



Ashesi University

The effects of overconfidence bias and herding bias on entrepreneurial performance

By

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DECLARATION

I hereby declare that this thesis is my original work and that no part of it has been presented for another degree in this University or elsewhere.

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I hereby declare that the preparation and presentation of this thesis were supervised in accordance with the guidelines on supervision of theses established by Ashesi University.

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ABSTRACT

The poor performance of entrepreneurial firms in Ghana has been attributed to economic and financial factors like scarcity of resources, poor institutions, and lack of capital for a long time, overlooking the physiological factors that have a direct impact on entrepreneurial performance. One important factor that is usually overlooked is the cognitive dissonance and heuristics entrepreneurs face when making decisions that affect the performance and success of their businesses. Behavioral finance has asserted that individuals, when making decisions, are not always rational and they are usually influenced by some cognitive bias. Research has proven that entrepreneurs are more susceptible to cognitive biases. This study focused on how the performance of entrepreneurial firms is affected by overconfidence and herding bias. This research relied on primary quantitative data obtained from questionnaires administered on entrepreneurs in Ghana to examine how overconfidence bias and herding bias affect the performance of entrepreneurial firms.

The results of this research showed that there is a positive relationship between overconfidence bias and entrepreneurial performance; such that a unit increase overconfidence bias could lead to 1.23 units increase in the performance of an entrepreneurial firm. The results also showed that there is a negative relationship between herding bias and entrepreneurial performance; such that a unit increase in herding bias could lead to 3.197 units decrease in entrepreneurial performance.

This study concluded that entrepreneurs in Ghana could increase their performance by: (1) making conscious efforts to prevent themselves from experiencing negative biases, (2) seeking professional assistance in decision making and (3) having some form of education to acquire more knowledge.

LIST OF ABBREVIATIONS

EMT – Efficient Market Theory

EUT – Expected Utility Theory

GDP – Gross Domestic Product

SMEs – Small and Medium-Sized Enterprises

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CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

Entrepreneurship is considered as the main factor that drives economic growth and encourages the development and advancement of productive activities in the global economy (Gomolemo *et al.*, 2017). Entrepreneurship has contributed significantly to economic development in various countries, especially in developing countries like Ghana. Small and medium enterprises contributed 70% of Ghana's GDP and provided 85% of total employment in the manufacturing sector in the last decade (Darko & Koranteng, 2015, p. 9). Entrepreneurship aids in economic development by creating jobs for both skilled and unskilled labour. SMEs have the prospect of promoting domestic growth in both new and existing industries and creating a competitive environment for the economy (Frimpong, 2013). Entrepreneurs who are the main players in the private sector of Ghana encourage healthy competition, which improves productivity and the efficient use of limited resources. SMEs stimulate economic diversification by venturing into new and under-explored sectors of the economy (Frimpong, 2013). In view of this, entrepreneurs undoubtedly play an active role in the development of the global economy, especially in developing countries.

Nevertheless, entrepreneurs are faced with challenges that limit their contributions and impact. Therefore, all gaps within the entrepreneurial sector must be identified and addressed to maximize the returns from the SMEs. Primarily, Ghanaian entrepreneurs usually face some common challenges like restricted accessibility to capital, lack of proper management skills, lack of skilled labour, and lack of technology (Opoku Mensah *et al.*, 2019). The Ghanaian government has put various initiatives and policies in place to solve some of these challenges faced by Ghanaian

entrepreneurs. However, one core challenge faced by Ghanaian entrepreneurs that have been overlooked is the effect of cognitive biases on entrepreneurship.

Entrepreneurs experience cognitive biases when making important decisions that affect the success of their businesses. Entrepreneurs encounter some systematic errors when processing information to make important decisions. Studies have shown that cognitive biases are mostly caused by emotions, societal norms and pressure, and individual motivations (Kahneman & Tversky, 1979). This indicates that entrepreneurs as individuals with emotions who form a part of their societies, are not immune to cognitive biases when making decisions. Given the significant contributions entrepreneurship makes towards economic development, it is important to understand entrepreneurs' susceptibility to cognitive biases when making decisions that affect the success, performance, and survival of their businesses. Research suggests that entrepreneurs are more likely to experience cognitive biases and they are more prone to some specific biases like overconfidence bias (Busenitz and Barney, 1997).

Cognition has consistently been integral to the well-known perception of entrepreneurship. Entrepreneurs go through the process of recognizing an opportunity, weighing the risk and returns on the opportunity recognized and putting together resources to manifest the opportunity. In doing all these, they use their reasoning skills (Katz & Shepherd, 2003, p.1). This study focuses mainly on the level of overconfidence bias and herding bias and how it affects Ghanaian entrepreneurs.

1.1.1 OVERCONFIDENCE

Overconfidence is described as the failure to recognize the limitations of one's knowledge (Simon & Houghton, 1999). Simply put, overconfidence occurs when one believes him/herself to be more competent than one actually is. Many businesses, especially SMEs fail during the initial years of operating. Dunne *et al.* (1988), as cited in Camerer & Lovallo, (1999), projected that 61.5 percent

of all entrants into new markets exited the markets within five years and 79.6 percent exited within ten years. In Ghana, 60 percent of SMEs do not survive beyond five years of operations (Boachie-Mensah & Marfo-Yiadom, 2005; Peprah, Mensah, & Akosah, 2016). The high level of failure among SMEs, among other things, may be attributed to the overconfidence bias entrepreneurs experience when making decisions concerning their businesses. Due to overconfidence, many entrepreneurs have mistaken short-term business opportunities for long-term opportunities. In doing so, these businesses make entry mistakes, and they fail shortly after entry (Camerer & Lovallo, 1999). Entrepreneurs are usually known to be more overconfident (Busenitz & Barney, 1997; Salamouris, 2013). They believe they have what it takes to build new businesses. Therefore, most entrepreneurs quit their well-paying secured jobs to pursue their dreams of becoming entrepreneurs, and this clearly shows how confident they are in their skills and competence. From Camerer & Lovallo's research, most subjects believed that total profit earned by other entrepreneurs was going to be negative, but their profit was going to be positive (1999). This is a sign of overconfidence among entrepreneurs. As a result of overconfidence, decision-makers treat their assumptions as facts and make major decisions based on these assumptions, ignoring the uncertainty associated with decisions made (Simon, Houghton, Aquino, 1999).

Entrepreneurs in Ghana are no different from other entrepreneurs all over the world. Eighty percent of Ghanaian youth believed that they had the necessary skills needed to become an entrepreneur despite the challenges involved in becoming an entrepreneur in Ghana- low-level educational qualification, and high rate of venture failure (Yankson, Bawakyillenuo, & Owusu, 2013). The current rate of unemployment in Ghana stands at 6.8% (Plecher, 2020). Despite the negative impact overconfidence has on entrepreneurial businesses, it has some positive impacts as well but its negative influence outweighs its positive influence. Overconfidence bias shows both

positive and negative effects but the negative impact on entrepreneurial firms and businesses is more pronounced.

1.1.2 OPTIMISM BIAS

Optimism as explained by Hmieleski and Baron (2009) is the situation in which one anticipates more outcomes that are positive even if these expectations are beyond rational justification. Research suggests that optimism bias experienced by most entrepreneurs is merely a result of overconfidence bias exhibited by these entrepreneurs. “This is consistent with our argument that individuals who believe themselves to have the skills and ability to start a new business are more likely to take an optimistic view of their prospects and overestimate their chances of success” (Koellinger, Minniti, & Schade, 2007, p. 504). Simply put, overconfidence in one’s skills and competence leads to optimism bias. This is because overconfident persons believe that their assumptions are accurate and that does not necessarily lead to a successful future (Simon, Houghton, & Aquino, 1999).

Optimism displayed by entrepreneurs gives them some kind of self-esteem and they are more emotionally stable; this assures them and they do not think critically in decision-making (Perloff, 1988, as cited in Gudmundsson & Lechner, 2013). It can be said that optimism bias leads to overconfidence. Optimistic entrepreneurs do not make provisions for negative outcomes, which can severely affect the performance and survival of the business. To some extent, entrepreneurs who exhibit optimism perform well; however, optimism bias affects their performance negatively. Therefore, it is important to analyze the effects optimism bias has on entrepreneurial decision-making.

1.1.3 HERDING BIAS

Herding bias happens when people settle on choices, copying the activities of others and following gathering practices (Baddeley, 2010; Calderón, 2018; Devenow & Welch, 1996; Fieger, 2017). Usually, persons experiencing herding bias have personal information which recommends an alternate game-plan (Banerjee, 1992) but they end up copying the choices of others. Herding bias is when people duplicate or follow a pattern. It normally influences individual and corporate investors in the financial market. Herding bias typically emerges from the absence of data, vulnerability, and doubt of investors' own data (Baddeley, 2010; Fieger, 2017). A few studies have demonstrated that herding is a social impact (Baddeley, 2010; Banerjee, 1992; Fieger, 2017). Due to the urge to fit in and have something in common, people copy the choices of others around them (Andersson *et al.*, 2014; Spyrou, 2013). Herding bias is a cognitive bias that affects decision-making. Since entrepreneurs make decisions at every point in their businesses, they are likely to be affected by herding bias.

From the information given above, it is quite clear that overconfidence bias and optimism bias work hand in hand; the existence of one leads to the other. It is also evident that these biases affect entrepreneurial businesses, which are the backbone of nations' economies. The objective of this research is to find out how the performance of entrepreneurial businesses in Ghana is affected by overconfidence and herding biases.

1.2 RESEARCH PROBLEM

Over a decade, the rate of unemployment in Ghana has been high and it keeps rising. The current rate of unemployment in Ghana stands at 6.8% (Plecher, 2020) as compared to Senegal that currently has 6.68%, and Nigeria also has an unemployment rate of 7.96% (Plecher, 2020). This shows that unemployment, especially unemployment among the youth, is not an issue only in

Ghana. Unemployment among the youth has serious repercussions for a nation and its inhabitants. According to Chiri (2016), high graduate unemployment in Ghana has contributed to the rise in social vices like cyber-crime popularly known as “sakawa”. Moreover, looking at the high rate of unemployment in Ghana, entrepreneurship is one effective solution to curb the growth of the unemployment rate. This is because 90% of registered companies in Ghana are SMEs (Abor & Beikpe, 2006; Capacity Development Center, 2012; Cole & Okyere, 2016) and SMEs provide 85% of employment in the manufacturing sector in Ghana. Entrepreneurship is one solution offered by governments to curb this challenge of unemployment.

Many studies have emphasized the importance of SMEs and entrepreneurs to the global economy (Chiri, 2016; Koellinger et al., 2007; Mohanty, 2015). Yet, researchers have proven that most SMEs fail in Ghana within 5 years of operating (Yankson, Bawakyillenuo, & Owusu, 2013). Failure of SMEs has been attributed to global crises, the decline in economic growth rate, poor institutions, and some other economic and financial factors. In order to solve this issue, the Ghanaian government has provided some policies on encouraging entrepreneurship and restructuring of these policies to ensure that the right business environment is created to guarantee the success of entrepreneurs in their business, but it is still persistent. In previous studies conducted, researchers have identified various success versus failure models to enable governments to come up with efficient support for SMEs (Lussier *et al.*, 2016). However, these studies did not cover the impact of psychology, specifically biases on entrepreneurial performance. Thus, accordingly, this gives rise to the need to study how the psychological makeup of entrepreneurs in Ghana affects their businesses’ performance and survival to reduce unemployment and sustain SMEs. This study aims to investigate how cognitive dissonance faced by entrepreneurs in their decision-making affects their businesses.

1.3 RESEARCH QUESTION

1. What are the levels of overconfidence bias and herding bias among entrepreneurs in Ghana?
2. What is the relationship between overconfidence bias and the performance of entrepreneurs in Ghana?
3. What is the relationship between herding bias and the performance of entrepreneurs in Ghana?

1.4 RESEARCH OBJECTIVES

The primary objective of this study is to understand the cognitive aspect of entrepreneurship and identify ways in which overconfidence and herding biases affect the performance of Ghanaian entrepreneurs and their businesses. The study aims to:

1. Examine the specific levels of overconfidence bias and herding bias among Ghanaian entrepreneurs.
2. Study the relationship between overconfidence bias and entrepreneurial performance.
3. Study the association between the relationship between herding bias and entrepreneurial performance.

1.5 RELEVANCE OF RESEARCH

Many studies have been conducted on how biases, especially overconfidence bias, affect the decision to make entry into a business and how they affect the survival of a business. Much research has not been conducted on the impact that these biases have on the performance of surviving businesses. In addition, many studies have focused on finding the effects that individual biases have on the overall well-being of a business. However, this study seeks to find the distinct

effects two biases, overconfidence and herding biases, have on the performance of entrepreneurial firms. This study would give more knowledge on the actual effect that cognitive dissonance has on entrepreneurs besides economic and financial factors. Therefore, entrepreneurs would benefit directly from this research. The Ghanaian government and main stakeholders in the Ghanaian economy would benefit from this research as well. This is because if entrepreneurs can plan and perform exceptionally with knowledge from this study, the economy as a whole would benefit from the efficiency of SMEs.

1.7 ORGANIZATION OF THE STUDY

This section of the thesis shows the whole structure of the study. Chapter two of this study would focus on a review of existing knowledge and studies conducted in this area of study. The research methodology used in this study would be discussed in depth in chapter three. This section would cover research design, sampling strategy, collection and analysis of data collected. This section would also discuss other research design options available for conducting the study and why those options were not used. Then the section would go on to discuss the challenges and limitations of the study. Data collected would be analyzed in chapter four of this study. Chapter five would contain recommendations for Ghanaian entrepreneurs on actions to take to avoid the impact of overconfidence and optimism biases on their businesses.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter analyzes previous studies conducted on overconfidence and herding bias experienced by entrepreneurs. It describes the theoretical foundations of this study and reviews some empirical studies on the impact that overconfidence bias and herding bias have on entrepreneurial performance. This chapter is divided into two main sections: the theoretical review and the empirical review. The theoretical review discusses two core theories that form the foundation of entrepreneurial biases: the hubris theory of entrepreneurship and prospect theory. This chapter further discusses empirical studies performed on entrepreneurial performance, overconfidence bias, and herding bias.

2.2 THEORETICAL REVIEW

For decades, many economists have subscribed to the expected utility theory. The expected utility theory states that, when faced with a situation with an uncertain outcome, individuals would choose the action with the highest utility that aligns with their personal preference. Simply put, individuals make rational choices when making decisions. Contrary to this theory, Kahneman and Tversky (1979) came up with the prospect theory which explained that individuals make decisions based on their perception of loss and gains. More simply, individuals making decisions are likely to be exposed to biases that cause deviations from rational expectations. In this study, entrepreneurs are in the position of making essential decisions that affect the success and survival of their businesses, and, in line with the prospect theory, it is evident that entrepreneurs' decisions are more likely to be affected by some biases and factors instead of being made on a purely rational basis.

2.2.1 HUBRIS THEORY OF ENTREPRENEURSHIP

Many previous studies have emphasized the importance of entrepreneurship as the main driver of the economy in both developed and developing countries (Schumpeter, 1934). For this reason, one would expect that the entry rate and success of entrepreneurial firms would be high. Bernoster *et al.*, (2018) confirm that entrepreneurial market entry is very high due to the presence of a cognitive bias namely, overconfidence. Many individuals enter markets as entrepreneurs and their levels of overconfidence largely influence this decision. Surprisingly, the rate of survival of entrepreneurial businesses as compared to the rate of entry is very low. Previous studies indicate that a majority of new ventures fail to exist after a few years of operation (Bernardo & Welch, 2001; Bernoster *et al.*, 2018; Camerer & Lovallo, 1999; Everett & Fairchild, 2014).

To answer the question of why more individuals create new ventures despite the high rate of venture failure, Hayward, Shepherd, and Griffin (2006) came up with the Hubris theory of entrepreneurship. This theory posits that overconfident entrepreneurs are more likely to start up new ventures even in pessimistic situations because they overestimate their abilities and the likelihood of the success of their ventures. Numerous studies conducted have affirmed the hubris theory of entrepreneurship. Overconfident entrepreneurs usually believe that they can start up a venture and they usually overestimate the success of their venture and underestimate the probability of failure (Bernoster *et al.*, 2018; Camerer & Lovallo, 1999; Everett & Fairchild, 2014; Hayward *et al.*, 2006; Invernizzi *et al.*, 2017; Koellinger *et al.*, 2007, Singh, 2020). This theory explains why more businesses are being created despite the high rate of startup failures.

2.2.2 PROSPECT THEORY

The prospect theory is the base theory under behavioral finance. It disputes the expected utility theory (EUT) and efficient market theory (EMT). EUT and EMT maintain that human beings are

rational and they make rational and informed decisions by choosing an option with the highest utility. In contrast with this detail, many studies conducted in the behavioral finance field maintain that human beings are irrational and decisions made by individuals are affected by cognitive biases and heuristics also known as mental shortcuts (Kahneman & Tversky, 1979). Simply put, human beings do not always act or reason as expected. There are different factors like emotions, information, and one's attitude which can cause individuals to deviate from the expected ways of action. The prospect theory explains how human beings make decisions, and judgements when they are involved in risky situations that involve losses and gains (Calderón, 2018). The theory asserts that humans are influenced by common biases and most individuals aim to avoid losses instead of choosing the option with the highest utility when making decisions.

Fieger (2017) asserts that the main biases that form the base of the prospect theory are: frame dependence, anchoring, mental accounting, and loss aversion. Under the theory, it is asserted that humans do not have specific risk preferences; instead, their risk preferences change at the perception of losses and gains. Individuals are risk-averse when they perceive gains and they are risk-takers when they perceive loss and this contradicts the expected utility perspective which holds that individuals have some specified range of risk preference; individuals also choose a point of reference when making risky decisions (Calderón, 2018, Deaves, 2010; Kahneman, 2011). These reference points affect the thinking process of the individuals, and they play similar to biases. This theory explains how humans make irrational decisions in the presence of some biases. In the context of this study, entrepreneurs are human beings who make decisions and judgements at every point in their businesses; therefore, this theory gives some explanation as to why entrepreneurs would not act rationally according to expectations.

2.3 LITERATURE REVIEW ON ENTREPRENEURIAL PERFORMANCE

Various studies conducted by other authors in the field of behavioral finance confirm truly that entrepreneurs are affected by biases when making decisions. Katz and Shepherd (2003) maintain that entrepreneurs use their cognition when making decisions; consequently, they are prone to biases. These biases usually do have a negative impact on entrepreneurial businesses. Camerer and Lovallo maintained that entrepreneurs who make incorrect judgments due to biases make mistakes when taking decisions and these mistakes lead to the failure of firms (1999). Many authors have extensively researched the area of cognitive biases and their impact on entrepreneurship and most of these studies agree that cognitive biases, when experienced by entrepreneurs, have some impact on their businesses.

Entrepreneurs can be defined as actors who set up ventures to solve problems that they have identified (Farsi *et al.*, 2014). Entrepreneurs play a vital role in the growth of the global economy; therefore, exploring and studying factors responsible for the failure and successes of firms is crucial to the growth and stability of economies (Garter *et al.*, 1999; Storey *et al.*, 1987). However, previous studies have indicated that most startups fail within the early years of operations (Bernardo & Welch, 2001; Bernoster *et al.*, 2018; Camerer & Lovallo, 1999; Everett & Fairchild, 2014). For this reason, previous studies conducted explored factors used to measure entrepreneurial performance and factors that affect entrepreneurial performance. Entrepreneurial performance is an indicator of a firm's success (Lakovelva, 2011). Chandler and Hanks (1994) explain entrepreneurial performance as the gauge used in measuring a firm's success. Specifics like entrepreneurial strategy, personal traits, resources available, and environmental factors have an impact on entrepreneurial success (Mugler, 2000; Snuif & Zwart, 1994).

Cooper and Gascon (1992) maintained that individual characteristics like age, gender, education, experience, occupation of parents, and entrepreneur's goals affect performance. Some studies also measure entrepreneurial performance with financial indicators like efficiency, growth, profit, size, liquidity, success/failure, market share, and leverage (Murphy *et al.*, 1996). Data used for calculating these indicators were derived from audited financial statements of sample firms used in the study to avoid the difficulty that comes with verifying the financials reported by entrepreneurs (Invernizzi *et al.*, 2016). In the case of measuring entrepreneurial performance in an informal sector, personal traits affect the level of entrepreneurial performance, and measures of entrepreneurial performance should be tasks that can be controlled (Kede Ndouna & Tsafack Nanfosso, 2017). One challenge identified in the area of measuring entrepreneurial performance was the nonexistent methods of verifying financial information provided by entrepreneurs themselves. The Ghanaian entrepreneurial industry, which is the scope for this study, is informal; therefore, the measure of performance that was employed in this study were "Age of the firm" and "Number of employees". These measures are appropriate because they directly impact the financials of a firm; this is a dimension of entrepreneurial performance.

2.4 LITERATURE REVIEW ON OVERCONFIDENCE BIAS

Overconfidence bias as explained by many authors is the instance where individuals overestimate their abilities and skills. Overconfidence bias is one of the commonly known biases that most individuals experience and entrepreneurs are no different. Entrepreneurs are said to be generally more overconfident than other individuals (Everett & Fairchild, 2014; Farsi *et al.*, 2014; Gudmundsson & Lechner, 2013). Previous studies contend that overconfidence is common among entrepreneurs because they make decisions without access to essential resources like capital, labour, experience, and existing information (Harris, 1998; Mulholland, 1998). Simply put,

entrepreneurs tend to make decisions with uncertainty and ranging levels of risk. For this reason, most entrepreneurs make decisions based on their intuition and cognition and this makes them easily susceptible to overconfidence bias.

One major element that makes the effect of overconfidence more prominent is the tendency of entrepreneurs to underestimate the strength of their competitors (Camerer & Lovallo, 1999; Gudmundsson & Lechner, 2013). For this reason, these entrepreneurs risk the failure of their businesses by investing less effort than required. This reason leads to the failure and under-performance of many entrepreneurial businesses that are affected by overconfidence. Previous studies conducted on overconfidence purported that overconfidence usually has a negative impact on business and the economy as a whole (Busenitz & Barney, 1997; Forbes, 2005; McCarthy, Schoorman, & Cooper, 1993). Overconfidence has a negative relationship with the survival of a firm (Camerer & Lovallo, 1999; Gudmundsson & Lechner, 2013; Farsi *et al.*, 2014). Simply put, the higher the level of overconfidence of the entrepreneur, the lower the chances of the survival of his/her firm. This is because overconfidence biases cause a lapse in judgement, leading entrepreneurs to make wrong decisions that affect the survival of their business.

Some other studies conducted argued that overconfidence bias has both positive and negative effects on entrepreneurial performance. Overconfidence leads to unprepared entry into a market, which action earmarks a venture for failure. On the flip side, overconfidence enables entrepreneurs to make decisions in uncertain situations which aid the success of the business (Farsi *et al.*, 2014; Gudmundsson & Lechner, 2013). The next paragraphs explain the positive and negative impacts of overconfidence bias in perspective.

Overconfidence has a significant impact on entrepreneurial intention also known as entrepreneurial market entry. This is the decision of entrepreneurs to enter a market and it usually leads to subsequent failure of the startup (Bernoster *et al.*, 2018; Farsi *et al.*, 2014). Overconfidence is seen to have an impact on entrepreneurial outcomes like survival, entrepreneurial intention, and entrepreneurial activity. It is worthy to note that overconfidence bias has a significant impact on entrepreneurial performance.

Previous studies conducted on the relationship between overconfidence and entrepreneurial performance maintain that overconfidence has a negative impact on entrepreneurial performance (Arend *et al.*, 2016; Hayward *et al.*, 2006; Invernizzi *et al.*, 2016; Mulholland, 1998). In contrast, Koellinger *et al.* (2007) argue that overconfidence bias exhibited by entrepreneurs may lead to a better economic outcome for the society because overconfidence enables entrepreneurs to pursue opportunities in difficult environments. However, overconfidence has a negative impact on entrepreneurial performance when entrepreneurs are in pursuit of new opportunities with limited resources (Hayward *et al.*, 2006), and that increases the chances of failure of an overconfident entrepreneur (Koellinger *et al.*, 2007).

Even though many studies have been conducted on overconfidence in entrepreneurial contexts, just a few studies have investigated the causes of overconfidence among entrepreneurs. A study conducted by Farsi *et al.*, (2014) asserts that overconfidence among entrepreneurs is caused by various factors such as information overload, partial information, availability heuristics, personal optimism, self-efficacy, environmental pressure, and past experiences of the entrepreneur. One challenge realized in previous literature was the difficulty of verifying levels of overconfidence of entrepreneurs.

2.5 LITERATURE REVIEW ON HERDING BIAS

Herding bias occurs when individuals make decisions imitating the actions of others and following group behaviours (Baddeley, 2010; Calderón, 2018; Devenow & Welch, 1996; Fieger, 2017) even when their personal information suggests the need to take a different course of action (Banerjee, 1992). Herding bias is when individuals copy or follow a trend. Herding bias usually arises from lack of information, uncertainty, and distrust of investors' information (Baddeley, 2010; Fieger, 2017). Some studies have also proven that herding is a form of social influence. Most individuals usually make decisions similar to other individuals around them because they want to fit in and have things in common (Andersson *et al.*, 2014; Spyrou, 2013). Many studies have not been conducted on the impact herding bias has on entrepreneurs and entrepreneurial outcomes. However, the few studies that have been conducted maintain that entrepreneurs do not usually experience the herding bias. Overconfident entrepreneurs are usually confident in their skills, abilities, and information; therefore, they do not follow trends and try to be innovative always (Cunningham & Anderson, 2018). Some studies maintain that imitation (herding) disrupts the creativity of entrepreneurs. However, Baddeley (2013) holds that entrepreneurs are innovative individuals who make their own decisions based on their information and intuition; therefore, entrepreneurs are not vulnerable to herding bias. This study would explore the existence of herding bias among Ghanaian entrepreneurs and the effects it has on entrepreneurial performance.

2.6 CONCLUSION OF LITERATURE REVIEW

Many previous studies have been conducted on overconfidence bias among entrepreneurs but most of these studies do not concentrate on the level of overconfidence among African entrepreneurs, especially Ghana which has economic and financial environments that are different from that of Western countries. For this reason, this study focuses on the level of overconfidence and herding

bias among Ghanaian entrepreneurs and the effects these individual biases have on entrepreneurial performance.

CHAPTER 3: METHODOLOGY

3.1 INTRODUCTION

This chapter provides detailed information on the research method, research design, and approach employed in this study. It further discusses the sampling methods, data collection, and data analysis tools used in processing the data collected. This chapter discusses the ethical issues that could arise in the process of collection of data for this research, the limitations of methods used, and all other essential factors needed to validate this study.

3.2 RESEARCH DESIGN

This study adopted the descriptive research approach. A descriptive research design focuses on the nature of a phenomenon instead of why it exists. This descriptive research design was employed to determine the status of overconfidence and herding bias among Ghanaian entrepreneurs. This design was used to statistically analyze the population sample. Therefore, descriptive research was appropriate in conducting this study. Quantitative primary data were collected using questionnaires. The quantitative data collected were analyzed mainly using the regression analysis method. Also, demographic data collected for this study were analyzed using the univariate analysis method to understand the influence of demographics on the result of the research.

3.3 RESEARCH SCOPE

This research was centered on entrepreneurs operating in both the formal and informal sectors in Ghana. Entrepreneurs in this study refer to individuals or teams who have started any type of business venture in the Ghanaian market. It could be any type of venture operating in the service industry, manufacturing industry, or any other industry. This study was conducted mainly in Accra and the other regions in Ghana since the main data collection tool was administered online. All

kinds of entrepreneurs are considered in this study because choosing some entrepreneurs over some others would not give an actual representation and a comprehensive picture of the actual situation in Ghana.

3.4 SAMPLING STRATEGY

For this study, the probability sampling technique was employed. The random sampling strategy was used in this study. The target sample size was 250, and this target sample included entrepreneurs who operate in any region of Ghana. In the end, only 156 entrepreneurs were sampled for this study. This was due to time constraints, resource constraints, and the constraint on human movement due to the coronavirus. Whilst the questionnaire was mainly administered online, it was difficult to get entrepreneurs to fill out these questionnaires. Therefore, some entrepreneurs were sampled on the streets of Accra and business places like salons, provision shops, and food vendors in Accra. However, this approach was quite limited due to the social distancing and health regulations set in place due to the corona virus pandemic. Since 87.1% (136) of the respondents had some formal education, at least until secondary level, it was not time-consuming for respondents to fill the questionnaire within the estimated time of **12 minutes**. However, a handful of respondents required assistance in answering the questionnaire since they did not understand the English language. The random sampling strategy was used because it reduced the time spent searching for suitable candidates to take part in this research. Due to time constraints and other factors like the corona virus, the random sampling strategy was the best strategy to use.

3.5 DATA COLLECTION

For this study, quantitative data were collected using questionnaires administered online. Questionnaires are used to collect facts and opinions from the participants of research. The

questionnaire had three sections, which included the demographics section, a section on overconfidence bias, and the last section based on herding bias. The questionnaire had demographic questions that requested basic information related to this study's objectives, and classifying information that made it possible to classify respondents. The questionnaires had closed questions only. The items in the questionnaire were directly related to overconfidence bias, herding bias, and entrepreneurial performance.

Overconfidence bias was measured using eight items on the questionnaire. These items were posed as general knowledge questions to test the knowledge of entrepreneurs and they were required to indicate their level of confidence in their answers using a five-point Likert scale ranging from "not confident (1)" to "very confident (5)". This yard of measure, also known as miscalibration is adopted from previous studies that have measured overconfidence bias and identified it as the most accurate measure of the overconfidence bias (Ilieva *et al.*, 2018; Michailova, 2010; Mulholland, 1998; Russo & Schoemaker, 1992). It looks at the difference between the accuracy of respondents and their indicated levels of confidence to determine their level of overconfidence. To exactly measure the overconfidence level of an entrepreneur, the difference between the correct answer score of the entrepreneurs and their confidence level score (average percentage of confidence – average percentage of correct answers) is taken. A positive answer indicates overconfidence, and a negative answer indicates under-confidence.

Herding bias is measured with a seven-item questionnaire. These items were posed as scenarios and business-related statements. Respondents were required to choose an answer that best suited their personality in the scenario section and they were to choose an answer on the Likert scale indicating their level of agreement to the business-related statements.

The data collected indicated that 51.3% (80) of the respondents had not formally registered their business and 69.9% (109) entrepreneurs ran their businesses as survival ventures, which provided only basic subsistence for them. Due to the large percentage of informal business among respondents, most of them did not have proper financial records to provide data to measure entrepreneurial performance (performance of the firm). Secondly, some studies have reported that most entrepreneurs usually do not give out their financial data for research purposes due to the fear of being reported for tax fraud (Ndouna & Nanfosso, 2017). Therefore, entrepreneurial performance in this study was measured using the age of the business and the number of employees (size) of the business. The age of the business would qualify as a measurement of performance because it indicates the survival of a business. The higher the age of a business, the higher its survival rate and likely the higher its performance. This is because a poorly performing business cannot survive for a long period all other things being equal. Also, the survival of a business is an indicator of firm growth which has also been used in the literature as an indicator of firm performance (Kalleberg & Leicht, 1991; Ndouna & Nanfosso, 2017). The size of the firm can also be used as an indicator of firm performance because a firm can only increase its size and operation when it is performing well in terms of income and other factors (Smith, Guthrie & Chen, 1989).

All data that were collected were firstly verified and coded before analyzing. The data collected were analyzed using the multiple linear regression model. The multiple linear regression model was used to measure the influence of overconfidence bias and herding bias on entrepreneurial performance. A multiple linear regression model is made up of independent variables, a dependent variable, and a control variable. In this research, the following equations would be applied.

$$\text{Formula 1: } Y_1 = \beta_0 + \beta_i X_i + \beta_{ii} X_{ii} + \beta_{iii} X_{iii} + e$$

Y_1 = Entrepreneurial performance (dependent variable)

β_0 = The y- intercept

β_i = Regression coefficient for Overconfidence bias

β_{ii} = Regression coefficient for Gender

β_{iii} = Regression coefficient for education level

X_i = Overconfidence bias (Independent variable)

X_{ii} = Gender (Control variable)

X_{iii} = Age (Control variable)

e = error term

Formula 2: $Y_2 = \beta_0 + \beta_i X_i + \beta_{ii} X_{ii} + \beta_{iii} X_{iii} + e$

Y_2 = Entrepreneurial performance (dependent variable)

B_0 = The y- intercept

β_i = Regression coefficient for Herding bias

β_{ii} = Regression coefficient for Gender

β_{iii} = Regression coefficient for education level

X_i = Herding bias (Independent variable)

X_{ii} = Gender (Control variable)

X_{iii} = Age (Control variable)

e = error term

3.6 DATA ANALYSIS

Data collected for this study were organized using Microsoft Excel and analyzed using the SPSS software. Data that needed to be coded were also coded. Data collected for this study were analyzed using the regression analysis approach. In this study, regression analysis was performed to study the impact that various independent variables like overconfidence bias, and herding bias has on entrepreneurial performance, which is the dependent variable. The multiple linear regression analysis was to analyze the single dependent variable and the multiple independent variables considered in this study. A correlational analysis was also run to determine the relationship between overconfidence and entrepreneurial performance and herding bias and entrepreneurial performance.

3.7 DATA VALIDITY AND RELIABILITY

In order to maintain the high quality of this research, tests were run to ensure the validity and reliability of the data and data collection instrument applied in this study. Validity is present when an instrument truly measures what it aims to measure (Vanderstoep & Johnston, 2009). Validity in this research was measured using Cronbach's alpha.

3.8 ETHICAL CONSIDERATIONS

Ethics is an integral part of every research. Ethical considerations are needed to protect the interest of the participants. In view of this, this research abided by the needed ethical considerations. Firstly, all participants were asked to voluntarily participate in this research. Before they answered the items on the questionnaires, the purpose of the study was explained to them first. They were then required to give their consent before taking part in the study. Participants were free to walk away from participating in this study whether or not they have completed answering a questionnaire. In answering the questionnaire, respondents were required to provide honest and

accurate, and objective answers to ensure the accuracy and validity of the data collected. Also, confidentiality was fully assured. Any data collected was not shared with the public to protect the interest of participants especially as they are in a competitive sector. The financial data of respondents were not shared with the public to avoid causing financial harm to participants. All respondents who took part in this study were not required to answer questions requesting their personal information; for instance, names and addresses were not included in the questionnaires. All respondents were kept anonymous and protected against any unethical practices.

3.9 LIMITATIONS

The results of this study cannot be generalized because the sample chosen through the random sampling technique would not be entirely representative of entrepreneurs in Ghana. This research sampled respondents from the Ghana mainly and entrepreneurs in the Ghana (West African) region would not be necessarily similar to entrepreneurs in other regions. Time was a constraint. There was not enough time to thoroughly gather data from the whole population or a sample that is representative of the whole population. It was also difficult to collect accurate financial performance data from the respondents. This is because most people did not disclose their financial information easily.

CHAPTER 4: DATA FINDINGS

4.1 OVERVIEW

This chapter presents insights on the statistical analysis of data collected to give a clearer understanding of the results. This chapter contains subsections discussing portions of the data analyses performed for this research. The first subsection analyses the demographic statistics of the respondents involved in the study.

4.2 RESPONDENT DESCRIPTION

Respondents who took part in the research were all adult entrepreneurs in Ghana who are at least 18 years old. A descriptive analysis of the data collected showed that 51.3% of the respondents were females and 48.7% of the respondents were males. The sample population used for this research indicated that more women entrepreneurs are operating in Ghana than there are men. Recent studies conducted have reported that the number of women involved in business (entrepreneurship) has increased over the last decade (Brush, 2006; Coughlin & Thomas, 2003; Dzisi, 2008; Fielden & Davidson, 2005). According to Fielden and Davidson (2005), increased education levels, later marriage, and reduced childbirth, and an increase in desire for financial independence among women are some factors responsible for this trend.

The analysis also indicated that a majority of the respondents (35.9%) was between the ages of 25 years to 34 years followed by 30.1% of respondents who fell below the age of 25, 17.9% of the respondents fall between the ages of 34 years to 45 and the 16% of the respondents are above 45 years. This statistic is an indication of the future of the entrepreneurial sector in Ghana. The entrepreneurial sector in Ghana has the opportunity for more growth and to remain vibrant as 66%

of entrepreneurs fall in the middle and young age category with just 1.9% of respondents being seniors.

The descriptive analysis also highlighted that 94.3% of the respondents had at least basic education with 31.4% of the respondents being degree holders. This statistic shows that most entrepreneurs in Ghana have the needed resource, formal education, to succeed in their line of business. However, entrepreneurial performance and survival are quite low and this proves that there is the need to direct more resources into researching non-financial and non-economic indicators affecting the entrepreneurial performance of entrepreneurs operating in Ghana. This is an indication of the changing employment structure in Ghana, a notable number of university graduates no longer rely on white-collar jobs to stay employed, according to the descriptive analysis. In confirmation of the fact that Ghana's entrepreneurial sector is highly informal, 51.3% of respondents reported to have not formally registered their businesses.

Table 1 - Gender of Respondents

		Frequency	Percent
Valid	Male	76	48.7
	Female	80	51.3
	Total	156	100.0

Table 2 - Age of Respondents

		Frequency	Percent
Valid	Less than 25 years	47	30.1
	25-34 years	56	35.9
	35-44 years	28	17.9
	44-54 years	22	14.1
	55 years or above	3	1.9
	Total	156	100.0

Table 3 - Level of Education of Respondents

		Frequency	Percent
Valid	No formal education	9	5.8
	Basic school	11	7.1
	Secondary School	30	19.2
	Diploma	41	26.3
	Degree	49	31.4
	Postgraduate diploma	6	3.8
	MBA/MSc	8	5.1
	PhD	2	1.3
	Total	156	100.0

Table 4– Registered Businesses

		Frequency	Percent
Valid	Yes	76	48.7
	No	80	51.3
	Total	156	100.0

4.3 LEVELS OF HERDING BIAS AND OVERCONFIDENCE BIAS

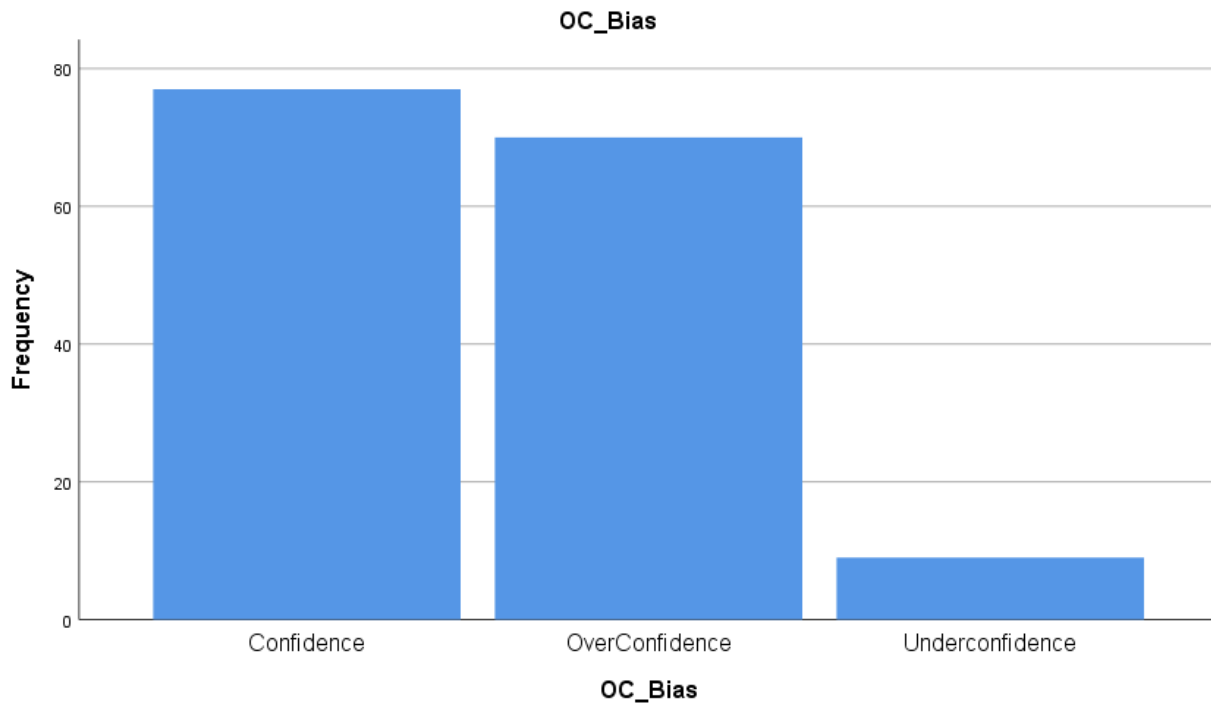
In order to determine the levels of herding bias and overconfidence bias exhibited by entrepreneurs operating in Ghana, a univariate analysis was performed on both variables. The results of the analysis show that the average level of overconfidence bias among entrepreneurs operating in Ghana is 21.86%, approximately 22%. The standard deviation of the data on overconfidence bias is 19.757%. This shows that the data are closer to the mean and it is reliable.

Table 5– Statistics of Overconfidence Bias and Herding Bias

		Statistics	
		Overconfidence Bias	Herding Bias
N	Valid	156	156
	Missing	0	0
Mean		.2186	.4256
Median		.1800	.4300
Std. Deviation		.19757	.23956
Variance		.039	.057

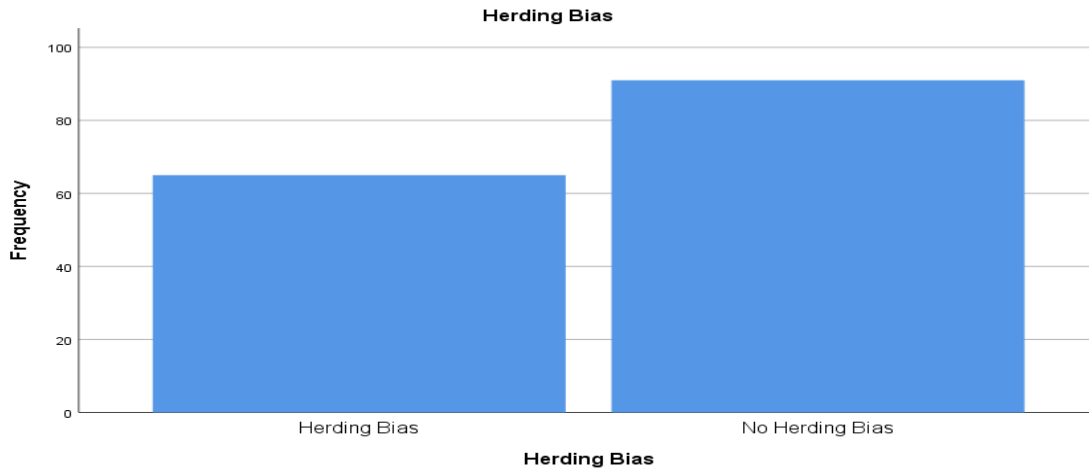
To distinguish between the various entrepreneurs and their confidence levels, they were put into three categories based on their levels of confidence. All entrepreneurs with a confidence level score below 0% are termed as under-confident. Entrepreneurs with confidence level scores from 0% - 22% are termed as confident and entrepreneurs with a confidence level score above 22% are termed as overconfident. *Figure 1* shows the frequency of entrepreneurs under each category. From the analysis, it was realized that 49.4% of entrepreneurs were confident, 44.9% were overconfident and only 5.8% of entrepreneurs were under-confident.

Figure 1



In order to calculate the level of herding bias for each entrepreneur, six items on the questionnaire were used. Answers to these items that indicated herding bias were given a score of one and other answers were given a score of zero. The average score of herding bias was recorded for each respondent. The analysis revealed that the average level of herding bias among entrepreneurs operating in Ghana is 42.56%. The standard deviation of data collected on herding bias is 23.95%. This shows that data on herding bias are widely spread. In order to distinguish between entrepreneurs exhibiting herding bias and entrepreneurs not exhibiting the herding bias, data collected on the herding bias were coded. All entrepreneurs with a herding bias level score below 43% were categorized as not exhibiting herding bias. All entrepreneurs with a herding bias level score from 43% were categorized as exhibiting herding bias. *Figure 2* shows the frequency of entrepreneurs in both categories. The analysis revealed that 41.7% of entrepreneurs did exhibit herding bias whilst 58.3% of entrepreneurs did not exhibit herding bias.

Figure 2



4.4 GENDER AND HERDING BIAS

For this aspect of the analysis, a chi-square test was used in exploring the association between herding bias and gender. The result showed that 58.3% of respondents did not exhibit the herding bias which confirms the results put out by various previous studies that entrepreneurs usually do not exhibit herding bias (Baddeley, 2013; Cunningham & Anderson, 2018). Whilst 41.7% of the respondents exhibited herding bias. The results also showed that among the 41.7% (65) of respondents who exhibited herding bias, 24.4% of these respondents were males and 17.3% were females. Some previous studies held that women are more prone to exhibiting herding bias as compared to men (Eagly & Carli, 1981; Kang, 2013; Nair *et al.*, 2017). However, the results of this study contradict the findings of Eagly & Carli (1981), Kang (2013), Nair, and others (2017). This result for this study could be attributed to the high level of education among women, easier access to essential information, and the high levels of independence among women in these recent

times. The test statistic was 4.324 and the p-value of the chi-square test is 0.040. This shows that there is a statistically significant association between gender and herding bias. The results:

Table 6- Gender and Herding Bias

		Herding Bias		Total	
		Herding Bias	No Herding Bias		
Gender	Male	Count	38	38	76
		% within Gender	50.0%	50.0%	100.0%
		% of Total	24.4%	24.4%	48.7%
	Female	Count	27	53	80
		% within Gender	33.8%	66.3%	100.0%
		% of Total	17.3%	34.0%	51.3%
Total		Count	65	91	156
		% within Gender	41.7%	58.3%	100.0%
		% of Total	41.7%	58.3%	100.0%

Table 7– Results of Chi-square test on Gender and Herding Bias

Chi-Square Tests					
	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.234 ^a	1	.040		
Continuity Correction ^b	3.592	1	.058		
Likelihood Ratio	4.252	1	.039		
Fisher's Exact Test				.051	.029
Linear-by-Linear Association	4.207	1	.040		
N of Valid Cases	156				

a. 0 cells (0.0%) have an expected count less than 5. The minimum expected count is 31.67.

b. Computed only for a 2x2 table

4.5 AGE AND HERDING BIAS

In analyzing these two variables, the cross-tabulation method was employed together with a chi-square test to test for the significance of the established association. From the analysis, it was realized that the majority of entrepreneurs below the age of 25 years and entrepreneurs between 35 years and 44 years did not exhibit herding bias. It was seen that 63.8% of entrepreneurs below the age of 25 years did not exhibit herding bias whilst 36.2% of these entrepreneurs exhibited herding bias. Also, 75% of entrepreneurs between 35 years and 44 years did not exhibit herding bias with 25% exhibiting herding bias. However, a majority of entrepreneurs between the ages of 25 years – 34 years, and 55 years and above exhibited herding bias. It is seen that 57.1% of respondents between the ages of 25 years and 34 years exhibited herding bias whilst 42.9% did not exhibit herding bias. From the analysis of this data, it can be concluded that entrepreneurs do not follow others in making entrepreneurial decisions when they are young and middle ages. The urge to prove themselves and be unique could be the main reason why young people involved in this research did not exhibit herding bias. Most middle-aged persons are at the peak of their careers and their reliance on their experiences could be the reason why they do not experience herding bias. Also, it is a known fact that most entrepreneurs do not exhibit herding bias to stifle their creativity and growth; therefore, these young and middle-aged entrepreneurs could not be experiencing herding bias simply because they are entrepreneurs.

Table 8– Age and Herding Bias

		Age & Herding Bias			
		Herding Bias		Total	
		Herding Bias	No Herding Bias		
Age	Less than 25 years	Count	17	30	47
		% within Age	36.2%	63.8%	100.0%
		% of Total	10.9%	19.2%	30.1%
25-34 years	25-34 years	Count	32	24	56
		% within Age	57.1%	42.9%	100.0%
		% of Total	20.5%	15.4%	35.9%
35-44 years	35-44 years	Count	7	21	28
		% within Age	25.0%	75.0%	100.0%
		% of Total	4.5%	13.5%	17.9%
44-54 years	44-54 years	Count	7	15	22
		% within Age	31.8%	68.2%	100.0%
		% of Total	4.5%	9.6%	14.1%
55 years or above	55 years or above	Count	2	1	3
		% within Age	66.7%	33.3%	100.0%
		% of Total	1.3%	0.6%	1.9%
Total	Total	Count	65	91	156
		% within Age	41.7%	58.3%	100.0%
		% of Total	41.7%	58.3%	100.0%

Based on a chi-square test result in Table 9, it was concluded that there is a statistically significant relationship between age and herding bias. The p-value of this test was 0.027, which is less than the alpha value of 0.05. This shows that there is a statistically significant association between

herding bias and the ages of entrepreneurs. This means that age is an important determinant of the level of herding bias exhibited by an entrepreneur.

Table 9 - Chi Square Results on Age and Herding Bias

Chi-Square Tests			
	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10.952 ^a	4	.027
Likelihood Ratio	11.078	4	.026
Linear-by-Linear Association	.389	1	.533
N of Valid Cases	156		

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 1.25.

A more simplified representation of the association between ages and the herding bias is displayed in the appendix.

4.6 EDUCATIONAL LEVEL AND HERDING BIAS

An analysis of the educational level and herding bias using cross-tabulation produced a rather interesting result in table 10. From the analysis, it was recognized that a majority of respondents whose highest level of education was basic school level exhibited herding bias as compared to other respondents who had been educated past the basic school level. It can be concluded that as an entrepreneur attains higher levels of education, he/she no longer follows others in decision making especially in making decisions that concern his/her entrepreneurial firm. The possible reason for this result could be that as people attain higher education levels, they become more learned and gain more knowledge. Therefore, they will prefer to rely on their knowledge when making decisions instead of copying the actions of others.

Table 10– Level of Education and Herding Bias

Count		Herding Bias		Total
		Herding Bias	No Herding Bias	
Level of education	No formal education	7	2	9
	Basic school	7	4	11
	Secondary School	5	25	30
	Diploma	20	21	41
	Degree	22	27	49
	Postgraduate diploma	1	5	6
	MBA/MSc	3	5	8
	PhD	0	2	2
Total		65	91	156

4.7 GENDER AND OVERCONFIDENCE BIAS

The analysis of the overall population for this research revealed in *Figure 1* that 49.4 % of respondents exhibited normal levels of overconfidence, 44.9% of entrepreneurs were overconfident and 5.8% of respondents were under-confident.

An analysis of gender and overconfidence bias was performed using cross-tabulation. Results of this analysis in table 11 showed that 6.3% of female entrepreneurs are under-confident, 42.5% of female entrepreneurs were normally confident and 51.2% of them were overconfident whilst 5.3% of male entrepreneurs are under-confident, 56.6% of these male entrepreneurs were normally confident and 32.8% were overconfident. This shows that the 7 under-confident entrepreneurs were made up of more female entrepreneurs as compared to their male counterparts. This means that more women entrepreneurs are likely to exhibit under-confidence as compared to their male

counterparts. This could be because of other factors like societal stereotypes, which expect women to be more laid back than men.

Also, it was seen in table 11 that 56.6% of male entrepreneurs were normally confident whilst 42.5% of females were normally confident. Looking at the 49.4% confident entrepreneurs, 27.6% of these confident entrepreneurs were males whilst 21.8% of these confident entrepreneurs were females. This shows that male entrepreneurs are more confident as compared to female entrepreneurs. This result in the study affirms the results of previous studies that hold that men are generally more confident than women are. Previous studies revealed that, on average, men exhibit more confidence when compared to women (Barber & Odean, 2001; Bhandari & Deaves, 2006; Dahlbom *et al.*, 2011; Lundeberg, Fox & Puncchohar, 1994). The result from the analyses further showed that 38.2% of male entrepreneurs are overconfident whilst 51.2% of female entrepreneurs are overconfident. The results from this analysis demonstrate that female entrepreneurs are more prone to being under-confident or overconfident as compared to their male counterparts, whilst a majority of the male entrepreneurs has normal levels of confidence.

Table 11– Cross Tabulation Result between Gender and Overconfidence Bias

			Confidence Bias			Total
			Under confidence	Confidence	Overconfiden ce	
Gender	Male	Count	4	43	29	76
		% within Gender	5.3%	56.6%	38.2%	100.0%
		% of Total	2.6%	27.6%	18.6%	48.7%
	Female	Count	5	34	41	80
		% within Gender	6.3%	42.5%	51.2%	100.0%
		% of Total	3.2%	21.8%	26.3%	51.3%
Total		Count	9	77	70	156
		% within Gender	5.8%	49.4%	44.9%	100.0%
		% of Total	5.8%	49.4%	44.9%	100.0%

4.8 AGE AND OVERCONFIDENCE BIAS

A cross-tabulation analysis was performed on age and overconfidence bias. The results from the analysis demonstrated that 63.8% of entrepreneurs below the age of 25 are confident with 34% of them being overconfident and only 2.1% of these entrepreneurs are under-confident. Entrepreneurs between the ages of 25 and 34 exhibited a similar pattern. The results showed that 53.6% of entrepreneurs between 25 years and 34 years were confident, 39.3% of these entrepreneurs were overconfident with only 7.1% being under-confident. The results of this analysis showed that 64.3% of entrepreneurs between the ages of 35 and 44 exhibited overconfidence bias whilst 63.6% of entrepreneurs between the ages of 44 and 54 years exhibited overconfidence bias. From this result, it is seen that a majority of the middle-aged entrepreneurs exhibit overconfidence bias as compared to the young entrepreneurs the majority of whom exhibited normal levels of confidence. The chi-square test results in table 13 shows that there is a significant association between the age of an entrepreneur and the level of overconfidence bias exhibited. This result is contrary to the results of previous studies that maintain that younger people are more prone to exhibit overconfidence bias and older people are less prone to exhibiting overconfidence bias due to their experiences (De Jorge Moreno *et al.*, 2007; Invernizzi *et al.*, 2017; Menkhoff *et al.*, 2013). For the old age entrepreneurs above 55 years, they formed 1.9% of our total respondents, and 100% of these 1.9% respondents exhibited normal levels of confidence.

Table 12– Overconfidence Bias and Age

		Age & Confidence Bias				
		Confidence Bias			Total	
		Under confidence	Confidence	Overconfidence		
Age	Less than 25 years	Count	1	30	16	47
		% within Age	2.1%	63.8%	34.0%	100.0 %
		% of Total	0.6%	19.2%	10.3%	30.1%
	25-34 years	Count	4	30	22	56
		% within Age	7.1%	53.6%	39.3%	100.0 %
		% of Total	2.6%	19.2%	14.1%	35.9%
	35-44 years	Count	1	9	18	28
		% within Age	3.6%	32.1%	64.3%	100.0 %
		% of Total	0.6%	5.8%	11.5%	17.9%
	44-54 years	Count	3	5	14	22
		% within Age	13.6%	22.7%	63.6%	100.0 %
		% of Total	1.9%	3.2%	9.0%	14.1%
	55 years or above	Count	0	3	0	3
		% within Age	0.0%	100.0%	0.0%	100.0 %
		% of Total	0.0%	1.9%	0.0%	1.9%
Total	Count	9	77	70	156	
	% within Age	5.8%	49.4%	44.9%	100.0 %	
	% of Total	5.8%	49.4%	44.9%	100.0 %	

Table 13– Result of Chi-Square Analysis between Age of Entrepreneur and Confidence Bias.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	19.670 ^a	8	.012
Likelihood Ratio	21.053	8	.007
Linear-by-Linear Association	1.764	1	.184
N of Valid Cases	156		

4.9 EDUCATIONAL LEVEL AND OVERCONFIDENCE BIAS

In order to analyze the educational level of entrepreneurs and their levels of confidence, a cross-tabulation analysis was performed. The results table 14 showed that the majority of entrepreneurs with no formal education and entrepreneurs with a basic level of education exhibited overconfidence bias. The results in table 14 also showed that 55.6% of entrepreneurs with no formal education exhibited overconfidence bias whilst, 33.3% of respondents with no formal education showed normal levels of confidence with just 11.1% of these respondents who exhibited under-confidence. On the other hand, 54.5% of entrepreneurs educated to basic school level exhibited overconfidence bias, with 36.4% of these respondents being confident and 9.1% exhibited under-confidence bias. 53.3% of entrepreneurs with their highest level of education being Secondary exhibited normal levels of confidence whilst 40% of these entrepreneurs exhibited overconfidence. A majority of entrepreneurs (56.1%) with their highest level of education being diploma exhibited overconfidence bias. The results also showed that 61.2% of entrepreneurs with a degree as their highest level of education exhibited normal levels of confidence. It also showed that 50% of Postgraduate entrepreneurs exhibited overconfidence bias whilst the other 50% of these entrepreneurs exhibited normal levels of confidence. The general

result showed that just a handful of entrepreneurs across the various levels of education were under-confident whilst most entrepreneurs across the various levels of education were confident. This finding is in line with the chi-square analysis results presented in table 15. The result showed that there is no statistically significant association between level of education and overconfidence bias. It was also seen that the overconfidence was particularly high among entrepreneurs with no formal education, basic school level education, diploma, and masters' degree. A part of this result agrees with previous findings (Invernizzi *et al.*, 2017; Koellinger *et al.*, 2007; Lichtenstein & Fischhoff, 1977) that hold that as educational levels increases, overconfidence reduces because these individuals are more aware of the biases and heuristics and they ensure that they avoid these biases in their dealings. Some other studies also hold that as educational level increases, the exhibition of overconfidence also increases (Bhandari & Deaves, 2006; Qasim *et al.*, 2019). The results of this research are mixed in the sense that some entrepreneurs are overconfident as their level of education increases and some entrepreneurs do not experience overconfidence bias as their level of education increase.

Table 14– Overconfidence Bias and Level of Education

		Level of education & Confidence Bias				
		Under confidence	Confidence Bias		Total	
	Confidence		Overconfidence			
Level of education	No formal education	Count	1	3	5	9
		% within Level of education	11.1%	33.3%	55.6%	100.0%
		% of Total	0.6%	1.9%	3.2%	5.8%
Basic school	Basic school	Count	1	4	6	11
		% within Level of education	9.1%	36.4%	54.5%	100.0%
		% of Total	0.6%	2.6%	3.8%	7.1%
Secondary School	Secondary School	Count	2	16	12	30
		% within Level of education	6.7%	53.3%	40.0%	100.0%
		% of Total	1.3%	10.3%	7.7%	19.2%
Diploma	Diploma	Count	1	17	23	41
		% within Level of education	2.4%	41.5%	56.1%	100.0%
		% of Total	0.6%	10.9%	14.7%	26.3%
Degree	Degree	Count	3	30	16	49
		% within Level of education	6.1%	61.2%	32.7%	100.0%
		% of Total	1.9%	19.2%	10.3%	31.4%
Postgraduate diploma	Postgraduate diploma	Count	0	3	3	6
		% within Level of education	0.0%	50.0%	50.0%	100.0%
		% of Total	0.0%	1.9%	1.9%	3.8%
MBA/MSc	MBA/MSc	Count	1	3	4	8
		% within Level of education	12.5%	37.5%	50.0%	100.0%
		% of Total	0.6%	1.9%	2.6%	5.1%
PhD	PhD	Count	0	1	1	2
		% within Level of education	0.0%	50.0%	50.0%	100.0%
		% of Total	0.0%	0.6%	0.6%	1.3%
Total		Count	9	77	70	156

% within Level of education	5.8%	49.4%	44.9%	100.0%
% of Total	5.8%	49.4%	44.9%	100.0%

Table 15 – Results of Chi-square Analysis between Level of Education

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.163 ^a	14	.820
Likelihood Ratio	9.662	14	.786
Linear-by-Linear Association	.255	1	.614
N of Valid Cases	156		

4.10 PERFORMANCE AND OVERCONFIDENCE BIAS

This part of the chapter will discuss the results from analyzing the association between firm size and overconfidence bias.

4.101 CORRELATION RESULT: OVERCONFIDENCE BIAS AND ENTREPRENEURIAL PERFORMANCE

In analyzing the relationship between overconfidence bias and entrepreneurial performance, which is measured using the size of the firm in this case, a cross-tabulation, and correlation, analysis was performed. The size of a firm is assumed as an indicator of entrepreneurial performance because a firm will increase its size (number of employees) only when it is performing better (Smith, Guthrie & Chen, 1989). The results from the cross-tabulation in table 16 showed that 48% percent of entrepreneurs who run businesses with no employees exhibited overconfidence bias, 48% of entrepreneurs who run businesses with no employees exhibited normal levels of confidence with the remaining 4% of one-man business owners being under-confident. The result also showed that

49.4% of entrepreneurs running businesses with one to five employees displayed normal levels of confidence with 44.8% of entrepreneurs in this category displaying overconfidence bias and the remaining 5.7% displayed under-confidence. A majority (62.5%) of entrepreneurs running businesses with six to 10 employees displayed normal levels of confidence with 25.5% only exhibiting overconfidence bias. Only 12.5% of entrepreneurs in this category were under-confident. This trend is similar among entrepreneurs in various classes of firm size besides the one-man business entrepreneurs. It is seen from the graph (*Figure 3*) that as the size of the firm increases, the number of entrepreneurs exhibiting normal levels of confidence is more than the number of entrepreneurs displaying overconfidence with just a handful of entrepreneurs exhibiting under-confidence. The results from the correlation analysis gave $r = -0.011$ and the p-value to be 0.896. This shows that there is a weak negative relationship between overconfidence bias and the size of a firm. If the level of overconfidence bias is high in an entrepreneur, then the size of that particular entrepreneur's firm will be small; and a small firm size is an indication of low entrepreneurial performance. It can be concluded that a majority of entrepreneurs in Ghana are normally confident, with a reasonable percentage of entrepreneurs being overconfident and just a few are under-confident. This finding does not align with Everett and Fairchild (2014), Farsi, Nouri, Ahmadi, and Toghraee (2014), and Gudmundsson and Lechner (2013). Previous studies concluded that entrepreneurs are more overconfident than other individuals (Everett & Fairchild, 2014; Farsi *et al.*, 2014; Gudmundsson & Lechner, 2013). Even though a majority of entrepreneurs involved in this study displayed normal levels of confidence; it is seen that 87% of the entrepreneurs run small-sized businesses. A small-sized business is an indicator of low performance.

4.102 REGRESSION RESULT: OVERCONFIDENCE BIAS AND ENTREPRENEURIAL PERFORMANCE

A multiple linear regression was also performed to measure the impact of overconfidence bias on entrepreneurial performance. The ANOVA result in Table 18 gave a p-value of 0.001; this means that, statistically, the independent variable (overconfident bias) significantly predicts the dependent variable, size of firm (entrepreneurial performance). The results of the regression test are displayed in table 19. The unstandardized coefficient for overconfidence bias is 1.230; this means that for every percentage increase in the overconfidence of an entrepreneur, the number of employees in the firm (entrepreneurial performance) increases 1.230 times when other independent variables in the model are held constant. In conclusion, there is a strong positive relationship between overconfidence bias and entrepreneurial performance. This result disputes the results of previous studies that hold that overconfidence bias has a negative influence on entrepreneurial performance (Busenitz and Barney, 1997; Camerer & Lovallo, 1999; Gudmundsson & Lechner, 2013). However, this relationship between the two variables is not statistically significant, similar to the findings of Mulholland (1998); the results of Mulholland's research produced a non-significant relationship between overconfidence bias and business performance. This could be due to the majority of entrepreneurs exhibiting normal levels of confidence instead of exhibiting a high level of overconfidence bias. If many entrepreneurs operating in Ghana are not exhibiting the overconfidence bias, then the bias will not have a major impact on entrepreneurial performance. Instead, there is a statistically positive significant relationship between the size of firm (entrepreneurial performance) and the age of the entrepreneur. Age has a coefficient of 1.51; this means that a year increase in the age of the entrepreneurs leads to a 151% increase in the number of employees in the firm. As the entrepreneur

grows old, the number of employees in his/her firm increases. The entrepreneurs' declining health due to old age and their willingness to pass on their business and skills could be responsible for the strong positive significant relationship between age of entrepreneur and size of firm.

Table 16 – Overconfidence Bias and Size of Firm (Performance)

			Confidence Bias			Total
			Under confidence	Confidence	Overconfidence	
Size of firm	None	Count	2	24	24	50
		% within Size of firm	4.0%	48.0%	48.0%	100.0%
		% of Total	1.3%	15.4%	15.4%	32.1%
	1-5	Count	5	43	39	87
		% within Size of firm	5.7%	49.4%	44.8%	100.0%
		% of Total	3.2%	27.6%	25.0%	55.8%
	6-10	Count	1	5	2	8
		% within Size of firm	12.5%	62.5%	25.0%	100.0%
		% of Total	0.6%	3.2%	1.3%	5.1%
	11 or more	Count	1	5	5	11
		% within Size of firm	9.1%	45.5%	45.5%	100.0%
		% of Total	0.6%	3.2%	3.2%	7.1%
Total	Count	9	77	70	156	
	% within Size of firm	5.8%	49.4%	44.9%	100.0%	
	% of Total	5.8%	49.4%	44.9%	100.0%	

Table 17 – Result of Correlation Analysis between Overconfidence Bias and Size of Firm

		Overconfidence Bias	Size of firm
Overconfidence Bias	Pearson Correlation	1	-.011
	Sig. (2-tailed)		.896
	N	156	156
Size of firm	Pearson Correlation	-.011	1
	Sig. (2-tailed)	.896	
	N	156	156

Table 18 – Result of ANOVA Test between Overconfidence Bias and Size of Firm

		ANOVA				
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	727.770	3	242.590	5.501	.001 ^b
	Residual	6702.896	152	44.098		
	Total	7430.667	155			

a. Dependent Variable: Firm Size

b. Predictors: (Constant), Overconfidence Bias, Gender, Age

Table 19 - Result of Multiple linear regression on Size of Firm and Overconfidence Bias

Model		Coefficients					95.0% Confidence Interval for B	
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Lower Bound	Upper Bound
		B	Std. Error	Beta				
1	(Constant)	-1.128	1.367		-.825	.411	-3.828	1.573
	Gender	2.390	1.080	.173	2.214	.028	.257	4.523
	Age	1.515	.501	.238	3.023	.003	.525	2.506
	Overconfidence Bias	1.230	2.754	.035	.447	.656	-4.210	6.670

a. Dependent Variable: Firm Size

4.11 PERFORMANCE AND HERDING BIAS

This part of the research discusses the results generated from analyzing the association between firm sizes and herding bias.

4.111 CORRELATION RESULT: HERDING BIAS AND ENTREPRENEURIAL PERFORMANCE

In analyzing the relationship between the size of the firm and herding bias, a cross-tabulation analysis and a correlation analysis was performed. The result of the cross-tabulation in table 20 gave some insights into the performance of an entrepreneurial business and the herding bias of an entrepreneur. To begin with, 66% of entrepreneurs running one-man businesses did not exhibit herding bias whilst 34% of these entrepreneurs exhibited herding bias. Additionally, 51.7% of entrepreneurs running small-sized businesses with one to 5 employees did not exhibit herding bias whilst 48.3% of these entrepreneurs exhibited herding bias. The results also showed that 50% of entrepreneurs running middle-sized businesses with employees from six to ten did not exhibit herding bias. Furthermore, 81.8 % of entrepreneurs running large-sized firms with more than 11

employees did not exhibit herding bias whilst 18.2% of these entrepreneurs exhibited herding bias. The correlation analysis gave a result of $r = 0$ and a $p\text{-value} = 0.893$. This result shows that there is no relationship between the herding bias of an entrepreneur and the size of the firm run by that particular entrepreneur. In total, 58.3% of entrepreneurs across the various firm sizes did not exhibit herding bias whilst 41.7% of all the entrepreneurs exhibited herding bias. This insight aligns with Cunningham and Anderson (2018) and Baddeley (2013). Cunningham and Anderson (2018) found that entrepreneurs do not follow trends and they are always on the lookout for innovations that make them unique.

4.112 REGRESSION RESULT: HERDING BIAS AND ENTREPRENEURIAL PERFORMANCE

A multiple linear regression was performed to measure the impact of herding bias on entrepreneurial performance. The ANOVA results displayed in table 22 contain a $p\text{-value}$ of 0.001. This means that, statistically, the independent variables significantly predict the dependent variable. The figures in table 23 are the results of the multiple linear regression performed for this section. The unstandardized coefficient of herding bias is -3.197. This means that a percentage increase in herding bias will lead to a 319.7% decrease in the number of employees, which is an indicator of the size of firm of an entrepreneur (entrepreneurial performance). However, this $p\text{-value}$ of herding bias is 0.154. This shows that this strong negative relationship between herding bias and size of firm is not statistically significant. This means that this relationship between herding bias and the size of the firm is not important. Similar to the results of the correlation analysis in table 21, the results of this analysis stated that there was an insignificant weak negative relationship between herding bias and size of firm.

Table 20 – Size of Firm and Herding Bias

		Size of firm & Herding Bias			
		Herding Bias		Total	
Size of firm	None	Count	Herding Bias		No Herding Bias
			17	33	50
		% within Size of firm	34.0%	66.0%	100.0%
		% of Total	10.9%	21.2%	32.1%
	1-5	Count	42	45	87
		% within Size of firm	48.3%	51.7%	100.0%
		% of Total	26.9%	28.8%	55.8%
	6-10	Count	4	4	8
		% within Size of firm	50.0%	50.0%	100.0%
		% of Total	2.6%	2.6%	5.1%
	11 or more	Count	2	9	11
		% within Size of firm	18.2%	81.8%	100.0%
		% of Total	1.3%	5.8%	7.1%
Total		Count	65	91	156
		% within Size of firm	41.7%	58.3%	100.0%
		% of Total	41.7%	58.3%	100.0%

Table 21 – Result of Correlation Analysis between Size of Firm and Herding Bias

		Correlations	
		Size of firm	Herding Bias
Size of firm	Pearson Correlation	1	-.109
	Sig. (2-tailed)		.177
	N	156	156
Herding Bias	Pearson Correlation	-.109	1
	Sig. (2-tailed)	.177	
	N	156	156

Table 22 - Result of ANOVA Test between Herding Bias and Size of Firm

		ANOVA				
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	808.590	3	269.530	6.187	.001 ^b
	Residual	6622.077	152	43.566		
	Total	7430.667	155			

a. Dependent Variable: Firm Size

b. Predictors: (Constant), Herding B, Age, Gender

Table 23 – Result of Multiple Regression Analysis between Size of Firm and Herding Bias

		Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.492	1.602		.307	.759	-2.672	3.657
	Gender	2.481	1.069	.180	2.320	.022	.368	4.594
	Age	1.500	.493	.235	3.042	.003	.526	2.473
	Herding B	-3.197	2.229	-.111	-1.434	.154	-7.600	1.207

a. Dependent Variable: Firm Size

4.12 AGE OF FIRM AND HERDING BIAS

In analyzing the relation between the ages of a firm and herding bias, a cross-tabulation was done.

The results from that analysis in table 24 showed that a majority (53.2%) of entrepreneurs of low survival firms (firms between 1 to 3 years) did not exhibit herding bias with 46.8% exhibited herding bias. A similar trend was observed across the various categories of firms. A majority of entrepreneurs running low survival firms, medium survival firms, and high survival firms did not

exhibit herding bias. This insight agrees with the findings of previous studies that held that entrepreneurs are less exposed to herding bias (Cunningham & Anderson, 2018).

Table 24 – Age of Firm and Herding Bias

			Herding Bias		Total
			Herding Bias	No Herding Bias	
Age of firm	1-3 years	Count	37	42	79
		% within Age of firm	46.8%	53.2%	100.0%
		% of Total	23.7%	26.9%	50.6%
	4-7 years	Count	21	36	57
		% within Age of firm	36.8%	63.2%	100.0%
		% of Total	13.5%	23.1%	36.5%
	8-10 years	Count	3	7	10
		% within Age of firm	30.0%	70.0%	100.0%
		% of Total	1.9%	4.5%	6.4%
	11 years and more	Count	4	6	10
		% within Age of firm	40.0%	60.0%	100.0%
		% of Total	2.6%	3.8%	6.4%
Total	Count	65	91	156	
	% within Age of firm	41.7%	58.3%	100.0%	
	% of Total	41.7%	58.3%	100.0%	

Table 25 below shows the results of a chi-square test performed on the age of a firm and the herding bias experienced by entrepreneurs. The p-value is 0.575; this shows that there is no statistically significant association between the age of firm and the herding bias. This goes on further to

confirm the results of previous studies that hold that entrepreneurs do not usually experience herding bias; therefore, it has no impact on entrepreneurial performance.

Table 25 - Result of Chi-square Test between Age of Firm and Herding Bias

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.986 ^a	3	.575
Likelihood Ratio	2.006	3	.571
Linear-by-Linear Association	1.122	1	.290
N of Valid Cases	156		

a. 2 cells (20%) have expected count less than 5. The minimum expected count is 4.17.

4.13 AGE OF FIRM AND OVERCONFIDENCE BIAS

After conducting a cross-tabulation analysis in table 26, it is shown that 50% of entrepreneurs with firms between the age of 8 years and 10 years are overconfident. This is the only group that had more overconfident entrepreneurs. Other categories have more confident entrepreneurs as compared to overconfident entrepreneurs. Across all categories, just a handful of entrepreneurs were under-confident.

Table 26 – Age of Firm and Overconfidence Bias

			Confidence Bias			Total
			Under confidence	Confidence	Overconfidence	
Age of firm	1-3 years	Count	3	39	37	79
		% within Age of firm	3.8%	49.4%	46.8%	100.0%
		% of Total	1.9%	25.0%	23.7%	50.6%
	4-7 years	Count	5	26	26	57
		% within Age of firm	8.8%	45.6%	45.6%	100.0%
		% of Total	3.2%	16.7%	16.7%	36.5%
	8-10 years	Count	1	4	5	10
		% within Age of firm	10.0%	40.0%	50.0%	100.0%
		% of Total	0.6%	2.6%	3.2%	6.4%
	11 years and more	Count	0	8	2	10
		% within Age of firm	0.0%	80.0%	20.0%	100.0%
		% of Total	0.0%	5.1%	1.3%	6.4%
Total	Count	9	77	70	156	
	% within Age of firm	5.8%	49.4%	44.9%	100.0%	
	% of Total	5.8%	49.4%	44.9%	100.0%	

Table 27

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	65.466	75	.776
Deviance	64.535	75	.800

The p-value of 0.776 shows that the data fit the model well since it is greater than 0.05; the result is not statistically significant, and it shows that the model fits the data well.

Table 28 - Data Findings and Research Questions

Research Questions	Data Findings
What are the levels of overconfidence bias and herding bias among entrepreneurs in Ghana?	<p>The average level of overconfidence bias among entrepreneurs operating in Ghana is 22%. Results showed that 49.4% of entrepreneurs were confident, 44.9% were overconfident and only 5.8% of entrepreneurs were under-confident.</p> <p>The average level of herding bias among entrepreneurs operating in Ghana is 42.56%.</p> <p>The results of the analysis revealed that 41.7% of entrepreneurs did exhibit herding bias whilst 58.3% of entrepreneurs did not exhibit herding bias.</p>
What is the relationship between overconfidence bias and the performance of entrepreneurs (startups) in Ghana?	<p>There is a strong positive relationship between overconfidence bias and entrepreneurial performance of entrepreneurs in Ghana. As the overconfidence of an entrepreneur increases, the performance of his/her firm increases. However, this relationship is not statistically significant.</p>
What is the relationship between herding bias and the performance of entrepreneurs in Ghana?	<p>There is a strong non-significant negative relationship between herding bias and entrepreneurial performance of entrepreneurs in Ghana.</p>

<p>How does overconfidence bias and herding bias affect the performance of entrepreneurs in Ghana?</p>	<p>A percentage increase in overconfidence bias leads to a 123% increase in entrepreneurial performance.</p> <p>A percentage increase in herding bias leads to a 319.7% decrease in entrepreneurial performance.</p>
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CHAPTER 5: RECOMMENDATIONS AND CONCLUSION

5.1 OVERVIEW

Based on the results from the data analysis done in the previous chapter, this chapter presents recommendations that entrepreneurs can consider to increase entrepreneurial performance and reduce their chances of experiencing biases and heuristics that will negatively affect their businesses. This chapter also covers the conclusion to this research.

5.2 RECOMMENDATIONS FOR ENTREPRENEURS

Entrepreneurs form a vital part of the global economy, they provide employment; contribute to national GDPs in various countries and entrepreneurs spearhead innovations and development. Therefore, the contributions and importance of entrepreneurs cannot be undermined. It will be beneficial to the global economy if entrepreneurial performance increases. In order to improve entrepreneurial performance, entrepreneurs are advised:

- a) To be more conscious of their psychological selves and make conscious efforts to prevent themselves from experiencing biases and heuristics which negatively affect entrepreneurial performance.
- b) Entrepreneurs should also seek professional assistance in decision-making to improve entrepreneurial performance.
- c) To have some form of education, preferably formal education if it is within their means to reduce their chances of experiencing herding bias

5.3 RECOMMENDATIONS FOR FUTURE RESEARCH

Future research on cognitive biases and entrepreneurial performance in Ghana should consider:

- a) Researching on how to improve the survival of entrepreneurial firms in Ghana.

- b) Researching on measuring the entrepreneurial performance of informal firms in Ghana.
- c) Researching on other factors that result in the low performance of firms in Ghana
- d) Researching on other biases and heuristics that affect entrepreneurial performance in Ghana.
- e) Researching on situations where overconfidence bias is beneficial to entrepreneurs

5.4 CONCLUSION

This study was conducted to identify and measure the individual relationships between herding bias, overconfidence bias, and entrepreneurial performance. Previous studies held that entrepreneurs are more prone to exhibiting overconfidence bias in making entrepreneurial decisions. On the other hand, entrepreneurs are less likely to exhibit herding bias because entrepreneurs are unique and make decisions based on their experience and instincts without copying the actions of others. Previous studies conducted on the relationship between overconfidence bias and entrepreneurial performance revealed that overconfidence bias has a negative relationship with entrepreneurial performance. Some studies also held that herding bias did not have any significant relationship with entrepreneurial performance.

Contrary to expected results and previous studies undertaken in this area, this study came up with results that stated that overconfidence bias and herding bias are not prominent among entrepreneurs in Ghana. In addition, these biases do not significantly affect entrepreneurial performance in Ghana. This means that there are other non-economic and non-financial factors besides overconfidence bias and herding bias that affects entrepreneurial performance in Ghana.

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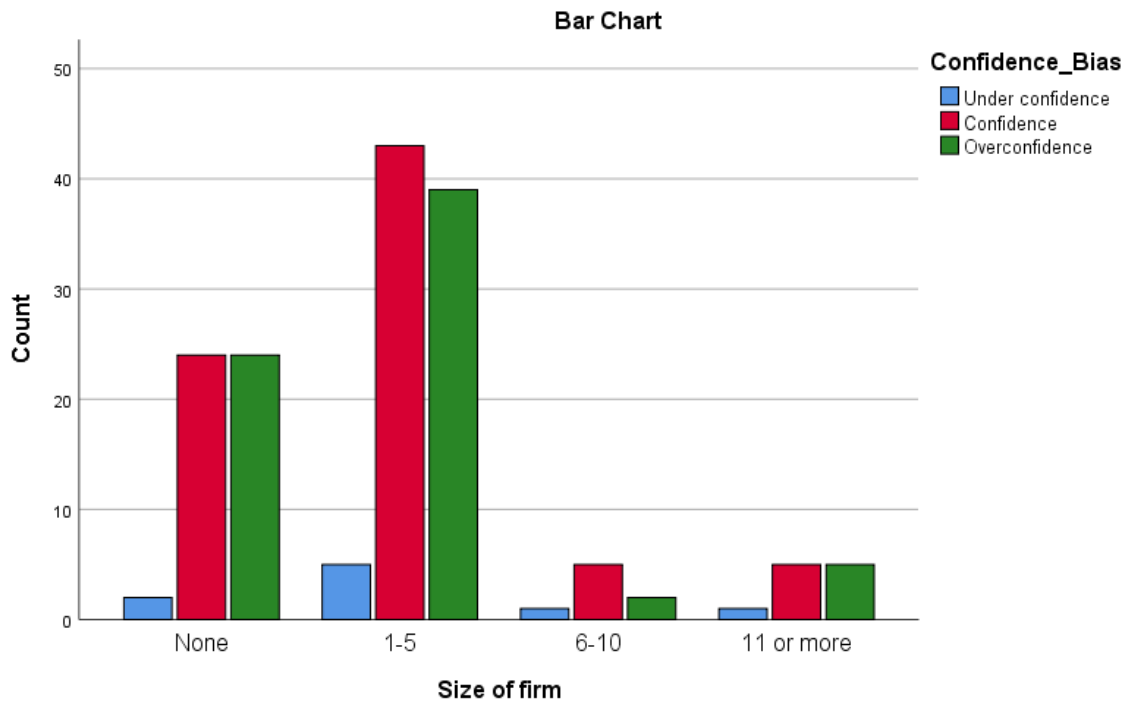
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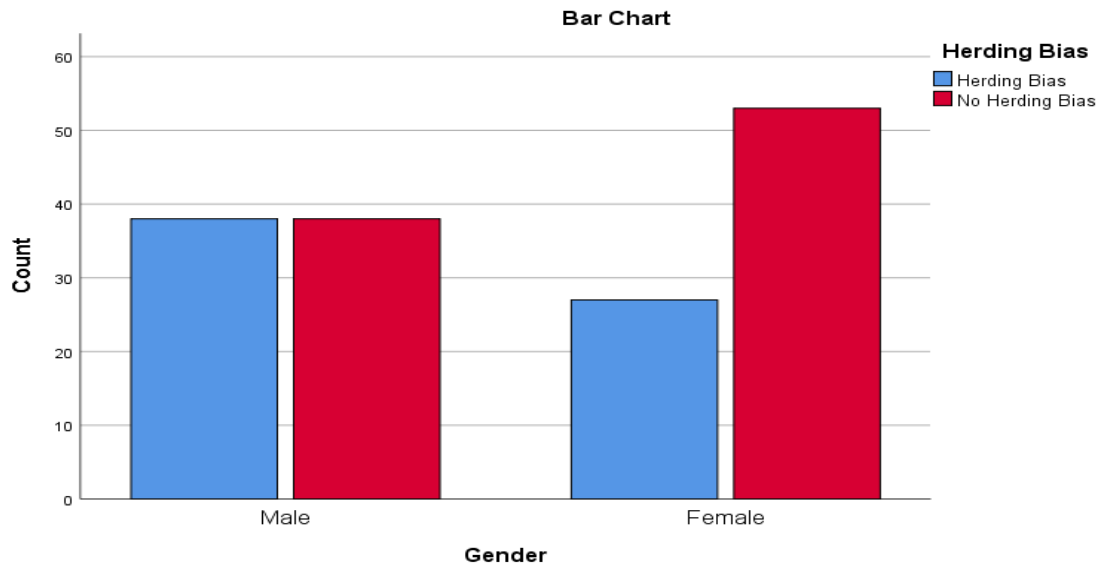
APPENDICES

Figure 3



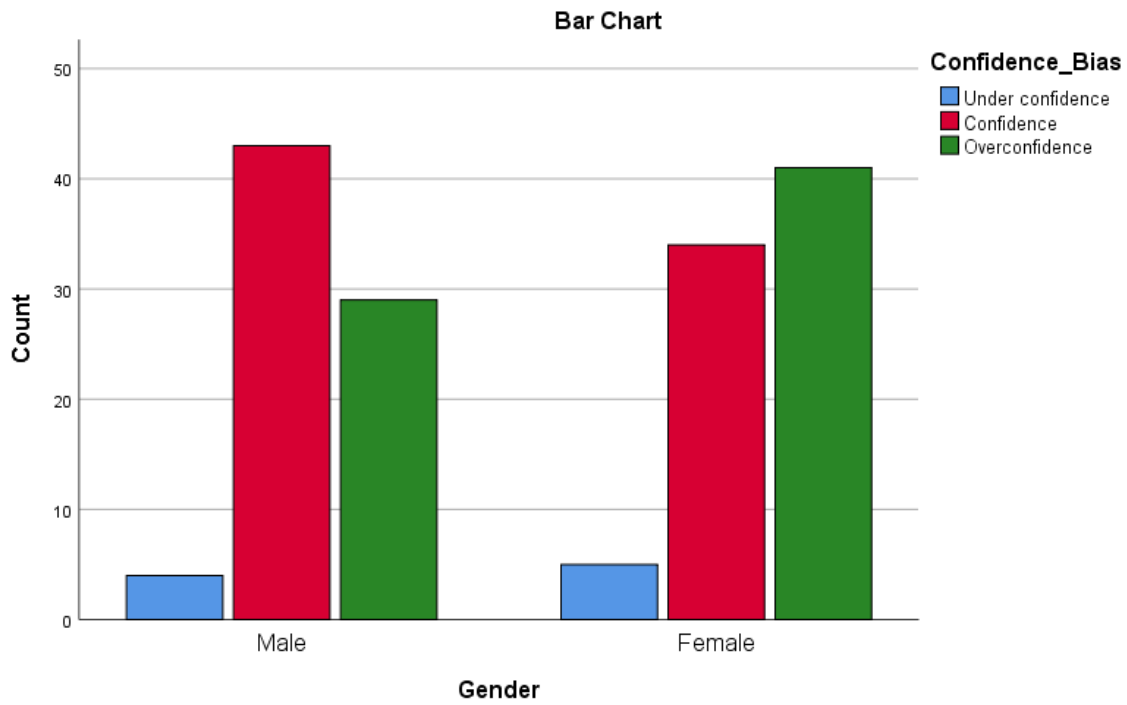
APPEND 1: GENDER & HERDING BIAS

Figure 4



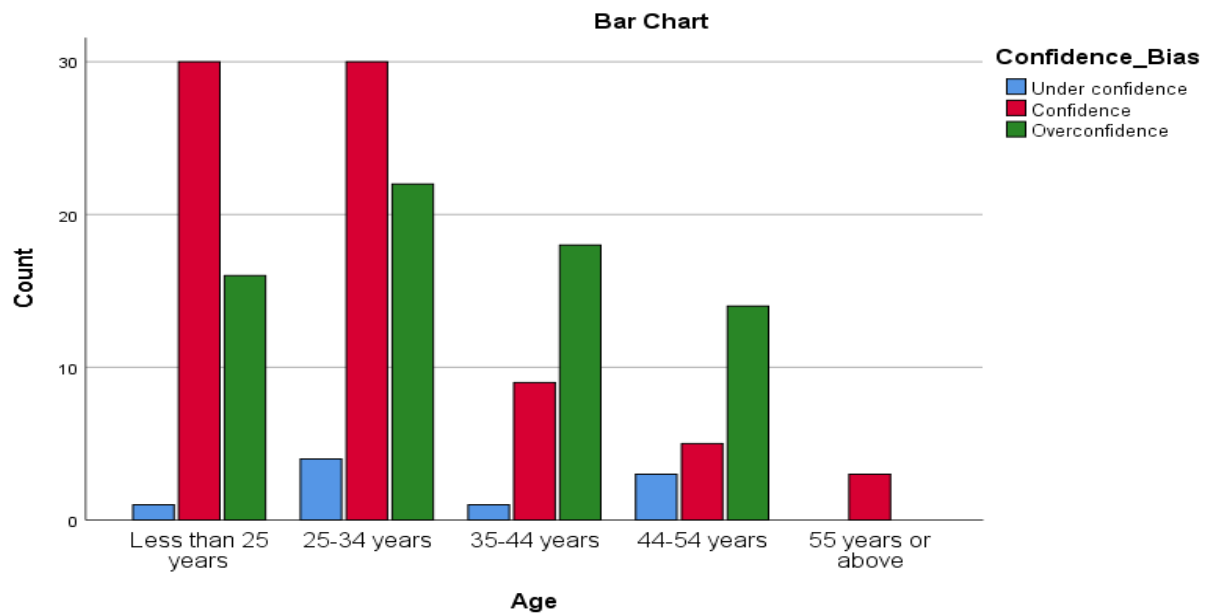
APPEND 2: GENDER AND OVERCONFIDENCE BIAS

Figure 5



APPEND 3: OVERCONFIDENCE BIAS & AGE

Figure 6



APPEND 4: OVERCONFIDENCE BIAS AND LEVEL OF EDUCATION

Figure 7

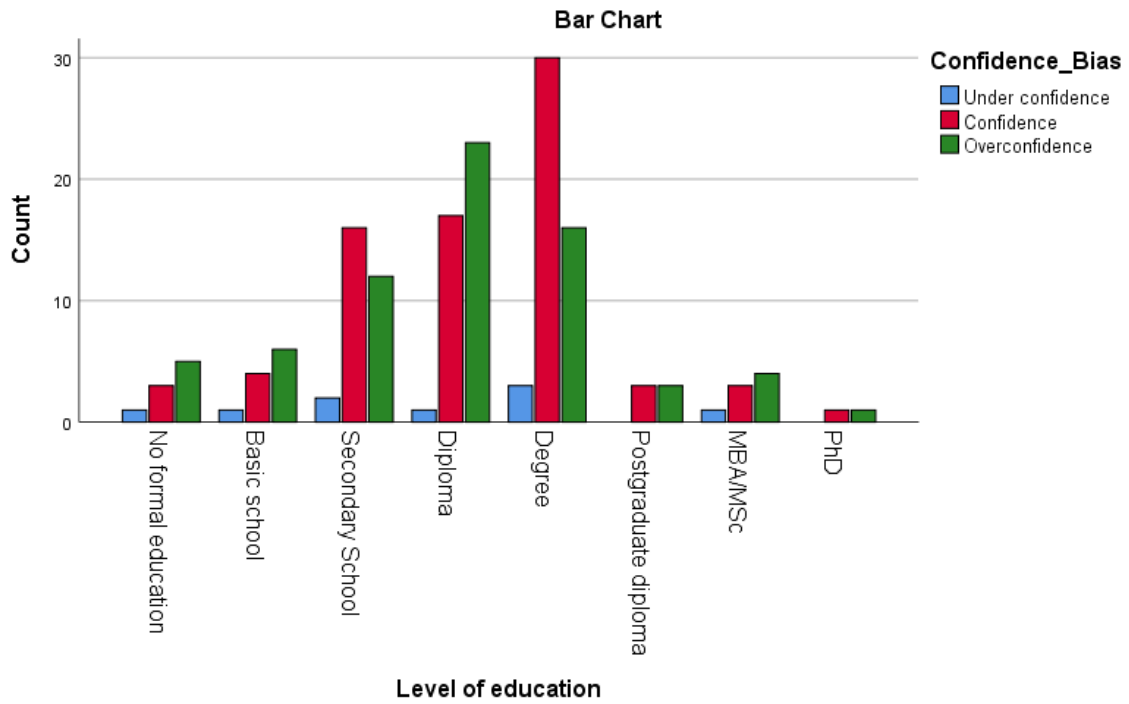
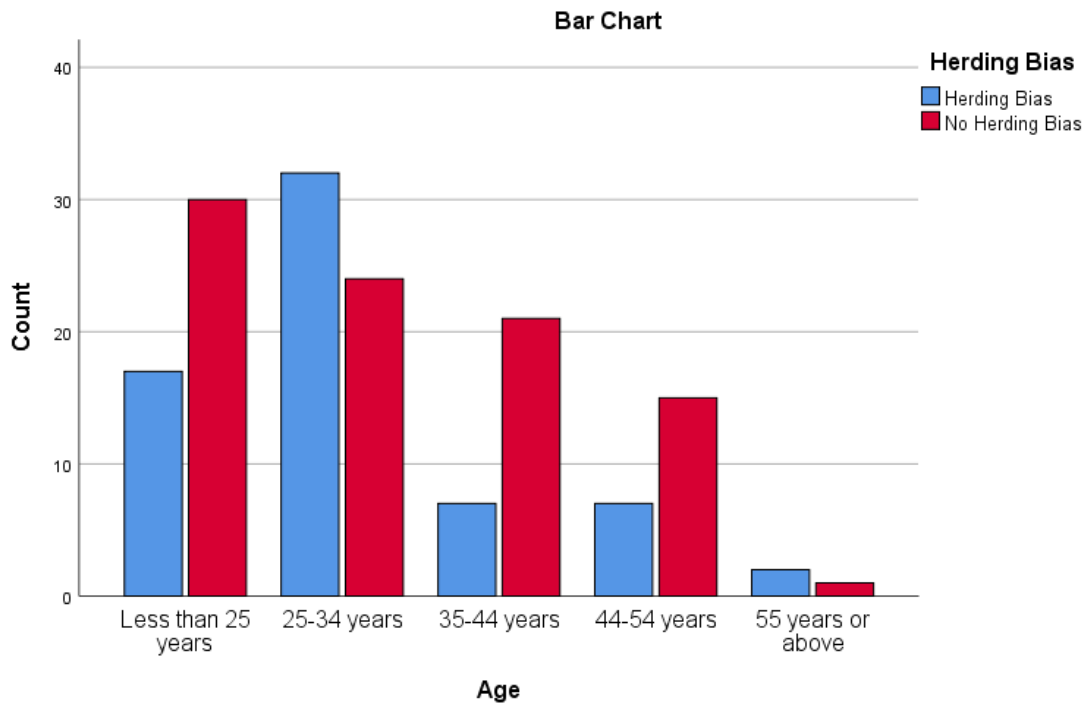
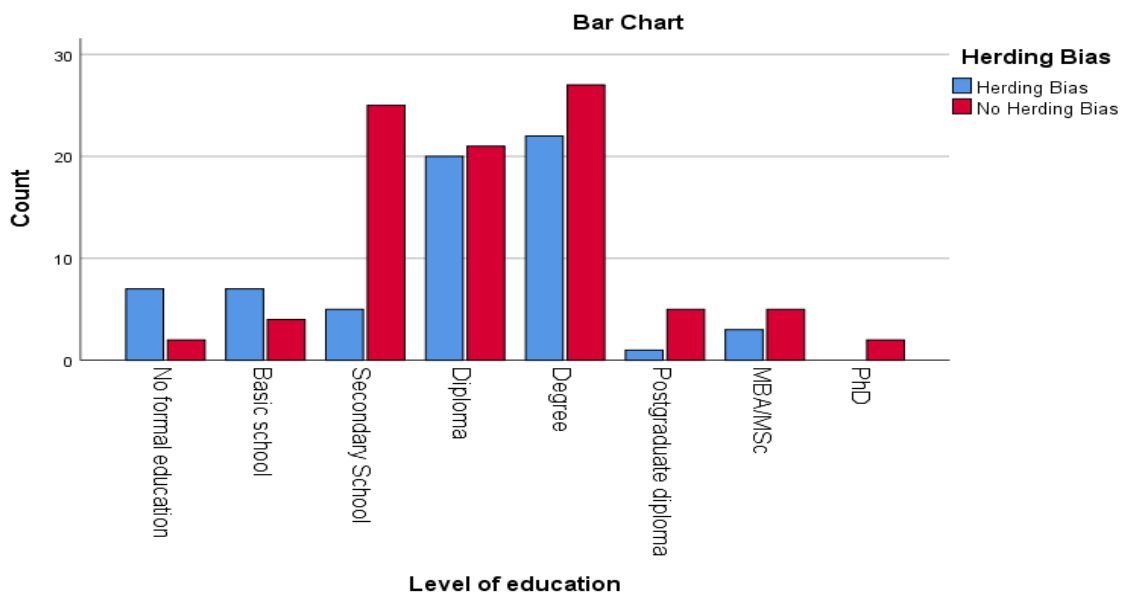


Figure 8

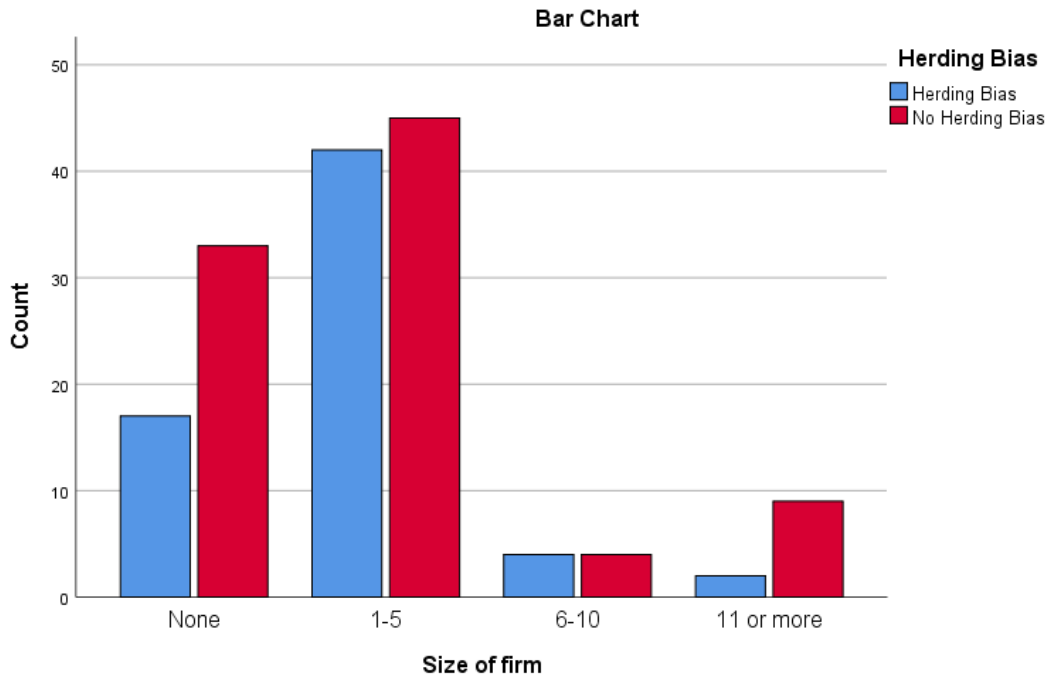


APPEND 6: HERDING BIAS AND LEVEL OF EDUCATION

Figure 9

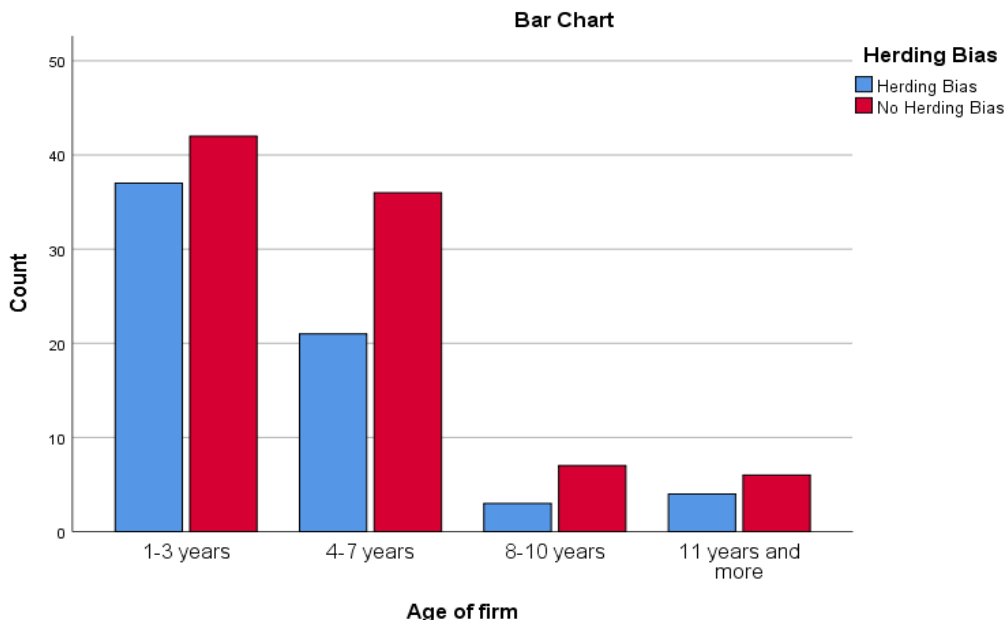


APPEND 7: HERDING BIAS AND SIZE OF FIRM



APPEND 8: HERDING BIAS AND AGE OF FIRM

Figure 10



APPEND 9: OVERCONFIDENCE BIAS AND AGE OF FIRM

Figure 11

