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# Behavioural propensities and their impact across diversity in the audit sector: an empirical study on behavioural biases and their impact on the risk perspectives between races, genders, and experience levels in South Africa.

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UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

# Behavioural propensities and their impact across diversity in the audit sector

– An empirical study on behavioural biases and their impact on the risk perspectives between races, genders, and experience levels in South Africa.


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# Abstract

*At its core, audit and assurance is a product of the decision making and professional judgement of its* practitioners*. Guided by a largely principle-based regulation, the auditor obtains and evaluates sufficient and appropriate evidence, by applying their professional judgment to make informed decisions and interpret standards that are vital to the audit process* (Kutluk , 2017; Weirich , et al., 2012)*. The ensuing opinion over the fairness of financial statements, is a function of critical thinking, due professional care, and ethics. Notwithstanding, behavioural accounting studies have shown the effects of heuristics, cognitive biases, and potential inefficiency toward making a neutral and sound judgement. This research aims to analyse the impact of unconscious biases amongst auditors. It examines the behavioural propensities of auditors, the impact of individual personal characteristics on risk perspective and the overarching influence that auditor behaviour could have on audit quality.*

*An experimental study was developed to study the outcomes provided by auditors of different personal characteristics. The author investigates this by conducting a research review on risk perception in behavioural accounting studies, which reveals that behavioural biases that are influenced by different personal attributes such as gender, culture, and age, can influence the judgement of auditors. This phenomenon can result in differing risk perspectives, and information interpretation that ultimately impact 'defined audit quality'. Thus, exacerbating the diverging viewpoints on the appropriate audit performance, audit objectives and litigation risks within audit engagements. The treatment of risk by different auditors in a principle-based auditing regime can result in differing audit decisions, which may be perceived as deficient. This study contributes to the works on the audit expectation gap, which widens as the performance of auditors may not always align with the expectations of society and regulators, as they often have to balance audit quality with reducing the scorn and disparagement that has been cast on the profession.*

*Building on these principles, this research made use of a deductive approached that involved an adapted online questionnaire. The intention is to ascertain whether the level of experience, gender, and racial background of individuals in South Africa can affect financial and risk decisions. A total of 154 volunteer participants contributed to the development of this research. The survey was distributed to auditors in South Africa, and by using ANOVA analysis, statistical findings are observed to explain how hidden biases can affect risk perspective.*

*It can be concluded that behavioural biases do impact the decisions undertaken by individuals and that there is a general indication that the personal characteristics of individuals will impact decisions. The study posits that there is a strong correlation between behavioural biases,*

*personal characteristics, and risk perspective. In particular, the results of the report suggest that there is a strong positive relationship established between females, loss aversion and risk aversion. Whilst a strong positive relationship was identified between men, overconfidence, availability, and anchoring biases. Moreover, a conclusion can be made on the relationship between cultures and collectivism-individualism. The results suggest that collectivistic cultures are more risk averse than individualistic cultures. On the other hand, individualistic cultures are highly subject towards overconfidence, availability, and anchoring biases. Across a variety of experience levels, the study found a low impact of risk and loss aversion on all levels of experiences between South African auditors. However, a lower experienced individual is highly subject to anchoring and availability biases.*

***Key words: Audit expectation gap, audit quality, behavioural accounting, behavioural bias, professional judgement, risk perception.***

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"Alone we can do so little; together we can do so much." - Helen Keller

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# Chapter 1

## 1. Introduction

The 2008 global financial crisis has raised concerns about the candour and resultant quality of financial statement audit engagements and their continued significance for the capital market (Humphrey, et al., 2011). As a result, the audit expectation gap exacerbates, where the expectant performance on audit engagements from society and audit regulations/standards (such as ISQC1 and ISA 220), is not being met by auditors (Porter, et al., 2012). This deficient performance is traceable to the quality of the audit engagement, which has for many years, continued to become a grossly debated topic for its definition and measurement.

Audit quality encompasses vital features that provides the environment to which the probability of audit executed with quality be maximised and recurrent (IAASB, 2011). The audit objective is to form an opinion on the financial statements based on having obtained sufficient and appropriate audit evidence (IAASB, 2009). The opinion is contingent on the absence or existence of material misstatements, to which the auditor is required to report in accordance with their findings (IAASB, 2009). To meet this objective, the auditor is required to obtain and evaluate sufficient and appropriate evidence, by applying their professional judgment in selecting among alternatives (Kutluk , 2017). Their opinion is a product of professional competence, integrity, and the critical evaluation of facts.

In order to mitigate the audit risk of issuing an incorrect opinion, the auditor must maintain a high level of audit quality throughout the audit. This is to ensure that the results of the engagement are valid, accurate and without bias or the influence of other external factors (Francis, 2004). One such factor is the management of threats to independence (IAASB, 2011).

Auditing is intrinsically an opinion driven process, where judgement is applied in the assessment of financial information. Nonetheless, the quality and direction of the auditor's judgement may be impacted by internal factors categorised by personal characteristics, values and psychology (Hellmann, 2016; Nelson & Tan, 2005). Therefore the questions abound, can an externally based audit quality survive when crucial internal influences are negated? Could the behavioural patterns of an auditor displace the intended uniformity of audit engagements?

## 1.1. Background

Whether the activity is deciding on what to buy or standing for or against a specific cause, our perception is superlative. Perception can be described as the system to which individuals organise and construe outward stimuli to offer meaningful inward experiences to their consciousness of rendezvous rather than just 'things' (Gregory, 2001). The ramifications are that different people will have dissimilar, even contrasting, views of the same event or situation.

The historical rendezvous in our life, which lead to growth, evidence the importance of life experience to human survival. Overtime, we quickly learn to realise dangerous situations, recognise trends from prior unrelared experiences, and even recognise familiar faces at a glance. Our experiences allow us to take shortcuts in our cerebral processes in order to function and support the homeostatis of decisions and thoughts that the brain is acustomed to. Notwithstanding, as humans, we take pride in our capacity to judge options and make choices. In neuroscience, we distinguish these two ways of thinking, the first one being intuitive thinking, and the other deliberative thinking.

In a perception creation model designed by Litterer (1965) there are two inputs (external factors) to the perceptual construction process. Namely, information (i.e. Accounting/Financial data) and the past experiences of the individual. Moreover, the model contains three internal devices that influence the perception process, which are selectivity, interpretation and closure.

S*electivity* refers to how an individual contends against information overload by only selecting specific information from the inundating range of options. Inherently, the individual can only focus on a limited number of stimuli at a time in order to make a judgment or decision regarding a particular event. Residual situations/stimuli are less obvious and become secondary information, which receives less attentiveness. In this phase, a person could unconsciously draw conclusions that are optimistic (for example, expect higher investment returns, or assign a lower than reasonable probability of risk). In essence, selectivity evinces how a person may behave (whether consciously or not) in a manner other than that which is rational by selecting from a set of less optimal options (Ricciardi, 2004).

*Interpretation* posits that the same stimulus (a specific scenario/event) can be construed in different ways by several decision makers as the individual's value system and past experience influences their inclinations of thought and action. Whereas *Closure* concerns the propensity of individuals to formulate a full picture of any specified situation. As a person processes information, they attribute additional information in an attempt to complete the thought process and heighten its importance. Therefore, perceiving more than the information appears to disclose (Ricciardi, 2004).

In 2011, the perception construction process was evidenced in a study conducted by Capuano and Ramsay (2011), which concluded that our decisions are influenced by both intrinsic and exogenous factors that would render "rational" forms of behaviour, incomprehensible. This study was rooted in the influential work by Kahneman & Tversky (1979), who had postulated a contemporary theory on risk-taking behaviour known as *prospect* theory. The prospect theory holds that biases and inclinations driven by behavioural details that influence an individual's judgement and selections under risky circumstances in a specific context, results in departures from rationality (Kahneman & Tversky, 1979). If true, this theory would have major implications on our understanding of foundational financial, accounting and auditing principles – most of which are based on the assessment of risk.

Accounting information users require reliable and appropriate information for decision-making; it is the responsibility of business insiders to provide this material (Bozkurt , 2012). Conversely, it is probable that the information is not dependable due to the intricacies of accounting transactions, separation of other stakeholders from operations, and the partisanship (prejudice) of the information providers (Kutluk , 2017). Financial information and its related features are presumed to be unbiased and impartial by its users. However, information used by stakeholders in financial decision-making is prepared by accountants who exercise their own professional scepticism and judgement to provide their construal and *interpretation* to standards and legislation – which is intended to be comparable across countries and entities. However, the behavioural accounting literature provides evidence that the pursuance of objectivity is not always realised (Doupnik & Richter, 2004; Hellmann, 2016).

Users may want to provide debt capital, invest, or wish to amalgamate; thereon, the procedure to verify the accuracy of the company's financial position is an important one (Duska , et al., 2011). The independent auditor's duty ensues, with the aim to mitigate the presentation risk of unreliable information.

The auditor obtains and evaluates sufficient and appropriate evidence, and provides an opinion on the fairness of financial statements. An appropriate audit engagement necessitates professional judgment, where relevant knowledge and experience is applied to the facts and circumstances, which are essential in the interpretation of standards and the informal decisions required during the audit process (Weirich , et al., 2012; IAASB, 2011; Francis, 2011).

The issue is that financial participants may be influenced to accept the neutral nature of financial information provided by entities than is actually in practice (Hellmann, 2016). Auditing is inherently an opinion driven process, where judgement is applied in the assessment of financial information. As such, the quality and direction of the auditor's judgement may be impacted by internal factors categorised by personal characteristics and psychology.

Modern auditing follows a risk-based approach (Hematfar & Hemmati, 2013). In this approach, audit resources are predominately focused on those financial statements items that may contain misstatements (either due to fraud or error) as a result of the risks faced by the business. In a paper by Ricciardi (2004), risk is depicted as being inherently subjective. In facets of a risky decision that involve ambiguity/uncertainty, the individual's judgement must be subjective since the aspects involved are not well defined. Similarly, when the risk factors are identifiable, an individual's perception remains subjective due to the personal quality of evaluating the probability of and exposure to losses (Ricciardi, 2004).

The audit related risk is that the auditor could make an incorrect risk assessment because of the cognitive and emotional limitations described in the prospect theory. This is particularly attributable to the perception formation model by Litterer (1965), where certain financial information may be selectively identified, misconstrued and/or be inappropriately augmented.

In response, audit firms make the use of a review process as a tool to enhance audit quality (Herrbach, 2001). The provision of feedback and checking the risk assessment work performed is especially crucial as a different perception of the situation/environment can mitigate the behavioural limitations by one auditor through the consideration, interpretation and evaluation of facts by another auditor (Nelson & Tan, 2005). The review is particularly done by individuals who are in the upper echelons of the engagement, which assumes that the manager will have a higher technical understanding, more expertise and in certain instances could differ in age and background. These personal determinants contribute to the variation of risk perceptions between individuals and represents instances of how individual auditors can affect audit quality within an audit firm or engagement.

In order to mitigate the audit risk of issuing an incorrect opinion, circumvent litigation and avoid public disapproval, the auditor must maintain a high level of audit quality throughout the audit. This is shaped by the intention to ensure that the results of the engagement are valid, accurate and without bias or the influence of other external factors (Francis, 2004). However, as a concept, audit quality is riddled with ambiguity, which makes it difficult to define and measure. This predicates the audit expectation gap as it reduces the confidence in the auditing profession's ability to embrace fully its social role (Herrbach, 2001; SIKKA, et al., 1998). Further, it makes it particularly sensitive to the behaviour of the individuals who carry on audit work (IAASB, 2011; Neri & Russo, 2014; Francis, 2011). Variances in interests and perspectives between different members of an audit team can negatively influence the work and motivation of the auditor (Herrbach, 2001). This can ultimately threaten audit quality or damage the reputation of the profession, hence widening the audit expectation gap (Herrbach, 2001; Porter, et al., 2012).

In contrast, the ICGN Global Governance Principle 3.1 posits that having a mix of personnel with different characteristics provides a wide range of perspectives that can benefit an

engagement team. The principle promotes this view having stated that the assortment of **perspectives** can generate effective challenge, discussion, and objective decision-making. A diverse team better comprehends its clients and the business operational environment. Accordingly, this heightened understanding contextualises the firm to better attain and capitalise on opportunities for growth and innovation, which ultimately creates value for the business (Deloitte Touche Tohmatsu Limited, 2017). In an article by Deloitte South Africa (2017), these value-adding characteristics include *inter-alia* skills, ethnicity, and expertise. This refers to having the optimal mix of competencies that help guide the business and strategy of the edifice and having a blend of individuals from various cultural, racial, and religious backgrounds (Deloitte Touche Tohmatsu Limited, 2017)

## 1.2 Report Question and purpose of the study

Decision-making manifests itself differently between individuals. It is highly influenced by one's knowledge, performance, desires, identity, achievement, personal characteristics, and psychological factors (Mudzingiri, et al., 2018).

Gul, Wu, & Yang (2013), provide evidence that audit quality differs between individual auditors. Factors influencing judgments and decisions in auditing include culture, age, and expertise (Nelson & Tan, 2005). Therefore, the understanding of auditor decision-making, its drivers, and the disparity in thinking between individual auditors with different profiles, will provide a more grass-root level explanation to a question on the variance of an individual auditor's risk perspectives amongst a diverse populous. The understanding of these hidden biases that affected auditor's unconsciously, aims to bring awareness to the necessity of diversity within audit firms and aims to identify the need for more robust audit methodology and regulations as a respond to potential psychological limitations in audit judgement and ultimately, audit quality. The context of the study is destined to augur well in South Africa, as this country is considered amongst one of the most diverse, as it hosts a wide range of individuals of various ethnicities and skills within business.

This paper will investigate whether there are significant differences in risk perspective amongst auditors with different individual personal characteristics. Moreover, it examines if gender, ethnicity, and expertise are proponents to behavioural biases amongst auditors. From the above-mentioned information, the research question is:

1. What are the behavioural biases impacting auditors?
2. Is an auditor's risk perception significantly impacted by individual personal characteristics, such as gender, ethnicity, and expertise?
3. Is there a significant relationship between the behavioural biases of an auditor and their personal characteristics?

## 1.3 Assumptions, Limitations and Delimitations

The scope of the research is limited to investigating behavioural bias differences among auditors from a South African audit firm – Deloitte. The sample has been divided into strata units that match the proportions of auditors at Deloitte; there are eight strata units in the sample based on differing races, experience levels and gender. A major limitation of the study, as a consequence of data coherence, is that the study has a restricted perspective on gender and race.

With regard to socio-cultural constructs, gender is a term used broadly to denote a range of identities that do not necessarily correspond to established ideas of male and female. However, where references of gender have been made in this study, these have been limited to the sex-based connotations of individuals being either male or female. This has been recognised as a major limitation to the study, as the breakdown of the strata units to include other gender identities would improve the generalisation of the study to the population as whole and provide a relevant portrayal of an individual's identity as a key element of one's personal characteristics.

People are often placed within different cultures that affect perceptions, expectations, cognition, and emotions (Statman, 2008). As a concept, race and culture is a categorisation of humans based on shared social or physical qualities (Schaefer, 2008). South Africa is a multifaceted combination of ethnicities, languages, and cultural identities. The racial categories introduced by Apartheid[1] remain entrenched in South African society with South Africans continuing to classify themselves, and each other, as belonging to one of the four defined race groups - Black, Whites, Coloureds, and Asians (Posel, 2001).

Another major limitation to the study, as a consequence of aggregation, is that the study has a limited examination on behavioural biases within individuals of different cultures. This is attributable to the assumptions made regarding the categorisation of different races. Statman (2008), found that individuals which had European and North America ethnicities had differing dimensions and financial behaviour than those from Asian and African backgrounds. As a result, our strata units have been structured to aggregate Asian, Black, and Coloured individuals into one group representing collectivism, whilst grouping White South Africans as those representing an individualistic culture.

This form of categorisation is inherently limited as cultural identities are influenced by more than just ancestry and skin colour, but by a multitude of other social factors such as religion,

[1] Apartheid was a system of racial classification, segregation and discrimination practiced in South Africa under the National party governments from 1948 to 1994. It entailed the ordering of a society explicitly and systematically according to racial categories (Schaefer, 2008).

language, and education (Schaefer, 2008). Accordingly, this is a limitation to the study as the inclusion of other cultural elements may have contributed ever greater to the understanding of the variances in personal characteristics. However, due to the broadness of subject matter (as aforementioned), the categorisation according to ancestry provided an elementary recourse.

For a holistic perspective, this report did not include extensive discussion on the limitation inherent in auditing regulations. Moreover, insufficient expansion may have been offered on considerations on the approaches taken to address behavioural biases impacting auditor judgements – such as trainings and the construal of standards and how its readability can be improved to facilitate inclusivity and if that could narrow interpretation risks.

Concerning research design, the study foundations its stance from the assessment of behavioural finance concepts and measures risk regarding personal decisions, instead of fashioning an approach that targets responses to an audit-specific scenario (e.g., Case study). Although the risk perspectives and behavioural biases may be obtained from the selected auditors (which satisfies the research question), there is a limitation that the approach and precedence used cannot be used to conclude on audit opinions, but rather imply superficially.

Regarding data collection, there is a limitation in that the result from the sample selection, which mainly consists of individuals from one audit firm, cannot be accurately generalised to represent the greater audit population of South African auditors/firms. This study was impacted by an access limitation in terms of attaining large samples of auditors and partners in South Africa to extrapolate the analysis toward the target population. This report makes use of a self-contained survey for data collection. The sampling risks are that small sample sizes could result in several sampling errors; sample sizes that are larger could increase the accuracy and validity of the study (Gordon & Porter, 2019). However, the shortcomings are the time, access, and cost constraints to conduct the research. This may marginally affect the external validity of the study in this regard and hence generalisation would be suggested and not assumed.

The researcher acknowledges that the extent of the survey being 11 question is a limitation to the study, as it may not allow for a robust conclusion on the biases being tested and their impact on the auditor's judgement. More questions could have been included to provide a deeper analysis into the impacts of behavioural biases on individuals. However, as a delimitation, the questions in the questionnaire were selected from previous questionnaires presented in the theoretical framework, which usually featured 10 to 20 uniform questions. For example, this report made use of adjusted questions from Fay and Montague (2015) – who had 6 questions addressing 5 biases, and Berggren, et al. (2010) – who had 12 questions addressing risk perspectives and 2 biases.

# Chapter 2

## 2. Literature review

This research paper lends itself predominantly in the field of behavioural finance and accounting. The aim is to investigate if ethnicity, gender and expertise influence the risk perspective of auditors. Prior literature, as evinced in the introduction, highlights the importance of behavioural patterns and biases within individuals. Although this may largely concern anthropology and psychology, it has become increasingly important for firms and scholars who realise its pervasive affect, and its overarching impact on the audit quality and the subsequent opinion.

Decision-making manifests itself differently between individuals. It is highly influenced by one's knowledge, performance, desires, identity, achievement, personal characteristics, and psychological factors (Mudzingiri, et al., 2018).

Gul, Wu, & Yang (2013), provide evidence that audit quality differs between individual auditors. They found that an individual auditor can affect the audit quality (which speaks to competence, performance and ethics) of an engagement through auditor characheristics including political affiliation, 'Big N audit firm' experience, education and ranked position held in the engagement. Other known factors influencing judgments and decisions in auditing and finance include culture, environment, motivation, gender and expertise (Nelson & Tan, 2005; Bonner, 2008; Hellmann, et al., 2010).

### 2.1 The Auditor

#### 2.1.1 Knowledge, competence, and expertise

The anthropological nature of auditing subjects it to personal characteristics (e.g., knowledge, skill, and behaviour) and cognitive boundaries that individual auditors possess which leave them susceptible to judgmental biases (Nelson & Tan, 2005). Primordially, Ashton and Kramer (1980) held that from an expertise perspective, students (studying audit/accounting) and auditors were inseparable. They postulated that in terms of a measure of consistency, utilisation and input interpretation students are reasonable surrogates for real-world professionals. However in recent years, significant differences have been identified between these two groups of participants. Krogstad , et al. (1984) posit that task convolution and tangible knowledge nuances required to perform different responsibilities are aspects only

acquired with experience in audit. Tan and Libby (1997) coalesce these perspectives by elucidating the importance of 'tacit management knowledge', which refers to on-the-job knowledge that comes with how to manage others, self-control and the trajectory of one's career in a job setting. They found that true superlative audit performance is resultant from tacit managerial knowledge, and not just technical knowledge.

Libby and Luft (1993) consolidate this perspective by positing that experience leads to opportunities to acquire knowledge, and knowledge coupled with ability, influences auditor performance. They also add that the level of experience and the environment of the auditor in an audit team plays an important role to the expertise on the engagement and the quality of professional judgement used (Libby & Luft, 1993).

### 2.1.2 Experience and behavioural propensities

Foremostly, cognitive limitations evinced in heuristics and cognitive biases described in behavioural literature in relation to auditors, bridges the principles across finance, accounting and psychology. Conspicuously, Tversky and Kahneman (1974) identify that auditors are disposed to heuristics and biases such as representativeness bias, availability bias and anchoring bias; these cognitive limitations were more prevalent and rampant in students who were exposed to auditing tasks. These results were further explored by Smith and Kida (1991), who held that auditors are highly prone to judgemental biases, however, these diminish with expertise/experience. This is particularly important, as the interpretation of phrases such as possible and probable in professional standards has been found to differ between audit firms/individuals (Nelson & Tan, 2005). Moreover, Smith and Kida (1991) specifically provide a widespread review of audit judgement research which address heuristics and biases. They particularly identify that anchoring, representativeness, sensitivity to sample sizes and the credibility of data sources are determinants to professional judgement, which differs across individual auditors.

In a study by Mudzinquiri and others (2018), it was concluded further that confidence, risk partialities, and financial literacy perceptions significantly influence the behaviour of categorised subjects. Low financial literacy university students are more over confident, risk loving, and impatient (Mudzingiri et Al., 2018). Other variables that significantly influence behaviour are age, degree enrolled for and geographical location.

Behaviour has thus been associated to individual risk preferences, knowledge, perceptions, personal characteristics, and other psychological factors. From the above, there is expectation of a link between auditor judgement and behavioural biases. Further, it is prevalent that there is a relationship between the potency of biases to their impact on individual perspectives and expertise/knowledge.

## 2.2.Behavioural Finance and Accounting

The ecosystem of finance and accounting has been convoluted with principles that govern the decision-making processes that accountants, investors and insiders make. These concepts have been based on the ideology of 'Homo economicus,' which assumes that economic agents are rational persons and that markets follow coherent patterns (Sargent, 1993). Market efficiency has been particularly categorised by the assumptions that current information will lead to new financial perspectives; investors will always choose what gives the most rewards for a given level of risk. However, these expectations (notwithstanding their intuitive nature) could not be practically applied, nor do they represent the norm (Shiller, 2003).

The relationship between psychology, accounting and finance has provided remedy to the deficiencies that traditional paradigms model. This partnership is referred to as behavioural accounting, which advances the reasons behind inefficiencies underpinned by human foibles as they react with accounting functions/reports (Shiller, 2003; Ricciardi, 2004).

To illustrate Ferreira , et al. (2019) suggest that according to the *regret theory* people may experience negative emotions after noticing a mistake in their judgement from a choice that was made. The theory regret aversion argues that when financial loss occurs (for an example), the hurt experienced by the decision-maker is not limited to the emotional pain but stretches to a feeling of responsibility for making the incorrect choice. Investors are likely to take the conservative and conventional approach by investing where the rest of the market invests, in an attempt to be regret averse and thus negating their own personal policies and beliefs (Ferreira , et al., 2019). However, this may not necessary be the erudite route as markets, as aforementioned, can be irrational and turbulent.

Shefrin (2007) defines bias as a predisposition towards error. It is a prejudice or a propensity to make decisions while already being influenced by an underlying belief (Shefrin, 2007). Studies emphasise that individuals are affected by psychological factors such as cognitive and emotional biases in their decision-making, rather than being rational and, fact/wealth-maximising focused (see (Shefrin, 2007; Barberis & Thaler, 2002; Pompian, 2011)). Emotional biases are systematic deviations from rationality because of impulse or intuition in decision-making. Cognitive biases, unlike emotional biases, are unconscious errors in reasoning (Pompian, 2011). Though the insiders have collected and evaluated the relevant information, it is very difficult to separate the mental and emotional factors that are involved.

### 2.2.1 Emotional Biases

#### *Self-Control Bias*

The self-control bias is the tendency of humans to prefer consumption goods instead of capital investment goods or saving (Pompian, 2011; Pompian, 2006). The reckless expense habits of individuals are intensely pervasive as these affect the human's financial behaviour as well as their subjective financial health. Individuals with higher levels of restraint are increasingly prone to save regularly and accordingly harbour greater financial resilience, sufficient income for retirement and lower levels of debt (Pompian, 2011). In essence, the inability to curb over-consumption may heavily result in incorrect financial decisions (Kahneman & Tversky, 1979).

#### *Loss Aversion*

Barberis and Thaler (2002) provide that investors in markets are loss-averse. They would rather realise a gain in an investment but would hold a loss of equal measure. An agent would be a risk-seeker when faced with the prospect of losses; when faced with the prospects of enjoying gains, they would be more risk-averse inclined (Kahneman & Tversky, 1979). This can be evidenced in the disposition effect where investors tend to sell assets that have increased in value, but insist on keeping assets that have dropped in value.

#### *Overconfidence Bias*

Barberis & Thaler (2002) also notes that people are overconfident in their judgement. This is evident both in their estimates of quantities and in their estimation of probability. This can alter the application of ISA 540, where auditors are required to make an auditor's estimate for the pupose of testing the reasonability of management's use of approximations and judgement (IAASB, 2019). People also display unrealistically hopeful views of their abilities and prospects (Weinstein, 1980). Overconfidence directly affects people's investment behaviours (Barberis & Thaler, 2002). Barber and Odean (2001) concluded in their paper that overconfident insiders trade unduly and this leads to poor returns. Owing to a disregard of historical investment statistical performance, they underestimate the downside risk, which results in poor portfolio performance (Barber & Odean, 2001).

The overconfidence bias suggests that those who susceptible to this bias are often unsighted to any crutial information. For instance adverse data that can indicate that assets/shares should not be bought or sold, the incorrect 'haircut' (rule-of-thumb) applied to audit materiality theshold used to determine the significance of transactions and discrepencies, or that financial

line items should have been scoped in the audit. Being overconfident or less confident may result in an individual ignoring crucial market and material misstatement signals that may be pivotal in making risk assessment beneficial decisions. Skewed self-assurance levels may result in an individual having “cognitive biases” and may take shortcuts in decision-making as a result.

### 2.2.2 Cognitive Biases

#### *Self-attribution bias*

Self-attribution is a cognitive phenomenon by which people tend to attribute success to innate aspects such as foresight, and attribute failures to situational factors. Individuals would take credit for successes and blame external factors for failures. An example could be students attributing higher grades to their own intelligence and hard work, and citing unfair grading when they obtain lower grades (Mishra & Metilda, 2015). Studies have shown strong association between self-attribution and overconfidence. Accordingly, overconfidence stems from self-attribution bias.

#### Risk aversion and Experience

At the centre of risk tolerance within individuals is overconfidence bias. This can be described as the as unjustified reliance in one's intuitive judgments, reasoning, and cognitive abilities (Pompian, 2011). Studies by Gervais and Odean (2001), and Mudzingiri, et al. (2018), show that the level of overconfidence decreased with an increase in level of experience. This is linked to the self-attribution bias, as young and inexperienced individuals take higher risks, and then take an inadequate degree of responsibility to failure as they attribute losses to external factors.

Interestingly, some studies contrast this conclusion. Mishra and Metilda (2015) in their study posit that professionals and experts (those with more experience and education) have a higher degree of overconfidence than relatively inexperienced subjects. This was supported by Glaser and Weber (2007) as well as Bhandari and Deaves (2006), who also found that higher levels of education and experience within individuals lead to more overconfidence in abilities.

In light on this contradictory evidence, an expectation can be created that those with higher levels of expertise are more likely to be more overconfident and take higher risks than those who are inexperienced – who opt for a more conservative approach.

### *Heuristics (shortcuts)*

Forms of cognitive bias that exacerbate bounded rationality (shortcuts in financial decision-making) are essentially driven by individual preferences. The *representation bias* relates to the propensity of people to focus more on the symbolism of information, rather than its details. This suggests that the decisions that people make will not be based on the facts or visible information which is often complex, but on the simplicity offered by representativeness. This can be crucial in an auditing environment as auditors may miss specific details in the information provided by management in their testing (such as through the inspection of supporting documentation), thus an incorrect conclusion or opinion can be provided as specific finer details may have been looked over (Smith & Kida, 1991; Ricciardi, 2004).

When representativeness is not palpable in data, Edwards (1986) promulgates that people's under/over reaction to the information will lead them to relying more on belief and prior knowledge. This is known as *conservatism*. This is particularly vital, as it could lead to auditors misconstruing events as their own individual value system and past audit experiences influences their inclinations of thought and action.

Behaviour is impacted by beliefs. Once people form an opinion that is practised often, literature from Lord, Ross, and Lepper (1979) supports that individuals will preserve their beliefs and will ignore new evidence over their beliefs. This is akin to the *Anchoring* bias, which identifies that people fixate too much on the initial value of an estimate and are slow to update their belief or estimate away from that initial value. This would impact the auditors ability to perform sufficient tests over balances in the financial statements, as they attempt to prove the accuracy of the figure, instead of considering all available information to attain the most accurate figure.

Penultimately, the psychological aspect of behavioural finance alludes to availability bias. Kahneman and Tversky (1979) provide that investors rely on information available to them over that that is not. The prejudice in information is often based on memories of the individual, which is not all equally retrievable, which leads to a biased rationale (Kahneman & Tversky, 1979).

Heuristic biases confirm the concepts of *Interpretation and closure* which were introduced by Litterer (1965). Interpretation refers to how that the same stimulus (financial information from the client) can be construed in different ways by several decision makers as the individual's value system and past experience influences their inclinations of thought and action (Litterer, 1965). Whilst *Closure,* concerns the propensity of individuals to formulate a full picture of any specified situation. When a person processes information, they attribute additional information

in an attempt to complete the thought process and heighten its importance. Therefore, perceiving more than the information appears to disclose (Ricciardi, 2004).

## 2.3 Risk perspective

### *2.3.1 Risk and Culture (ethnicity)*

Albaity and Rahman (2012) propose that one's trust highly depends on their ethnic origin, geographic location and religious background demonstrating the relationship between religious background, ethnic origin and risk taking behaviour (Albaity & Rahman, 2012). Their results show that those who are religious tend to be more trusting of other individuals than individuals who are not. Arruñada (2009) who postulates that religion and identity have significant influence, has extended this point on the risk assessments made by individuals (Arruñada, 2009). This is increasingly important in the attest function of auditors, as it may be observed that religious indivduals may be more trusting of the clients they audit than individuals who are not. This may also lead to some hinderance to the auditor's objectivity, when they encounter misstatements, or to incorrectly attribute a lower risk classification for clients who share similar values and beliefs, or to those which they trust (without consideration of other substantive facts).

Moreover, Markus and Kitayama (1991), who describe the propensity of people in individualistic cultures[2] to think confidently about themselves and focus efforts on their own internal characteristics - for instance their skills - establish the connection between individualism and overconfidence. Certainly, most psychology literature posit that individualistic cultures people, like the United States, believe that their abilities are above average, unlike people in collectivistic cultures, like Japan (Markus & Kitayama, 1991). This suggests that auditors from different ethnical backgrounds within an audit engagements may all have different perspectives on same financial data and thus have differing risk perceptions and even assessments.

Statman (2008) posits that the risk perspectives of different cultures and countries are different from each other. Roland & Gorodnichenko (2019) extends this idea and makes mention that the self-focused nature of individualised cultures, increases susceptibility of those nations and ethnicities to individual cognitive biases.

[2] The individualism dimension explores the extent to which people in a society are assimilated into groups. Individualistic societies have advocated the interests of self over the views of the collective. They emphasize the "I" versus the "us". Its counterpart, collectivism, represents a society in which the group is nurtured first, and relationships represents an important commodity (Hofstede, 2001)

These theories are supported by the work of Kanagaretnam, et al. (2014). In their cross-country analysis, individualism is also positively related with risk-taking. Cultures which were seen to be individualistic had tendencies to take more risks and tend to report earnings less conservatively (Kanagaretnam, et al., 2014).

## Cultural dimensions

Geert Hofstede postulates that the various cultures that are evident within an organisation, can become problematic for those organisations as the principals, values and perspective differences between cultures can impact the effective implementation of principals (Hofstede, 2001). Moreover, he posits that in order to address the divergence between cultural diversity and organisational issues, the comprehension of cultural dimensions of a country in relation to other countries is superlative.

For example, Hofstede (2001) makes reference to an uncertainty avoidance index (UAI), which refers to ones inclination to accept risk. This index measures an individual's tolerance for ambiguity, evinced in events that are unknown or unexpected such as those within an audit perspective situation, where risk assessment or evaluation of misstakements or estimates are examples of circumstances on uncertainty. The UAI reads that societies which have a higher degree of uncertainty avoidance, often prefer laws, guidelines and strict behavioural practices. On the other hand, lower UAI members are more tolerant of opposing and differing truths and idea; as such, these societies often haven less regulations.

In a 2008 study by Meir Statman, a strong link was made between risk and cultural dimentions. Statman (2008) posits that the combined set of shared experiences that individuals of the same culture share will influence their emotional and cognative biases. Through a survey across various people from different countries, he holds that individuals in collectivistic countries may tend to take more risk or have higher risk tolerance levels because their factioning provides downside protection. Statman (2008) also establishes a positive relationship between risk tolerance, regret avoidance and cultural factors such as country of origin, gender, income and trust levels (where trusting people are more risk seeking).

In contrast, although Hofstede (2001), Statman (2008) and Markus and Kitayama (1991) make a connection between cultural dimensions and risk, Ming-Yi (2006) postulates that cultural values can change over time. When the political, societal, and economic environments change, the risk response as a concequence of cultural dimensions also changes. Societies and organisations who get exposed to different other cultures through technological cross-communication, may slowly becoming hybrid cultures that may not have any deviant responses in risk assessment or use of professional judgement. (Hofstede, 2001)

### 2.3.2 *Risk aversion and gender*

The relationship between risk and gender (amongst other determinants), has been under scrutiny since the beginning of the century. For instance, Ferreira , et al. (2019) investigates how women are different from men in risk aversion in a South African context. The authors conclude that women are more risk averse than men. They also identify that there is a positive relationship between women, age and risk aversion.

In addition, it is also well documented that overconfidence bias varies based on gender (Barber & Odean, 2001). Men tend to be more overconfident than women, which can be linked to women's risk aversion behaviour in general.

In addition, males exhibit propensities to abridge information, thus ignoring relevant aspects of financial information. This can lead to women being more thoughtful and informed, as they are more likely to ask more questions than men do and to consider all relevant financial factors (Barber & Odean, 2001). The individual's risk perception functions as an intermediary in their decision making process.

Concerning other biases, in a South African study Ferreira , et al. (2019), had found a low impact of loss and regret aversions as well as anchoring on both genders. However, a significant influence was identified toward representative bias, availability bias and self-control bias.

Other notable research has found that risk tolerance, trust, emotional biases (e.g. Regret and loss aversions) through the disposition effect, have a greater effect on older individuals, females and cultures such as those with a Chinese (collectivistic) background (see: (Frino, et al., 2015; Rau, 2014; Breitmayer, et al., 2019)). This creates the expectation for differences in age, gender and culture/ethnic origin to risk perspective and behaviour.

## 2.4 Hypotheses

The purpose of the study is to investigate the effect of behavioural biases on the risk perspectives of auditors with different personal characteristics in South Africa. The aim of the study is to ascertain whether the level of experience, gender and racial background of individuals can affect the financial and risk decisions.

The research question aims to investigate the relationship between the risk perspectives of auditors, cognitive and emotional biases, and personal characteristics.
The research question is:

1. What are the behavioural biases impacting auditors?
2. Is an auditor's risk perspectives impacted by individual personal characteristics, such as gender, race, and expertise?
3. Is there a relationship between the behavioural biases of an auditor and their personal characteristics?

The hypotheses are based on the lierature review and considered the three personal characteristics gender, culture and level of experience. Each of these independent variables, will be associated an dependent variable based on the results of the theoretical framework. In particular, the behavioural biases and risk perception (dependent variables) from similar work in the field. Hence, the hypotheses are:

*H0 – There is no difference between the compared alternatives*

*H1 – There is a difference between the alternatives*

Refer to Figures 1 for an illustration of this theory.

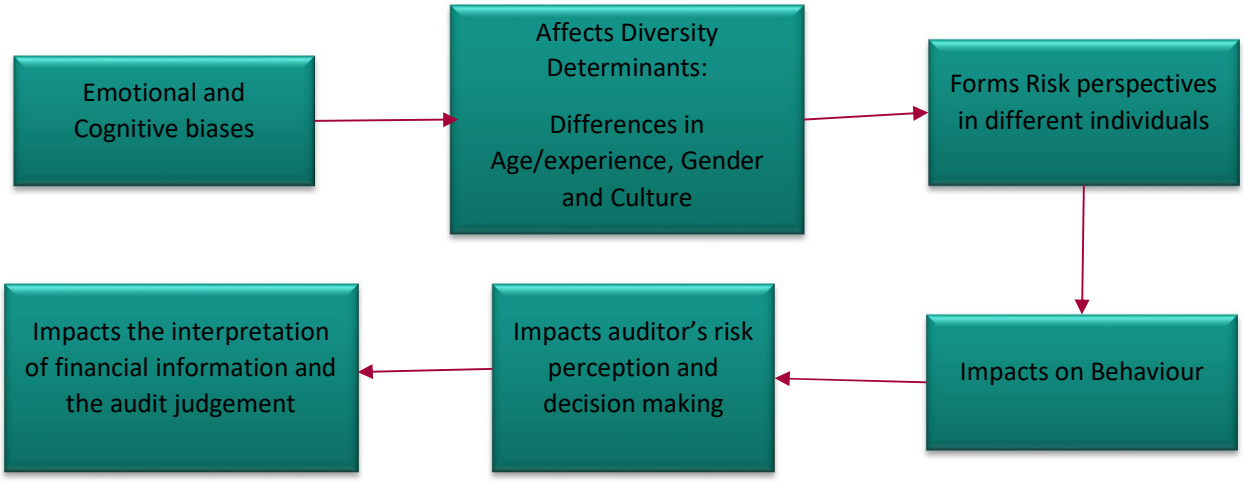



*FIGURE 1. IMPACT OF DIVERSITY ON FIRMS*

$H_0$: Audit and assurance members in South African audit firms are not influenced by behavioural biases.

H: Based on the conclusions of Barber & Odean, 2001; Berggren, et al., 2010; Ferreira , et al., 2019, there are significant differences in the risk perspective (categorised by their emotional and cognitive biases) in auditors with different between genders:

- $H_1$: Women are more risk averse than men
- $H_2$: Women are more loss (regret) averse than men
- $H_3$: Males are more overconfident than females
- $H_4$: Males are more susceptible to availability and anchoring biases

H: Based on the conclusions of Kanagaretnam, et al., 2014; Hofstede, 2001; Markus & Kitayama, 1991; Ming-Yi , 2006, there are significant differences in the risk perspective (categorised by their emotional and cognitive biases) in auditors with different cultural backgrounds (ethnicities):

- $H_5$: Black & Asian South Africans are more collectivistic than White South Africans.
- $H_6$: Collectivistic cultures are less overconfident (more conservative) than individualistic cultures
- $H_7$: Collectivistic cultures are more risk averse than individualistic cultures
- $H_8$: Individualistic cultures are more prone to anchoring and availability (cognitive) biases

H: Based on the conclusions of Tan & Libby, 1997; Smith & Kida, 1991; Glaser and Weber (2007); Mishra and Metilda (2015); Bhandari and Deaves (2006), there are significant differences in the risk perspective (categorised by their cognitive biases) in auditors with differing levels of experience:

- $H_9$: Experienced auditors are more risk taking than novice auditors
- $H_{10}$: Lesser experienced auditors are more susceptible to availability and anchoring biases

## 2.5 Relevance of the study

### 2.4.1 Audit opinion and going concern

An opinion can be categorised as the culmination of an individual's decisions over time. Choice, moreover, is predominantly a function of behavioural patterns that are considerably subject to behavioural biases (Mudzingiri, et al., 2018). This is akin to the resultant opinion of auditors, which is driven by the exercise of judgement and scepticism over the course of an engagement (Hellmann, 2016). It is from the understanding of choice as a function of biases, that researchers can design studies that deliberately analyse the impact of behavioural biases on risk assessments, decisions and professional judgement; thus identify the behavioural determinants of audit opinion and ultimately the dependability of audited financial data.

### 2.4.2 Going concern

The global financial crises, fraudulent reporting scandals and corporate collapses (such as the ENRON case) are all such instances that ensued changes to the International corporate reporting standards. Auditing standard setters have also responded with new standards in areas of audit reporting as well as accounting estimates, risk assessment and governance quality. These areas are particularly aimed at fulfilling the social expectation on the objectives of an audit by addressing corporate failures through warning the public on an organisation's inability to continue as a 'going concern'. (ACCA, 2019).

This was introduced by IFAC and FRC in ISA 570 (2009), to provide requirements to auditors on how to address the risk assessment. Auditors are required to report on the adequacy of management's preparation of financial statements in a going-concern basis according is IAS1. The assessment entails performing risk assessment procedures, evaluating the solvency and liquidity of the entity, assessing management's assessment, and concluding on the probability of entity's ability to continue as a going concern (IAASB, 2009). The auditors are required to obtain sufficient and appropriate audit evidence on the appropriateness of management's use of the going concern assumption in the preparation of the financial statements (ISA 570, 2009; IAASB, 2009). Similarly, in 2018, the IFAC have provided a revision to ISA 540 standard on the assessment of accounting estimates and related disclosures made by management and evaluating if financial statement line items are recorded without management bias and that the amounts are reliably measured, where management judgement is involved. The aim of ISA 540 (revised) encompasses that auditor keep updated on the changing markets and foster an independent and sceptical mind-set (IAASB, 2019).

The auditor is thus required to provide an opinion on the accuracy and fairness of the financial statement, to ensure that amounts have not be grossly manipulated. This would be a reform by the auditing profession to help auditors detect business fraud and prevent corporate failures from taking place - in an attempt to narrow the reasonableness gap and deficient performance gap (ACCA, 2019).

In a research review by Nelson and Tan (2005), the going concern assessment is categorised as being tainted by psychological phenomena such as consistency effects, justification effects and pre-decisional distortion. Auditors are known to use accounting ratios to prejudice firms with going concern problems. This introduces the variances between judgement and choice, as well as the consideration of other non-observable factors in determining whether to qualify an opinion (Kida, 1980). The media coverage of a business's debt default was directly linked to the greater probability of a modified audit opinions being issued by the auditors, even though it has no impact on the entity's probability of bankruptcy (Joe, 2003; Nelson & Tan, 2005). Joe (2003) explains that auditors are strategic, because the issue of modified opinions would mitigate the increased litigation risk exposure from the public knowledge of the event (media coverage). Moreover, a further elucidation has been given relating to cognitive baises, in which the recurrent media coverage of the risk of default made influenced the audit opinion by making the risk more significant (Joe, 2003). This validates that the risk persepctives held by auditors may be influenced by forces other than the direct financial information, which they audit.

### 2.4.3 Fairness of Presentation

In a case based study by Pincus (1990), some auditors had failed to detect inventory overstated by management based on actual client engagement information, even though indications existed plainly to detect the fraud. This posited the argument of differences between individual auditors in terms of fairness of presentation judgements. The respondents were required to indicate their perception/opinion on whether the inventory account in the case was fairly presented. Pincus (1990) makes use of three psychology based variances to measure the individual's characteristics, namely, field independence-dependence, representing the degree to which an individual is able to obtain the essencial subject of a complex and confusing situation; category width, defining the degree (whether narrow or broad association) to which a individual makes conclusions on available information; and ambiguity tolerance-intolerance, the level of comfort an individual has with an ambiguous context (similar to the uncertainty avoidance index). The findings note that field independent and ambiguity-intolerant auditors are more likely to identify information that is not fairly presented than others (Pincus, 1990).

### 2.4.4 Dilution effect

The dilution effect is another cognitive bias that is said to occur when the judgments made, in the presence of both diagnostic and non-diagnostic information, are less clear to those judgements made only in the presence of diagnostic information (Nisbett, et al., 1981). Diagnostic information is knowledge that is useful in making a particular judgment, whilst non-diagnostic information is knowledge that is not relevant to the judgment being made. Ordinarily, judgements are only influenced by indicative evidence and not implied or non-observable (non-diagnostic) evidence.

Hackenbrack (1992) provides the foremost instances explaining that auditors are disposed to the dilution effect bias. Although time pressures can be categorised as a factor impeding audit quality, and can be linked to deficient audit performance, Glover (1997) postulates that time pressure diminishes the dilution effect, while accountability has no influence on this bias (Glover, 1997).

Hoffman & Patton (1997) echo Glover's (1997) point and add that accountability leads to risk assessments that are more conservative (Hoffman & Patton, 1997). Whilst Shelton (1999), demonstrates that partners and managers are less prone to biases of the dilution effects than would a beginner auditor. This signifying audit experience (expertise) can diminish the effects of this bias through the audit review process (Shelton, 1999).

### 2.4.5 Approaches to improve judgement – Decision aids

The process taken to improve an auditor's lack of expertise and exhibition of quality reducing behaviour, or diminish their proneness to cognitive deficiencies and biases is through the provision of training or inclusion of more experienced auditors to improve performance and audit quality (Nelson & Tan, 2005). Audit firms make the use of a review process as a tool to enhance audit quality, as well as audit software embedded with professional standards that aid in audit risk model and sample-size estimation (American Institute of Certified Public Accountants, 1999). The provision of feedback and checking the risk assessment work performed is especially crucial as a different perception of the situation/environment can mitigate the behavioural limitations by one auditor through the consideration, interpretation and evaluation of facts by another auditor. Herrbach (2001) supports and expands on this point by positing that psychological contract terms that deal with professional aspects of auditing such as financial rewards provide the most potency in addressing audit quality reduction behaviours.

### 2.4.6 Standard Setting

The effect of professional accounting standards on audits of financial statements is evidenced in the varying corporate results when previously adopted standards are considered. Companies who were realising losses under a previously recognised standard could suddenly realised gains when using a new/different standard with the same economic conditions (Doupnik & Perera, 2015).

This phenonenon can created doubts for both auditors and other stakeholders, and resulted in the need for globally accepted standards.

This ensued the introduction of the International corporate reporting and auditing standards by IFAC, PAAB and the IAASB (and others) in their efforts to replace national standards for global standards that drive higher audit quality and help improve confidence in the assurance function (ACCA, 2019; Auditing Practices Board, 1991)

The process of IFRS standard setting is intended to eliminate uncertainty of the decisions made by the boards, by involving interested stakeholders in a foundation to determine acceptable accounting and auditing practices and principles (Erb & Pelger, 2015; Hellmann, 2016).Conversely, politics have infiltrated the standard setting process, with the boards exhibiting bias in regarding the opinion of application of specific principles and practices to standards. This biases could be influenced by experiences and backgrounds that they have encountered which shape their interests and perception (Hellmann, 2016; Erb & Pelger, 2015; Doupnik & Richter, 2004).

Standard setting has been categorised by influences from regulators, government, campanies and other stakeholders who all have differing behaviour, interests and drives. These parties have tried to influence the direction of regulation by lobbying and placing pressure on the IAASB on objectable features in the standards (Hansen, 2011; Kwok & Sharp, 2005). The impact of this is that new standards which may have tructated provision due to successful lobbying may increase the intepretation risks for auditors as well as enable management to opportunistically engage in impression management through strategic disclosure and presentation which results in misstatement of financial information as a result of standards not being fully realised (Hellmann, 2016).

Similarly, the intricate transalation of IFRS standards and financial statements to other languages for individuals to understand can introduce translation errors which may create trepidation on the accurate and consistent application of standards across different countries (Hellmann, et al., 2010; Hellmann, 2016).

Additionally, Mock, et al. (2009) and ACCA (2019) relates that the audit expectation-performance gap could be as a result of the complexity of auditing standards and ambiguity of regulations which create differences in interpretation of requirements amongst audit firms. Deficient standards impact the auditors ability to perform in a manner that would meet the expectations of the public due to the terminology of standards which may hinder the performance of auditors, and also through the limitations of audit standards - by not emphasising the expected role of society defined 'audits' (Porter, 1993). The inclusion of subjective concepts (such as 'material', 'possible' and 'probable') that require further clarification, attribute to the differences in audit quality and audit methodology that is observed in audits (Knechel , et al., 2013; Francis, 2004; MacDonald Commission, 1988; Nelson & Tan, 2005). Mock, et al. (2009) expands the argument that although there may be differences between perceptions on the audit objective between auditors and the public, certain conceptions, understandings and interpretations of words such as fraud, samples, level of assurance and going concern are variant amongst different individual auditors. Although measures may be put in place by audit regulators to ensure alignment with societal expectations, the limitation becomes that the interpretation of the standards could still contribute to a further performance gap, which the standards attempt to reduce (MacDonald Commission, 1988; Porter, 1993).

In essense, the ambiguity in the standards and regulations becomes an incubator for divergent judgement to proliferate.

### 2.4.7 Audits and preparation of Financial Statements

The standards and regulations that have implemented by IAASB and IFAC, are laregly principle-based regulations, which entails the inclusion of generally accepted rules to conduct financial reporting and auditing (Black, 2008; IAASB, 2009; IAASB, 2011). Accordingly, this regulatory regime is based on trust, responsibility and mutuality that the audit firms apply to their methodology and culture to align with audit standards (Black, 2008; Humphrey, et al., 2011).

Moreover, principles place firms in a position of greater flexibility in terms of audit methodology (which often deviates amongst firms) (Humphrey, et al., 2011; IAASB, 2011). The increased flexibility in application of provisions by having 'minimum requirements' exacerbates the risks of making the wrong intepretation (interpretation risk) by making an evaluation which is not agreed upon by the regulators (Black, 2008). In a highly regulated environment where minute deviations from regualtions and standards is greatly penalised, the principle based environment will require further adaptation and adjustments (Black, 2008; Francis, 2004).

These principle based standards require the use of professional judgement from both auditors and management to prepare financial statements. Provision examples include the intepretation of probability (such as the recognition criteria for assets), materiality and similar thresholds, and the selection of an applicable accounting policy. With emphasis being placed on a transaction's economic substance over its legal intepretation, the biases, propensities and perspectives held by the different auditors and management, could lead to an incorrect application of these principles which are shapped by different individual personal characteristics such as culture and experience (Hellmann, 2016; Gul, et al., 2013; Nelson & Tan, 2005)

Prominently, the intepretation of the likelihood of events occuring, which is refered to as 'probability' in accounting and auditing standards has been deviant across countries. This was evidenced by Doupnik and Richter (2004) who found that German accountants were more conservative those in the USA. This evidences the personal characteristic of culture, risk perception and over-confidence bias influences interpretation of 'probability' which supports the views of Markus and Kitayama (1991). Hellmann et al. (2010) echo that by postulating that German accountants are highly risk averse, as a consequence of professional judgments being considered more conservatively in Germany.

In addition to culture and confidence, other significant individual personal characteristics that may influence the quality of professional judgements include abilities, motivation, environment, and gender (Libby & Luft, 1993; Bonner, 2008).

Auditing standards are deficient in that they do not provide guidance on the audits of financial information that is presented in technical analysis such as presented in form of pictures and graphs. This has the potential to influence the formation of judgements due to the visual prominence of graphical formats to draw focus and convey the reception of information (Bruce & Tsotsos, 2009).

Correspondingly, standards that strengthen the principle-based regime as well as the application of a risk-based audit methodology with rigorous documentation, additional audit, and reporting requirements (IAASB, 2009; IRBA, 2018; IAASB, 2011) do not make mention of ways to audit integrated reporting. Regrettably, challenges facing the profession surround existing assurance standards, which fail to provide sufficient guidance on the verification of information that is qualitative, subjective, and prospectively reported, such as sustainability reports, whose information is prolifically relevant (De Villiers, et al., 2014). This has been largely attributable to a lack of criteria and definition to which auditors could apply skill and judgement to the related unconventional reporting. This lends itself more to reporting inconsistencies between individual auditors who make use of their own personal lens to audit subjective information based on their past and/or background (Nelson & Tan, 2005; Hellmann, 2016). Consequently, this offers an opportunity to management to over-emphasise favourable

performances and obscure negative performances, which may contradict the highly regulated quantitative information (Merkl-Davis & Brennan, 2011).

### 2.4.8 Audit expectation-performance gaps

The principal evaluation criterion for the auditors' performance is their ability to follow the guideline stipulated in existing audit standards. These Audit standards from boards such as the International Auditing and Assurance Standards Board and IFAC have been particularly constructed to ensure that audits across different engagements and countries have a high and comparable level of audit quality (Francis, 2004). The audit quality of engagements according to ISQC1 and ISA200, has been categorised by *inter alia* ethics, competence, resources, and documentation (IAASB, 2009). However, the consideration of internal factors (such as biases) and external factors such as working environment (Libby & Luft, 1993), that auditors are exposed to, could result in deviations from optimal/rational performance stipulated in auditing standards to a variable extent. These permeate into physical public manifestations as quality reducing behaviour that is causal to the reasonableness gap. The expectation that is placed on auditors to do certain work may be hindered by these factors and as such society fails to acknowledge the reality of audits by over expecting audit robots instead of realising the humanness and influences in the judgements made (MacDonald Commission, 1988; Porter, et al., 2012; Kutluk , 2017).

## 2.6 Overall objective

The objective of an audit is to bridge the agency problem and enhance the confidence of users of financial statements through expressing an opinion on the fair presentation of these financial reports (Lee, 1970). To achieve this purpose, auditors obtain sufficient appropriate audit evidence in line with auditing regulations and standards, which involve judgement in their construal and interpretation (IAASB, 2011).
These regulations standards alongside seminal literature provide a key basis for defining audit quality. Standards such as ISA 220 and ISQC1 provide requirements to auditors on the involvement of skill, knowledge, experience, and resources to justify audit quality. Therefore, auditing heavily relies on the competence of auditors to use expertise, apply their professional judgement and professional scepticism, whilst remaining independent, to ensure that appropriate decisions are made on the direction and evolution of the audit engagement.

However, due to the judgemental nature of features both in auditing and corporate reporting, there are factors that inhibit the accurate application and measurement of audit quality, and lead to the complexity of outlining its clear determinants. As explained, these factors encompass - the partial insight provided in audited financial statements on the presence of material misstatements; judgement and the considerations to sufficient appropriate audit evidence; and most importantly, the varying perspectives and audit behaviour that are held by individual auditors who have differing personal attributes, interests, and preference. Thus, a deeper layer of variable has been added to the single definition of audit quality provided by DeAngelo (1981).

The correlation between audit quality and auditor behaviour has been evidenced as being both strong and positive. Where the behaviour of the individual auditors and the culture, procedures and policies set by their firms are not aligned with the requirements set out by auditing standards and the codes of professional conduct, the resultant quality of the auditing engagement may be impaired. Consequently, this quality impeding conduct can be distinguished as that which is taken by the auditor during an engagement that may inhibit the effective collection of sufficient appropriate audit evidence, and thus increase the risk of the auditors providing an incorrect audit conclusion. The ramifications of this behaviour can ultimately impair the reputation of the firm and exacerbate the audit expectation gap – concerning deficient performance, as the expected/perceived behaviour from both society and standard setters is not met by auditors, palpable in audit failures and fraud scandals.

# Chapter 3

# 3. Methodology

## 3.1. Research strategy and assumptions

This research paper follows a deductive approach, which typically ensues with preceding literature and later intends to ascertain if the findings are supported by the earlier studies and if they can be generalised (Berggren, et al., 2010). This was the selected approach based on similar works based on this subject matter. This deductive study succeeds previously existing models about behavioural accounting, with a cultural, level of experience and gender perspective. As with many such studies (Statman, 2008; Albaity & Rahman, 2012; Barberis & Thaler, 2002; Kahneman & Tversky, 1979) we will use a survey to collect primary data to be analysed, where we assume the sample to represent our population.

Akin to most quantitative studies in this field of work, this report will conclude on the responses of a large sample of survey participants. This will give the opportunity to extrapolate the results to the proposed population (Gordon & Porter, 2019). This method is particularly preferred for the deductive positivist perspective that this paper will take.

## 3.2. Research Method

The data collected will be enumerated; this translates that observations from the survey will be converted into numerical characters. Quantification will allow the opportunity to compare results of this work to other previous studies in the field (Barberis & Thaler, 2002; Berggren, et al., 2010; Statman, 2008). Moreover, it will make it possible for data visualisations to take effect, as that will give the information a clearer layout.

## 3.3. Secondary Sources

To conduct the research, information was gathered from Google scholar. This search engine allowed the use of keywords to find articles. These keywords included *inter alia* decision-making, financial behaviour, behavioural accounting, gender perspective, culture, risk aversion, and overconfidence bias. The research will reference frequently cited/seminal articles to safeguard toward peer acceptance.

## 3.4. Research Design: Sampling consideration

In order to allow for the generalisation of result to similar populations, this study will make use of a stratified sampling methodology. In this method, the target population is divided into smaller strata units based on explicit variables. The proportions between the strata units should be the same as the proportions within the population (Berggren, et al., 2010).

The target population for this survey is the audit seniors, managers, associate directors, and partners in an audit firm who often use professional judgement to identify and assess risks, as well as evaluate and conclude on the financial reporting assertions made by management.

The identified determinants of diversity are race, gender, and experience levels. These profiling categories will be obtained from participants at the beginning of the survey. In terms of expertise, in order to obtain a wider and more robust response – participants will be questioned on their level of experience in audit, their age as well as their qualification. The author will make use of the junior trainees within the firm, in an attempt to test whether 'tacit management knowledge' (tangible work experience), could offer different results in how personal characteristics influences behavioural patterns.

The stratified proportional sampling that will be followed, divides the total sample size into 8 strata units that represent the percentage representation of the diversity determinant of the sample size to the total population e.g., if the total audit firm has 60% males, then the sample must consist of 60% males.

The author has specifically identified the audit and assurance members at the Deloitte South Africa firm as the population for which a sample will be taken, largely due to the convenience factor in term of access. The rich diversity of individuals with different backgrounds at this firm allowed for confidence that the necessary strata units would be obtained to meet the intended sample sizes.

## 3.5. Population

The sample will be obtained from an office group within the audit firm of Deloitte. The population contains 55% black/Asian and 45% white, 56% female and 44% males. More than 63% of the auditor's population in the audit firm consists of audit managers and seniors, with experience ranging from 1 to 5 years in audit. Whilst 37% of the population represents audit partners, associate directors, and Engagement Quality Control Reviewers. This population was then disaggregated into units based on percentages representing level of expertise (age/experience), gender and race. These strata units intended to match the size of the sample to the proportions of the members of Deloitte Audit South Africa – Gauteng office.

The strata have been set out as follows:

TABLE 1: 8 STRATA UNITS OF SAMPLE DISAGGREGATED POPULATION

| | | | |
|---|---|---|---|
| F\|W\|H | F\|W\|L | F\|B\|L | F\|B\|H |
| M\|W\|H | M\|W\|L | M\|B\|H | M\|B\|L |

F=Female; W=White African; B= Black African, coloured & Asian; M=Male; L=Low level of experience; H=high level of experience /Executive.

What could hamper the accuracy of the results is that the participants may be considered homogenous – as the sampling technique was not a random sample and includes respondents from only one audit firm (defined cluster). However, since the respondents represent different ages, different cultures and genders, the author believes that this has mitigated the issue in part.

## 3.6. Composing of the survey

The questionnaire was sent out using Google Forms, which is a survey administration app. This allowed the survey to be contained in a specific link or email, which was sent to specific respondent groups. This resulted in a limitation to whom may access of the survey. Furthermore, it has a configuration to restrict the number of times answers can be submitted by a respondent. The raw data was automatically saved to an excel spreadsheet, with all the answers of the participants. The question order is entirely randomised per participant to ensure the incorporation of randomness and limit predictability. During the 3 data collection phases, all intended numbers were met, and additional samples did not have to be sent out to fulfil Strata units.

The assembly of a survey requires the consideration of key principles, ensuing with the start, where questions are typically easy and concise. This will aid in increasing the likelihood that the respondent will fill out the form. It should not be too lengthy else, the probability of non-response is likely to increase (Keller, 2005). This intends to lower non-response rate but still allow for the extraction of quality data.

The survey makes use of 11 standard questions, which have been modified from similar research to suit the target population (Berggren, et al., 2010; Epley & Gilovich, 2002; Statman, 2008; Fay & Montague, 2015). It ensues with profiling questions aimed at obtaining the respondent's level of experience, gender, ethnicity, and risk awareness. The survey questions were in a multiple-choice format. This method is preferred as it assists with data analysis and reducing potential misinterpretations from the responses received from participants.

As an introduction to the survey, a brief explanation on the purpose of the survey was provided to the respondent. A trial selection (pilot) was conducted to five individuals from the audit firm

to evaluate the quality of the questionnaire. The pilot study assisted in developing the recommendations for refinement of questions and the layout, which diminished the probability of misapprehension of questions when the questionnaire was sent out to the greater sample selection. **A copy of the survey is included in the appendix 1.**

## 3.7. Sample size

The sample size represents the number of individuals in the target population that will be researched. In order to improve validity and ensure that the individuals researched provide results that is significantly within the defined parameters (Kotrlik & Higgins, 2001).

Based on prior quantitative literature in this field the following parameters ranges have been used to calculate the sample size, confidence interval of 90% - 95%; margin of error of 5% - 7%; and a standard deviation of 0.5 (normal distribution).

The target population represented by the audit and assurance members at Deloitte South Africa's Gauteng office was estimated at 982 members as at 31 October 2020. With the necessary variables obtained, and the proxies inputted into this formula:

$$\text{Sample size} = \frac{\frac{z^2 \times p\,(1-p)}{e^2}}{1 + \left(\frac{z^2 \times p\,(1-p)}{e^2 N}\right)}$$

the sample size is estimated at 154 targeted samples, which represents 16% coverage. This is higher than the normal 5% to 10% sample size industry norm.

*TABLE 2: DISTRIBUTION OF SAMPLE SIZE BASED ON STRATA UNITS*

| **F\|W\|H** | **F\|W\|L** | **F\|B\|L** | **F\|B\|H** |
|---|---|---|---|
| **M\|W\|H** | **M\|W\|L** | **M\|B\|H** | **M\|B\|L** |
| **Sample distribution** | **100%** | | |
| 10% | 15% | 18% | 12% |
| 8% | 12% | 10% | 15% |
| **Sample observations** | **154** | | |
| 15 | 23 | 28 | 19 |
| 12 | 19 | 15 | 23 |

F= Female – 56%.

W= White South Africans– 44%.

B= Black African, coloured, and Asian South African– 56%.

M=Male – 44%.

L= lower experience (audit senior/Analyst or manager) – 61%.

H=higher experience (Senior manager, Director or Partner) – 39%.

## 3.8. Choice of Questionnaire

The goal of the survey is to establish the tendencies relating to the literature underpinning the research. The questions in the questionnaire were selected from previous surveys presented in the literature, which usually featured 10 to 20 uniform questions. For this thesis, Fay and Montague (2015), Berggren, et al. (2010), Hofstede (2001) and Statman (2008) are reference points to develop the structure and content of the questionnaire. All the questions were modified to fit the target sample group in a South African context. The research methodology is based on the survey questions used in other similar research and incorporates the same reliability and validity measurement as the seminal works. In so doing, we are able to gain comfort in the proclivity of the questions in attaining the intended validity. The final questionnaire contains 12 survey questions. This is in line with preceding surveys which were based on a model of 10 to 20 questions.

**Risk appetite and Loss Aversion**: primordially, we aim to assess the risk tolerance of individuals. Most of the seminal works surrounding risk aversion included a theoretical monetary gain which must be wagered with (Berggren, et al., 2010). Participants who opt to gamble over the guaranteed return should be considered risk takers (Grable & Lytton, 1999). Most of the questions that assess risk awareness centre around questions on hypothetical financial inheritance with which the respondent must gamble. The questions that assess the risk-taking patterns of the respondents are 4, 5, 7 and 9.

In question 4, the individual is asked on what level of risk taking would they usually accept. This can be linked with similar questions aimed at determining the participant's attitude towards risk. Question 5 is used to determine a base reaction to risk aversion, as it suppresses information about the investments and their expected return. This allows the respondent to lean on prior experience and knowledge.

Question 7 and 9 are similar questions in that they require the individual to select an option based on the gambling of money. However, in question 7 there is a risk that the individual will not keep any money, whilst in question 9 no money is mentioned to have been lost, but the prospects of gain from the investment are presented in terms of a savings portfolio.

In question 7, the aim is to assess the respondent's ability to handle a loss of money, as this loss may affect their risk aversion. Question 9 of the questionnaire determines risk taking within investments. In this question the distribution between high, medium, and low risk is known to the respondents. This question is thus linked to question 4, as all the available information is given. Moreover, with the sum of money in question 9 being larger than that in

question 7, it is expected that individuals who show higher loss and risk aversions to select a lower risk concentrated portfolio.

**Overconfidence**: In previous research papers (see Berggren, et al. (2010); Fay & Montague (2015)), overconfidence has been simply by asking invididuals if they are better than the average on something that they will all have in common (Grable & Lytton, 1999). This has been typically asked in relation to driving skills, and job skills (Fay & Montague, 2015; Berggren, et al., 2010).

Shefrin (2000) illustrates the test of overconfidence through the measurement of perspective and driving skills. A research group was asked to rate their driving abilities, where 60% to 80% of participants deemed themselved above average (Shefrin, 2000). In a similar mannar, Mishra and Metilda (2015) in their study used both the driving ability of their repsondents as well as their ability to do their job, as a means to gauge their overconfidence. In both these studies, an indicator for overconfidence was the partcipants selecting above average and thus demostrating their inclination to exaggerate their capacities.

Questions 6, and 8 are designed to investigate overconfidence among surveyed individuals using job title perception and job skills as a topic that has been assumed to be common among respondents. This should address the level of overconfidence- that exists among females and males with the expectancy that women are to be less overconfident than men are (Ferreira , et al., 2019).

In addition, questions 6 and 8 are linked to an individual's performance perception. As a result, it can be assessed whether an individual with a high level of confidence also desires to take higher investment risks. Moreover, this is connected to the assessment of skills and expertise within the participant and their relationship with risk. Accordingly, respondents with more experience tend to be more risk taking than those without or with lower experience (Mishra & Metilda, 2015). Question 2 will be linked to Question 4, to assess the level of audit experience/expertise and risk perspective of the participants.

**Behaviour**: In a paper by Fay and Montague (2015), which set out to prove that auditor's were susceptible to behavioural biases, anchoring bias was described as a common bias amongst auditors. Anchoring bias occurs when people rely too much on pre-existing information or the first information they find when making decisions (Barberis & Thaler, 2002). In Fay and Montague (2015), the test of anchoring bias was assessed through a single question where they asked paricipants to estimate the height of Mount Evarest. From a given array of options, partcipants were found to have selected an answer anchored based on their past knowledge or expectation, and not on factual information. In a similar fashion, achoring bias will be

assessed in question 10. In this question, participant is asked the gestion period of an African Elephant, which is in line with Epley and Gilovich (2001), who measured anchoring bias based on this question. Similar to the work of Fay and Montague (2015), the selection of an option outside of the factual answer would indicate the reliance on pre-existing information, and thus exhibit an anchoring bias amongst respondents.

**Cultural dimension:** The survey also includes an assessment on Hofstede (2001) cultural dimensions factors, namely individualism-collectivism. This is presented as question 11, which aim to gauge if there is an interaction with the general societal values and if they influence the biases held by participants. Question 11 was sourced directly from Hofstede's survey, and aims to assess whether a particular individual is individualistic or collectivistic. Moreover, in a study on cognitive and emotional biases Markus and Kitayama (1991) suggested that people in individualistic cultures think confidently about themselves and focus efforts on their own internal characteristics, for instance their skills. As such, question 11 will be linked to questions 3, 4 and 5 to ascertain whether there is a relationship between the degree of collectivism, culture, and risk aversion.

The multiple choice also makes use of a 5-point Likert scale (where applicable**)**, where each answer is given a weighting for quantification purposes. The weights range from five (highest risk) to one (lowest risk).

## 3.9. Access

To inspire enthusiasm for individuals to participate in the survey may be challenging. Since the survey is purely online, interaction with respondents is limited. To address this, information about the purpose, use of data and anonymity of the respondent was promulgated first, to increase the willingness to partake in the survey.

In the emailed invitation to participate and first page of the survey, a brief introduction was communicated to respondents. The fact that the author is an employee at Deloitte (having direct access to the target population) increased the ability to gain access to the environment. The costliness of experiments and the easy accessibility of audit firm members are the major reasons the research design included a *convenience sample*. *Convenience sampling* is a non-statistical sampling method appropriate for a target population depending on the location, accessibility, and time availability and willing to participate in the study (Gordon & Porter, 2019).

To add some random variability to the survey was emailed over a two-week period during the months of December and February (since the firm closure period occurred in December, this period was regarded as the period with the most likely rate of response, whilst February is a

period where the greatest number of people are present in the firm). Moreover, each participant received a differently ordered (randomised order) version of the questionnaire.

## 3.10. Data processing

The surveying process resulted in 154 usable questionnaires that were answered fully. The tracking and analysis of these observations has been pre-processed by the Google Form platform.

From this data, the objective is to investigate the relationship between the determinants of the participant and their risk perceptive and behavioural patterns – so that we can conclude on the hypotheses. The hypotheses were assessed using a single-factor analysis of variation model. The independent variables are the gender, race, and experience level of the participants. The mean and standard deviation of answers (from respondents) relating to the dependent variables - risk perspective (ranging from risk averse or risk taking), overconfidence (high or low), loss aversion (high or low), individualism-collectivism and anchoring & availability bias (high or low) will be calculated based on the different categorical profiles. Each of the questions in the survey has been specifically designed to measure specific behavioural biases (dependent variables) of each participant.

These results have then been inputted in the two-way ANOVA model at an alpha level of 0.05. The model determines if the resultant P-value shows significance in the relationship between each behavioural bias (dependent variable) and different determinants (independent variables). Gender is categorised as Male or female, race as White African/European or Black African/Asian, and experience level as Low or high. The analysis of variation is completed for each of the identified dependent variables to address the intended hypothesis, so as to ascertain which biases have a weightier impact on race, gender, and experience (i.e., 3 determinants x 2 to 4 biases: 6 to 12 evaluations).

The analysis of the data performed graphically using a excel data visualisation functionality, and technically using the Excel Data analytics specialised toolbar. This toolbar allows the conduct of t-tests, regression measure and an analysis of variance (ANOVA).

## 3.11. Reliability

A quintessential prerequisite for a repeatable case study, is the detailed documentation of procedures taken during the study. This report makes use of a deductive approach method from a survey directed to auditors in a South African firm. The same procedures are considered easily transferable to other studies that aim to research a similar sample group and should render similar findings.

As noted in the delimitations and limitations of the report, there are some potential shortcomings identified in this study that may limit its reliability. However, to avoid bias, the survey did not have mandatory fields (apart from the profiling questions), which allows for responses to be left blank, thus providing option not to answer particular questions.

To further avoid bias, a preliminary questionnaire was conducted with five participants as a pilot study of the survey. This increases the *face* validity and reliability as it provided an opportunity to mitigate misunderstandings.

In addition, the simplistic layout and language of the survey aimed to add more clarity to the questions. Thus, the author holds that if the study were conducted in the same prescribed manner with little variation, then it would be repeatable; thus, may be considered reliable.

## 3.12. Validity

Within the field of quantitative research, internal and external validity are essential considerations, as the study must measure what it was intended to measure. Internal validity refers to the ability of the designed test method in capturing the cause-effect relationship between a specific controlled situation and the resulting effect – from the experiment being performed. Whereas the external validity tests that are performed focuses more on the interpretation of information into a 'real-world' scenario (Gordon & Porter, 2019).

Foremost, construct validity refers to the data collection process, and creating accurate operation measures for the concepts being studied. The study concentrates on the decision-making in auditors of different personal characteristics. as the primary data collection is directed towards auditors in an audit firm with differing genders, cultural identities, and levels of experience, all of which capture the diversity of personal characteristics among auditors. Although the participants directed within a single audit firm, the desired heterogeneity of the samples have been achieved through strata unit sampling, as such the report is considered to have a relatively high construct validity.

The internal validity is captured on the link between the theoretical framework and the empirical research. This study aims to determine whether behavioural factors can impact the decisions made by auditors. The research considers whether the theories in behavioural accounting and finance are justifiable in elucidating the empirical results. As a criticism, there may be a limitation in demonstrating that specific biases are the sole reason for the decisions that the study describes to its participants. There may be additional external factors (such as the media), which may better explain the decisions taken, which have not been taken in account.

The external validity, barring the limitations and delimitations of the study, refer to the generalisation of the findings from the auditors within the defined firm to the greater population

of South African auditors. Conducting the pilot study prior to the actual sampling ensured that the interpretations of the questions are accurate. Moreover, the study has made use of strata sampling to ensure that the questionnaire is conducted with similar proportions to the populations identified. To increase the randomness of the sample, surveys were collected throughout several days, and the order of questions was randomised to avoid pre-emption or predictability amongst questions. The use of this sampling methodology is preferred to perform this deductive study as it allows for the findings of this study to be extrapolated to other similar audit firms within South Africa. The instrumentation strategy incorporated the measurement procedures and questionnaires used by other similar works in this field, which augments *content* validity. Thus, our consideration of internal validity is relatively reasonable and the external validity to be acceptable.

## 3.13. Ethical Considerations

In the construction and delivery of the study, certain ethical principles have to be considered. This is to ensure that there is autonomy, honesty, and privacy in the study. Detailed in this section are the ethical procedures undertaken to gather data from human participants as the primary source of information through the survey.

Primarily, the respondents to the survey were not forced to participate in the survey or answer any questions as part of the questionnaire. This would be an invasion of their freedom or autonomy. The intention is to make participants feel comfortable and provide answers that are trustworthy, and that would not cause bias in the outcomes. The survey was delivered by mail, which promulgated a link to the participants to access the questionnaire. As such, the decision to participate in the survey is entirely at the choice of the participant. Moreover, the survey did not make any survey question obligatory, by disabling mandatory fields. This allows for responses to be left blank, thus providing option not to answer particular questions.

To achieve honesty, the respondents were given informed consent as the purpose of the study and the aim of the survey was presented to them in both the invitation to participate as well as in the short introduction to the survey itself. In addition to the purpose, the survey introduction also enforces confidentiality by ensuring the participants of their anonymity and that their answers will not be shared with others.

**Please refer to ethical clearance certificate attached at the end of the research document**

# Chapter 4

## 4. Empirical Findings

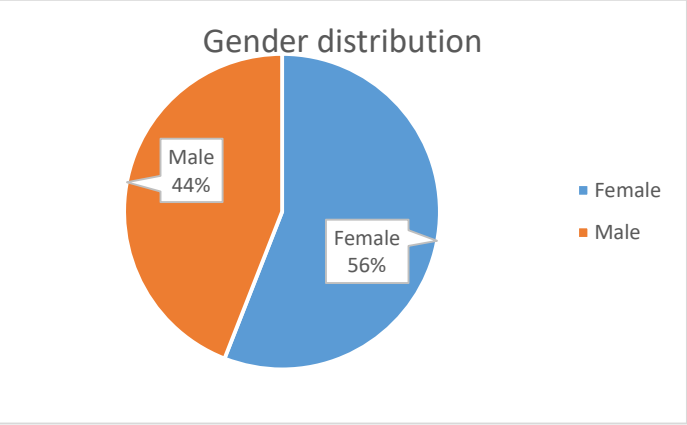
This chapter is aimed at presenting the empirical findings of the study. The format of the presentation will include both graphical depictions as well as statistical results, with the aim of understanding the differences between participants with different attributes (Experience, gender, and race).

### 4.1 Gender – Empirical findings

The findings have been presented through illustrative diagrams from the use of excel analytics. This will aid in providing an easy-to-follow overview of the results from the study. Moreover, all the differences and spread from the results will be explained for each diagram. Each diagram will be further supported by an Analysis of variance (ANOVA), which has been performed to test and evaluate the significance of variances in the responses between the different genders.

**Question 1**

**Gender distribution among respondents**




The onset of the questionnaire focused on attaining the portfolio of the respondents and to make them comfortable. Included in the portfolio section was a question asking the participants to indicate their gender. To meet the strata units of the target sample size of 154, the respondent distribution of gender was 56% female (86) and 44% Male (68) auditors at Deloitte Gauteng audit firm. This matches the distribution within the total targeted population.

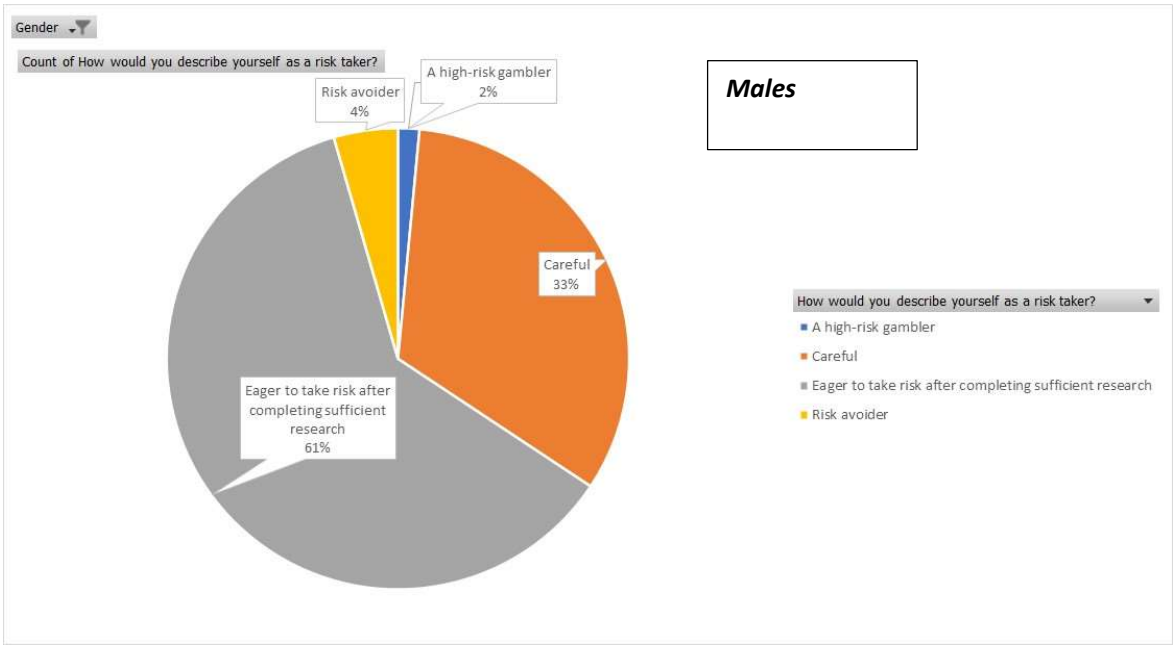
*Figure 2: Gender distribution*

| Table 3 Gender Results | | | | | | |
|---|---|---|---|---|---|---|
| **Attributes** | **Gender** | **N** | **Mean** | **Std. Dev.** | **F-ratio** | **p-value** |
| How would you describe yourself as a risk taker? | Male | 68 | 2.60 | 0.60 | F = 13.34658 | P = .000357 |
| | Female | 86 | 2.18 | 0.77 | | |
| | Total | 154 | 2.36 | 0.73 | | |
| You have received R 100´000 with one condition; you have to invest the full money in one of the following alternatives. Which one would you choose? | Male | 68 | 2.12 | 0.73 | F = 9.05517 | P = .00308 |
| | Female | 86 | 1.76 | 0.72 | | |
| | Total | 154 | 1.96 | 0.75 | | |
| Relative to others, how good are you at your Work/Job? & I deserve a higher title than I currently have. | Male | 68 | 3.65 | 0.88 | F = 4.26627 | P = .040597 |
| | Female | 86 | 3.93 | 0.75 | | |
| | Total | 154 | 3.77 | 0.83 | | |
| Imagine that you just lost R10'000 in a game and had to choose one of the following alternatives, which one would you choose? | Male | 68 | 1.28 | 0.50 | F = 6.81464 | P = .010004 |
| | Female | 86 | 1.52 | 0.62 | | |
| | Total | 154 | 1.39 | 0.57 | | |
| You have inherited R500'000 with a condition to invest in one of the following alternatives, which option would you choose | Male | 68 | 1.90 | 0.60 | F = 10.90258 | P = .001213 |
| | Female | 86 | 2.24 | 0.61 | | |
| | Total | 154 | 2.05 | 0.63 | | |
| How long is the gestation period of the African elephant? | Male | 68 | 0.88 | 0.32 | F = 10.57331 | P = .001417 |
| | Female | 86 | 0.67 | 0.47 | | |
| | Total | 154 | 0.79 | 0.41 | | |

*Table 3: Statistical results for Gender*

**Risk perception – Survey Question 4**

In the 4th question the respondents were required to indicate their risk perception, by expressing their feelings towards risk. From table 3 and figure 3 below, there seems to be a tendency among male respondents to take risks, after completing sufficient research. This is seen by 61% of the men that responded to the survey answering in this manner, as compared to 33% of the surveyed women. In contrast, it seems that the women surveys were more prone to seeing themselves as more risk averse than the males, as 45% of them indicated that they were careful whilst 20% indicated that they avoided risk all together.



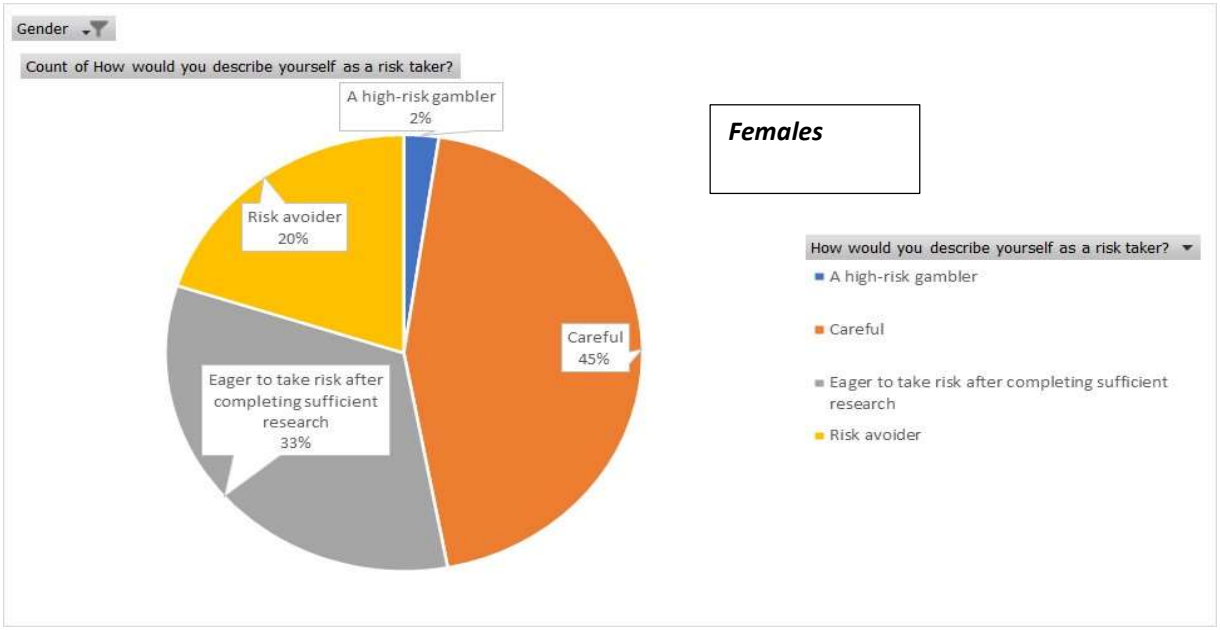




*Figure 3: Gender Risk category*

The results from question 4 have been quantified, with 1 representing risk aversion and 5 representing risk seeking. This allowed the use of the ANOVA model, which revealed that the various responses given by the male and female participants are significantly different from each other at a 95% level of confidence. The f-ratio value is 13.34658 and the p-value is 0.000357. The p-value is less than 0.05, which supports that there are significant differences between the results.

**Investment decisions - Question 5**

In addition to the profiling question in the questionnaire, the potential investment decisions of the respondents. The individuals had to choose between four different investment decisions which represented different levels of risk categories. The options included the following investment alternatives: government bonds, saving in a bank account, mutual funds and investing in the stock market. Viz., each type represents an increasing level of risk with a latent proportionate increase in return.

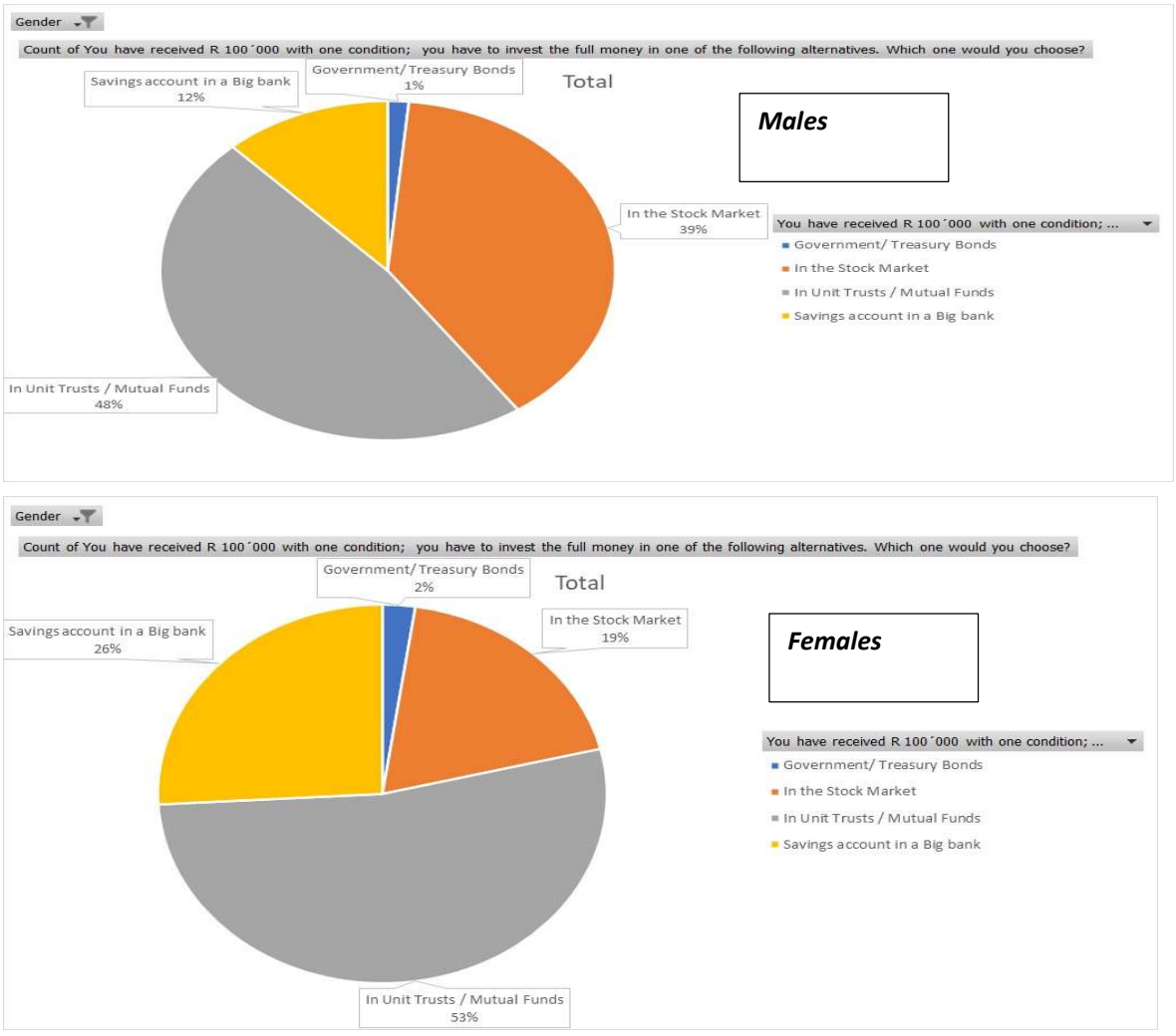



*Figure 4: Gender Investment decision*

From the graphs, there are notable difference between the levels of risk selected by the respondents of different genders. From the 68 male respondents, 12% of them answered that they would rather investment their money in a bank account than the alternative; for the same question 26% of the female auditors felt similarly. Male auditors who'd invest in stocks were as high as 39%, whereas for female auditors this number was only 19%. The differences between those who'd invest in mutual funds and those who'd choose government bonds, were slight, with the differential being only 5% between genders. In conjunction with the results from question 4, a material variance between the genders can be seen in which female auditors are less willing to invest in the higher risked stock markets than male auditors.

The ANOVA output shows the f-ratio value is 9.05517and the p-value is 0.00308. The p-value is less than 0.05, which supports that there are significant differences between the responses provided by males and females at a 95% level of confidence.

**Overconfidence – Surveyed Question 6 and 8**

In these questions we wanted to measure overconfidence among the respondents.

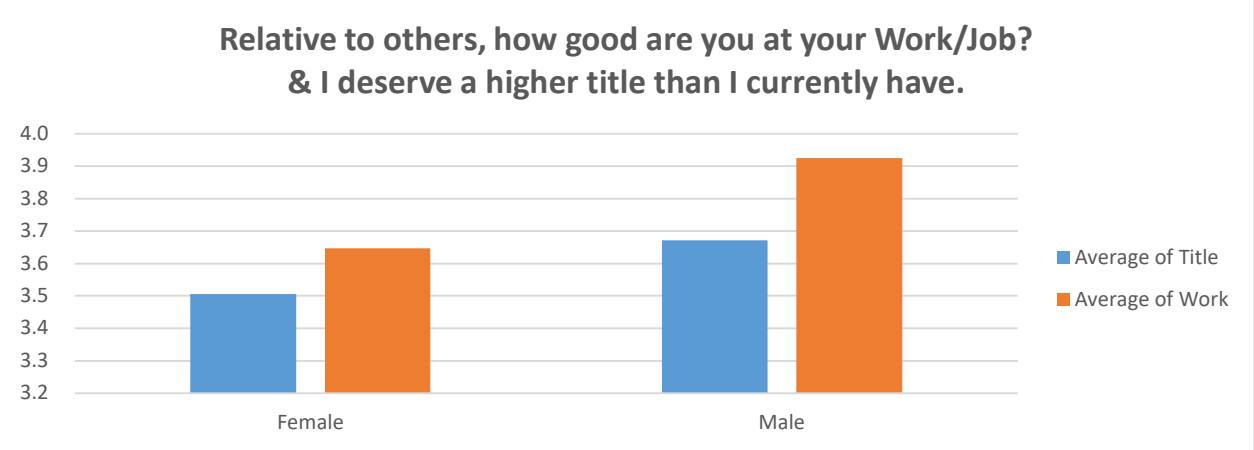



*Figure 5 – Gender overconfidence bias*

With an average of 3 (based on a 5-point Likert scale), both genders seemed to consider themselves above average. This is evidenced by males showing an average of 3.8, whilst females had an average of 3.55. This indicates that the male auditors surveyed consider themselves better at their work and feel that they deserve a higher title relative to others, than the female auditors surveyed.

| Likert scale | Female | Male |
|---|---|---|
| 1 | 2.33% | 0.00% |
| 2 | 15.11% | 1.49% |
| 3 | 13.95% | 26.87% |
| 4 | 52.32% | 49.25% |
| 5 | 16.28% | 22.39% |
| **Survey Total** | **100.00%** | **100.00%** |

*Table 4. Overconfidence distribution between genders*

Only 1.5% of the male participants gave the answer that they consider themselves to be below average, while 15% of the females have given this answer. For the men surveyed, 72% considered themselves above the average, which shadows the 68% of females who considered themselves above average. A larger spread can be seen for the average with 27% of males as opposed to 14% of females.

At a 95% confidence level, the ANOVA quantifies a f-ratio value of 4.26627 and a p-value of 0.040597. With the p-value being less than 0.05, the results support that there are significant differences the responses given by participants of differing genders.

**Regret and loss aversion - Question 7 and 9**

In these questions regret avoidance and loss aversion is the focus. In question 7, the respondents were faced with an early onset loss of R10 000 and had to decide to either continue gambling or accept the loss. Whilst question 9 tries to capture the tendencies that show whether the respondents chose a higher level of risky investments

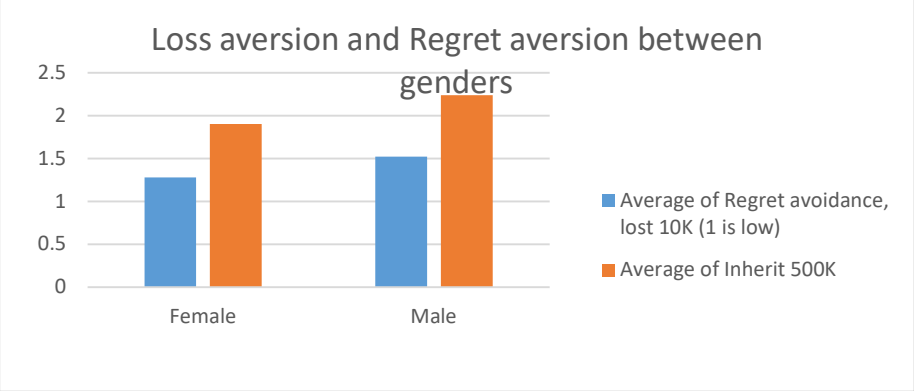



*Figure 6– Regret and Risk aversion in genders*

With regards to question 7, a numeric scale was assigned to each response as follows, 1 represents ‘keeping your loss without further action’, 2 showing 50% chance to win back R5 000 and a 50% chance to lose an additional R5 000, and 3 indicating the choice of 25% chance to win back R10 000 and a 75% chance to lose an additional R10 000. From the survey results, males had an output of 1.52 (54% deciding to keep their loss, 40% going for option 2 and 6%

going for option 3), whilst females had an average of 1.28 (74% deciding to keep their loss, 24% going for option 2, and only 2% going for option 3).

Based on a 95% level of confidence, the ANOVA model quantifies that the various responses given by male and female respondents are significantly different from each other. This is supported by the output f-ratio value of 6.81464 and the p-value of 0.010004. With the p-value being less than 0.05, if can be seen that there are significant differences between the two groups' responses.

In a similar pattern, the responses in question 9 were also given a numeric indicator. The less risky option of investing 75% in low risk was assigned the number 1, whilst the 50% in the low risk was allocated the number 2 and 25% in a low-risk portfolio was assigned the number 3. The mean response by the surveyed males was 2.24 (9.5% going for 1, 57% selecting 2 and 33.5% selection 3), whilst the female response averaged 1.9 (23% selecting 1, 63% choosing 2 and only 13% going for option 3).

Similar to question 7, the ANOVA output shows evidence that there are significant differences between the results. This is evinced by an f-ratio value of 10.90258 and a p-value of 0.001213. The p-value is less than 0.05, which implies that the difference in response based on gender is significant.

**Anchoring and Availability Bias - Question 10**

In this question the focus is the anchoring and availability bias. Adapted from a study by Epley and Gilovich (2002), the respondents were asked to indicate their estimate on the length of an African Elephant's gestation period. This question is particularly appropriate as the anchoring bias describes that when individuals are faced with uncertainty (especially surrounding estimates), they intepret from the a reference point (or an initial value), instead of approaching it objectively (Lord, et al., 1979; Tversky & Kahneman, 1974; Epley & Gilovich, 2002). With 9 months as the apparent anchoring individuals who are prone to the bias would estimate according to the the size of the elephant. Whilst with availability bias, the prejudice in information is often based on memories of the individual, which is not all equally retrievable (especially in moments of uncertainty), which leads to a biased rationale (Kahneman & Tversky, 1979). With the correct answer of 21 – 22 months, individuals who answered 30, 12, 9 or 15 months are more prone to anchoring biases.

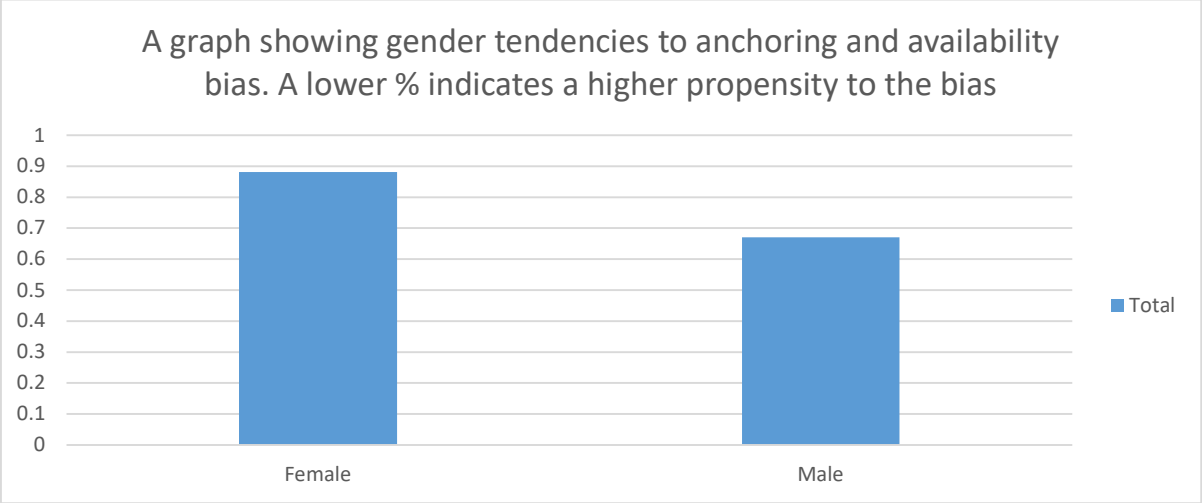



*Figure 7 – Anchoring and availability bias amongst genders*

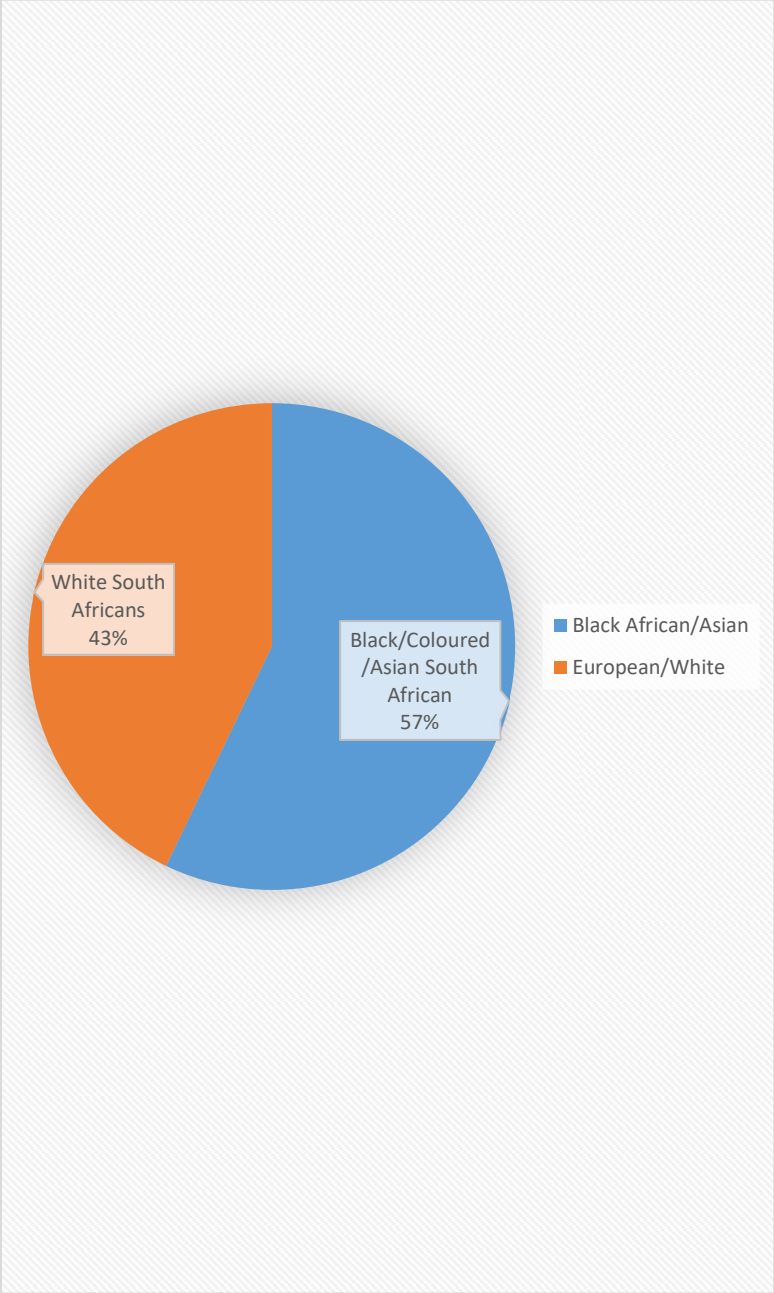
The answers were converted into numeric figures were 1 represented the correct answer and thus a lower propensity to be affected by the bias, whilst 0 was allocated to the incorrect alternatives.

From the graph, the females surveyed had a higher mean of 0.83, with 88% of them selecting the correct answer. On the other hand, only 66% of the males surveyed were able to respond with the correct answer. The spread of 22% indicates a difference between the two groups perspectives.

This is further supported by the ANOVA model, where the output shows an f-ratio value of 10.57331 and a p-value of 0.001417. Since the p-value is less than 0.05, it can be inferred that there are significant differences between the results based on gender.

## 4.2 Culture/ethnicity – Empirical findings

**Culture distribution among respondents - Question 3**




In the 3rd question of the survey respondents were asked to indicate their population group categorised by different ethnicities/races.

From the answers obtained, the portfolio data obtained was then categorised into 2 distinct groups, namely Black & Asian South Africans as well as White South African cultures.

To meet the strata units of the target sample size of 154, the respondent distribution of gender was 57% Black & Asian South Africans (87) and 43% White South African (67) auditors at Deloitte Gauteng. This matches the distribution within the total targeted population.

*Figure 8: Culture distribution*

| Table 5 - Culture results | | | | | | |
|---|---|---|---|---|---|---|
| **Attributes** | **Cultural identity** | **N** | **Mean** | **Std. Dev.** | **F-ratio** | **p-value** |
| **Group success is more important than individual success** | Black/Asian South African | 87 | 3.75 | 0.87 | F = 17.23185 | P = .000055 |
| | White South African | 67 | 3.12 | 1.00 | | |
| | Total | 154 | 3.48 | 0.98 | | |
| **How would you describe yourself as a risk taker?** | Black/Asian South African | 87 | 2.25 | 0.73 | F = 4.00296 | P = .047201 |
| | White South African | 67 | 2.48 | 0.71 | | |
| | Total | 154 | 2.35 | 0.73 | | |
| **You have received R 100´000 with one condition; you have to invest the full money in one of the following alternatives. Which one would you choose?** | Black/Asian South African | 87 | 2.80 | 0.89 | F = 6.12318 | P = .014441 |
| | White South African | 67 | 3.12 | 0.69 | | |
| | Total | 154 | 2.94 | 0.82 | | |
| **Relative to others, how good are you at your Work/Job?<br><br>& I deserve a higher title than I currently have.** | Black/Asian South African | 87 | 3.42 | 0.97 | F = 30.51417 | P = .00001 |
| | White South African | 67 | 4.17 | 0.60 | | |
| | Total | 154 | 3.74 | 0.91 | | |
| **Imagine that you just lost R10'000 in a game and had to choose one of the following alternatives, which one would you choose?** | Black/Asian South African | 87 | 1.40 | 0.54 | F = .49785 | P = .481525 |
| | White South African | 67 | 1.33 | 0.59 | | |
| | Total | 154 | 1.37 | 0.56 | | |
| **You have inherited R500'000 with a condition to invest in one of the following alternatives, which option would you choose** | Black/Asian South African | 87 | 1.92 | 0.63 | F = 6.72139 | P = .010456 |
| | White South African | 67 | 2.18 | 0.61 | | |
| | Total | 154 | 2.03 | 0.63 | | |
| **How long is the gestation period of the African elephant?** | Black/Asian South African | 87 | 0.70 | 0.46 | F = 5.56098 | P = .019638 |
| | White South African | 67 | 0.86 | 0.35 | | |
| | Total | 154 | 0.77 | 0.42 | | |

*Table 5: Statistical results for Culture*

**Risk perspective – Survey question 4**

As shown in Table 4 and figure 9, when the participants were asked to indicate their risk perception, by expressing their feelings towards risk, the mode choice (representing 52%) by the White South African respondents was to being risk takers, after completing sufficient research. Only 43% of the Black and Asian South Africans felt the same. In the next option, 38% of the White South African group indicated that they would approach risk in a careful way. Whilst 40% of the Black and Asian group reported that they approached risk carefully. Penultimately, 16% of the same group felt directly averse to risk whereas 8% of White auditors shared similar views. Although slight, 1% of the black and Asian Auditors indicated that they were high risk gamblers, compared to the 3% of White population who felt likewise.

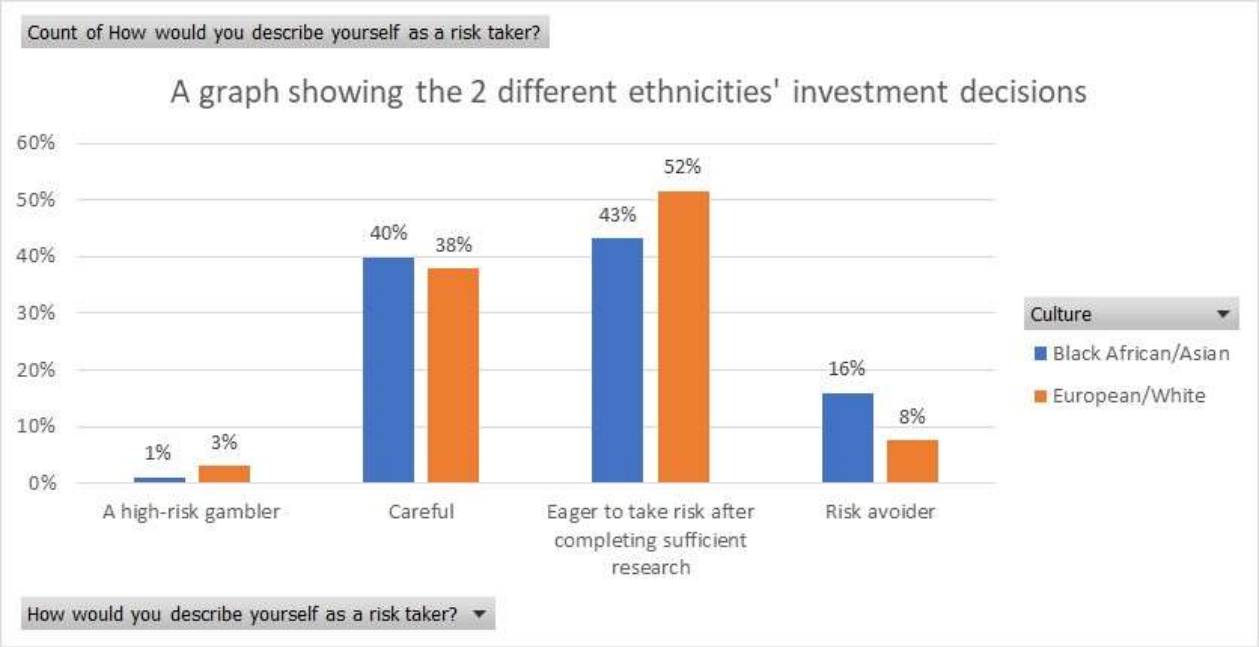



*Figure 9: Risk category in ethnicities*

The result above indicated a tendency for the Black and Asian respondents to selecting a more risk averse stance than those in the White South Africans group. The significance of these findings is supported by the ANOVA model which quantified that at a 95% given level of confidence, a f-ratio value of 4.00296 and a p-value of 0. 047201. Since the p-value is less than 0.05, is means that there are significant differences between the results based on culture.

**Investment Decision - Question 5**

In conjunction with question 4, respondents were asked to indicate their potential investment decisions as a means of gauging their risk propensities. The individuals were given four different levels of risk choice. The options included the following investment alternatives: government bonds, saving in a bank account, mutual funds and investing in the stock market. Specifically, each type represents an increasing level of risk with a latent proportionate increase in return.




*Figure 10: Investment decision by Racial groups*

From a racial group perspective, the graphs depict distinguished variances in investment patterns. From the 67 White South African auditors surveyed, 18.18% have answered that they would rather investment their money in a bank account than the alternative; this is rivalled by only 20.45% of the Black/Asian South African auditors answering in the same way. The White African respondents who would invest in stocks were as high as 30.3%, with the Black/Asian respondents trailing with 25%. With only a slight margin of 0.38% between the mean responses, the investment option in mutual funds or unit trusts did not have significant differences between racial groups.

Conversely, the Black/Asian racial group were the only respondents to select government bonds for an investment decision, with a 3.41% distribution.

Based on question 4 and 5 which focused on risk and investment decisions, a material variance is prevalent between the racial groups as the White South African auditors are more risk tolerant and willing to invest in riskier assets than their fellow auditors.

Statistically, as shown in table 4, the ANOVA output shows an f-ratio value of 6.12318 and a p-value of 0. 014441. Thus, is can be construed that based on culture there are significant differences in responses as the p-value is less than 0.05.

**Overconfidence - Question 6 and 8**

Question 6 and 8 are aimed at measuring overconfidence among the respondents. Overall, both cultural groups considered themselves above average, as mean was above 3 on the 5-point Likert scale. As depicted in table 4, the White South African group had an average of 4.17, as compared to a 3.42 mean response by the Asian/Black South African group. As illustrated in figure 12 and 13, this indicates that the White South Africans surveyed consider themselves better at their work and feel that they deserve a higher title relative to others

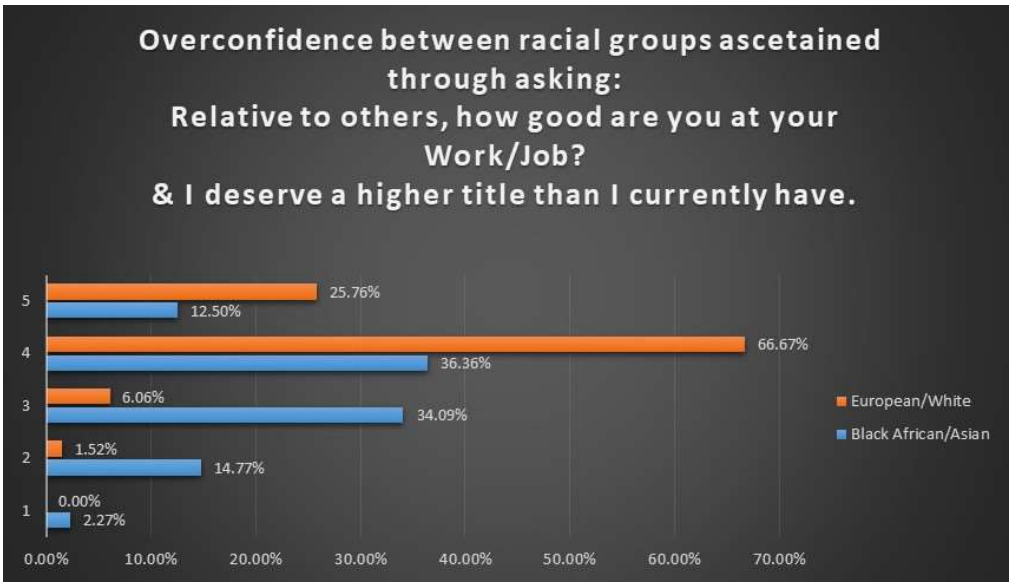



*Figure 11 – Racial group overconfidence bias* distribution

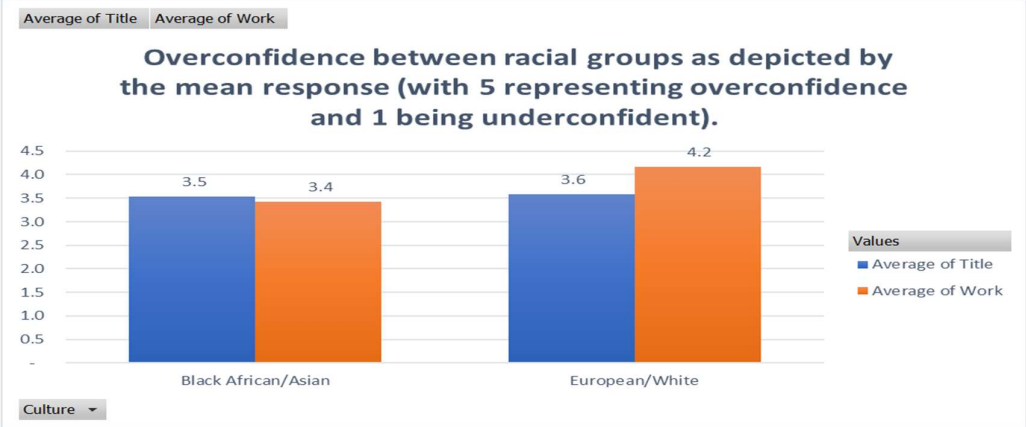



*Figure 12. Overconfidence bias average between races*

Only 1.52% of the White South African participants have considered themselves to be below average, while 17.05% of the Black/Asian respondents felt similarly. In contrast, 92% of the White South Africans surveyed selected an above average response, which shadows the 48% of Black Africans/Asians who considered themselves above average. A similar spread can be seen for the average – 6.06% of White Africans as opposed to 34% of Black Africans/Asians.

As per table 4, the f-ratio value is 30.51417 and the p-value is 0. 00001.The p-value is less than 0.05 for both questions which indicates the cultural differences are significant at a 95% level of significance.

**Regret and Loss - Question 7 and 9**

In question 7, the respondents were faced with an early onset loss of R10 000 and had to decide to either continue gambling or accept the loss. Whereas question 9 tries to capture the tendencies that show whether the respondents chose a higher or lower level of risky investments

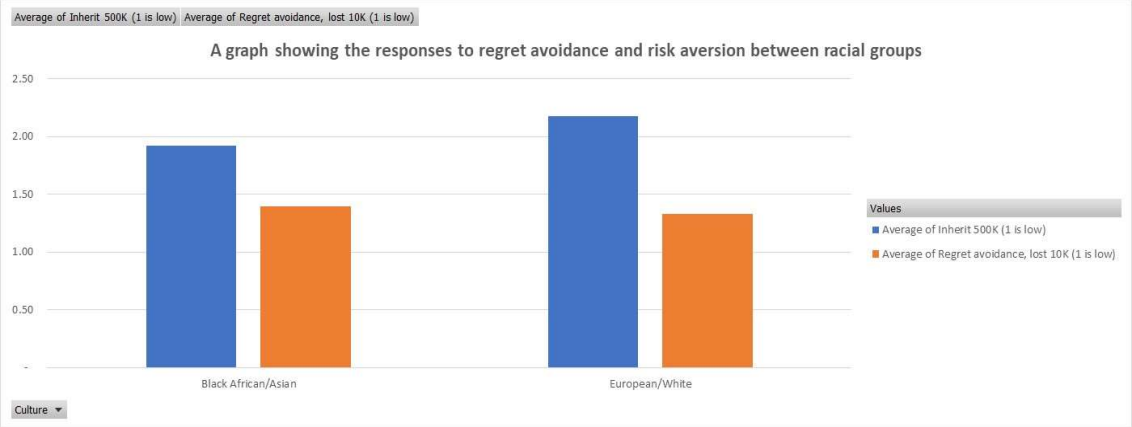



*Figure 13– Regret and Risk aversion in ethnic groups*

With regards to question 7, a numeric scale was assigned to each response as follows, 1 represents 'keeping your loss without further action', 2 showing 50% chance to win back R5 000 and a 50% chance to lose an additional R5 000, and 3 indicating the choice of 25% chance to win back R10 000 and a 75% chance to lose an additional R10 000. From the survey results, Black/Asian respondents had a mean of 1.33 (45% deciding to keep their loss, 50% going for option 2 and 5% going for option 3), whilst White South African had an average of 1.38 (55% deciding to keep their loss, 32% going for option 2, and 14% going for option 3). From the depictions, it is not conclusive whether the loss aversion bias is impacted by an individual's ethnicity.

Statistically the results for question 7 showed that the responses between the racial groups are not significantly at a 5% significance level. The f-ratio value is 0.49785 and the p-value is 0. 481525 (> 0.05).

The responses in question 9 were also given a numeric indicator. The less risky option of investing 75% in low risk was assigned the number 1, whilst the 50% in the low risk was

allocated the number 2 and 25% in a low-risk portfolio was assigned the number 3. The mean response by the surveyed White Africans group was 2.2 (4.9% going for 1, 55.5% selecting 2 and 39.6% selection 3), whilst the Black Africans/Asians racial group response averaged 1.9 (12.4% selecting 62.7% choosing 2 and only 24.9% going for option 3).

In question 9, the statistically significant between the different cultures was achieved through the ANOVA model as the output showed an f-ratio value of 6.72139 and a p-value of 0.010456. With the p-value less than 0.05, ANOVA supports that there are significant differences between the results.

**Cultural Dimensions - Question 11**

The main priority of this question was to determine if cultural dimensions had an impact on this study. Groups and cultures which are more individualistic than collectivistic often tend to take riskier decisions. In question 11, individuals were asked to indicate their feelings toward a statement based on a 5-point Likert scale, which was aimed at assessing their propensity toward collectivism. The question inquired if 'Group success is more important than individual success', where 1 represented strongly disagree and 5 represented a strong agreement with the statement.

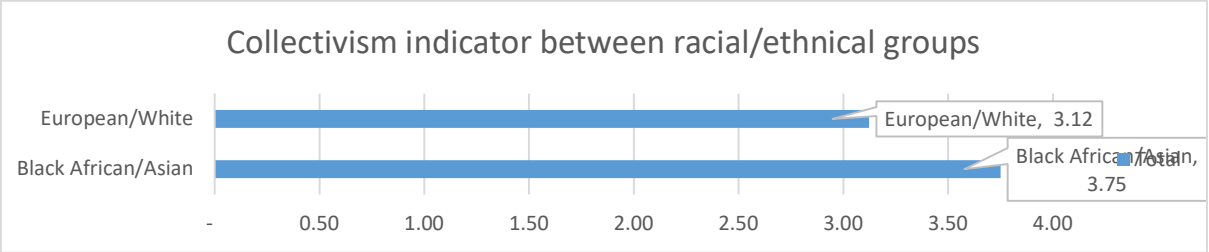



*Figure 14– Collectivism in ethnic/racial groups*

With the average response by the Black/Asian South African respondents at 3.75 and the White South African respondents at 3.12, there was a significant impact on collectivism relating to collectivism that can be identified. This was support by a F-value of 17.23185 and a p-value of 0. 000055. The p-value is less than 0.05, which confirms that the responses disparity is significant.

**Anchoring and Availability bias - Question 10**

Question 10 aims to ascertain the respondent's proclivity to the anchoring and availability biases. The answers were converted into numeric figures were 1 represented the correct answer and thus a lower propensity to be affected by the bias, whilst 0 was allocated to the incorrect alternatives.

From figure 20, the White South Africans surveyed had a higher mean of 0.86, whilst the Black and Asian group received 0.7 as a mean. The spread of 16% indicates a difference between the two groups responses.

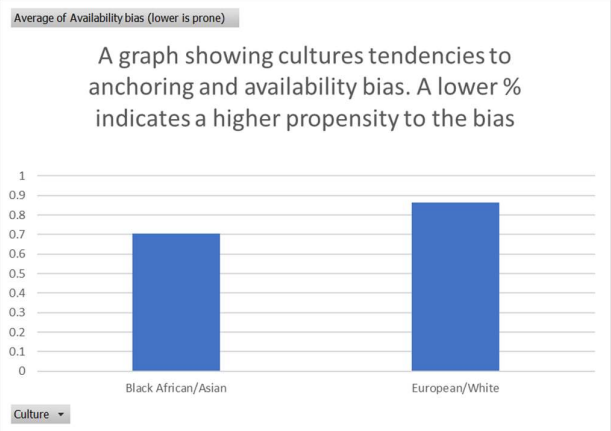



*Figure 15 – Anchoring and availability bias amongst cultures*

The variance has been analyses through the ANOVA model, which quantified an f-ratio value of 5.56098 and a p-value of 0.019638. The low p-value of less than 0.05, indicates that there is a significant difference between responses given based on cultural identity at a 95% confidence level.

## 4.3 Experience – Empirical findings

**Experience distribution among respondents – Question 2a**

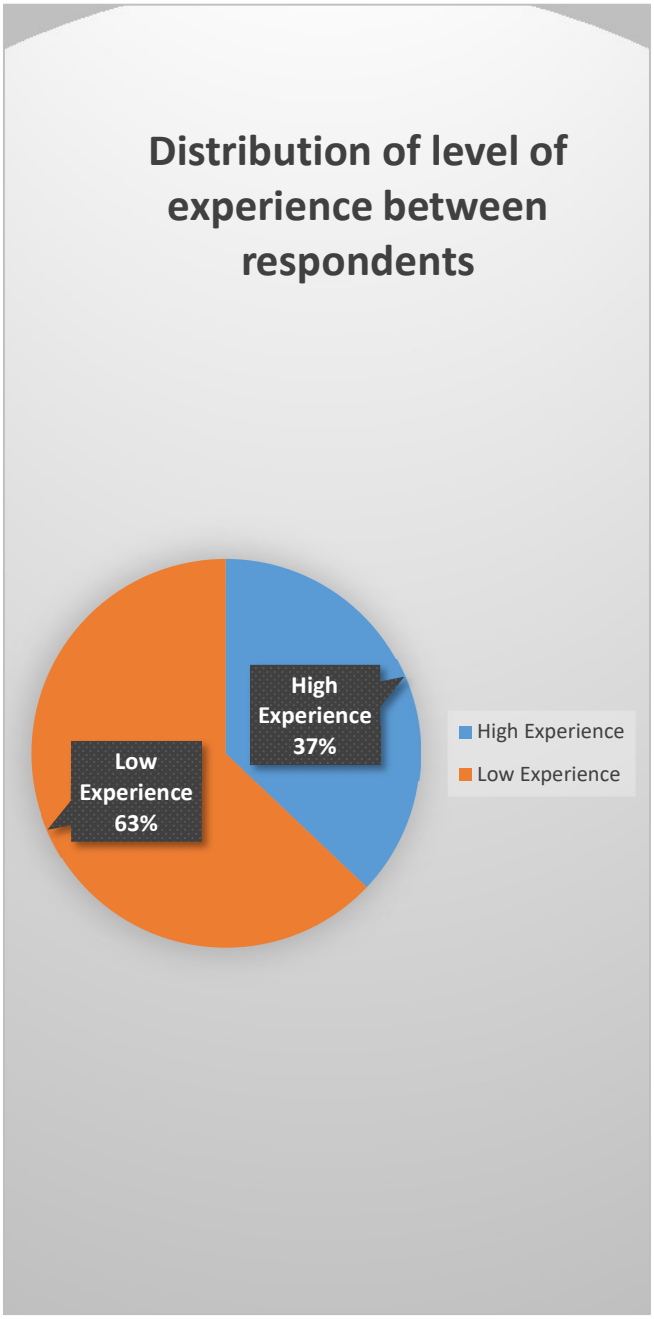



*Figure 16: Experience distribution*

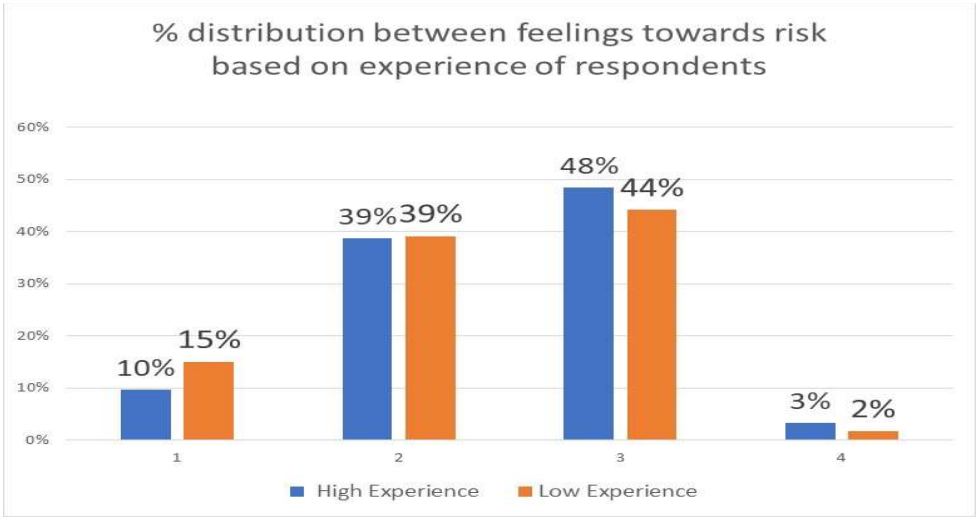
The demographic profile of participants categorised by different levels of experience has been depicted in figure 16.

From the answers obtained in question 2a of the survey, the portfolio data obtained was categorised into 2 distinct groups, namely low level of experience as well as a high level of experience. From the result obtained, a low level of experience considered auditors which only had 1 to 5 years of audit experience, whilst those with more than 5 years audit experience were considered as highly experienced auditors. Although the number of years were not specified, Tan and Libby (1997) posit that the more on-the-job knowledge leads to more audit expertise.

To meet the strata units of the target sample size of 154, the respondent distribution of levels of experience was 37% high level of experience (57) and 63% low level of experience (97). This matches the distribution within the total targeted population.

**Risk perspective - Question 4**

As depicted in figure 17, when the participants were asked to indicate their risk perception, by expressing their feelings towards risk, 48% of high experience respondents seem to tend toward being risk takers, after completing sufficient research. In contrast, 44% of the surveyed participants with low experience provided a similar answer. Moreover, it seems that the latter group were slightly more prone to seeing themselves as more risk averse than the those with more experience, as 39% of the low experience respondents indicated that they were careful and 15% indicated that they avoided risk all together. Whilst 39% of the more experienced respondents also considered risk carefully, and 10% viewed themselves as being risk averse. These slight differences were also seen in the choice for high-risk gambling where only a 1% differential existed between both groups.



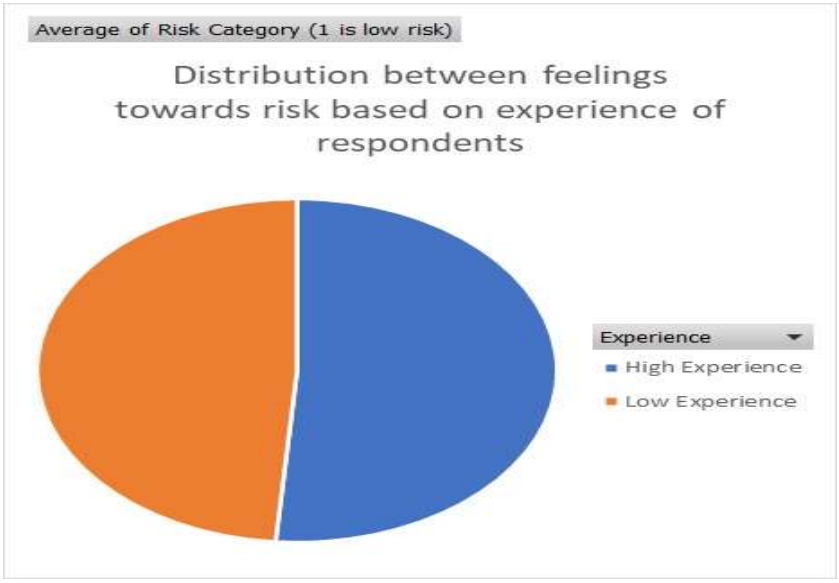




*Figure 17: Risk category by level of experience*

Although there seems to be some relationship between level of experience and risk perspective, the statistical results show that this is not a strong or significant relationship. The f-ratio value is 0.7176 and the p-value is 0. 398291 (>0.05), which indicates that there were no significant differences between responses.

**Investment decision - Question 5**

For question 5, individuals asked to indicate their readiness to invest in a variety of investment instruments, which require the use of their own prior knowledge of these instruments and their inherent levels of risk. The options included the following investment alternatives: government bonds (low risk represented by 1), saving in a bank account (2), mutual funds and investing (3) in the stock market (4). In other words, each type represents an increasing level of risk with a latent proportionate increase in return.

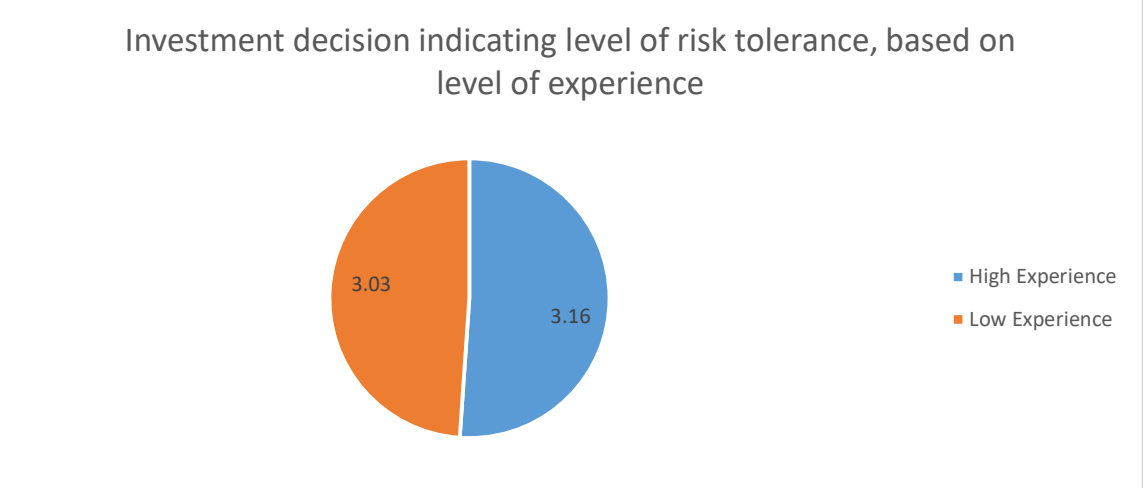



*Figure 18: Investment decision by level of experience*

| Row Labels | High Experience | Low Experience | Grand Total |
|---|---|---|---|
| Government/ Treasury Bonds | 0.00% | 2.50% | 1.99% |
| In the Stock Market | 32.26% | 26.67% | 27.81% |
| In Unit Trusts / Mutual Funds | 51.61% | 51.67% | 51.66% |
| Savings account in a Big bank | 16.13% | 19.17% | 18.54% |
| **Grand Total** | **100.00%** | **100.00%** | **100.00%** |

*Table 6: Distribution of risky assets decision*

The results from question 5 support those posed in question 4. As depicted in table 5 and figure18, there is a difference in the risk tolerance between the different groups. From the 57 high experienced auditors surveyed, 16.13% have answered that they would rather investment their money in a bank account than the alternatives; for the same question 19.17% of the low experience auditors felt similarly. More experienced auditors who'd invest in stocks were as high as 32.26%, while for the lesser experienced group lagged at 26.67%. The differences between those who'd invest in mutual funds or unit trusts, were slight, with the gap being only 0.06% between experience groups.

The low experience group were the only respondents to select government bonds for an investment decision, with a 2.5% distribution.

The findings above suggest a mixed response, with the overall mean differing by 0.13. Nonetheless, there is a slight difference between the responses given by lesser experienced respondents than those with more expertise. It can be seen that high experience auditors seem to be more risk tolerating than their fellow auditors.
Similar to the findings of question 4, the ANOVA output shows an f-ratio value of 0.84055 and the p-value is 0. 360722, which indicate statistical insignificance as the p-value is greater than 0.05.

**Anchoring and Availability bias - Question 10**

Question 10 intends to measure the susceptibility of respondents to the anchoring and availability biases. The results from the survey are enumerated, where 1 represents the correct answer (thus a lower propensity to be affected by the bias), whilst 0 was allocated to the incorrect alternatives (showing a higher propensity to the effects of the bias).

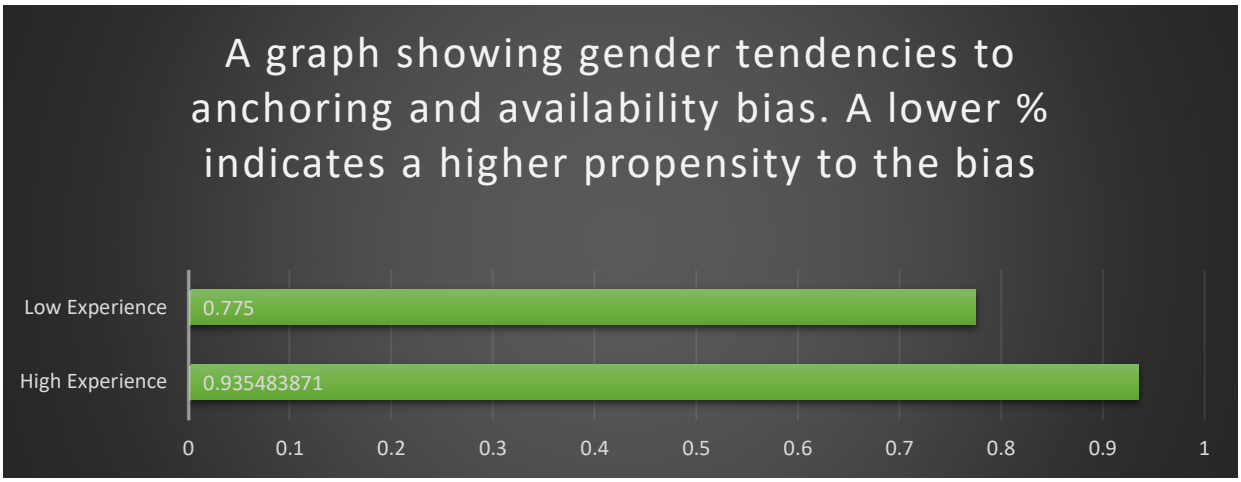



*Figure 19 – Anchoring and availability bias based on experience*

From figure 19, the lesser experienced respondents surveyed had a lower mean of 0.775, with only 77% of them selecting the correct answer. On the other hand, the more experienced respondents had a mean of 0.935, with more than 93% able to respond with the correct answer. The spread of 16% indicates a material difference between the two groups perspectives.

This was supported by the ANOVA model, which supplied an f-ratio value of 4.14722 and a statistically significant p-value of 0.043474 (<0,05). This confirms that there are significant differences between the responses provided by participants based on the level of experience.

# Chapter 5

## 5. Analysis and Conclusion

This chapter is aimed at discussing the empirical findings and bringing together the theoretical framework, surrounding risk perspectives and behavioural biases, with the findings *(as detailed in chapter 4)* from the data collection through the survey. The analysis will be presented in the same order as the empirical finding to create a clear connection for the reader.

The empirical investigation studied the effect of behavioural biases on the risk perspectives of auditors with different personal characteristics. The aim of the study is to ascertain whether the level of experience, gender and racial/cultural background of individuals can affect the financial and risk assessment decisions. This study was limited to the auditors at the Deloitte South Africa – Gauteng office.

The research question aimed to investigate the relationship between the risk perspectives of auditors, cognitive and emotional biases, and personal characteristics.

The research question is:

1. What are the behavioural biases impacting auditors?
2. Is an auditor's risk perspectives impacted by individual personal characteristics, such as gender, race, and expertise?
3. Is there a relationship between the behavioural biases of an auditor and their personal characteristics?

This study made use of a questionnaire to collect primary data to answer the research questions. From the empirical findings, differentiations can be made on the tendencies of different groups (with unique characteristics) regarding risk aversion and behavioural biases. A statistical analysis of variance model (ANOVA) has been used to determine the significance of the differences in the data collected from the various groups. This model applied a 95% level of confidence (5% significance level) to conduct that analysis of variance tests.

The hypotheses are based on questions in the survey. Please refer to appendix 1 for the questionnaire. Each profiling question has been associated independent variables, namely, level of experience, race, and gender. Moreover, each question asked is meant to represent a particular behavioural bias and risk perception (dependent variables) and is based on survey questions from similar work in the field. Each independent variance has two contrasting alternatives e.g., gender has been separated between males and females. Hence, the hypotheses are:

$H_0$ – There is no difference between the two compared alternatives

$H_1$ – There is a difference between the two alternatives

## 5.1 Gender – Analysis

The findings from the analysis performed on gender as a variable are linked with seminal works conducted in this field, as discussed in the theoretical framework. In a study performed by Ferreira, et al. (2019) a conclusion was reached that women are different from men with regards to risk perspective and decision making in a South African context. They found that women are more risk averse /conservative than men. They also found a strong connection between availability biases and gender, concluding that males exhibit propensities to abridge information, thus ignoring relevant aspects of financial information.

These theories are supported by the work of Barber and Odean (2001), who also postulates that gender plays an important role in the decision making of individuals. They conclude that in addition to risk tolerance, men are more overconfident than females in their decision making.

The results from this study support these earlier studies. In the findings of the investigation, gender as a personal characteristic seemed to affect the decisions of the individual. As depicted in the results to questions 4, 5, 7 and 9, the results indicated that the females are more risk averse, as they mostly selected options that are less risky than men. According to the ANOVA statistical analysis, the p-values for these questions were all below the significant level of 0.05. This indicates that there is a significant effect of gender on risk aversion. This means that $H_1$ that women are more risk averse than men can be accepted.

Similarly, from the results shown in figure 5, there are indications that men are more overconfident than women in their decision making. This was supported by a p-value less than 0.05, which indicates that there is a significant effect of gender on overconfidence biases. This means that $H_3$ that males are more overconfident than females can be accepted.

With regards to loss aversion and availability biases, the finding indicates that men are more prone to availability and anchoring bias, whilst female are more prone to loss aversion bias. This suggests that women are more conservative, which can lead to being more thoughtful and informed, as they are more likely to ask more questions than men do and to consider all relevant financial factors (Barber & Odean, 2001). The findings are statistically supported as both question 7 and 10 had a p-value less than 0.05, which indicates that there is a significant effect of gender on availability, anchoring, and loss aversion biases. This means that $H_4$ and $H_2$ can be accepted.

The outcomes indicate that a decision made by an individual seems to be dependent on the gender of the individual and their unique perception of risk. Ricciardi (2004) posits that an

individual's risk perspective is superlative in making any type of financial and accounting decisions. As each gender assesses the risk of a financial decision differently, the financial decisions made are bound to differ as well. In addition, this study shows that men are prone to select risker assets, which implies that a financial decision made by a male respondent would be different to a financial decision made a female respondent.

We can observe from the analysis of the gender variable in this study, that the results are in line with previous researchers such as Barber and Odean (2001). They too found a strong correlation between risk perspective and gender.

## 5.2 Culture/Ethnicity – Analysis

The findings from the analysis performed on race and culture as a variable is linked with seminal works conducted in this field, as discussed in the theoretical framework. Statman (2008) posits that the risk perspectives of different cultures and countries are different from each other. In a study on cognitive and emotional biases Markus and Kitayama (1991) suggested that people in individualistic cultures think confidently about themselves and focus efforts on their own internal characteristics, for instance their skills. Roland & Gorodnichenko (2019) extend this idea and make mention that the self-focused nature of individualised cultures, increases susceptibility of those nations to individual cognitive biases.

These theories are supported by the work of Kanagaretnam, et al. (2014). In their cross-country analysis, individualism is also positively related with risk-taking. Cultures which were seen to be individualistic had tendencies to take more risks and tend to report earnings less conservatively.

Primarily, from the survey responses to question 11, it is apparent that the Black South African /Asian South African racial group were more collectivistic in their responses than the White South African racial group. This was supported by the statistical p-value of 0.00055, which showed that the difference in the responses were significant at a 95% level of confidence as it is below 0.05. This indicates that the White South African racial group can be considered more individualistic than the Black/Asian South African racial group, thus we can accept $H_5$ that Black-African & Asian-African cultures are more collectivistic.

The results from this study support aforementioned seminal studies. In the findings, race and culture as a personal characteristic seemed to affect the decisions of the individual. As depicted in questions 4, 5 and 9, the results indicated that the Black/Asian South African ethnicities are more risk averse, as they mostly selected options that are less risky than the White South African racial group. According to the ANOVA statistical analysis, the p-values for these questions were all below the significant level of 0.05. This indicates that there is a

significant effect of culture on risk aversion. This means that $H_7$ that collectivistic cultures are more risk averse can be accepted.

Similarly, from the results shown in figure 12, there are indications that the White South African racial group is more overconfident than the Asian/Black South African group in their decision making. This was supported by a p-value less than 0.05, which indicates that there is a significant effect of cultures on overconfidence biases. This means that $H_6$ that low collectivistic cultures are more overconfident can be accepted.

In contrast, the results from question 7, which aimed to measure loss and regret avoidance were not statistically significant. Although figure 14 depicts that Asian and Black South Africans, who are more collectivistic, have a higher tendency to make financial decisions that are influenced by the avoidance of regret and future loss – this supposition could not be statistically proven as the p-value of 0.48 was higher than the significance level of 5%. However, though the differences in response may be slight for question 7, the risk aversion perspective between the two cultures has been established from the responses to questions 4, 5 and 9.

With regards to cognitive biases as suggested by Roland & Gorodnichenko (2019), the finding indicates that the White South African culture group that is more individualistic is more prone to availability and anchoring biases. This is expected as culture with more individualistic nucleus will be more influenced by individual cognitive biases as opposed to those who focus more on greater societal decisions (Roland & Gorodnichenko, 2019). The findings are statistically supported as the results from question 10 showed a p-value less than 0.05, which indicates that there is a significant effect of culture on availability and anchoring cognitive biases. This means that $H_8$ can be accepted.

The findings indicate that a choice made by an individual seems to be dependent on the cultural background of the individual and how they perceive risk. Ricciardi (2004) posits that an individual's risk perspective is superlative in making any type of financial and accounting decisions. As each cultural group assesses the risk of a financial decision differently, the financial decisions made are bound to differ as well. In addition, this study shows that individuals who are more individualistic, whether through their ethnical backgrounds or otherwise, are prone to select risker assets. This implies that a decision made by a collectivistic respondent could be materially different to a decision made an individualistic respondent.

## 5.3 Experience – Analysis

The results obtained on experience as a variable are underpinned by the influential studies conducted in this field, as discussed in the theoretical framework.

Tversky and Kahneman (1974) identify that auditors are disposed to heuristics and biases such as availability bias and anchoring bias; these cognitive limitations were more prevalent and rampant in less experienced students who were exposed to auditing tasks. These results were further explored by Smith and Kida (1991), who held that auditors are highly prone to judgemental biases, however, they diminish with experience/expertise (viz. a negative correlation between expertise and cognitive biases). Moreover, Smith and Kida (1991) specifically provide a widespread review of audit judgement research which address heuristics and biases. They particularly identify that anchoring, representativeness, and confirmatory bias are determinants to professional judgement, which differs across individual auditors.

In a more recent study by Mishra and Metilda (2015), it was concluded further that risk partialities, and education levels significantly influence the behaviour of categorised subjects. Higher experienced professionals are more risk taking than those who were less experienced. However, this was in contrast with the work of Gervais and Odean (2001), who held that more experienced individuals are more risk averse than the self-attributive novice.

The results from this study were partially contradictory to earlier studies. In the findings, levels of experience as a personal characteristic did not seemed to significantly affect the decisions of the individual. As depicted in questions 4 and 5, the results indicated that although higher experienced auditors were more risk tolerant than lesser experienced auditors based on the choice of risky assets, these were not material differences. According to the ANOVA statistical analysis, the p-values for these questions were all above the significant level of 0.05. This indicates that there is little to no effect of expertise on risk aversion. This means that we accept $H_0$ and reject $H_9$ that less experienced auditors are more risk averse, than experienced individuals.

With regards to cognitive biases as suggested by Smith and Kida (1991), figure 19 indicates that the more experienced auditors are less prone to availability and anchoring biases. This is expected as the more on-the-job knowledge obtained through experience develops expertise that limit mental inefficiencies in decision making (Tan & Libby, 1997). The findings are statistically supported as question 10 had a p-value less than 0.05, which indicates that there is a significant effect of experience on availability and anchoring cognitive biases. This means that $H_{10}$ can be accepted.

The findings indicate that a choice made by an individual seems to be dependent on the level of expertise of the individual and their perception of risk. Ricciardi (2004) posits that an

individual's risk perspective is key in making any type of financial and accounting decisions. The suggestion that more expertise can improve risk assessment by mitigating cognitive biases, indicates that financial and accounting decisions made by lesser experienced auditors is likely to differ than those with more tacit management knowledge.

## 5.4 Conclusion

The purpose of this report was to conduct a research on factors and decision-making processes that affect auditors during risk assessment. More specially, the objective is to investigate the effect of behavioural biases on the risk perceptions of auditors with different personal characteristics. Behavioural finance and accounting, which is a fairly recent paradigm of accounting and finance seeking to enhancement the standard finance theories by introducing behavioural aspects to the decision-making process, provided the theoretical basis for the research.

The objective of an audit is to bridge the agency problem and enhance the confidence of users of financial statements through expressing an opinion on the fair presentation of these financial reports (Lee, 1970). To achieve this purpose, auditors obtain sufficient appropriate audit evidence in line with auditing regulations and standards which involve judgement in their construal and interpretation (IAASB, 2011).
These regulations standards alongside seminal literature provide a key basis for defining audit quality. Standards such as ISA 220 and ISQC1 provide requirements to auditors on the involvement of skill, knowledge, experience, and resources to justify audit quality. Therefore, auditing heavily relies on the competence of auditors to use expertise, apply their professional judgement and professional scepticism, whilst remaining independent, to ensure that appropriate decisions are made on the direction and evolution of the audit engagement (IAASB, 2011).

Notwithstanding, auditing is inherently an opinion driven process, where judgement is applied in the assessment of financial information. As such, the quality and direction of the auditor's judgement may be impacted by internal factors categorised by personal characteristics and psychology. In a paper by Ricciardi (2004), risk is depicted as being inherently subjective. In facets of a risky decision that involve ambiguity/uncertainty, the individual's judgement must be subjective since the aspects involved are not well defined. Similarly, when the risk factors are identifiable, an individual's perception remains subjective due to the personal quality of evaluating the probability of and exposure to losses. This has become a pertinent issue at the peak of an era where the audit expectation gap is rampant, as modern auditing follows a risk-based approach. The quality of the audit may be impacted by unconscious bias where the auditor could make an incorrect risk assessment because of the cognitive and emotional limitations described in the prospect theory. This is particularly attributable to the perception formation model by Litterer (1965), where certain financial information may be selectively identified, misconstrued and/or be inappropriately augmented.

More specifically, due to the judgemental nature of features in corporate finance, auditing and corporate reporting, there are factors that inhibit the accurate application and measurement of audit quality, and lead to the complexity of outlining its clear determinants. As noted in this report, these factors encompass the partial insight provided in audited financial statements on the presence of material misstatements; judgement and the considerations to sufficient appropriate audit evidence; and most importantly, the varying risk perspectives and behaviour that are held by individual auditors who have differing personal attributes, interests, and preferences. Thus, a deeper layer of variable has been added to the single definition of audit quality provided by DeAngelo (1981).

In their decision-making quiz for Certified Public Accountants (CPAs) published in 2015, Fay & Montague (2015) identified five commonly occurring biases that can affect business judgments, namely – overconfidence, anchoring (confirmation) and adjustment, availability, and rush to solve. The biases referenced are based on a type of decision-making technique known as heuristics, which are mental shortcuts that allow people to make decisions efficiently. This process to problem solving is often beneficial, saving individuals the time and effort of meticulously assessing each data point in the world around them (Fay & Montague, 2015). Often, the heuristic approach results in a high-quality decision. However, the problems abound when individuals rely on these shortcuts unwittingly or when the shortcuts lead individuals astray. In those cases, decisions may be methodically biased.

As elucidated in the introductory paragraphs, the purpose of this study is to investigate the effect of behavioural biases on the risk perspectives of auditors with different personal characteristics. In particular, the study's goal is to ascertain whether the level of experience, the gender of an auditor and racial background of audit individuals can affect the financial and risk assessment decisions undertaken. The population used was the auditors at the Deloitte South Africa – Gauteng office. This implies that the any generalisation would be applicable to the target population and similar groups in other audit firms in South Africa.

In response to the research question, it can be concluded that behavioural biases do impact the decisions undertaken by individuals and that there is a general indication that the personal characteristics of individuals will impact decisions. This report found that gender, racial background, and level of experience impacted the decision of the surveyed auditors. In addition, the results also suggest that availability bias, anchoring (confirmation) bias, overconfidence bias and loss aversion bias are behavioural propensities which influence the risk perceptive of individual auditors to some material degree.

It can also be concluded that there are strong correlations between behavioural biases, personal characteristics, and risk perspective. From the results of the report, there was a strong positive relationship established between females, loss aversion and risk aversion.

Whilst a strong positive relationship was identified between men, overconfidence, availability, and anchoring biases. This supported the work of Barber and Odean (2001) who held that gender differences are a significant influence when explaining an individual's decision making. Moreover, a conclusion can be made on the relationship between cultures and collectivism-individualism. The results suggest that there is a strong positive relationship between collectivistic cultures (such as Asian cultures) and risk aversion. On the other hand, there is a strong positive relationship between individualistic cultures, overconfidence, availability, and anchoring biases. This is in line with the work of Roland & Gorodnichenko (2019), Hofstede (2001), Statman (2008), and Kanagaretnam, et al. (2014).

Although there is a low impact of risk aversion on the level of experience held by individuals, a significant influence was identified toward anchoring and availability biases. The results in this report regarding the expertise, support some of the ideas held by Mishra & Metilda (2015) and Smith & Kida (1991).

This research helps acknowledge the irrationality of risk perspective. It evinces that there is a multitude of stimuli that are involved in the perception of risk and that the decision making process is influenced not just by exagenous factors. In the concepts of audit quality, although auditing and accounting literature, standards, and regulations focus heavily on the consideration of exterior factors such as the the the auditor's resources, ethics, and the audit firm (IAASB, 2011), very little is explored regarding the internal psychological factors that may impact audit quality, risk assessement and decision making within engagements.

## 5.5 Further Research

Although this study has provided key insights and overviews on behavioural ideas and differences that influence risk perspectives in auditors, the limitation experienced in the study inhibit the full comprehensive analysis of the promising field of behavioural accounting.

An area of further research includes the studying of other behavioural biases and other particular characteristics (such as the work environment, resources, and mental fatigue) and its impact on an auditor's risk perspective and the overall audit quality.

Moreover, since this study lends its questions from general psychology and behavioural finance questions to evaluate biases, a suggestion would be looking more intensely at other tools that could measure behaviour in auditors more accurately. This would involve the use of audit risk related case study questions which target the audit context more directly.

To increase the external validity of the study, this research can be extended to include other audit firms who may have different demographical and biological dynamics. This may yield a different result or support the outcomes of detailed in this report. In a similar fashion, the scope of the study can protract to include a variety of different contexts and populaces that differ

from the current demographic – to see whether this would lead to alternative results. These contexts include – other countries which have a diversity of ethnicities, a mix of different generations of Auditors such as Generation X versus Y, and also the incorporation of students studying towards being an auditor as a control variable.

Another area for future research includes the investigation of how specific audit procedures, principles, and practices (such as risk assessments and substantive analytical procedures) have adapted to incorporate the inclusion of behavioural accounting and individual auditor attributes/behaviour. This is to assess the mitigation attempts of regulators and audit firms to address behavioural biases that could potentially affect audit quality, and the risks of issuing an incorrect audit opinion.

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# 7. Appendix 1 – Questionnaire Survey

## Research on an auditor's behavioural propensities and its impact on diversity in decision making.

Dear Respondent

Thank you for your decision to participate in this survey. Your responses will be recorded as part of a Research dissertation. Your participation will help aid in the investigations of differences in decision making amongst auditors with different behavioural patterns and personal characteristics. This is a short Multiple-choice survey. The entire questionnaire is anonymous, and individual answers gathered will be kept confidential and not shared with anyone, but the author. Please read the description to each section before answering the question.

**Q1. Gender**

A. Male B. Female

**Q2a. Please indicate your work experience in Audit & Assurance (in years)?**

**A.** 1 - 3 years
**B.** 3 - 5 years
**C.** 6 - 10 years
**D.** 10 - 20 Years
**E.** More than 20 Years

**Q2b. Please indicate your Age group:**

**A.** < 21
**B.** 21 – 26
**C.** 27 – 35
**D.** 35 – 45
**E.** > 45

**Q3. What population group best describes you?**

A. Indian/Asian
B. Black African
C. Coloured
D. White
E. Other

**Q4. How would you describe yourself as a risk taker?**

A. A high-risk gambler
B. Eager to take risk after completing sufficient research
C. Careful
D. Risk avoider

**Q5. You have received R 100´000 with one condition; you have to invest the full money in one of the following alternatives. Which one would you choose?**

A. Government/ Treasury Bonds
B. Savings account in a Big bank
C. In the Stock Market
D. In Unit Trusts / Mutual Funds

**Q6. Relative to others, how good are you at your Work/Job?**

Please express your viewpoint on the following statements on a 5-point Agreement scale (where applicable), Where 5 represents strongly agree and 1 represents strongly disagree.

**Q7. Imagine that you just lost R10'000 in a game and had to choose one of the following alternatives, which one would you choose?**

A. Keep your loss without further action
B. 50% chance to win back R5 000 and a 50% chance to lose an additional R5 000
C. 25% chance to win back R10 000 and a 75% chance to lose an additional R10 000

**Q8. I deserve a higher title than I currently have**.

Please express your viewpoint on the following statements on a 5-point Agreement scale (where applicable), Where 5 represents strongly agree and 1 represents strongly disagree.

**Q9. You have inherited R500'000 with a condition to invest in one of the following alternatives, which option would you choose?**

A. 75% in low risk, 15% in medium risk, 10% in high risk
B. 50% in low risk, 30% in medium risk, and 20% in high risk
C. 25% in low risk, 20% in medium risk, and 55% in high risk

**Q10. How long is the gestation period of the African elephant?"**

**A.** 9 Months

**B.** 15 Months

**C.** 22 Months

**D.** 12 Months

**E.** 30 Months

**Q11. Group success is more important than individual success.**

Please express your viewpoint on the following statements on a 5-point Agreement scale (where applicable), Where 5 represents strongly agree and 1 represents strongly disagree.

## Your response has been recorded, thank you for your participation!

# Student Declaration

SCHOOL OF ACCOUNTANCY

University of the Witwatersrand
School of Accountancy
1 Jan Smuts Avenue
Johannesburg
South Africa

2002

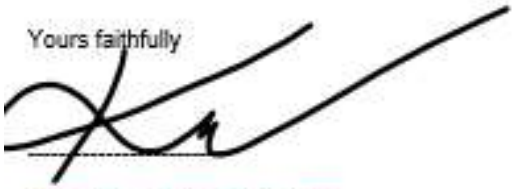
The Head of the School of Accountancy

Dear Professor

I hereby declare that this research report is my own unaided work. It is submitted in partial fulfilment of the degree of Master of Commerce (Accounting) at the University of the Witwatersrand, Johannesburg.

This research has been carried out according to the ethical policies of the University of the Witwatersrand and has not been submitted elsewhere for the purpose of being awarded another degree or for examination purposes at any other university.

Yours faithfully



Kamohelo Tsosane, 1052377

30/04/2021

# Ethical clearance certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

**SCHOOL OF ACCOUNTANCY ETHICS COMMITTEE**
**CONSTITUTED UNDER THE UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)**

**CLEARANCE CERTIFICATE** **PROTOCOL NUMBER: SOA-2020-09-21**

**PROJECT TITLE** **Behavioural propensities and their impact across diversity in the audit sector**

| | |
|---|---|
| **INVESTIGATOR** | **Kamohelo Tsosane (1052377)** |
| **SCHOOL/DEPARTMENT OF INVESTIGATOR** | School of Accountancy |
| **DATE CONSIDERED** | 7 September 2020 |
| **DECISION OF THE COMMITTEE** | Approved unconditionally |
| **RISK LEVEL** | **MINIMAL RISK** |

**EXPIRY DATE** 31 March 2021 (if extension is granted) at the latest must meet n + 2 rule as outlined by the CLM Faculty.

**ISSUE DATE OF CERTIFICATE** 28 September 2020

**MCOM CO-ORDINATOR & ETHICS COMMITTEE MEMBER** Samantha Gomez
(Miss Samantha Gomez)

cc: Supervisor: **Yogesh Brahmbhatt**

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**DECLARATION OF INVESTIGATOR**

To be completed in duplicate and **ONE COPY** returned to the Chairperson of the School/Department ethics committee.

I fully understand the conditions under which I am are authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee.

**Signature** **Date** 27 / 10 / 2020