Article

Exploring Chief Executive Officer Overconfidence and Merger and Acquisition Deal Characteristics

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Abstract

Purpose: Research shows that mergers and acquisitions (M&As) often fail, prompting interest in causes such as overconfident boards and chief executive officers (CEOs). Evidence from developed markets on CEO overconfidence and M&A deal characteristics is mixed. Relationships between CEO overconfidence and four deal characteristics (rationale, size, financing, and number of deals completed) were examined using data from 119 deals undertaken by South African listed companies between 2016 and 2023. South Africa has an active, regulated M&A market, boasting substantial domestic and foreign investor participation.
Methodology: CEO overconfidence was measured using the conventional Longholder measure and a novel proxy called the Receptiviti overconfidence measure. Data were collected from Bloomberg, the acquirers' annual integrated reports, the South Africa Competition Commission, and other credible online sources.
Findings: Contrary to expectations, logistic and cross-sectional regressions reveal that overconfident CEOs preferred non-diversifying acquisitions. They also completed significantly more deals during their tenure than their non-overconfident peers did. The agency and upper echelon theories explain the findings and provide insights for stakeholders.
Practical Implications: For serial acquirers, effective monitoring by truly independent non-executive directors is crucial to ensuring that CEO-driven acquisitions contribute to long-term value creation rather than empire-building. The incentive compensation of serial acquirers should be based on deal

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completion and long-term performance rather than short-term performance metrics.
Originality/Value: This study contributes to the limited body of knowledge on this behavioural bias within emerging markets and proposes an alternative overconfidence measure for emerging markets, such as South Africa, where the use of stock options has declined substantially.

Keywords: mergers and acquisitions (M&As); chief executive officer (CEO); Longholder measure of overconfidence; Receptiviti measure of overconfidence; agency theory; upper echelon theory

Introduction

The failure rate of mergers and acquisitions (M&As) globally is as high as 90% (Reeves et al. 2019), with experts predicting little improvement soon (Zhou et al. 2023). While failure can be defined in many ways, it generally refers to lower-than-expected post-acquisition sales and gross margins, disappointing share price performance, and large goodwill write-offs (Lev and Gu 2024). Given the adverse consequences of M&A failures for shareholders, employees, customers, and other stakeholders (Renneboog and Vansteenkiste 2019), scholars are intensifying their efforts to identify potential causes and remedies for failure (Friedman et al. 2015; Grigorieva and Kirakosyan 2022).

Prior research has linked deal underperformance and subsequent failure to certain M&A deal characteristics, such as the rationale for the deal, premium paid, deal size, financing structure, and the number of deals previously completed by the CEO (Renneboog and Vansteenkiste 2019). Several behavioural finance scholars have reported that these deal characteristics are significantly associated with CEO overconfidence—that is, instances where CEOs overestimate their own knowledge and abilities (Ferris et al. 2013; Hwang et al. 2020; Ismail and Mavis 2022). Malmendier and Tate (2008), for example, reported that overconfident CEOs overestimate their ability to generate returns and, as a result, pay substantial premiums for target companies and undertake more value-destroying deals.

Grigorieva and Petrunina (2015) show that the consequences of failed M&As are more detrimental for shareholders in emerging markets, given weaker regulatory frameworks and higher costs (Van Wyk et al. 2024). Considering the limited research in these markets, particularly in Africa (Ellis et al. 2015), South Africa was selected as the research setting for this study. South Africa is one of the largest industrialised countries on the African continent and has a robust M&A market (Green and Izzard 2022). The Johannesburg Stock Exchange (JSE) is also regarded as highly regulated and efficient (Heymans and Santana 2018). As such, the authors investigated the relationships between four M&A deal characteristics (deal rationale, deal size, financing structure, and number of deals completed) and CEO overconfidence in South Africa from 2016 to 2023.

A total of 119 acquisitions were identified from the Bloomberg database. CEO overconfidence was measured by computing two proxies, namely the conventional Longholder measure (Malmendier and Tate 2005, 2008) and a novel Receptiviti measure. The biggest disadvantage of Malmendier and Tate's Longholder measure is that it ignores other reasons for holding onto options longer, such as tax considerations, liquidity constraints, and personal risk preferences (Kaplan et al. 2022). Employing an alternative CEO overconfidence proxy is also important in the South African context, where stock options as a form of compensation have decreased considerably in recent years (Steenkamp and Wesson 2018). Advancements in technology offer more effective ways to measure overconfidence. Rather than deriving assumptions from stock option exercise decisions, more accurate and timely information can be obtained by applying language assessment tools to evaluate the level of clout with which a CEO communicates. Data were collected from various sources, including Bloomberg, the South African Competition Commission's website, and the acquirers' integrated annual reports and websites. The data were analysed using descriptive statistics, cross-sectional analysis, and logistic regressions.

The study makes four important contributions to the existing body of knowledge. Prior research primarily focused on the following four deal characteristics: deal rationale, premiums, deal size, and financing structure. By including the number of deals completed as a fifth deal characteristic, this study sheds light on the concept of serial acquisitions during a CEO's tenure. It also expands the scope of previous research by utilising the novel Receptiviti score as a proxy for CEO overconfidence alongside the established Longholder measure. The empirical results show that these two measures can be used for the same objective, demonstrating that the Receptiviti score is a valid and reliable measure of overconfidence. The empirical evidence underscores the pivotal roles of a CEO's educational background and nationality in shaping deal rationale and financing structure, respectively. Although incorporated as control variables, the findings indicate that these two CEO demographics warrant deeper investigation in the future. Finally, applying upper echelons theory to the empirical findings provides a new perspective on the behavioural bias considered and its link to M&A decision-making. This theory yielded new insights alongside agency theory, which has been predominantly used in prior studies.

Literature Review, Theoretical Underpinning, and Research Hypotheses

Despite the excitement surrounding business combinations, the majority of M&As fail (Reeves et al. 2019). Failure is a multifaceted and time-sensitive construct, often measured in terms of post-acquisition sales, gross margins, share price performance, and goodwill write-offs (Lev and Gu 2024). Some of the most prominent causes of deal failure highlighted in the extant literature include insufficient planning, superficial due diligence investigations, poor timing, cultural clashes, weak human resource management, and overpayment for targets (Ott 2019; Renneboog and Vansteenkiste 2019; Saleh 2023). Many of these causes have been linked to flawed decision-making by C-suite executives, notably CEOs (e.g., Hwang et al. 2020; Ismail and Mavis 2022; Lev and Gu 2024; Malmendier and Tate 2008).

As the company's highest-ranking executive, the CEO bears substantial responsibility for the company's vision, mission, strategy, and overall success (Neal 2021). Researchers and practitioners are increasingly adopting the view that a CEO's personality, biases, abilities, and demographics play a role in decision-making, including important strategic decisions regarding M&As (Kaplan et al. 2022). M&As are among the most crucial and noteworthy events in a company's lifecycle, as they have significant effects on operations and value creation (Renneboog and Vansteenkiste 2019). According to Graham et al. (2015), CEOs tend to make M&A decisions in relative isolation. Given the importance of these decisions for firm value, CEO decision-making warrants thorough investigation.

The CEO attribute receiving the most attention is overconfidence (Aljabri et al. 2026; Seraj et al. 2022). In essence, overconfident individuals overestimate their own knowledge and abilities (Shefrin 2018). CEO overconfidence has been associated with various corporate decisions, such as capital structure (Mundi and Kaur 2022), dividend policy (Khan et al. 2025), corporate investments (Aljabri et al. 2026), and M&A decisions (e.g., Grogirieva and Kirakosyan 2022; Nie and Yen 2024).

Overconfidence is an example of a behavioural bias that can cause decision-makers to deviate from rational decision-making. The difference between real-world decision-making and what academic models assume occurs due to bounded rationality (Simon 1956). Bounded rationality implies that individuals make decisions rationally, but "within the constraints imposed by their limited search and computational capacities" (Gilovich et al. 2013, 2). In other words, individuals are not necessarily irrational, but rather rational within bounded terms. Given certain constraints on decision-making, the brain uses heuristics to simplify the process (Shefrin 2008), which are useful for decision-making but can result in information-processing errors and subjective interpretations, ultimately leading to behavioural biases that yield suboptimal decisions (Baker and Nofsinger 2002).

Drawing on Roll's (1986) hubris hypothesis, the behaviour of overconfident CEOs is said to differ from that of their rational counterparts in two ways. First, they overestimate the potential synergies of acquisitions because they believe their leadership skills are better than average and fail to perceive some of the risks involved in the deal (Ferris and Sainani 2021). The latter is due to their belief that they have more control over the outcome than is actually the case. Second, overconfident CEOs erroneously believe that their company's equity is undervalued (Aktas et al. 2019; Toksoz et al. 2026). This belief arises from overestimating the future returns that could be generated under their leadership.

Overconfidence is considered the most pervasive and damaging of all behavioural biases, causing significant errors in judgement (Brown and Sarma 2007; Hayward et al. 2010). As will be shown in the following sections, CEO overconfidence has been found to influence several M&A deal characteristics. These characteristics, in turn, have been associated with deal underperformance and subsequent failure (Renneboog and Vansteenkiste 2019).

Deal Rationale

Deal rationale refers to the primary reason why a company undertakes a merger or acquisition (Brahma et al. 2023). One of the most common drivers is the desire to increase market share and power. This objective can be achieved by expanding within the same industry or by entering a new, unrelated industry (Büssgen and Stargardt 2024). External growth within the same industry is classified as a non-diversifying strategy, while growth in a new, unrelated industry is considered a diversifying strategy (Brown and Sarma 2007; Ferris et al. 2013). Scholars have reported a clear preference among overconfident CEOs for diversifying acquisitions (Ferris et al. 2013; Hwang et al. 2020). Lev and Gu (2024) point out that spreading a company's operations across diverse industries provides no real benefit to shareholders, as they can diversify their investments on their own. Overconfident CEOs, however, engage in these transactions not only to enlarge the company under their charge (a phenomenon called empire-building) but also to boost their compensation (Chen et al. 2021; Lev and Gu 2024). Research confirms that shareholders of JSE-listed companies seldom replace poorly performing CEOs (Viviers et al. 2019). The existence of agency conflicts (Brown and Sarma 2007; Malmendier and Tate 2008) and limited shareholder interventions in the South African context suggest that:

> H_1: Overconfident CEOs of JSE-listed companies engage in more diversifying acquisitions than their rational counterparts.

Deal Size

The deal size of an M&A refers to the aggregate (total) amount paid or payable by the acquirer and its subsidiaries to finalise a deal (Alexandridis et al. 2013). The feasibility and appropriateness of this amount largely depend on the resources and objectives of the acquirer. Scholars have found that acquirers who engage in small- and moderate-sized M&As typically create the most value (Tan et al. 2024). The upper echelon theory posits that the outcomes of M&A decisions are influenced by the characteristics, biases, and past experiences of top executives, notably CEOs (Ting et al. 2015). The "upper echelon" of a company's leadership brings unique perspectives and backgrounds to the decision-making process, shaping the company's strategies and actions. The importance of understanding both the individual and collective characteristics of managers in explaining company behaviour and performance is emphasised by the upper echelon theory (Brunzel 2021; Plöckinger et al. 2016). This theory implies that overconfident CEOs make bold decisions, such as undertaking large and risky M&As. Such CEOs might see large deals as opportunities to showcase their capabilities. Scholars propose that chief financial officers (CFOs), rather than CEOs, are often responsible for smaller deals, which tend to be more successful than the larger deals initiated by overconfident CEOs (Ferris and Sainani 2021). Empirical findings regarding the association between CEO overconfidence and this deal characteristic are inconclusive (Doukas and Petmezas 2007; Ferris and Sainani 2021). To shed light on this relationship and the role of upper echelon theory, the second hypothesis was formulated as follows:

> H_2: Overconfident CEOs of JSE-listed companies engage in larger acquisitions than their rational counterparts.

Financing Structure

The method of payment that an acquirer or its subsidiaries use to pay for a transaction is called the financing structure of the deal (Ferris et al. 2013). Acquirers can use cash, shares, or a combination of these two methods. Alternatively, debt financing can be employed but is considered very risky (Pan et al. 2019), particularly in developing and emerging markets, where interest rates tend to be higher than in developed markets (Arteta et al. 2026). The choice between internal financing (cash) and external financing (equity and debt) is based on the abundance of cash flow available to the acquirer and/or the (false) certainty of the acquiring executives that the deal will be successful. The agency theory posits that overconfident executives tend to overestimate their ability to generate value from an acquisition; therefore, they prefer payment methods that reflect their optimism. More specifically, overconfident CEOs believe that their company's shares are undervalued (Toksoz et al. 2026), leading to a preference for cash transactions to protect the intrinsic value of their shares. Given ambiguous findings on the association between CEO overconfidence and this dependent variable (Ferris et al. 2013; Hwang et al. 2020; Malmendier and Tate 2008), the third hypothesis states:

> H_3: Overconfident CEOs of JSE-listed companies more often use cash (internal financing) to fund acquisitions than their rational counterparts.

Number of Deals Completed

CEOs who regard acquisitions as central to achieving growth are sometimes called serial acquirers (Grant et al. 2022). These CEOs are highly acquisitive and tend to complete more deals in a shorter period of time (Malmendier and Tate 2008). In most research, the number of deals completed by an acquirer in two years serves as a proxy for the acquirer's acquisitiveness (Hossain et al. 2021; Klasa and Stegemoller 2007). Serial acquirers, on average, experience declining short- and long-term performance from deal to deal (Doukas and Petmezas 2007). This finding is somewhat surprising, as CEOs are, in theory, expected to gain valuable experience in the process (Ismail and Abdallah 2013). The number of deals completed by acquiring CEOs during their tenure is, therefore, an important variable to consider when using agency and upper echelon theories as theoretical lenses (Ferris et al. 2013; Malmendier and Tate 2008; Renneboog and Vansteenkiste 2019). Given the additional lure of deal-completion compensation (Brown and Sarma 2007; Lev and Gu 2024), the fourth hypothesis is:

> H_4: Overconfident CEOs of JSE-listed companies complete more deals during their tenure than their rational counterparts.

Research Design and Methodology

Suitable deals from January 1, 2016, to December 31, 2023, were identified using Bloomberg. This research period was selected to provide a sufficient timeframe for analysis, covering the COVID-19 pandemic, which had a significant impact on M&A deals globally. Acquirers had to have a primary listing on the JSE during the research period, obtain more than 50% of the combined entity to gain control, and complete the acquisition within the research period. Comprehensive data on the selected deal characteristics and the acquiring CEO's identity at the time of each transaction had to be available. Additionally, sufficient data on the spot price, strike price, grant date, exercise date, and expiration date of the respective CEOs' option exercises were also required to estimate the Longholder CEO overconfidence proxy.

The Bloomberg database, a world-renowned financial data and solutions provider (Bloomberg 2024), was used to retrieve data on M&A deal characteristics, the Longholder overconfidence measure, and control variables. In cases where Bloomberg did not provide sufficient data on a variable, the integrated reports of the respective companies were consulted to address the missing data in the dataset. Three press releases had to be available for each deal in the sample to measure the second CEO overconfidence proxy using the Receptiviti language assessment tool. After considerable data cleaning, the final sample consisted of 119 acquisitions undertaken by 78 CEOs.

Operationalisation and Data Collection of the Dependent Variables (Deal Characteristics)

Deal rationale was defined as the acquirer's primary purpose for undertaking a specific deal (Brahma et al. 2023). In line with Ferris et al. (2013) and Brown and Sarma (2007), the rationale was classified as either diversifying or non-diversifying. M&As spanning multiple industries, according to the Global Industry Classification Standard, were classified as diversifying, while those within the same industry were categorised as non-diversifying (Kim et al. 2022). Data for this binary variable were obtained from Bloomberg.

Deal size was defined as the total amount paid by the acquirer to complete the deal (Alexandridis et al. 2013). For comparison purposes, all deal sizes were denoted in South African rand (ZAR) and standardised by dividing the deal size by the market capitalisation of the acquirer on the date of completion. Both values were retrieved from Bloomberg. A deal's financing structure was defined as the method of payment used to complete a transaction (Ferris et al. 2013; Hwang et al. 2020; Malmendier and Tate 2008). This variable was measured using Bloomberg's payment type function, which reports the following payment types per deal: cash, shares; cash and shares; cash or shares; cash and debt; cash, shares, and debt; shares and debt; and debt and undisclosed payment types. All deals with undisclosed payment types and those in the cash or shares category were excluded. Thereafter, deals were grouped into internal funding (cash) and other funding (all other payment types and combinations).

The number of deals completed reflects the total number of deals completed by each acquiring CEO during their tenure over the research period. This ordinal variable served as a proxy for the acquisitiveness of the acquiring CEOs. Data on the 78 CEOs' appointment dates and the number of deals completed were sourced from their companies' integrated annual reports, websites, and other credible sources. To enhance rigour, data sourced from Bloomberg were verified by comparing them to data published in JSE Stock Exchange News Service (SENS) announcements and corporate press releases in several cases.

Operationalisation and Data Collection of the Independent Variable (CEO Overconfidence)

The first CEO overconfidence proxy used, the Longholder measure developed by Malmendier and Tate (2005), employs share option-based compensation data to assess overconfidence. A CEO was classified as overconfident if, at any point during their tenure at the helm of the acquirer, they held an option package until the last year before expiration, provided that the option package was at least 40% in-the-money upon entering its final year. Malmendier and Tate (2005) argue that CEOs who hold onto their option packages for longer believe that the fair market value of the company's shares will continue to grow and that their companies will perform well in the future. Option-related data were retrieved from Bloomberg. In line with Malmendier and Tate (2008), a binary classification was assigned to each CEO per deal, with a value of one, indicating an overconfident CEO, and zero, indicating a rational CEO.

To address the shortcomings of the Longholder measure, a second proxy for CEO overconfidence was employed. As indicated earlier, it was also pertinent to explore an alternative measure of CEO overconfidence in South Africa, given the substantial decline in the use of stock options among local CEOs since the implementation of International Financial Reporting Standards (IFRS) 2 in December 2005 (Steenkamp and Wesson 2018). This development could hinder the use of the Longholder measure as a proxy for CEO overconfidence in future research. The authors, therefore, sought to explore an alternative technique to measure CEO overconfidence in South Africa.

To construct the second CEO overconfidence proxy, a psycholinguistic approach was used, employing the Receptiviti language assessment tool. This tool measures the extent to which an individual communicates with clout or hesitation within text. Psycholinguistic research has suggested that the linguistic marker of an individual's clout is a valid technique for capturing overconfidence (Zyung and Shi 2022). The use of clout, rather than press portrayal as employed in earlier work (e.g., Malmendier and Tate 2008), is akin to the approaches followed by Huang et al. (2014) and Larcker and Zakolyukina (2012). Notably, Zyung and Shi (2022) also implemented a psycholinguistic approach to measure CEO overconfidence through language.

Statements made by the 78 identified CEOs about the 119 considered acquisitions were collected from press releases on the website of South Africa's Competition Commission. By law, all JSE-listed companies must issue mandatory press releases regarding proposed M&As. Three substantial pieces of text per deal were used as input for the Receptiviti language assessment tool. The tool generates a score between zero and 100, using communication dynamics specifically tailored to identify confidence. According to Receptiviti, a high clout score reflects language that is very confident. Examples of terms/phrases used by CEOs classified as overconfident include: "game-changer," "unprecedented," "guaranteed success," "leading the industry," "once-in-a-lifetime opportunity," and "our unique advantage." Zyung and Shi (2022) concur that overconfident CEOs display strong clout in their language. For comparison purposes, a binary classification was also employed for this proxy, with a value of one assigned to Receptiviti scores of 75 and above (i.e., overconfident), and zero otherwise (i.e., rational). The term overconfidence reflects the upper-bound dominance implied by the construct, consistent with prior psycholinguistic interpretations of clout.

Operationalisation and Data Collection of the Control Variables

Five CEO-related control variables were identified in the literature. CEO age was defined as the age of the CEO in the year a particular deal was completed (Malmendier and Tate 2008). Older CEOs generally undertake fewer deals and pay less for targets (Serflin 2014). They also tend to be more risk-averse and prefer diversifying acquisitions. Younger CEOs were previously found to be more overconfident than their older counterparts (Citci and Inci 2016). The most common explanation is that younger CEOs are incentivised to prioritise firm growth. In doing so, they demonstrate their capabilities and prove their worth (Navaretti et al. 2021). Although research has shown the important role of women in M&A decision-making (Ahmed et al. 2022), CEO gender was not considered in this study due to the substantially low representation of women CEOs in JSE-listed firms.

Zhao and Cai (2024) argue that CEOs who engage in acquisitions early in their tenures do so because of external pressure to produce short-term results or meet company objectives. Motivations for undertaking acquisitions, however, change the longer a CEO remains in position. Some do so for empire-building reasons or other self-interested motives, such as ego or remuneration (Jebran et al. 2022). CEO tenure was measured as the number of months the CEO had been with the company at the time of deal completion (Malmendier and Tate 2008). As with the previous two control variables, tenure data were collected from Bloomberg, the acquiring companies' integrated annual reports, and websites.

Most CEOs have educational backgrounds in accounting, finance, insurance, and investment management (Jaggia and Thosar 2021; Main and Silva 2021). In this study, CEO educational background was classified as either "financial," "technical," or "miscellaneous." CEO nationality was included as another control variable, as it has been shown to influence strategic decisions, including cross-border M&A deals (Agcayazi et al. 2024). Nationality was defined as the acquiring CEO's official nationality at the end of the financial year in which the deal was completed.

Board independence was measured as the percentage of independent non-executive directors (%INEDs) on the acquirer's board at the end of the financial year during which the deal was completed (Renneboog and Vansteenkiste 2019). Traditional finance theory proposes that INEDs are responsible for monitoring managerial behaviour (Annuar 2014). INEDs, therefore, have an opportunity and a responsibility to monitor CEOs' behavioural biases and prevent them from making poor strategic decisions. Data for this variable were retrieved from Bloomberg.

Data Analysis

In addition to descriptive statistics, cross-sectional and logistic regression analyses were employed to test the hypotheses. A cross-sectional, rather than a longitudinal, research design was employed, as the selected M&A deal characteristics, CEO overconfidence, and identified control variables were assessed at the time of deal completion rather than over the eight-year research period. The following cross-sectional regression equation was applied to test H_2 and H_4:

$$\text{Deal characteristic}_i = \alpha_0 + \beta_1\text{CEO overconfidence}_i + \beta_2\text{CEO age}_i + \beta_3\text{CEO tenure}_i + \beta_4\text{CEO education}_i + \beta_5\text{CEO nationality}_i + \beta_6\text{Board independence}_i + \varepsilon_i$$

The dependent variable, i.e., deal characteristic, represents deal size and the number of deals completed (continuous variables). Contrastingly, logistic regression analyses were conducted to address H_1 and H_3, considering the binary nature of the deal rationale and financing structure variables. The following equation was used:

$$\text{Logit}[P(\text{Deal characteristic}=1)] = \alpha_0 + \beta_1\text{CEO overconfidence}_i + \beta_2\text{CEO age}_i + \beta_3\text{CEO tenure}_i + \beta_4\text{CEO education}_i + \beta_5\text{CEO nationality}_i + \beta_6\text{Board independence}_i + \varepsilon_i$$

The binary dependent variable indicated whether the deal represented a diversified deal or a cash payment, respectively. For both cross-sectional and logistic regressions, two regressions were conducted per deal characteristic, using the Longholder and Receptiviti measures (proxies for CEO overconfidence) as the independent variables, respectively. The intercept term is denoted by α_0, the regression coefficients by β, and the error term by ε_i. Autocorrelation was tested using the Durbin–Watson (DW) test, multicollinearity was assessed with variance inflation factors (VIFs) and heteroskedasticity detected via the Breusch–Pagan test. Where applicable, regression results were adjusted for heteroskedasticity.

Results and Discussion

The majority of deals (67.227%) were non-diversifying, meaning that most acquirers bought targets operating in the same industry as themselves. The sampled CEOs might have preferred these types of deals due to the opportunities and challenges brought about by the COVID-19 pandemic. Consolidation was a key theme in several industries in 2020 and 2021 (Ardolino et al. 2022). The mean ZAR standardised deal size (0.889) implies that for every R1 of an acquirer's market capitalisation, the deal value was R0.889. Almost 80% of the sampled acquirers used internal funding to finance their respective deals, with 95 of the 119 deals being entirely financed with cash. This finding is in line with Fischer (2017), who also reported a very strong preference among acquirers for cash-funded acquisitions.

The median number of deals completed by acquiring CEOs during the research period was two. On average, the sampled CEOs undertook an M&A deal every 28 months. Following Hossain et al.'s (2021) definition, the sampled CEOs were not classified as serial acquirers, as the average time between deals was more than 24 months. There were, however, outliers in this variable pointing to some serial acquirers. The maximum number of deals (34) was undertaken by a CEO with a tenure of 282 months. This executive thus completed 1.5 deals per year and could be classified as a serial acquirer.

According to the Longholder measure, 57% of the deals (68 of 119) were undertaken by overconfident CEOs, compared to 51 deals (43%) reported by the Receptiviti measure. It is important to note that some CEOs were involved in multiple deals. In the case of the Longholder measure, the classifications were calculated only once per CEO, not once per deal. The scores for the Receptiviti measure were calculated once per deal, as CEOs could exhibit different levels of confidence for different deals. Despite applying the Receptiviti measure to each respective deal rather than once per CEO, it was noted that only one CEO involved in multiple deals exhibited overconfidence in one deal and non-overconfidence in another. Thus, it appears that CEOs' level of overconfidence remains fairly consistent across different deals. Although the two overconfidence proxies are not perfectly aligned (68 vs. 51 deals), a Pearson correlation analysis revealed a statistically significant positive association ($p < 0.01$). This result offered an early indication that the Receptiviti measure may be a valid alternative for assessing CEO overconfidence.

The average age of the acquiring CEOs was 53 years. The average tenure of the sampled CEOs was 78.992 months (approximately 6.5 years). As expected, most CEOs (60%) had a financial background and were South African (71%). The remaining CEOs were Dutch, Argentinian, Zimbabwean, Brazilian, British, and Australian. More than half of the directors serving on the acquirers' boards (60.307%) were INEDs. In theory, such a high level of board independence should temper CEO overconfidence (Annuar 2014).

The Relationship Between Deal Characteristics and CEO Overconfidence

This section reflects on the results obtained from the cross-sectional and logistic regression analyses. All VIF values were below five, indicating no multicollinearity issues. The variables reporting statistically significant relationships with a deal characteristic are shown in bold in Tables 1 to 4. As indicated in Table 1, deal rationale was significantly and inversely related to the traditional Longholder measure.

Table 1: Results of logistic regression: Deal rationale and CEO overconfidence

Variable	Regression coefficient ($\boldsymbol{\beta}$)	Standard error	Wald	*p*-value	Odds ratio
Intercept	-0.270	1.841	0.021	0.884	
Longholder measure	**-0.370**	**0.211**	**3.069**	**0.080***	**0.477**
CEO age	-0.016	0.036	0.188	0.664	0.984
CEO tenure	0.002	0.004	0.308	0.579	1.002
CEO educational background	**-0.801**	**0.460**	**3.037**	**0.081***	**0.213**
CEO nationality	0.318	0.241	1.730	0.188	1.887
Board independence	-0.004	0.016	0.072	0.789	0.996
Intercept	-0.188	1.823	0.011	0.918	
Receptiviti measure	-0.105	0.215	0.239	0.625	0.810
CEO age	-0.017	0.036	0.214	0.053	0.984
CEO tenure	0.002	0.004	0.004	0.009	1.002
CEO educational background	**-0.780**	**0.459**	**2.886**	**0.089***	**0.230**
CEO nationality	0.301	0.239	1.575	0.210	1.824
Board independence	-0.005	0.016	0.102	0.750	0.995

Note: * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level; statistically significant results are presented in bold.

This finding implies that overconfident CEOs prefer non-diversifying deals; in other words, they opt to acquire targets that operate in the same industry as they do. This preference among the sampled CEOs contradicts prior literature (e.g., Billet and Qian 2008; Brown and Sarma 2007; Ferris et al. 2013; Malmendier and Tate 2008) and implies that H_1 could not be supported. This contradictory result emphasises the fact that findings from developed countries cannot be extrapolated to emerging markets (Kumar et al. 2023).

With the inclusion of the COVID-19 pandemic, CEOs in the sample might have noticed financially distressed targets in their own industries (Theunissen 2024). Tough economic conditions and inefficient infrastructure, such as loadshedding, might have further prompted these horizontal deals (Tregenna et al. 2021). Given the circumstances in South Africa during the research period, the sampled CEOs might have opted for non-diversifying deals to reduce competition in their respective industries and subsequently improve their market share. In addition, these CEOs may have taken advantage of bargain deals due to financial distress caused by the pandemic and economic conditions. The upper echelon theory might also explain this surprising finding. This theory proposes that CEOs favour non-diversifying deals due to familiarity and expertise, risk aversion, strategic fit and forecasted synergies, social and professional networks, and organizational culture (Bower 2001; Campa and Moschieri 2008; Fieldman 2023). According to this theory, CEOs might therefore have preferred non-diversifying deals due to past experiences and insights into the industry in which they operate.

The deal rationale variable was also significantly and inversely related to the CEO's educational background. Closer inspection revealed that CEOs with miscellaneous educational backgrounds tended to prefer non-diversifying deals. These CEOs included, among others, legal professionals, healthcare providers, medical doctors, politicians, agricultural specialists, pastors, clothing designers, and journalists. As proposed by upper echelon theory, CEOs may favour non-diversifying deals due to familiarity and expertise (Fieldman 2023), which are particularly important for generalists, such as the CEOs classified as having a miscellaneous educational background in this study. Table 2 contains the results of the analysis using deal size as the dependent variable.

Table 2: Results of cross-sectional regression: Deal size and CEO overconfidence

Variable	Regression coefficient (β)	t-statistic	*p*-value	Regression summary
Intercept	0.002	0.006	0.996	$R^2 = 0.07$
Longholder measure	0.000	0.003	0.998	$N = 99$
CEO age	-0.003	-0.480	0.632	F(0.986); $p = 0.447$
CEO tenure	0.000	0.118	0.906	DW: 1.70
CEO educational background	0.106	1.073	0.286	
CEO nationality	-0.025	-0.325	0.746	
Board independence	**0.006**	**2.424**	**0.017****	
Intercept	0.016	0.050	0.918	$R^2 = 0.073$
Receptiviti measure	-0.010	-0.130	0.897	$N = 99$
CEO age	-0.003	-0.497	0.621	F(0.988); $p = 0.445$
CEO tenure	0.000	0.126	0.900	DW: 1.70
CEO educational background	0.107	1.078	0.519	
CEO nationality	-0.023	-0.306	0.760	
Board independence	**0.006**	**2.357**	**0.021****	

Note: * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level; statistically significant results are presented in bold.

The findings in Table 2 suggest that H_2 could not be supported, as deal size was not significantly related to either of the two CEO overconfidence proxies over the research period. Deal sizes were significantly larger in acquirers with higher levels of board independence. This result indicates that companies with more INEDs on their boards tend to engage in larger deals. As with H_2, H_3 could not be supported either (Table 3) given the negative and non-significant association between CEO overconfidence and the financing structure variable. Whereas INEDs are primarily appointed to monitor opportunistic managerial behaviour (Paruchuri et al. 2024) and temper CEO power in M&A deals (Fogel et al. 2021), research suggests that these directors are not always very effective in doing so (Neville et al. 2019). Independent directors might also support large deals as successful outcomes, as these deals not only benefit shareholders but also boost the directors' reputations (Redor 2016).

The financing structure was, however, significantly positively related to CEO nationality. South African CEOs primarily used cash to finance their acquisitions. This finding might be explained by considering three cultural dimensions that have been shown to influence cash holdings (Ramirez and Tadesse 2007). Using Hofstede's cultural dimension indices (Hofstede 2024), Chang and Noorbakhsh (2009) found that companies are inclined to hold more cash in countries where people tend to be more masculine (individualistic), avoid uncertainty more, and have a longer-term orientation. Compared to the other countries from which the sampled CEOs hailed, South Africa has the lowest Hofstede scores for individualism and long-term orientation and the second-lowest score for uncertainty avoidance (The Culture Factory 2026). These scores suggest that South African CEOs might prefer to use cash for productive purposes (including acquisitions) rather than holding it for precautionary motives. Ferris et al. (2013) also found that individuals heading firms headquartered in Christian countries were encouraged to exhibit individualism and de-emphasise long-term orientation. According to the 2022 census, 85% of South Africans belonged to a branch of the Christian faith, lending further support to South African CEOs using their firms' cash resources to enhance short-term growth through acquisitions.

Table 3: Results of logistic regression: Financing structure and CEO overconfidence

Variable	**Regression coefficient ($\boldsymbol{\beta}$)**	**Standard error**	**Wald**	***p*-value**	**Odds ratio**
Intercept	2.192	2.177	1.014	0.314	
Longholder measure	-0.314	0.248	1.606	0.205	0.534
CEO age	-0.063	0.045	1.951	0.162	0.939
CEO tenure	0.004	0.004	0.887	0.346	1.004
CEO educational background	0.401	0.408	0.964	0.326	2.160
CEO nationality	**0.562**	**0.338**	**2.754**	**0.097***	**3.074**
Board independence	-0.014	0.019	0.549	0.459	0.986
Intercept	2.340	2.187	1.145	0.285	
Receptiviti measure	-0.333	0.260	1.641	0.200	0.513
CEO age	-0.064	0.045	2.028	0.154	0.938
CEO tenure	0.004	0.004	0.827	0.363	1.004
CEO educational background	0.367	0.414	0.786	0.375	2.020
CEO nationality	0.545	0.336	2.628	0.105	2.973
Board independence	-0.017	0.019	0.792	0.373	0.983

Note: * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level; statistically significant results are presented in bold.

Finally, the association between the number of deals completed and CEO overconfidence (H_4) was assessed. A statistically significant positive association was reported between the number of deals completed and the Longholder measure ($p = 0.046$), as well as with the Receptiviti measure ($p = 0.079$). These results emphasise the important role of CEO overconfidence in the acquisitiveness of CEOs. Given these findings, H_4 is supported. This finding corresponds with studies in other contexts, such as Brown and Sarma (2007), Ferris et al. (2013), and Hwang et al. (2020).

While both CEO overconfidence proxies reported statistically significant associations, it should be recognised that other omitted factors—such as corporate life cycle (Owen and Yawson 2010), investor and manager sentiment (Herve et al. 2024; Lee et al. 2026; Vasnetsov et al. 2023), and macroeconomic factors such as economic growth and inflation (Kumar et al. 2023)—could drive deal frequency. Of the five control variables, only CEO tenure reported statistically significant results. A positive regression coefficient indicates that the number of deals completed is higher for CEOs with longer tenures. A positive relationship was expected, as a longer tenure provides a CEO with more time to undertake and complete acquisitions.

Table 4: Results of cross-sectional regression: Number of deals and CEO overconfidence

Variable	**Regression coefficient (β)**	**t-statistic**	***p*-value**	**Regression summary**
Intercept	3.180	1.278	0.204	$R^2 = 0.103$
Longholder measure	**1.143**	**2.022**	**0.046****	$N = 118$
CEO age	-0.039	-0.829	0.409	F(1.796);
CEO tenure	**0.013**	**2.735**	**0.007*****	$p = 0.095$
CEO educational background	0.468	0.609	0.544	DW: 1.47
CEO nationality	-0.060	-0.096	0.924	
Board independence	-0.004	-0.168	0.867	
Intercept	2.641	1.021	0.309	$R^2=0.095$
Receptiviti measure	**1.051**	**1.775**	**0.079***	$N = 118$
CEO age	-0.031	-0.647	0.519	F(1.652);
CEO tenure	**0.013**	**2.647**	**0.009*****	$p = 0.129$
CEO educational background	0.460	0.596	0.552	DW: 1.38
CEO nationality	-0.031	-0.050	0.960	
Board independence	0.002	0.081	0.936	

Note: * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level; statistically significant results are presented in bold.

Discussion

Given the limited research in an emerging market context, this study investigated the relationships between four M&A deal characteristics and CEO overconfidence in South Africa from 2016 to 2023. The results show that overconfident CEOs preferred non-diversifying acquisitions to expanding into new, unrelated industries. Both CEO overconfidence proxies reported a negative association with the deal rationale; however, only the Longholder measure was statistically significant. This finding deviates from the extant literature. Factors such as the declining South African economy, the shrinking investment universe on the JSE, COVID-19 challenges, and loadshedding might explain why acquirers opted for consolidation over diversification during the research period. The role of macroeconomic factors and CEO demographics was more important than initially expected. The upper echelon theory also suggests that the demographic attributes and prior experiences of CEOs impact their decisions in ways that subsequently affect company performance adversely (Brunzel 2021; Plöckinger et al. 2016; Ting et al. 2015). This theory features prominently in existing behavioural finance studies, the body of knowledge to which this study contributes.

The only hypothesis that was supported (H_4) related to the number of deals completed by CEOs during their tenure. Overconfident CEOs, as measured by both the Longholder and Receptiviti measures, completed more deals during their tenure than their rational counterparts, as expected (Roll 1986). Research suggests this relationship is circular in nature (Ismail and Abdallah 2013). As overconfident CEOs complete more deals, their confidence grows even further, leading to additional acquisitions. While learning from earlier mistakes should result in higher returns for serial acquirers, several researchers have reported the opposite (Martin and Davis 2010). The agency theory explains that CEOs act in self-interest, often engaging in more M&As to boost their reputation or compensation, despite the high risk of failure and potential negative impacts on shareholder value (Chen et al. 2021; Lev and Gu 2024). CEO overconfidence was higher the longer a CEO was at the helm of an acquirer and in acquirers with lower levels of INEDs.

Limitations and Avenues for Future Research

The literature shows that overconfident CEOs often pay excessive premiums for targets (Ismail and Mavis 2022; Malhotra et al. 2022). However, due to data limitations, the authors could not investigate this M&A characteristic. Given the very low representation of women CEOs, this control variable could not be investigated either. Future research could incorporate more firm-level control variables and focus on the impact of other cognitive and behavioural biases that influence M&A decisions and performance, including excessive optimism, illusion of control, and self-attribution. Another avenue for future research is to include board overconfidence, alongside CEO overconfidence, as an additional explanatory variable for M&A deal characteristics.

Scholars may also examine debiasing methods in real-life contexts to assess their effectiveness in moderating CEO biases in business combinations. Studies could place a direct focus on CEO overconfidence and M&A deal failures. In addition, it should be recognised that the proxies used for M&A deal characteristics could be impacted by other factors besides CEO overconfidence. For example, deal frequency could be influenced by macroeconomic, firm-specific, or sentiment factors, and different lenses could be applied to distinguish between diversified and non-diversified deals. These omitted factors should be considered in future research on the drivers of specific M&A deal characteristics.

This research explored the use of the Receptiviti measure as an alternative proxy for CEO overconfidence in South Africa. This proxy yielded similar results to the traditional Longholder measure in most empirical analyses conducted, implying that it could be a valid alternative. A limitation of employing the Receptiviti language assessment tool was the word limit imposed on the text that could be inserted and analysed to generate a clout score. Future researchers could consider other language assessment tools that allow a less stringent word count to enhance the reliability of such a CEO overconfidence proxy. Malmendier and Tate's (2005, 2008) distinction between irrational (overconfident) and rational (non-overconfident) CEOs was adopted in this study. A more nuanced approach, which places greater emphasis on the implications of bounded rationality, might be adopted in future studies.

Practical Implications and Recommendations

Shareholders should ensure that truly independent non-executive directors are elected to the boards of serial acquirers, as these individuals play a crucial monitoring role. Shareholders should, furthermore, insist that comprehensive due diligence investigations be conducted prior to approving acquisitions, whether these are undertaken in the same or a different industry. Audit committees are encouraged to scrutinise acquisition proposals and due diligence reports to ensure that CEO-driven acquisitions align with shareholder value goals rather than personal ambitions. Governance and nomination committees should regularly evaluate the performance of the CEO and the board using clearly articulated metrics. The remuneration committee can further support responsible decision-making by CEOs by aligning compensation packages with long-term company performance rather than short-term performance metrics. Attention should be paid to incentives based on deal completion and performance, especially for serial acquirers. It is furthermore recommended that greater emphasis be placed on independent expert reports for large M&A deals. Finally, CEOs themselves should (ideally) engage in self-evaluation from time to time and welcome external assessments to identify potential behavioural biases that could influence their decision-making.

Conclusions and Contributions of the Study

Given the limited use of share options as a type of incentive compensation in South Africa, the Longholder measure may no longer be a valid proxy for CEO overconfidence in this emerging market. In response, the researchers explored the use of an alternative measure of CEO overconfidence in the South African context. This overconfidence proxy was operationalised through a psycholinguistic approach using the Receptiviti language assessment tool. By including this novel measure of CEO overconfidence and showing that it yields results similar to the Longholder measure, the literature on this behavioural bias is extended. Greater insight into the association between CEO overconfidence and the selected M&A deal characteristics is advantageous, as it can enhance due diligence investigations and managerial monitoring. By tempering CEO overconfidence in the M&A context, shareholders and remuneration committees can potentially reduce M&A failures. This study further contributes to the limited body of knowledge on CEO overconfidence in M&A deal planning within an emerging market context. Greater insight into the relationship between CEO overconfidence and the selected deal characteristics will significantly enhance deal planning and eventual success.

Competing Interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced the writing of this article.

Author Contributions

All authors contributed to the conceptualisation of the study and the methodological choices made. The third author conducted the research, which included reviewing the literature, collecting, analysing, and interpreting the data. The first and second authors supervised the study and wrote the initial and subsequent drafts of the article.

Ethical Considerations

The necessary ethics approval was obtained before data collection.

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Data Availability

The data that support the findings of the study are available upon reasonable request from the first author.

Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of the agencies with which the authors are affiliated.

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