exhibit adequate convergence. According to Malmendier & Tate (2005), measuring CEO confidence with the HOLDER67 criteria and the net buyer proxy is better. Due to limited time and limited available data, it was not possible to measure CEO confidence in this manner. As compensation, the net buyer proxy is used as a robustness measure. This latter measure confirmed that CEO compensation as the only measure of CEO confidence is not enough. Further, as described earlier, the measurement of CEO confidence by CEO compensation has institutional limitations. In some countries, larger compensation gaps are more common than in other countries (Greckhamer, 2015). Meaning that the average compensation gap could differ per country and thus what could be seen as CEO confidence also differs per country. This study however did not control for this variable. Furthermore, there could be alternative explanations for why strategic distinctiveness did not regress on CEO confidence in this study. In fact, as this study is quantitative, there is also a black box problem because this study does not directly examine how CEO confidence as a psychological characteristic leads to more distinctive strategies in practice (Hambrick, 2007).

Therefore, future research should measure CEO confidence differently when measuring the direct effect on strategic distinctiveness. Preferably, CEO confidence is measured with the HOLDER67 criteria and the net buyer proxy (Malmendier & Tate, 2005) together and use the CEO compensation gap and the CEO earning forecast as a robustness check. Hill et al. (2014) argue that scholars should employ methods to account for measurement error and pursue validation of measures. (The latter is done in this study.) Future studies would be even better when primary data is used instead of secondary data.

Future studies could use direct measures of CEO confidence, to improve measurement accuracy, by doing qualitative interviews to open the black box of psychological processes or by adopting a survey to test the theoretical mechanisms. In addition, this study showed very robust figures in indicating that strategic distinctiveness increases when CEO age also increases. This goes against theoretical expectations (Yang et al., 2016). Future studies should therefore examine how CEO age relates to strategic distinctiveness and what role CEO confidence plays in this relationship.

The second limitations and directions for further research are concerning the moderating effect of CEO power. To start with, CEO power is measured as is done in multiple studies (e.g. Sauerwald, 2014). However, in this study one indicator of CEO power is slightly different. Instead of measuring the total number of board directors who joined the board under the leading CEO, the percentage of board directors who are also top executives in the organization is measured. This brings forth a decline in the construct validity of this research. In addition, CEO power is measured as the average of 3 standardized indicators. However, the indicator board duality could only be -0.8 (no board duality) or 1.2 (board duality). This means that board duality could have less influence on the concept of CEO power while this might not be the case. Another limitation could be found in a possible direct effect of institutional investor dedication on CEO power. The power of the CEO might also be influenced by the dedication of the institutional investor, as more dedicated institutional investors are more active in an organization (Benner & Zenger, 2016) and monitor the CEO more closely (Aggarwal et al., 2011). This could affect the power of a CEO, as the institutional investor might intervene in his/her strategy plans.

Therefore, future research could do structural equation modeling (SEM), to provide more and more specific relationships between concepts. Not only could more concepts be included in the model, but factor analysis is also directly applied in SEM, so it becomes clear how strong the indicators of concepts load. This could also help in deciding how many indicators of CEO power to adopt. I recommend future scholars to measure the concept of CEO power with the 5 indicators given by Finkelstein et al. (2009) to increase the validity of the study. Furthermore, future researchers who use the SEM could also add a variable that measures the power of other top executives, as these might influence the CEO more when his/her confidence is low, because these CEOs have more need for validation of their ideas (Stajkovic, 2006). In addition, future researchers could also add a variable to the SEM which measures the charisma of CEO peers, as CEOs are more inclined to imitate their CEO peers when these have high levels of charisma (Gupta & Misangyi, 2016).

The third limitations and directions for future research are concerning the moderating variable of institutional investor dedication. To begin with, the measurement of Bushee (1998) is used to measure institutional investor dedication, which is used in most studies (e.g. Borochin & Yang, 2017; Chan et al., 2013; Oehmichen et al., 2021). Institutional investor dedication is categorized as transient, dedicated, or as quasi-indexer based on high levels of private information (Bushee, 1998). But even though this is high-quality data, the direct level of activity that an institutional investor has in a firm has not been measured. Also, institutional investors are categorized as transient, dedicated, or quasi-indexers, yet it

is not known how dedicated or transient an institutional investor is. Second, this study argued that more dedicated institutional investors would mitigate the direct effect of CEO confidence on strategic distinctiveness, as confident CEOs are more likely to adopt opportunistic behavior and choose for their own interests (Lartey & Danso, 2022). If strategic distinctiveness would be in the own interest of the CEO, dedicated institutional investors would intervene. No supportive evidence is found, so it could be that institutional investors only intervene when their return on investment is in danger, as creating a good return on investment is their main goal (Borochin and Yang, 2017). Creating more strategic distinctiveness could be good for firm performance (Deephouse, 1999), so institutional investors would not have reason to intervene.

Hence, future research could examine whether institutional investors intervene in the strategic decision about distinctiveness when firms have more distinctive strategies, but that the market shows that firms with more similar strategies have a higher firm performance or vice versa. In addition, it is also interesting to know if dedicated institutional investors intervene more actively than transient institutional investors in that case. Furthermore, previous research showed that institutional investors intervene in strategic decisions (e.g. Aggarwal, 2011) and that they care most about their return on investments (Borochin and Yang, 2017). Future research could therefore investigate which CEO characteristics institutional investors deem most dangerous for their return on investments. This could be crucial information for the board of directors when deciding on who to hire as the new CEO.

Finally, some general limitations and directions for future research. In chapter 3.7 limitations concerning the external validity of this research are described regarding institutional differences, differences in firm size, sampling bias, and the number of observations. Further research could validate whether there is also no significant effect between CEO confidence and strategic distinctiveness in small and medium-sized enterprises. In addition, future research could adopt a survey as primary data, instead of using secondary data as in this research in which probability sampling is possible. Within this sample, the scholar should control for institutional differences to take the problem of external validity away. Another limitation of great importance is that fixed effects were not appropriate for my study. Therefore, it could be the case that significant effects were found, but these were only there because of firm-specific cases, such as the culture or other fixed elements in a firm. This study compensated for the fact that fixed effects were not applied, by making dummy variables of the country and industry variables and taking these into account when making the random effect model. However, this does not take into account every firm-specific issue. Therefore, I recommend future research to use fixed effects to control for these firm-specific issues if appropriate. Lastly, the main analysis is done with a dependent variable that is measured unusually, as both negative and positive values indicate strategic distinctiveness. Even though a recent study by Kang et al. (2021) also measured strategic distinctiveness in this manner, it remains rather difficult to interpret the results. Therefore, I recommend future research to do the main analysis in which strategic distinctiveness is measured with only positive values, thus where no distinction is made between negative strategic distinctiveness and positive strategic distinctiveness.

6 | CONCLUSION

This study provides an answer to the following research question: *“To what extent does CEO confidence influence the strategic distinctiveness of an organization when institutional investor dedication and CEO power are taken into account.”* This study contributes to the strategic leadership literature and the upper echelons theory of Hambrick and Mason (1984) by showing that more confident CEOs do not pursue a more distinctive strategy as predicted by Hiller and Hambrick (2005). Although, this is true when CEO power is not taken into account. My findings show that CEOs with low confidence and CEOs with high confidence both pursue a more distinctive strategy if they have great CEO power. CEOs with lower confidence will invest more in the indicators of strategic distinctiveness and CEOs with higher confidence will invest less in these indicators. Furthermore, this study found that dedicated institutional investors do not intervene when confident CEOs pursue a distinctive strategy. In fact, this study found that prior research by Oehmichen et al. (2021) might have overestimated the direct effect of institutional investor dedication on strategic distinctiveness, as this effect is likely to be dependent on firm-specific issues. Future research should expand this research by adding the influence of top executives on the CEO as moderating variable and adding the market demand for more distinctive/similar strategies as moderating effect for the moderating effect of institutional investor dedication. This research is needed to better understand the relationship between the cognitive frame of the CEO and the strategic decision-making behavior and to better understand the role of institutional investors in influencing strategic decision-making.

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APPENDIX

Appendix 1 | Initial descriptive statistics before deletion of outliers and missing values

Variable	Obs	Mean	Std. dev.	Min	Max
<i>CEO CONFIDENCE (measured with compensation difference)</i>	1641	.0728185	.7371596	-2,15	20,06
<i>Strategic Distinctiveness</i>	1648	.0131565	.5190981	-1,35	11,78
<i>Institutional Investor Dedication</i>	619	-.1283094	.1444371	-.7278413	.8369064
<i>CEO POWER</i>	2735	.0202982	.5823948	-1,14	3,56
<i>CEO gender</i>	2468	.9614719	.1494614	0,00	1,00
<i>CEO age</i>	2447	54,91	7,20	32,00	76,00
<i>CEO degree</i>	1819	2,32	.9880643	1,00	4,00
<i>Firm performance</i>	2144	.6775886	74,99	-693.57	3072.11
<i>Firm age</i>	1903	31,93	35,90	-7,00	191,00
<i>firm size</i>	2163	1.45e+07	2.54e+07	-128.773,00	3.28e+08
<i>Quasi indexer investor share</i>	605	.3460048	.3087018	0,00	2,75

Appendix 2 | One-dimensionality tests

One-dimensionality test with CEO compensation and the net buyer proxy

Average interitem covariance: .0042685
 Number of items in the scale: 2
 Scale reliability coefficient: 0.0161

One-dimensionality test with CEO confidence (compensation variable) and the CEO power indicators

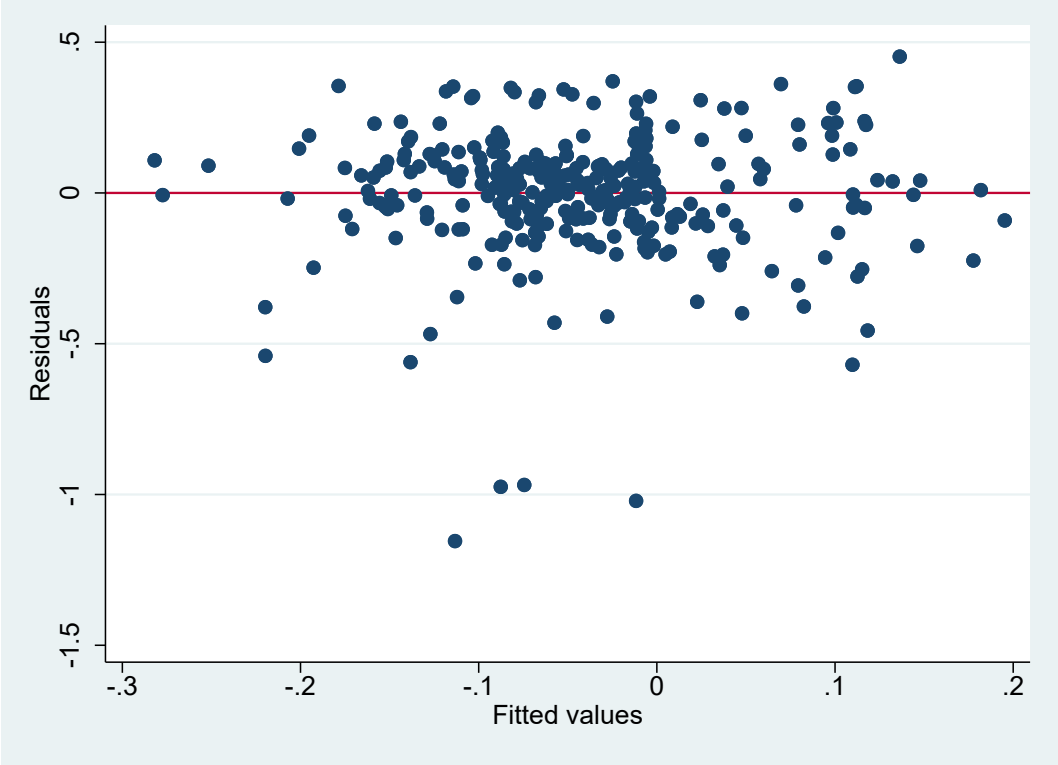
<i>Item</i>	<i>Obs</i>	<i>Sign</i>	<i>Item-test correlation</i>	<i>Item-rest correlation</i>	<i>Avarage interitem correlation</i>	<i>alpha</i>
<i>CEO compensation difference</i>	2278	+	0.6905	0.3542	0.0763	0.1985
<i>Boardduality</i>	2278	+	0.5788	0.1934	0.1653	0.3726
<i>Number of Board Directors as executives</i>	2278	-	0.6434	0.2810	0.1150	0.2804
<i>CEO tenure</i>	2259	+	0.4901	0.0857	0.2353	0.4801
<i>Test scale</i>					0.1048	0.3692

One-dimensionality test with CEO confidence (compensation variable) and the CEO power indicators and their interitem correlations

	<i>CEO compensation difference</i>	<i>Board duality</i>	<i>Number of Board Directors as executives</i>	<i>CEO tenure</i>
<i>CEO compensation difference</i>	1.000			
<i>Board duality</i>	0.1860	1.000		
<i>Number of Board Directors as executives</i>	0.3897	0.1304	1.000	
<i>CEO tenure</i>	0.0823	0.0760	0.0219	1.000

Appendix 3 | Assumption regression analysis

Appendix 3.1 Test for homoscedasticity in scatterplot



Appendix 3.2 Breusch–Pagan/Cook–Weisberg test for heteroskedasticity

Assumption: Normal error terms
Variable: Fitted values of Strategic_Distinctiveness
H0: Constant variance
chi2(1) = 0.01
Prob > chi2 = 0.9078

Appendix 3.3 Test for multicollinearity

<i>Variable</i>	<i>VIF</i>	<i>1/VIF</i>
<i>CEO degree</i>	1.09	0.920898
<i>CEO gender</i>	1.17	0.854830
<i>CEO age</i>	1.15	0.868720
<i>firm size</i>	1.27	0.784908
<i>Firm performance</i>	1.01	0.991986
<i>Firm age</i>	1.14	0.874249
<i>Quasi indexer investor</i>	1.86	0.537740
<i>CEO confidence</i>	2.37	0.422382
<i>CEO power</i>	1.11	0.897604
<i>Institutional investor dedication</i>	1.78	0.561977
<i>interaction term CEO power W CEO confidence</i>	1.20	0.834485
<i>interaction term institutional investor dedication W CEO confidence</i>	2.19	0.456723
<i>Mean VIF</i>	1.45	

Appendix 3.4 Normality of the variables

<i>Variable</i>	<i>N</i>	<i>Pr(skewness)</i>	<i>Pr(kurtosis)</i>	<i>Adj chi2(2)</i>	<i>Prob>chi2</i>
<i>CEO confidence</i>	2,278	0.0000	0.0000	374.16	0.0000
<i>Strategic Distinctiveness</i>	1,635	0.0000	0.0000	809.26	0.0000
<i>Institutional Investor Dedication</i>	626	0.0607	0.0000	67.97	0.0000
<i>CEO POWER</i>	2,259	0.0000	0.0000	388.53	0.0000
<i>CEO gender</i>	2,05	0.0000	0.0000	.	.
<i>CEO age</i>	2,032	0.0000	0.2022	33.43	0.0000
<i>CEO degree</i>	1,53	0.0000	0.0000	200.58	0.0000
<i>Firm performance</i>	2,143	0.0000	0.0000	.	.
<i>Firm age</i>	1,896	0.0000	0.0000	383.01	0.0000
<i>Firm size</i>	2,16	0.0000	0.0000	.	.
<i>Quasi indexer investor share</i>	613	0.0206	0.0000	.	.

Appendix 3.5 Testing for linearity

<i>Variables</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>	<i>Model 6</i>	<i>Model 7</i>	<i>Model 8</i>
<i>Variables added</i>	<i>Control variables</i>	<i>Independent</i>	<i>interaction term 1. CEO power</i>	<i>interaction term 2. Inst. Inv</i>	<i>Both interaction terms</i>	<i>Polynomial independent t</i>	<i>Polynomial interaction term 1</i>	<i>Polynomial interaction term 2</i>
<i>CEO degree</i>	0.022** (0.011)	0.022** (0.011)	0.021* (0.011)	0.022** (0.011)	0.021* (0.011)	0.020* (0.011)	0.023** (0.011)	0.023** (0.011)
<i>CEO gender</i>	0.274* (0.149)	0.269* (0.149)	0.311** (0.149)	0.260* (0.151)	0.316** (0.151)	0.314** (0.152)	0.351** (0.154)	0.341** (0.155)
<i>CEO age</i>	-0.007*** (0.002)	-0.007*** (0.00216)	-0.007*** (0.002)	-0.007*** (0.002)	-0.007*** (0.002)	-0.007*** (0.002)	-0.006*** (0.002)	-0.006*** (0.002)
<i>Firm size</i>	-6.47e-10 (5.34e-10)	-5.75e-10 (5.50e-10)	-4.41e-10 (5.47e-10)	-5.63e-10 (5.51e-10)	-4.43e-10 (5.48e-10)	-3.81e-10 (5.58e-10)	-4.18e-10 (5.57e-10)	-3.69e-10 (5.58e-10)
<i>Firm performance</i>	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.0012 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
<i>Firm age</i>	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
<i>Quasi indexer investor share</i>	-0.100* (0.055)	-0.10* (0.055)	-0.080 (0.055)	-0.097* (0.055)	-0.080 (0.055)	-0.079 (0.055)	-0.096* (0.056)	-0.095* (0.056)
<i>Institutional investor dedication</i>	0.060 (0.105)	0.065 (0.105)	0.060 (0.104)	0.063 (0.106)	0.0615 (0.105)	0.064 (0.106)	0.070 (0.105)	0.029 (0.113)
<i>CEO power</i>	0.0414 (0.026)	0.039 (0.026)	0.052* (0.026)	0.041 (0.026)	0.051* (0.026)	0.0532** (0.027)	0.0313 (0.029)	0.0323 (0.029)
<i>CEO confidence</i>		-0.007 (0.012)	-0.010 (0.012)	-0.001 (0.017)	-0.013 (0.017)	-0.018 (0.027)	-0.024 (0.027)	-0.037 (0.029)
<i>Interaction term CEO confidence X CEO power</i>			-0.055*** (0.021)		-0.060*** (0.021)	-0.062*** (0.023)	-0.042 (0.031)	-0.046 (0.033)
<i>Interaction term CEO confidence X</i>				0.045 (0.092)	-0.021 (0.095)	-0.027 (0.099)	-0.066 (0.102)	-0.216 (0.152)

<i>institutional investor dedication</i>								
<i>quadratic CEO confidence</i>						-0.005 (0.008)	-0.000 (0.010)	0.003 (0.012)
<i>cubic CEO confidence</i>						0.002 (0.004)	0.002 (0.004)	0.004 (0.005)
<i>Quadratic interaction term CEO confidence X CEO power</i>							-0.050 (0.031)	-0.053* (0.032)
<i>Cubic interaction term CEO confidence X CEO power</i>							-0.019* (0.010)	-0.019* (0.011)
<i>Quadratic interaction term CEO confidence X Institutional investor dedication</i>								-0.217 (0.221)
<i>Cubic interaction term CEO confidence X Institutional investor dedication</i>								0.568 (0.451)
<i>Constant</i>	0.0878 (0.205)	0.0848 (0.205)	0.0463 (0.204)	0.0963 (0.207)	0.0399 (0.206)	0.0317 (0.207)	-0.0192 (0.209)	-0.012 (0.209)
<i>Observations</i>	318	318	318	318	318	318	318	318
<i>Adjusted R-squared</i>	0.086	0.084	0.102	0.082	0.099	0.094	0.099	0.099
<i>R-squared</i>	0.112	0.113	0.133	0.113	0.133	0.134	0.144	0.150

Legend: *** $p < 0,01$, ** $p < 0,05$, * $p < 0,1$

Note 1: Robust standard errors in parentheses

Note 2: Model 4 is in reference to model 2, not model 3

Note 3: Adjusted R-squared is measured with the non-robust option

Appendix 4 | Random effect model Hausman test

Below the Hausman test is shown, which examines whether a Fixed Effect or a random effect model should be applied.

Test of H0: Difference in coefficients not systematic, meaning, a random effect is more applicable for this regression analysis.

$$\begin{aligned}\text{chi2}(20) &= (b-B)'[(V_b-V_B)^{-1}](b-B) \\ &= 8.90\end{aligned}$$

$$\text{Prob} > \text{chi2} = 0.9841$$

As could be seen, the p-value is above the significance level of 0.05 and thus the null hypothesis is accepted. This means that a random effect model is more applicable than a fixed effect model.

Appendix 5 | Random effect model 6 with year, industry and country as dummy

Significant differences in strategic distinctiveness level per year, industry and country. With random effect model 6, main analysis.

<i>Strategic_Distinctiveness</i>	<i>Coefficient</i>	<i>P>z</i>
<i>CEO degree</i>	.0117419	0.529
<i>CEO gender</i>	.1840455	0.092
<i>CEO age</i>	-.0020071	0.513
<i>Firm size</i>	2.26e-10	0.768
<i>Firm performance</i>	.0008603	0.406
<i>Firm age</i>	.0002841	0.735
<i>Quasi indexer investor share</i>	-.047787	0.485
<i>CEO POWER</i>	.0276003	0.261
<i>Institutional investor dedication</i>	.0909751	0.529
<i>CEO confidence</i>	-.0120848	0.605
<i>Interaction term CEO confidence X CEO power</i>	-.0395755	0.140
<i>Interaction term CEO confidence X institutional investor dedication</i>	-.0553377	0.736
<i>Year</i>		
<i>2010</i>	.013183	0.719
<i>2011</i>	.0376998	0.349
<i>2012</i>	-.1158584	0.150
<i>2013</i>	-.0007685	0.983
<i>2014</i>	-.0022177	0.956
<i>2015</i>	-.021732	0.636
<i>2016</i>	-.0057358	0.900
<i>2017</i>	.0414905	0.332
<i>2018</i>	-.0095241	0.847
<i>Industry</i>		
<i>Beverages</i>	-.2663056	0.082
<i>Chemicals</i>	.026304	0.707
<i>Clothing & Personal Products</i>	.1021485	0.321
<i>Construction & Building Materials</i>	-.0974172	0.309
<i>Diversified Industrials</i>	-.3872515	0.010
<i>Electricity</i>	.0680188	0.368
<i>Electronic & Electrical Equipment</i>	.0742267	0.481
<i>Engineering & Machinery</i>	.0701319	0.561
<i>Food & Drug Retailers</i>	-.1987474	0.200
<i>Food Producers & Processors</i>	-.0535039	0.574
<i>General Retailers</i>	-.1099819	0.192
<i>Health</i>	-.188043	0.133
<i>Household Products</i>	-.1334291	0.215
<i>Information Technology Hardware</i>	-.0502726	0.732
<i>Leisure & Hotels</i>	-.224392	0.081

<i>Media & Entertainment</i>	.1700984	0.159
<i>Mining</i>	-.1072964	0.401
<i>Oil & Gas</i>	.2321108	0.127
<i>Pharmaceuticals and Biotechnology</i>	-.1089151	0.179
<i>Renewable Energy</i>	-.2623353	0.052
<i>Software & Computer Services</i>	.1311378	0.200
<i>Speciality & Other Finance</i>	.0338061	0.853
<i>Steel & Other Metals</i>	-.2706944	0.150
<i>Telecommunication Services</i>	.1100861	0.393
<i>Transport</i>	-.0114727	0.923
Country		
<i>Finland</i>	-.3786821	0.135
<i>France</i>	-.3315368	0.058
<i>Germany</i>	-.3546254	0.072
<i>Isle Of Man</i>	-.2621547	0.228
<i>Jersey</i>	-.1167493	0.461
<i>Netherlands</i>	-.0137601	0.951
<i>Republic Of Ireland</i>	-.2421056	0.180
<i>Spain</i>	-.5373881	0.048
<i>Switzerland</i>	-.2845984	0.106
<i>United Kingdom - England</i>	-.4029383	0.026
<i>Constant</i>	.1972029	0.457

Appendix 6 | Overall model fit additional analysis

In this appendix the overall model fit tables are shown for model 10 to 15. These overall model fit tables are insightful, as they show if the model improves when adding variables. The random effect model could not be included in these overall model fit tables.

Model 10, No institutional investors

<i>Block</i>	<i>F</i>	<i>Block df</i>	<i>Residual df</i>	<i>Pr > F</i>	<i>R2</i>	<i>Change in R2</i>
1	6.39	6	988	0.0000	0.0594	
2	11.93	1	987	0.0006	0.0691	0.0097
3	7.99	1	986	0.0048	0.0760	0.0069

Model 11, Dependent variable square rooted

<i>Block</i>	<i>F</i>	<i>Block df</i>	<i>Residual df</i>	<i>Pr > F</i>	<i>R2</i>	<i>Change in R2</i>
1	15.85	9	110	0.0000	0.5033	
2	2.90	1	109	0.0915	0.5206	0.0173
3	7.71	1	108	0.0065	0.5449	0.0243
4	1.06	1	107	0.3057	0.5491	0.0042

Model 12, Dependent variable with only positive values

<i>Block</i>	<i>F</i>	<i>Block df</i>	<i>Residual df</i>	<i>Pr > F</i>	<i>R2</i>	<i>Change in R2</i>
1	7.74	9	308	0.0000	0.1824	
2	1.05	1	307	0.3062	0.1873	0.0049
3	0.17	1	306	0.6786	0.1881	0.0008
4	0.03	1	305	0.8608	0.1882	0.0001

Model 13, R&D expenses out of dependent variable

<i>Block</i>	<i>F</i>	<i>Block df</i>	<i>Residual df</i>	<i>Pr > F</i>	<i>R2</i>	<i>Change in R2</i>
1	4.22	9	323	0.0000	0.1313	
2	0.27	1	322	0.6041	0.1321	0.0008
3	8.75	1	321	0.0033	0.1542	0.0220
4	0.36	1	320	0.5472	0.1554	0.0012

Model 14, CEO confidence 2 indicators (CEO compensation gap and Net Buyer Proxy)

<i>Block</i>	<i>F</i>	<i>Block df</i>	<i>Residual df</i>	<i>Pr > F</i>	<i>R2</i>	<i>Change in R2</i>
1	2.40	9	196	0.0132	0.0936	
2	0.33	1	195	0.5663	0.0966	0.0031
3	1.26	1	194	0.2639	0.1088	0.0122
4	0.03	1	193	0.8523	0.1091	0.0003

Model 15, CEO confidence measured by Net Buyer Proxy

<i>Block</i>	<i>F</i>	<i>Block df</i>	<i>Residual df</i>	<i>Pr > F</i>	<i>R2</i>	<i>Change in R2</i>
1	2.41	9	197	0.0131	0.0935	
2	2.01	1	196	0.1577	0.1013	0.0079
3	0.02	1	195	0.9002	0.1014	0.0000
4	2.27	1	194	0.1333	0.1109	0.0095

Appendix 7 | Random effect models of additional analysis

<i>Variables</i>	<i>Model 10</i>	<i>Model 11</i>	<i>Model 12</i>	<i>Model 13</i>	<i>Model 14</i>	<i>Model 15</i>
<i>Model explanation</i>	No institutional investors	dependent variable square rooted	dependent variable positive values	R&D expense out dependent variable	CEO confidence 2 indicators	CEO confidence NBP
<i>CEO degree</i>	0.013 (0.010)	0.011 (0.014)	-0.020* (0.011)	0.022 (0.015)	0.005 (0.020)	0.006 (0.019)
<i>CEO gender</i>	0.129 (0.084)	-0.257* (0.153)	-0.448*** (0.093)	0.298*** (0.116)	0.257* (0.142)	0.186 (0.138)
<i>CEO age</i>	-0.006*** (0.002)	-0.009*** (0.003)	-0.004** (0.002)	-0.006** (0.003)	-0.006 (0.005)	-0.007 (0.004)
<i>Firm size</i>	-0.000 (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000 (0.000)	-0.000* (0.000)	-0.000* (0.000)
<i>Firm performance</i>	0.001 (0.001)	-0.000 (0.001)	-0.002*** (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
<i>Firm age</i>	-0.001* (0.000)	-0.002*** (0.000)	-0.001*** (0.000)	-0.001 (0.000)	-0.001 (0.001)	-0.001 (0.001)
<i>Quasi indexer investor share</i>		0.008 (0.054)	-0.047 (0.054)	0.001 (0.071)	-0.052 (0.081)	-0.069 (0.079)
<i>Institutional investor dedication</i>		0.391*** (0.072)	0.069 (0.097)	0.108 (0.142)	0.074 (0.152)	0.056 (0.124)
<i>CEO power</i>	-0.002 (0.013)	-0.005 (0.022)	-0.062*** (0.024)	0.033 (0.025)	0.058 (0.047)	0.053 (0.045)
<i>CEO confidence (compensation gap)</i>	-0.009 (0.010)	-0.011 (0.009)	-0.006 (0.019)	-0.020 (0.020)		
<i>Interaction term CEO confidence X CEO power</i>	-0.013 (0.011)	-0.022** (0.011)	0.018 (0.025)	-0.055*** (0.020)		
<i>Interaction term CEO confidence X institutional investor dedication</i>		-0.019 (0.102)	0.035 (0.112)	-0.090 (0.144)		
<i>CEO confidence (full)</i>					-0.036 (0.048)	
<i>Interaction term full CEO confidence X CEO power</i>					-0.118* (0.069)	
<i>Interaction term full CEO confidence X institutional investor dedication</i>					-0.130 (0.332)	
<i>CEO confidence (Net Buyer Proxy)</i>						0.000** (0.000)

<i>Interaction term</i>						0.000
<i>NBP CEO</i>						(0.000)
<i>confidence X</i>						
<i>CEO power</i>						
<i>Interaction term</i>						0.000
<i>NBP CEO</i>						(0.001)
<i>confidence X</i>						
<i>institutional</i>						
<i>investor</i>						
<i>dedication</i>						
<i>Constant</i>	0.175	1.134***	0.990***	0.013	0.115	0.229
	(0.112)	(0.269)	(0.144)	(0.229)	(0.266)	(0.264)
<i>Observations</i>	996	120	318	333	206	207
<i>Prob > chi2</i>	0.0037	.	0.0000	0.0009	0.0000	0.0000
<i>Number of</i>	147	38	71	72	56	56
<i>board id</i>						

*Legend: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$*

Note 1: Robust standard errors in parentheses

Note 2: Firm and year random effects are included in all models