Title: Management accountants’ susceptibility to overconfidence: the overplacement perspective.

Running title: Management accountants and overplacement bias.

Abstract: Purpose: Overconfidence bias is one of the most influential decision-making biases in the business environment. The aim of this paper is to identify the susceptibility of management accountants to overconfidence-related overplacement bias and to determine its pervasiveness among management accountants.

Design/methodology/approach: A survey was conducted among an international sample of management accountants using overplacement bias elicitation questions. A number of demographic variables were also obtained in order to test hypothesised associations between selected variables and bias susceptibility using binary logistic regression.

Findings: Management accountants are found to be susceptible to overplacement bias, yet its pervasiveness among the sample is slightly lower than other sample populations in comparable studies. Management accountants in the position of chief financial officer were found to be more susceptible to overplacement bias than their colleagues in both the normal management accountant position and the position of chief executive officer.

Research limitations: Reliance on convenience sampling to attain the internationally diverse sample represents a limitation of the research, as well as the sample size which limited the power of the logistic regression analysis.

Practical implications: Management accountants are well suited for their business decision-making role as their overplacement bias levels are comparatively low. However, these professionals should strive to remain humble in their decision-making abilities to ensure they do not allow overconfidence bias to influence their decision-making, especially when make forecasts which may later be found to be overoptimistic.

Keywords: Overconfidence bias, overplacement, management accountant, business partner, business decisions.

Paper classification: Research paper.
Author: Zacharias (Zack) Enslin
Department of Financial Management, University of Pretoria, Pretoria, South Africa.
ORCID: http://orcid.org/0000-0002-3367-5886
Email: zack.enslin@up.ac.za, Tel(w): +27 12 420 5490, Tel(c): +27 83 643 2794
Management accountants’ susceptibility to overconfidence: the overplacement perspective.

1 INTRODUCTION

“If we were all appropriately humble about the quality of our judgments, we could more easily double-check our opinions and correct our flaws” (Bazerman and Moore, 2012)

Bazerman (1994) defines the overconfidence bias as the tendency of human decision-makers to be overly confident in the correctness of their own judgement when making decisions. A decrease in the knowledge of the decision maker regarding the scenario upon which a decision has to made (referred to as the decision-problem for the purposes of the present paper), does not necessarily lead to a corresponding decrease in the confidence of the decision-maker (Bazerman, 1994). Bazerman and Moore (2012) argue that overconfidence results in some of the “most potent, pervasive and pernicious” biasing effects of all the commonly known cognitive decision biases. They also suggest that overconfidence facilitates many of these other biases.

The effects of overconfidence bias have also been documented in business and managerial decision-making. Camerer and Lovallo (1999) report experimental evidence that overconfidence may be a significant factor contributing to the over-entry of entrepreneurs into the market, despite the high rate of entrepreneurial failure. Similarly Malmendier and Tate (2008) ascribe the high rate of merger and acquisition activity, despite high failure rates, to overconfidence by CEOs.

Management accountants are increasingly becoming involved in business and managerial decision-making (CGMA, 2016, Goretzki et al., 2013, Kim et al., 2012). As financial specialists, management accountants provide key financial interpretations of decision options to fellow managerial decision-makers. However, management accountants are increasingly required to incorporate non-financial data into their financial interpretation of business decision-options (CGMA, 2016). Within the fast-paced managerial domain senior managers regularly have to make decisions in conditions of uncertainty (Järvenpää, 2007), often resulting in the use of judgement rather than rigorous analysis (Hodgkinson and Starbuck, 2008). Managerial decisions made in conditions of uncertainty, where the need to use judgement arise, are regularly influenced by cognitive behavioural biases, including the effects of overconfidence (Bazerman and Moore, 2012).
Consequently, the purpose of this study is to examine whether management accountants exhibit overconfidence bias in their emerging managerial decision-making role. As Moore and Healy (2008) argue that overconfidence research suffers from the confounding of different aspects of overconfidence, which create measurement difficulties, the present study investigates the possible presence of overconfidence bias in decision-making behaviour of management accountants from a number of perspectives. The analyses that are performed to determine the possible presence of overconfidence bias are based on four questions posed in a survey of an international sample of management accountants. The results from the different analyses are then triangulated to enable a motived conclusion on the susceptibility of management accountants to overconfidence bias. Finally, possible demographic variables associated with management accountants who exhibited strong evidence of overconfidence bias are identified by means of binary logistic regression analysis in order to better understand the possible dispersion of overconfidence in the management accountant population.

Similar to the call from the ACCA on research into behavioural biases to inform education and standard setting in the auditing profession (ACCA, 2017), the results of the present study would be of interest to the management accounting profession, which is also in the process of acknowledging the possibility that cognitive biases may influence business and analytical decision-making (CGMA, 2016). Kahneman et al. (2011) state that awareness of the possible biases is not sufficient to eliminate behavioural decision biases in decision-making. Consequently, the findings of this study will pave the way for future research into how to minimise the influence of possible overconfidence in the decision-making behaviour of management accountants.

The paper continues with an in-depth discussion of the overconfidence literature and the development of hypotheses. The research methods are then discussed, followed by the results and findings. The conclusion summarises the main findings and provide recommendations of possible future areas to be researched.
2 LITERATURE REVIEW

In this review of supporting literature, the theoretical grounding for the study is discussed, followed by in-depth discussions on overconfidence, its biases, and its relevance to managerial decision-making. Lastly hypotheses are developed, based on the available literature, to test possible associations between demographic variables and overconfidence bias (specifically overplacement bias).

2.1 COGNITIVE DECISION-MAKING BEHAVIOUR

Human decision-making has been researched through mainly two theoretical frameworks (Bazerman and Moore, 2012). The first theoretical approach is based on developing models for optimal decision-making by a rational human decision-maker. Consequently, this theoretical approach is referred to as prescriptive decision research as it prescribes how rational human decision-makers should behave when making a decision. The second theoretical approach is to observe decision-making behaviour by human decision-makers with the objective to analyse how human beings really make decisions. This theoretical approach is referred to as descriptive decision research because it investigates and describes how human decision-makers actually make decisions. The present study examines business decision-making of management accountants through the theoretical lens of descriptive decision research.

Descriptive decision research is largely founded on the seminal work of Simon (1957) which indicated that due to limitations on the cognitive ability of human decision-makers, they are unable to make fully rational decisions when the decision-problem is complex and time is constrained. According to March and Simon (1993), these cognitive limitations cause decision-makers to forego the prolonged and exhaustive search for the optimal solution in favour of an acceptable or reasonable solution. Simon (1957) termed this decision-making behaviour, ‘bounded rationality’.

More recently Stanovich and West (2000) expanded upon bounded rationality by developing the distinction between System 1 and System 2 thinking. System 1 thinking is intuitive, requires low effort and is largely automatic. While System 1 thinking frequently leads to good decision-making, it is susceptible to biases that result from human cognition (Kahneman et al., 2011). System 2 thinking refers to conscious analytical processing employed by human decision-makers to reach a decision (Stanovich and West, 2000). System 2 thinking takes longer and requires more effort from the decision-maker before a decision is reached (Milkman et al., 2009). Unfortunately, the high volume
of decision-making and effort required of business managers result in them often having to rely on System 1 thinking (Chugh, 2004). Additionally, a large number of human decision-makers tend to have a lot of confidence in their System 1 decision-making abilities (Bazerman and Moore, 2012).

2.2 OVERCONFIDENCE UNPACKED

Overconfidence bias by human decision-makers is the irrationally strong believe in the correctness of their own judgement. Oskamp (1965) argues that beyond an early stage in the process of gathering information for a decision that needs to be made, the predictive accuracy of the information gathered reaches a maximum. However, decision-makers continue to become more confident as more information is gathered, resulting in decision-makers becoming overconfident in their decisions.

The development and endurance of overconfidence bias can, in part, be attributed to selective and self-serving interpretations of outcomes (Morris and Moore, 2000). Negative outcomes are ascribed to emanate from other people’s actions or even bad luck, while positive outcomes are hedonically attributed to a decision-maker’s own actions (or at least excessively attributed to own actions). However, this is more likely to occur when feedback on actual performance is ambiguous or even lacking (Allison et al., 1989, Kunda, 1990). Individuals who are likely to continue to perform self-serving interpretations when actual performance outcomes are expected to become known, are also found to be more likely to fraudulently attempt to improve their performance outcomes, by rationalising their fraudulent behaviour as justifiable (Von Hippel et al., 2005).

While most earlier studies and a substantial proportion of current studies investigate overconfidence as a single concept, Moore and Healy (2008) as well as Moore and Schatz (2017) argue that overconfidence should be sub-divided into at least three constructs. These three constructs are overestimation, overplacement and overprecision. Overprecision is defined as the tendency of human decision-makers to be overconfident in their judgement, even in the presence of mildly contradictory evidence. Overestimation is defined as the tendency of human decision-makers to consider themselves to be better, over a number of spheres, than they actually are. Overplacement refers to human decision-makers considering themselves better than others, when comparing their abilities against those of others. Moore and Healy (2008) indicate that overplacement decreases when the difficulty of the decision problem increases, while overestimation increases with an increase in decision problem difficulty. Overprecision, on the other hand, is largely unaffected by problem difficulty (Moore and Schatz, 2017). Some recent studies have adopted this distinction and indicated its focus on one specific construct of overconfidence (for examples see Benigno and
Karantounias (2019) and Bushuven et al. (2019)). The present study follows this approach and focus specifically on possible overplacement by management accountants.

Overplacement has been found to be present in decision-making behaviour of various decision-makers including investment fund managers (Menkhoff and Nikiforow, 2009) and property fund managers (Lowies, 2012). In his study of pension fund committee members and managers, Gort (2009) found overplacement with reference to the ability to find and employ above average fund managers, the expected performance of current fund managers and the expected performance of the funds being managed. The expectation of better than average performance in the future does not correlate with the relatively poor general recent performances by these pension funds and therefore can be argued to relate to overplacement, even though individual performances could not be precisely measured (Gort, 2009).

The prevalence of overplacement is more pronounced when the dimension in which decision-makers are evaluating their abilities are subjective, socially desirable, and common (Myers, 2010), as well as when the decision problem is perceived to be easy (Moore, 2007). Therefore, when evidence to disconfirm the decision-maker’s notion of being above average is difficult to find or to measure, overplacement will more regularly occur (Allison et al., 1989, Kunda, 1990). Moore and Healy (2008) explains that overplacement in easy decision-problem scenarios, is replaced by underplacement on difficult decision problems. They argue that decision-makers underestimate the abilities of others on easier tasks more than they underestimate their own ability, resulting in overplacement. However, when faced with a difficult decision problem, decision-makers overestimate the abilities of others more than they overestimate their own ability, resulting underplacement. Referencing Klar et al. (2008), Klar et al. (2012) and Windschitl et al. (2008); Bazerman and Moore (2012) indicate that one of the possible causes of overplacement is that decision-makers neglect to properly delineate the reference group to which their abilities should be compared (e.g. a professional population with specific skills) and simply compare their abilities to the general population (whom may on average not be as proficient in the relevant skills).

Decision-makers in management positions within businesses are far from immune to the biasing effects of overconfidence. Accordingly, the next section contain discussion on research and findings on overconfidence and its possible consequences within the managerial decision-making domain.

2.3 OVERCONFIDENCE IN MANAGERIAL DECISION-MAKING
When individuals display (over)confidence in their abilities, they tend to be evaluated as being more capable than others (Bazerman and Moore, 2012). Indeed, Radzevick and Moore (2011) indicates that prospective leaders gain support by expressing overconfidence. It is therefore no surprise to find overconfidence to be prevalent in the decision-making behaviour of managers. It should be noted that if the overconfidence is disconfirmed it damages the reputation of decision-makers significantly, especially if (over)confidence was verbally expressed by the decision-maker (Tenney et al., 2019). Non-verbally communicated overconfidence are more likely to result in the persistent perceptions by others that the decision-maker is capable, even if some disconfirming evidence should emerge.

Overconfidence has been reported to have a number of negatives effects on managerial decision-making. Similar to the findings by Oskamp (1965) regarding the decreasing informativeness of excessive additional information, Kausel et al. (2016) find that managers become overly confident in their judgement based on additional information obtained from unstructured interviews of job applicants, while the information obtained during such interviews generally contain low validity (Cortina et al., 2000). Overconfidence bias can therefore lead to making sub-optimal appointments.

With reference to financial managerial decision-making, Huang et al. (2016) found that overconfident chief executive officers were willing to take on higher liquidity risk by making use of a higher proportion of current debt (payable within 12 months), than chief executive officers who exhibited less overconfidence. Apart from higher risk taking behaviour, overconfidence by executive management is also correlated with poorer company financial performance for established companies (Arend et al., 2016). Yet some studies argues that overconfidence could also positively affect company performance. Arend et al. (2016) contend that overconfidence is positively correlated with company financial performance for entrepreneurial companies which operate in unstable, dynamic environments. Phua et al. (2018) corroborate the possible advantageous effect of overconfidence with their finding that overconfident chief executive officers are able to obtain more supplier commitment and stronger labour commitment. Yet, when considering the findings by Phua et al. (2018) through the lens of the conclusions by Radzevick and Moore (2011) and Tenney et al. (2019), this apparent advantage may indeed later lead to a larger perceived lack of trust in the overconfident executive’s abilities if actual stakeholder relations do not meet the high expectations created by the overconfidence.

Very relevant to the current study on management accountants, Ben-David et al. (2013) found significant overconfidence, specifically overestimation, by chief financial officers of companies in
both market and company performance predictions. In addition, Ben-David et al. (2013) posit that overconfidence bias by chief financial officers has a definite effect on company financial policy decisions, including persuasion of more aggressive investment and debt policies. Alarmingly, Meikle, Tenney and Moore Meikle et al. (2016) argue that overconfidence in accounting-related earnings forecasts, thus overestimation, places executives under pressure in subsequent reporting years, resulting in increased propensity to fraudulently misrepresent organisational performance to be more in line with the overestimated performance. This argument is consistent with the findings by Von Hippel et al. (2005) discussed earlier regarding the link between overconfidence by decision-makers and their inclination to rationalise fraudulent behaviour. It is therefore imperative to investigate overconfidence bias among financial managers. This need is even more urgent due to the increased business decision-making involvement of management accountants in their developing ‘business partner’ role (Enslin, 2019, Goretzki et al., 2013).

2.4 MANAGEMENT ACCOUNTANTS AND MANAGERIAL DECISION-MAKING

Harris (1994) argued that management accounting professionals were reluctant to make intuitive decisions, based on their general personality traits favouring supportive evidence for decision-making purposes. For this reason management accountants were frequently excluded from operational decision-making because they were deemed to be too focused on numbers, and lacked an understanding of business and other contextual factors (Byrne and Pierce, 2007, Pierce and O'Dea, 2003, Rausch, 2011, Siegel et al., 2003). The focus on rational, calculation-based decision-making is regularly not feasible in the complex and fast-paced business decision-making environment as attempts to attain perfect information gravely affect the timeliness of business-related decisions (Bazerman and Moore, 2012, Byrne and Pierce, 2007, Järvenpää, 2007).

However, due to pressures related to automated enterprise resource planning systems, management accountants are driven to become more involved in business decision-making (Caglio, 2003). Accordingly, management accounting professionals are becoming more business-orientated, which Järvenpää (2007) explains as the “willingness and ability … to provide more added value to management”, including increased participation in managerial decision-making. Goretzki et al. (2013) argue that this change towards the so-called ‘business partner’ is so significant, that in some circumstances management accountants consider themselves to be performing general business management. The increased decision-making involvement reported above, and the high potential for overconfidence to negatively affect business performance, forms the motivational basis for the present study.
2.5 DEMOGRAPHICS AND OVERCONFIDENCE

A higher susceptibility to overconfidence bias may be associated with certain demographic characteristics of decision-makers. Literature which suggest such associations is briefly discussed in this section with the purpose of developing testable hypotheses regarding such associations which may be present within the current study’s sample.

With reference to gender, Pompian and Longo (2004), as well as Barber and Odean (2001), found that men were significantly more overconfident than women. Accordingly, the following hypothesis is generated:

**Hypothesis 1 – Gender and susceptibility to overplacement bias:**

*The men in this study’s sample are more susceptible to overplacement bias, than the women in the sample.*

In terms of age, Kovalchik et al. (2005) as well as Arend et al. (2016) state that younger individuals are more overconfident than older individuals. Therefore the following hypothesis is developed:

**Hypothesis 2 – Age and susceptibility to overplacement bias:**

*Younger respondents in this study’s sample are more susceptible to overplacement bias than the older respondents.*

Meyvis et al. (2010) confirm the premise by Tversky and Kahneman (1986) that decision-makers tend to misremember their original forecasts at the time that the actual outcome is known, significantly reducing the possible debiasing effects of learning from experience. Similarly, Bazerman and Moore (2012) indicate that experienced managers exhibit similar levels of bias to those of less experienced decision-makers. To the contrary, Fuertes et al. (2014) found that the level of overconfidence bias of investors differ in that investors that are experienced in providing investment advice, or that also trade professionally, are more overconfident than other financially educated investors. Nonetheless, the majority of previous studies favour the development of the following hypothesis

**Hypothesis 3 – Experience and susceptibility to overplacement bias:**
There is no difference in susceptibility to overplacement bias between less experienced and more experienced respondents in the sample.

With reference to an individual’s position in an organisation’s management hierarchy, Meikle et al. (2016) argue that promotion practices result in higher-level managers exhibiting higher overconfidence than persons in lower-level positions. According to Meikle et al. (2016), individuals who have achieved success from risky and overconfident behaviour are regularly promoted to higher-level managerial positions. This situation is exacerbated by promotion committees looking for confident individuals to act as leaders in the organisation, even though confidence may not always be an indication of ability. The generation of the following hypothesis is therefore supported:

Hypothesis 4 – Position and susceptibility to overplacement bias:
Respondents in managerial positions are more susceptible to overplacement bias than respondents in the traditional management accounting position.

Management accountants are considered more inclined to evidence-based decision-making, than intuitive decision-making (Byrne and Pierce, 2007, Harris, 1994). Bazerman and Moore (2012) argue that individuals that are more susceptible to overconfidence bias exhibit a higher level of certainty that their opinions are correct, and would be less inclined to confirm their opinions by investigating supporting information. The following hypothesis is based on the preceding argument:

Hypothesis 5 – Preference for supporting information and susceptibility to overplacement bias:
Respondents who indicated a higher level of preference for making intuition-based decisions are more susceptible to overplacement bias than respondents who indicated a higher preference for supporting information when having to make decisions.

The demographic variables discussed above are not exhaustive, yet are the variables most suited to the present study and the context of the change in the role of management accountants. The research methods applied to address the research objectives of the present study are discussed in more detail in the next section.
3 RESEARCH METHOD

Based on the focus of this study being the international population of management accountants, a survey approach was necessitated in order to obtain a widely diverse sample of the population. This is in accordance with Brandon et al. (2013) who suggest the use of online surveys and response generation tools to enable studies to reach a diverse range of respondents when conducting accounting-related behavioural research. Surveys are regularly used to investigate overconfidence (Gort, 2009, Lowies, 2012, Moore and Schatz, 2017).

Assistance in obtaining responses were provided by the Institute of Management Accountants (IMA) from the United States of America, the Chartered Institute of Management Accountants (CIMA) from the United Kingdom, and by means of Qualtrics Panel services (respondents mostly from Europe and Asia). The sample for this study (n = 303) consists of a convenience sample of management accountants who responded to the e-mail requests and other profession focused marketing media. Even though convenience samples regularly represent a valuable proxy for random samples in situations where the population is widely dispersed, the validity of these samples should be confirmed by means of additional procedures (Brandon et al., 2013). The validity of the present study’s sample was confirmed by its demographic composition which compared remarkably well (except for its unique international composition) with the samples of previous studies on the same population (Clinton and White, 2012, Garg et al., 2003, Montano et al., 2001).

As the study focused specifically on overconfidence in the business decision-making behaviour of management accountants due to their changing role, respondents were first presented with the following description of business decision-making; “In this survey the term ‘business decisions’ refers to decisions related to management of a business, and not to ordinary decisions related to the traditional controller role of management accountants (e.g. which variances to investigate).”

To test for possible overplacement in the decision-making behaviour of respondents, four questions were posed. Firstly, two Likert scale questions which were adapted from questions originally posed by Gort (2009) and later adapted by Lowies (2012). A similar question was also used by Menkhoff and Nikiforow (2009) to investigate the presence of overplacement bias in the decision-making behaviour of professional fund managers. The one question asked respondents to judge their business decision-making abilities against those of other business managers (in general). Based on the premise by Bazerman and Moore (2012) that decision-makers tend to neglect the reference
group, the second question required management accountants to consider their business decision-making abilities specifically against other management accountants.

Secondly, as Moore (2007) points out that overplacement decreases when the difficulty of the decision-problem increases, two additional questions were incorporated into the questionnaire to test for overplacement or underplacement when facing a difficult decision-problem. The first question required respondents to estimate the percentage of respondents to the present survey who worked at a company with 100 or fewer employees, the smallest category in the employment company size demographic variable question. This could not be known in advance, but respondents may have felt that they could estimate it to some extent based on available data regarding the general percentage of micro and small enterprises when compared to larger enterprises. The second question in this section then required respondent to indicate their confidence in being able to predict a more accurate estimate when compared to other respondents in the sample. The response options were presented on an 11-point scale of percentages between 0% and 100%, in increments of 10 percentage points. This was presented as the decile percentage of respondents they considered themselves to be able to ‘beat’ with their estimate to the previous question.

The demographic variables section of the questionnaire was developed with reference to the variables, and categories for each variable, posed in the surveys by Clinton and White (2012) and Garg et al. (2003) of samples of management accountants. Confirmation of the validity and reliability of the questionnaire was derived from basing the questions on the work of previous scholars, by obtaining input from an international expert and from conducting an initial pilot study. The questionnaire was administered using the Qualtrics survey software platform which enable both mobile and desktop responses.

The approach of comparing the mean response actually received to the expected ‘average’ mean response if no overplacement bias were present, as applied by both Gort (2009) and Lowies (2012), was followed to test for overplacement bias by management accountants based on the first two questions. Moore and Schatz (2017) express concern regarding this practice of comparing the responses based on Likert scale for ‘better than average’ questions, due to the possibility of skewness in the abilities of the sample or population. Application of this method in the present study was considered valid, as overplacement was also tested by means of the two additional questions. Furthermore, the validity of the sample to the population was confirmed by the number of responses and the comparability of the demographic variables to those of previous studies of the sample. Accordingly, the probability of skewness in the sample’s capabilities when compared to other
management accountants, are deemed improbable. With reference to the comparison to other business managers, the possibility of management accountants having superior business decision-making abilities (not specifically financial decision-making abilities) to other business managers, is questionable (Byrne and Pierce, 2007). The analysis of the second set of overplacement questions conforms to the requirements suggested by Moore and Schatz (2017) of comparing placement to performance on a comparable task.

Binary logistic regression (Hosmer and Lemeshow, 2000) was selected as statistical analysis method to investigate the possible significance of the selected demographic contextual factors which may be associated with higher susceptibility to overplacement bias. Some of the response categories for demographic variables had to be combined to ensure that the sample size assumptions stated by Hosmer and Lemeshow (2000) are adhered to. For a description of the composition and abbreviations used for the variables in the binary logistic regression analysis, refer to the Appendix 2.

Consequently, the sample size also limited the power of the analysis to identify more possible significant demographic indicators of overplacement bias susceptibility. Yet, the sample size is considered adequate for this exploratory analysis, similar to D'Angelo et al. (2018) who recently applied logistic regression in a behavioural study with a smaller sample. The results of applying these research methods and analyses are presented in the next section.
4 RESULTS AND DISCUSSION

4.1 OVERPLACEMENT BIAS RESULTS

4.1.1 General overplacement and neglect of the reference group

The first set of questions to test for overplacement bias, namely Questions 1 and 2 in the overplacement section, required respondents to indicate how they deemed their business decision-making ability to compare to other general business managers, as well as to other management accountants respectively. The response options that were available to the respondents consisted of a five-point Likert scale, with average ability being the centre option. The responses were coded from 1 for a response by individuals who deemed their decision-making ability to be ‘Well below average’ to 5 for a response by individuals who deemed their ability to be ‘Well above average’. In accordance with Gort (2009), a one-sample t-test (bootstrapped to ensure robustness) is conducted to determine whether the mean response by respondents differs significantly from average confidence. It is hypothesised that, should respondents in the sample not be either overconfident or underconfident, the mean response to these questions should be average for each question (refer to research method section for a discussion regarding the validity of this hypothesis). Accordingly, a mean response of 3 for each of the two relevant questions represents the null hypothesis for statistical analysis purposes. Table 1 below presents the results of the t-test.

Table 1: t-Test for significance of overconfidence bias – ability relative to other managers

<table>
<thead>
<tr>
<th>Question</th>
<th>Size (n)</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>t</th>
<th>df</th>
<th>Bootstrapped significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 1 – confidence in ability relative to other business managers</td>
<td>303</td>
<td>3.54</td>
<td>0.792</td>
<td>11.827</td>
<td>302</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Question 2 – confidence in ability relative to other management accounting professionals</td>
<td>303</td>
<td>3.51</td>
<td>0.825</td>
<td>10.789</td>
<td>302</td>
<td>p &lt; .001</td>
</tr>
</tbody>
</table>

The proportion of respondents who rate their own decision-making abilities higher than other business managers are 58.4% (177 responses). Based on the one-sample t-test presented, the mean confidence level of respondents in the full sample (n = 303) in their business decision-making
abilities when compared with the other business managers \((M = 3.54, SD = 0.792)\) differs significantly \((t(302) = 11.827, p < 0.001)\) from an ‘Average’ level of confidence \((M = 3)\). Cohen’s \(d\) \((d = 0.68)\) indicates a medium effect size. The higher than ‘Average’ mean value in the sample indicates that management accounting professionals in the sample considered their business decision-making ability to be significantly higher than the ability of the average business manager.

When comparing their decision-making abilities to other management accounting professionals, 52.1% of respondents (being 158 respondents) were confident that they are better decision-makers. The mean confidence of respondents in the full sample \((n = 303)\) in their business decision-making abilities when compared with other management accounting professionals \((M = 3.51, SD = 0.825)\) also differs significantly \((t(302) = 10.789, p < 0.001)\) from an ‘Average’ level of confidence \((M = 3)\). Cohen’s \(d\) \((d = 0.62)\) again indicates a medium effect size. Management accounting professionals in the sample also considered their business decision-making abilities to be significantly higher than the ability of an ‘Average’ management accounting professional. The high level of confidence by respondents in the sample in their business decision-making ability is an indication of the presence of overconfidence, specifically overplacement bias.

Management accounting professionals in the sample were slightly more confident in their decision-making ability when compared to other business managers \((M = 3.54, SD = 0.792)\) than when compared to other management accounting professionals \((M = 3.51, SD = 0.825)\). However, this difference is not statistically significant \((p = .55)\), according to a paired sample t-test \((t(302) = 0.54, SD = 0.776)\). The effect size of this difference is also very small \((d = 0.04)\). The non-significance of differences when placing abilities comparative to two different reference groups provide some corroboration for the argument by Bazerman and Moore (2012) that overplacement partly occur due to neglect by decision-makers to properly delineate the reference group against whom abilities are compared.

Even though t-test are regularly used for Likert-scale variables and provides valid results (De Winter and Dodou, 2010, Norman, 2010), some academics regularly argue that it is more appropriate to use a statistical test which compares medians, rather than means (Norman, 2010). Accordingly, the results of one sample Wilcoxon signed rank tests for this data are briefly reported here. When judging their decision-making abilities in comparison to other business managers, the observed median placement by respondents \((Md = 4)\) is significantly higher \((z = 9.643, p < 0.001)\) than the expected median of 3. Also, when judging their decision-making abilities against other management accountants, the observed median placement \((Md = 4)\) is significantly higher \((z = 8.984, p < 0.001)\)
than 3. Both these results represents medium effect sizes \((r = 0.55\), and \(r = 0.52\), respectively). The difference between placement when comparing to other business managers in general, and other management accountants in particular, remains insignificant \((z = 0.687, p = 0.492)\).

It is useful to compare these findings to those of previous studies which used the same type of rating scale. Menkhoff and Nikiforow (2009) found a mean level of 3.66 placement (also based on a five-point Likert-scale\([1]\)) by investment fund managers in their ability when compared with other fund managers. The mean placement by the property fund managers in their abilities, when compared to other fund managers, is 3.65 (Lowies, 2012). Gort (2009) used a seven-point Likert scale and found a mean response of 4.57 placement by Swiss pension fund managers, when judging their own fund’s ability to outperform competing funds. When relating the proportion of respondents who placed their abilities or expected performance as higher than average, Gort (2009) reported that 50.48% of pension fund managers expected to perform better than average. In the present study, 58.4% of management accountant respondents placed their business decision-making abilities as above that of the average of business managers in general, and 52.1% placed their abilities as above that of the average management accountant. Menkhoff and Nikiforow (2009) did not provide the percentage of respondents who exhibited overconfidence in their sample, but referred to an earlier study by Svenson (1981), which reported an overconfidence proportion of 82% with reference to respondents’ rating of their own vehicle driving ability. Lowies (2012) found that 58.8% of listed property fund managers in his sample were confident that they had the ability to outperform the other fund managers. Consequently, the mean confidence of management accounting professionals in the present study, whether compared with other business managers \((M = 3.53)\), or other management accountants \((M = 3.51)\), is falls within the lower range of that found for other populations in previous studies.

4.1.2 Over-/under-placement for difficult task

The second set of questions to test for overplacement bias, namely Questions 3 and 4 in the overplacement section, endeavoured to determine respondents’ confidence in providing a better estimate based on a difficult task to determine whether the overplacement bias decreases to underplacement when management accounting professionals were confronted with difficult decision problems as suggested by Moore (2007). Furthermore, if overplacement would again be present, these questions would validate the overplacement found in the previous set of questions. Question 3 requested each respondent to estimate the exact percentage of all respondents to the questionnaire who would, in Question 9 of the demographical information section of the
questionnaire, indicate that they were employed at companies consisting of 100 or fewer employees (the smallest category available in Question 9). This could not be known in advance, but could only be estimated to some extent based on information regarding the general percentage of total enterprises which denotes micro and small enterprises. However, due to the challenges of estimating in advance the percentage of respondents who would indicate that they were employed in companies with 100 or fewer employees, respondents were expected to be more conservative with reference to their confidence in being able to predict this particular figure with more accuracy than other respondents (Moore and Healy, 2008). Question 4 then requested respondents to indicate their confidence in being able to predict a more accurate estimate when compared with other respondents in the sample. The response options to Question 4 were an 11-point scale of percentages between 0% and 100%, in increments of 10 percentage points. The responses to Questions 3 and 4 are summarised in Table 2. One respondent did not answer these two questions and were therefore excluded from the analysis.

Predictions with reference to the percentage of respondents who were employed by companies with 100 or fewer employees range between 0% and 100% (\(M = 41.90\%\), \(SD = 23.58\%\)). The actual percentage of respondents employed by companies with 100 or fewer employees, is 26.4%[2].

**Table 2: Test for significance of over-(under-)placement bias when faced with a difficult decision problem**

<table>
<thead>
<tr>
<th>Question</th>
<th>Size (n)</th>
<th>Mean</th>
<th>Median</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 3 – prediction of percentage of respondents working in companies with 100 or fewer employees</td>
<td>302</td>
<td>41.90%</td>
<td>40%</td>
<td>23.58%</td>
</tr>
<tr>
<td>Question 4 – confidence in ability to predict the above relative to other respondents in the sample</td>
<td>302</td>
<td>51.13%</td>
<td>50%</td>
<td>21.58%</td>
</tr>
</tbody>
</table>

The mean confidence of respondents in the sample in their ability to provide a more accurate estimate than other respondents is 51.13% (\(SD = 21.58\%\)). Based on a one-sample t-test (\(t(301) = 0.906\)), this level of confidence does not differ significantly (\(p = 0.365\)) from a 50% (thus average) confidence placement level. Accordingly, for the difficult decision problem, the presence of the overplacement bias could not be confirmed in the decision-making behaviour of respondents. Consistent with the findings by Moore and Healy (2008), the mean placement of the respondents in
the current study in their abilities compared to others decreases when faced with a difficult decision problem. However, contrary to the argument by Moore and Healy (2008), the mean placement of management accounting professionals who responded did not decrease to a level significantly below average. The none-occurrence of mean underplacement may partly be due to the respondents not having expecting to receive feedback on the correctness of their actual responses (Allison et al., 1989, Kunda, 1990). Consequently, the results are analysed further in the following paragraphs.

The large standard deviation \((SD = 21.58\%)\) in the confidence of respondents indicates that a large variation is present in the confidence placement levels of the respondents. This is confirmed by Figure 1.

**Figure 1: Distribution of the placement levels of respondents with reference to the difficult task relative to other respondents**

![Figure 1](attachment:image.png)

In line with suggestions by Moore and Schatz (2017), the placement by respondents was compared with their actual performance on the task. An increase in accuracy levels of predictions, relative to an increase in placement levels, would suggest that the increased placement may have been validly based on a higher level of knowledge relevant to the decision problem. This premise is investigated by means of Figure 2. The approach followed was to test whether the level of *inaccuracy* of estimates decreases, relative to an increase in placement levels. As confirmed by Figure 2, the opposite was found, namely higher mean inaccuracy levels for respondents with higher placement levels relative
to respondents who indicated a lower level of placement. Subsequently, the relationship between the confidence that respondents had in their estimates, as measured by their placement, and the distance of the respondents’ estimates from the actual value is investigated by means of Pearson’s product-moment correlation coefficient. A statistically significant medium-strength and positive correlation \((n = 303, r = .338, p < .001)\) between the level of placement by respondents, and the distance of the estimates from the actual value, is found. Consequently, an increase in the placement levels of respondents, is associated with an increase in the mean inaccuracy of their responses to this difficult decision problem. This finding suggests that the level of overplacement (invalidly high placement), increases in line with the relative level of placement by respondents of their ability, with reference to a difficult decision task.

**Figure 2: Overplacement bias – mean absolute distances of estimates from correct outcome vs standard deviation of estimates in 10% confidence increments**

The increase in error rate that accompanies the increase in placement levels, could be due to the respondents with higher placement levels having access to information on the percentage of small firms in existence in general, which may differ from the percentage found for the population in the sample of the present study. If this is the case, then the confident respondents should provide a narrower range of responses, which approximates possible information to which they may have had
access, than the range of ‘guesses’ by the respondents with lower placement levels. Consequently, the standard deviations of the estimates are also presented in Figure 2. It is hypothesised that if respondents with higher confidence levels were more knowledgeable with reference to the difficult decision scenario than respondents with lower levels of placement confidence, then the standard deviations of responses from respondents who indicated lower placement would be higher due to the natural dispersion of ‘random best guesses’ relative to ‘more informed guesses’ by the high placement respondents, irrespective of the actual answer to the present study’s question. Also here, the information presented in Figure 2 contradicts the hypothesised explanation of valid placement, as the standard deviations of estimates from respondents with different placement levels do not indicate a decreasing trend, but rather an increasing trend. To test the statistical significance of this trend, it was decided to investigate the possible correlation between the range of estimates provided by a category of respondents when aggregated into nine placement-level categories (0% and 100% levels of placement are disregarded because each was only selected by one respondent and are regarded as outliers) and the level of confidence of each category. Accordingly, the non-parametric Spearman’s rho correlation coefficient is used to investigate the relationship between the level of placement by respondents of their estimates relative to others, and the range of estimates within the placement-level group (measured by means of the standard deviation of the estimates). A statistically significant, strong, and positive correlation is found between the particular level of placement of a group of respondents and the width of the range of estimates in the particular group of respondents ($n = 9$, $r = .8$, $p = .01$). The positive correlation indicates that the range of estimates increases along with an increase in the level of placement. Accordingly, the findings confirm that the increase in error rate which accompanies an increase in placement level, is not due to respondents who placed themselves higher having access to reliable alternative information. In fact, it indicates the contrary, namely that higher placement levels are associated with a wider range of guesses, which can be associated with a lower level of conservatism in guesses (i.e. more ‘wild’ guesses).

The findings in the previous and present sub-sections, when combined, provide adequate support to indicate the presence of overconfidence-related overplacement bias in the decision-making behaviour of some management accounting professionals in the sample. Subsequently, possible demographic indicators of higher susceptibility to overplacement bias are examined in the next section.

4.2 INDICATORS OF HIGHER SUSCEPTIBILITY TO THE INFLUENCES OF OVERPLACEMENT BIAS
Possible relationships between the demographic variables of decision-makers and their susceptibility to overconfidence-based bias were discussed in the literature review. The identified relationships may serve as indicators of higher susceptibility to overplacement bias, where applicable. The applicability of these possible indicators is investigated by means of the following hypotheses developed in the literature review:

**Hypotheses – Higher susceptibility to overconfidence-related overplacement bias**

**Hypothesis 1 – Gender:**
- The men in this study’s sample are more susceptible to overplacement bias, than the women in the sample.

**Hypothesis 2 – Age:**
- Younger respondents in this study’s sample are more susceptible to overplacement bias than the older respondents.

**Hypothesis 4 – Position:**
- Respondents in managerial positions are more susceptible to overplacement bias than respondents in the traditional management accounting position.

**Hypothesis 5 – Preference for intuition-based decision-making (inverse of preference for supporting information):**
- Respondents who indicated a higher level of preference for making intuition-based decisions are more susceptible to overplacement bias than respondents who indicated a higher preference for supporting information when having to make decisions.

**Hypothesis – No difference in susceptibility to overconfidence-related overplacement bias**

**Hypothesis 3 – Experience:**
- There is no difference in susceptibility to overplacement bias between less experienced and more experienced respondents in the sample.

The aforementioned hypotheses were tested by way of logistic regression modelling and analysis. Respondents were classified as being susceptible to overconfidence-related overplacement bias when the respondents indicated that they consider their abilities to be ‘better-than-average’ in at least two of the three overplacement measures, and at least average on the remaining overplacement measure. In the sample \( n = 303 \), the overplacement bias selection criteria resulted in 158 (52.1%) of the respondents being classified as not particularly susceptible to the bias. For 145
(47.9%) of the respondents, overplacement bias were prevalent based on the criteria above. As expected when measuring overplacement bias by combining more than one test, the bias proportion is somewhat lower than for the individual tests, yet still compares favourably to the individual tests. The outcome variable dispersion limits the number of parameters that could be included in the model to 14 (Hosmer and Lemeshow, 2000). To ensure robustness and prevent violation of the maximum number of parameters, a theory-informed model building exercise was implemented according to the prescriptions by Hosmer and Lemeshow (2000), which was neatly summarised by Reyers (2014).

Table 3 indicates that ‘Gender’, ‘Age’, ‘Experience’ and ‘Position’ should be entered into the initial model. Tests for possible multi-collinearity between the Age and Experience variables were performed. All the tests indicated correlations which are below the tolerance values (correlations between categories are below 0.7 and the Tolerance and VIF values are below suggested cut-off values).
Table 3: Summary of bivariate analysis – indicators of overconfidence bias susceptibility

<table>
<thead>
<tr>
<th>Variable</th>
<th>Wald (df) significance</th>
<th>Likelihood ratio (df) significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>3.117 (1)</td>
<td>3.147 (1)</td>
</tr>
<tr>
<td></td>
<td>( p = .078 )</td>
<td>( p = .076 )</td>
</tr>
<tr>
<td>Age</td>
<td>8.867 (2)</td>
<td>9.269 (2)</td>
</tr>
<tr>
<td></td>
<td>( p = .012 )</td>
<td>( p = .010 )</td>
</tr>
<tr>
<td>Experience</td>
<td>7.006 (2)</td>
<td>7.133 (2)</td>
</tr>
<tr>
<td></td>
<td>( p = .030 )</td>
<td>( p = .028 )</td>
</tr>
<tr>
<td>Position</td>
<td>10.066 (2)</td>
<td>10.818 (2)</td>
</tr>
<tr>
<td></td>
<td>( p = .007 )</td>
<td>( p = .004 )</td>
</tr>
</tbody>
</table>

To be entered into initial model \((p < .25)\)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Wald (df) significance</th>
<th>Likelihood ratio (df) significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preff_supp_info</td>
<td>0.359 (1)</td>
<td>0.359 (1)</td>
</tr>
<tr>
<td></td>
<td>( p = .549 )</td>
<td>( p = .549 )</td>
</tr>
</tbody>
</table>

Not to be entered into initial model \((p > .25)\)

When analysing the initial model, the moderating and controlling effects of the variables result in only ‘Position’ remaining significant at a \( p \leq 0.05 \) level. However, the removal of the ‘Gender’, ‘Age’ and ‘Experience’ variables significantly affects the likelihood ratio and also the beta coefficients of the model variables. Accordingly, these variables are added back to the model through an iterative process (according to relative significance of removed variables) to identify the optimal model. The model likelihood ratio and variable coefficients stabilise when ‘Gender’ and ‘Age’ are added back.

The statistics regarding the fit of the final model are summarised in Table 4. Apart from the \( R^2 \) statistics, the other fit statistics indicate a moderate to good fit. Accordingly, the model is accepted as a moderate model. Preliminary interpretations from the model should be supplemented by future research in this area.

Table 4: Model fit statistics – indicators of overconfidence bias susceptibility

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Value</th>
<th>Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Likelihood ratio</td>
<td>16.565 (5), ( p = 0.005 )</td>
<td>Significant fit</td>
</tr>
</tbody>
</table>
Classification hit rate increase:
- Maximum by chance 14.89%
- Proportional by chance 18.66%  Moderate improvement*

Area under ROC curve 0.629  Moderate discrimination

$R^2$:
- McFadden .042  Weak fit
- Nagelkerke .075

Hosmer & Lemeshow test 0.498 (6), $p = .998$  Good fit

Studentised residuals above 2 None  Good fit

* Level of bias, and therefore base rate proportion, is 51.7%

The final model is presented in Table 5. ‘Position’ is the only statistically significant predictor of susceptibility to overplacement bias by respondents in the sample. ‘Gender’ and ‘Age’ serve as controlling and moderating variables and are not statistically significant at $p < .05$.

Table 5: Final logistic regression model – indicators of overconfidence bias susceptibility

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta coefficient</th>
<th>Standard error</th>
<th>Significance (Wald)</th>
<th>Odds ratio</th>
<th>Confidence interval (95%) for odds ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7.005 (2)</td>
<td>p = .030</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>p = .008</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Position 1</td>
<td>0.965</td>
<td>0.366</td>
<td>6.939 (1)</td>
<td>2.625</td>
<td>1.280</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>p = .008</td>
<td></td>
<td>5.384</td>
</tr>
<tr>
<td>Position 2</td>
<td>0.236</td>
<td>0.317</td>
<td>0.554 (1)</td>
<td>1.266</td>
<td>0.680</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>p = .457</td>
<td></td>
<td>2.358</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.387 (2)</td>
<td>p = .184</td>
<td></td>
</tr>
<tr>
<td>Age 1</td>
<td>0.558</td>
<td>0.304</td>
<td>3.381 (1)</td>
<td>1.748</td>
<td>0.964</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>p = .066</td>
<td></td>
<td>3.168</td>
</tr>
<tr>
<td>Age 2</td>
<td>0.463</td>
<td>0.434</td>
<td>1.140 (1)</td>
<td>1.589</td>
<td>0.679</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>p = .286</td>
<td></td>
<td>3.718</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.336</td>
<td>0.266</td>
<td>1.591 (1)</td>
<td>0.715</td>
<td>0.424</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>p = .207</td>
<td></td>
<td>1.204</td>
</tr>
</tbody>
</table>
Based on the model, management accountants in the top management position of chief financial officer, financial director, or vice-president finance, are 2.625 times more susceptible to commit overplacement bias ($\text{Wald } \chi^2 = 6.939 \ (1), \ p = .008$) than their colleagues in the normal management accountant, financial manager, controller, or accountant positions. The finding of the higher prevalence of overplacement bias among management accountants who progressed to the top management accounting positions, corroborates the arguments by Meikle et al. (2016) that people who are overly confident in their abilities are likely to pursue, and be appointed to, higher level management positions. However, management accountants who progressed to the top business management position of chief executive officer, managing director, or president, were not significantly more prone to overplace their abilities than management accountants in the normal management accounting positions.

At first glance, this finding seems at odds with the argument by Meikle et al. (2016) that individuals in top management positions are more overconfident than the general population. Yet, based on research by Moore (2007), Meikle et al. (2016) indicate that for difficult tasks, people tend to overestimate, but underplace, their own abilities. As the top management position in organisations is undoubtedly involved in performing difficult tasks, this finding of low overplacement susceptibility does not pre-empt the possibility that overestimation may still be prevalent within this position.

Evidently, the preceding explanation is problematic with reference to the higher overplacement bias susceptibility of management accountants in the top management accounting positions. The reason for this anomaly can only be speculated in the present study, and is considered worthy of future research effort. Two possible explanations for this anomaly are speculated in the present study. The first is that overconfident management accountants in the top management accounting position are more likely to neglect the reference group (Bazerman and Moore, 2012) of professional decision-makers when comparing their own abilities, while management accountants in the top business management position may be more in contact with top managers in other businesses and therefore more aware of the reference group. The second may be that, for management accountants to progress to the top business management positions, they need to overcome the archaic stigma that management accountants inhibit general business decision-making (Byrne and Pierce, 2007). Accordingly, they should not have verbally expressed overconfidence to an excessive extent, as this would have harmed their reputation (Tenney et al., 2019) resulting in non-selection for top business management positions.

To summarise, only hypotheses 3 and 4 are supported by the results of the analysis. With reference to hypothesis 3, experience were confirmed to be insignificant as an indicator to overplacement bias.
With reference to hypothesis 4, the findings were anomalous as individuals in top management accounting positions were found to be more susceptible to overplacement bias than normal management accountants, yet individuals in top business management positions were not. This finding requires future research attention to properly explain the reason behind this finding. No significant support were obtained for the remaining hypotheses. Additional influences and indicators not dealt with in the current study, as well as a larger sample size, may improve the models of future studies.

5 CONCLUSION

5.1 DISCUSSION OF FINDINGS

This study set out to determine the susceptibility of management accountants to overconfidence bias. Management accountants are becoming more involved in business decision-making (CGMA, 2016, Goretzki et al., 2013) and, as human decision-makers, are expected to be susceptible to cognitive behavioural bias (Bazerman and Moore, 2012). Overconfidence is argued to be one of the most common and influential biases, suggest to even be facilitating many of the other biases (Bazerman and Moore, 2012). Yet, limited past studies have investigated the susceptibility of management accountants, as a group of decision-makers, to cognitive behavioural biases and none could be found that focused on overconfidence.

In accordance with Moore and Healy (2008) and Moore and Schatz (2017), overconfidence was considered to be divisible into three sub-constructs, namely overprecision, overestimation and overplacement. The present paper focussed specifically on overplacement bias as a sub-construct of overconfidence. A survey was performed on an international sample of 303 management accountants who mostly consist of IMA and CIMA members. A set of two self-placement questions with differing reference groups was posed to respondents. The mean and median response to these two question indicated a statistically significant ‘better-than-average’ effect. When this effect was compared to other studies, management accountants’ susceptibility to overplacement was within the lower range found by previous studies on other populations. Consistent with the discussion by Bazerman and Moore (2012), it was found that management accountants neglected to adjust their placement for the change in reference group for the two questions. The one reference group was other management accountants, and the second was other business managers.
The second set of two questions tested whether general overplacement changed to underplacement, when management accountants were faced with a difficult decision-problem (Moore, 2007). Interestingly it was found that the overplacement simply changed to average placement, and not underplacement. Additionally, a positive correlation was found between the level to which respondents placed themselves to other respondents and the mean inaccuracy of estimates. The range of estimates also correlate positively with the placement levels. Accordingly, the higher respondents placed themselves, the further the mean of their guesses were from the actual answer, and the wider the range of guesses by the respondents at the particular placement level.

Based on the findings from the two sets of analyses, management accountants are considered to be susceptible to overplacement bias on easier and less disconfirmable tasks, but not to underplacement on difficult tasks. Subsequent to the finding of overplacement bias susceptibility, demographic factors possibly associated with higher bias susceptibility were tested by means of binary logistic regression. The analysis indicate that responding management accountants in the top management accounting position of chief financial officer, financial director, or vice-president finance, were significantly more prone to overplacement bias than their colleagues in lower management accounting positions. Yet, responding management accountants in the top business management position of chief executive officer, managing director, or president, were found not to be significantly more susceptible to overplacement bias than their colleagues in lower management accounting positions. The data of the present study do not provide the analysis opportunities required to explain this anomaly. Two possible causes for the anomaly were speculated with reference to past literature being; lower neglect of the reference group by chief executive officers (Bazerman and Moore, 2012), and the possibility that reputational damage of overconfident management accountants may inhibit their progression to the top business management position of chief executive officer (Tenney et al., 2019).

5.2 IMPLICATIONS OF FINDINGS AND AREAS FOR FUTURE RESEARCH

The finding of the presence of overconfidence bias in the decision-making behaviour of management accounting professionals is of particular concern when considered with reference to the association between a higher propensity for accounting misstatement by overconfident executives (Meikle et al., 2016). Ben-David et al. (2013) argue that overconfidence bias results in chief financial officers making overoptimistic earnings forecasts. According to Meikle et al. (2016), this places executives in general under pressure when the lower actual earnings results are noted, to fraudulently report higher performance which is closer to the overoptimistic forecasts. Even though the mentioned
studies refer to overestimation and not overplacement, the present study's finding that chief financial officers were comparatively more susceptible to overplacement bias emphasises the concern. Chief financial officers are naturally more involved in the preparation of earnings forecasts (Ben-David et al., 2013). Therefore, mitigation of susceptibility to the overconfidence bias by management accounting professionals should receive urgent attention in subsequent research studies.

Even though management accountants were found to be susceptible to overplacement bias to a similar, if not slightly lower, degree than other populations, the management accounting profession should note the susceptibility of management accountants to overconfidence bias. Management accountants are highly involved with the financial aspects of businesses, which may easily be influenced negatively by overconfidence bias (Cortina et al., 2000, Huang et al., 2016, Meikle et al., 2016). Management accounting educational syllabi and continual professional development efforts should be amended to address the issue.

The reliance on the convenience sampling method represents a limitation to the current study. The attainment of responses from an international sample which compares well in terms of demographic make-up to that in previous research samples of the population provide support for the validity of the present study's sample. However, generalisation of the findings should be considered with the provision that future research could supplement the current findings.

Sample size considerations limited the number of demographic variables that could be included in the logistic regression analysis. The sample size may also have limited the power of logistic regression analysis to identify additional demographic indicators. Age specifically approached significance with the middle aged category differing from the younger category with a significance of $p = .066$. The possible significance of age with reference to overplacement bias would therefore benefit from future research if a larger sample could be obtained.

The anomaly in the findings of the higher susceptibility to overplacement bias of management accountants in the chief financial officer positions, than management accountants in the chief executive officer positions, require focused future research attention to explain the difference.

Management accountants are susceptible to overconfidence-related overplacement bias, yet to a comparatively average to slightly lower extent than other decision-makers. Their increased involvement in business decision-making should therefore not be worrisome from an overconfidence
bias perspective. Nonetheless, due to their particular involvement in earnings forecasts, the possible effect that overconfidence may cause when preparing these forecasts, should be noted.

**Acknowledgements**

The author is thankful to the Institute of Management Accountants (USA) and Chartered Institute of Management Accountants (UK) for their assistance in distributing/marketing the survey to their members.

[1] Note that the findings by Menkhoff and Nikiforow, (2009) were inverted, as their original coding (being 1 highest placement, and 5 lowest placement) was the reverse of the present study’s coding.

[2] Four respondents answer by selecting the “I honestly don’t know” option. These responses were retained as part of the total respondents as it is assumed that these respondents would be employed in larger companies where it is more difficult to obtain the total number of employees figure than in very small companies.
REFERENCES

ACCA (2017), Banishing bias? Audit, objectivity and the value of professional scepticism. ACCA: London.


A national online-survey on overconfidence in Germany", *Infection Control & Hospital Epidemiology*, Vol. 40, No. 8, pp. 943-946.


Klar, Y., Karelitz, T., Roziner, I. & Levi, U. (2008), "LOGE vs. logic: Can every group member be taller than others in the group", *Unpublished manuscript, Tel Aviv University, Israel*, Vol., No.


APPENDIX 1 – Questionnaire

DEMOGRAPHICAL SECTION

Question 1:
Of which professional association(s) are you a member, if any? You may select more than one.
- CMA
- ACMA
- CGMA
- FCMA
- ACCA
- CPA
- CA
- No professional association
- Management accounting student
- Other (specify) ___________

Question 2:
Gender:
- Male
- Female

Question 3:
Age:
- 20 - 29 years
- 30 - 39 years
- 40 - 49 years
- 50 - 59 years
- 60+ years

Question 4:
How many years of work experience do you have as a management accounting professional?
- 0 - 1 year
- 1 - 5 years
- 6 - 10 years
- 11 - 15 years
- 16 - 20 years
- 20+ years

Question 5:
Which country is most representative of your culture and mind-set?
Select from a dropdown list of 193 countries
Question 6:
In which country do you currently work?
Select from a dropdown list of 193 countries

Question 7:
In which industry does the company where you work, operate?
- Agriculture/Environment
- Construction
- Consumer package goods
- Educational services
- Energy/utilities
- Financial services/consulting
- Government/Non-profit
- Information technology
- Legal services
- Manufacturing
- Mining
- Pharmaceutical/Health services
- Retail/Wholesale
- Telecom/Media services
- Tourism
- Transportation/Logistics
- Other (indicate) ____________

Question 8:
What is the relative size of the company where you work in terms of its annual sales/turnover/revenue (roughly translated into US Dollars):
- $10 million or less
- Between $10.1 million and $100 million
- Between $100.1 million and $1 billion (billion = 1 000 000)
- Between $1.1 billion and $5 billion (billion = 1 000 000 000)
- More than $5 billion (billion = 1 000 000 000)
- I honestly do not know

Question 9:
What is the relative size of the company where you work in terms of the number of employees?
- 100 or fewer
- Between 101 and 1 000
- Between 1 001 and 5 000
- Between 5 001 and 10 000
- Between 10 001 and 50 000
- More than 50 000
- I honestly do not know
Question 10:
To what extent do you prefer making decisions supported by specific calculations and other supporting facts, as opposed to making intuitive/judgement-based decisions?

My personal preference is:
- I prefer having specific supporting facts before making decisions.
- I do not have a particular preference.
- I prefer making decisions based on my intuition/judgement.

Scale: 0 1 2 3 4 5 6 7 8 9 10

OVERPLACEMENT SECTION

Before you continue, note the following:
In this survey the term 'business decisions' refers to decisions related to management of a business, and not to ordinary decisions related to the traditional controller role of management accountants (e.g. which variances to investigate).

Question 1:
How would you describe your ability to make business-related decisions, as compared to the ability of other business managers?
- Well below average
- Below average
- Average
- Above average
- Well above average

Question 2:
How would you describe your ability to make business-related decisions, as compared to the ability of other management accounting professionals?
- Well below average
- Below average
- Average
- Above average
- Well above average
**Question 3:**
You were asked earlier to indicate the size of the company where you work in terms of its number of employees.

What percentage of survey respondents do you expect will indicate that they are employed at a company consisting of 100 or fewer employees (the smallest category).

Percentage of respondents employed at companies of 100 or fewer employees:
Scale: 0 10 20 30 40 50 60 70 80 90 100

**Question 4:**
Relative to the other survey respondents, how close to the actual percentage do you rate your estimate (above) to be? My estimate would be closer to the actual percentage than that of .... % of the respondents.

Closer than ....%:
Scale: 0 10 20 30 40 50 60 70 80 90 100
### APPENDIX 2 – Demographic variable categories used for logistic regression analysis

**Table A2: Variable composition and parameters for heuristic-based bias logistic regression analyses**

<table>
<thead>
<tr>
<th>Description of variable</th>
<th>Abbreviated name for analysis (dummy variable convention in italics, where applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender of respondent</td>
<td>Gender</td>
</tr>
<tr>
<td>Age of respondent:</td>
<td>Age</td>
</tr>
<tr>
<td>• Young, respondents aged between 20 and 29 years;</td>
<td>Age</td>
</tr>
<tr>
<td>• Midlife, respondents aged between 30 and 49 years; and</td>
<td>Age 1</td>
</tr>
<tr>
<td>• Older, respondents aged 50 years and above.</td>
<td>Age 2</td>
</tr>
<tr>
<td>Years of work experience of respondent:</td>
<td>Experience</td>
</tr>
<tr>
<td>• Little experience, 0 to 5 years’ experience;</td>
<td>Experience</td>
</tr>
<tr>
<td>• Moderate experience, 6 to 15 years’ experience; and</td>
<td>Experience 1</td>
</tr>
<tr>
<td>• Experienced, more than 15 years’ experience.</td>
<td>Experience 2</td>
</tr>
<tr>
<td>Position occupied by the respondent:</td>
<td>Position</td>
</tr>
<tr>
<td>• The traditional management accountant position, including</td>
<td>Position 1</td>
</tr>
<tr>
<td>its equivalents of financial manager, accountant and</td>
<td>Position 2</td>
</tr>
<tr>
<td>controller;</td>
<td>Position 3</td>
</tr>
<tr>
<td>• The top management accounting position of financial</td>
<td></td>
</tr>
<tr>
<td>director, including its relative equivalents of chief</td>
<td></td>
</tr>
<tr>
<td>financial officer and vice president of finance; and</td>
<td></td>
</tr>
<tr>
<td>• Business management position, by combining the positions</td>
<td></td>
</tr>
<tr>
<td>of managing director, including its relative equivalents</td>
<td></td>
</tr>
<tr>
<td>of chief executive officer and president, as well as</td>
<td></td>
</tr>
<tr>
<td>operational manager.</td>
<td></td>
</tr>
<tr>
<td>The level to which a respondent prefers to have supporting</td>
<td>Pref_supp_info</td>
</tr>
<tr>
<td>information to support the decisions, as opposed to relying</td>
<td></td>
</tr>
<tr>
<td>on intuition or judgement.</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX 3 – Descriptive statistics to each binary logistic model tested in the study

Table A3: Descriptive summary of demographic data of respondents in the sample for analysis of susceptibility to overconfidence bias

<table>
<thead>
<tr>
<th>Demographic variable</th>
<th>Categories</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>200</td>
<td>66%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>103</td>
<td>34%</td>
</tr>
<tr>
<td>Age</td>
<td>Young, 20 to 29 years</td>
<td>76</td>
<td>25.1%</td>
</tr>
<tr>
<td></td>
<td>Midlife, 30 to 49 years</td>
<td>185</td>
<td>61.1%</td>
</tr>
<tr>
<td></td>
<td>Older, 50 years and above</td>
<td>42</td>
<td>13.9%</td>
</tr>
<tr>
<td>Years of work experience</td>
<td>Little experience, 0 to 5 years</td>
<td>113</td>
<td>37.3%</td>
</tr>
<tr>
<td></td>
<td>Moderate experience, 6 to 15 years</td>
<td>116</td>
<td>38.3%</td>
</tr>
<tr>
<td></td>
<td>Experienced, more than 15 years</td>
<td>74</td>
<td>24.4%</td>
</tr>
<tr>
<td>Position occupied</td>
<td>Traditional management accountant</td>
<td>187</td>
<td>61.7%</td>
</tr>
<tr>
<td></td>
<td>Top management accounting position</td>
<td>46</td>
<td>15.2%</td>
</tr>
<tr>
<td></td>
<td>Business management position</td>
<td>55</td>
<td>18.2%</td>
</tr>
<tr>
<td></td>
<td>Other position, or not specified</td>
<td>15</td>
<td>5%</td>
</tr>
<tr>
<td>Preference for supporting information</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional culture to which respondents subscribe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Africa</td>
<td>54</td>
<td>17.8%</td>
<td></td>
</tr>
<tr>
<td>Asia</td>
<td>85</td>
<td>28.1%</td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>44</td>
<td>14.5%</td>
<td></td>
</tr>
<tr>
<td>North America</td>
<td>113</td>
<td>37.3%</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>2.3%</td>
<td></td>
</tr>
</tbody>
</table>

$M = 5.96, \ Mdn = 7, \ SD = 2.658$