



Technological opportunism and firm performance: moderating and mediating contexts of strategic entrepreneurship

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ABSTRACT

The underlying problem of the empirical study is with the perceived influential relationship between technological opportunism and firm performance in a context of the banking institution in South Africa. The study combines the resource based view theory and dynamic capabilities perspective to investigate the mediating and moderating roles of strategic entrepreneurship in the influence of technological opportunism on firm performance.

Quantitative data for the research was collected from the employees of the banking institution through an online research survey. The researcher adopted multiple regression models to study the data of 347 respondents. The study demonstrates that the banking institution is perceived to hold a positive relationship between technological opportunism and firm performance through mediating and moderating effects of strategic entrepreneurship. However, the higher levels of strategic entrepreneurship weaken the relationship between technological opportunism and firm performance. Firm performance was measured based on a collective indicators of new product success rates, return on investment (RoI), revenue growth rates, market share and profitability.

Overall, the research provides fresh theoretical and practical insights. Firstly, the study is fundamental to academic research advancement and refinement of existing theories in technology, strategic management and entrepreneurship in a context of an emerging economy. Secondly, the development of technology sensing and responding resources and capabilities to leverage technological opportunities has to be viewed as a strategic enabler to organizational business performance, competitive advantage and this bodes well for the objectives of national economic developments. Thirdly, the study of an interdependence of strategic management and entrepreneurial orientation to technological opportunism is imperative to understanding how could these innovative practices be leveraged within an existing organizational ecosystem.

DECLARATION

I, Mandlenkosi Wesley Maphumulo, declare that this research report is my own work except as indicated in the references and acknowledgement. It is submitted in partial fulfilment of the requirement for the degree of Master of Management in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Mandlenkosi Wesley Maphumulo

Signed at _____

On the _____ day of _____ 2017

DEDICATION

To my late daughter, Eli Maphumulo, I could not have acquired the strength, motivation and inexorable perseverance to take on this challenging but enriching educational experience. Thank you for the blessing of your life although it was only 11 years.

To my late father, Elisha Maphumulo, our lives continue to shine through your inherent guardianship, care and blessings. I am truly jealous of the after-life you are enjoying with my daughter.

I love you both and may your souls rest in peace

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CHAPTER 1 – INTRODUCTION

The chapter begins by discussing the purpose of the study and contextual background to the research. This is followed by a problem statement description which informs the research study, the knowledge gap and the significance of the study is then articulated, among other things, the research limitations. The assumptions, definitions of terms used in the study and an overall structure of the empirical research are outlined at the end of the chapter.

1.1 PURPOSE OF THE STUDY

The objective of the study is to extend the existing theoretical knowledge and literature by examining the influences of strategic entrepreneurship practices on technological opportunism and firm performance. Strategic entrepreneurship is defined as an organizational pursuit of strong performance through the practices of competitive advantage-seeking (strategic management practices) and entrepreneurial opportunity-seeking (corporate entrepreneurial orientation) in an existing organization (Ketchen, Ireland, and Snow, 2007). Strategic entrepreneurship has emerged as the new concept to represent strategic management and entrepreneurship (Kuratko and Audretsch, 2009). Strategic entrepreneurship enables senior management and the boards of directors in organizations to exploit their competitive advantage while identifying and exploring opportunities which present innovations for future revenue generation and sustainability (Urban and Venter, 2015).

The study extends on previous research conducted on an effect of technological opportunism on firm performance (Srinivasan, Lilien, and Rangaswamy, 2002; Sarkees, 2011; Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012 and Chen and Lien, 2013) by introducing mediating and moderating effects of strategic entrepreneurship on

this relationship. Technological opportunism is an organizational capability to sense and respond to technological developments in pursuit of creating a competitive advantage (Srinivasan, Lilien, and Rangaswamy, 2002). Technological-sensing and technological-responding capabilities are two underlying dimensions of technological opportunism (Srinivasan, Lilien, and Rangaswamy, 2002; Sarkees, 2011; Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012 and Chen and Lien, 2013). Further, technological opportunism is deeply rooted in the dynamic capabilities theory which emerged after various studies of the resource based view theory as an extra competitive advantage for organizations (Srinivasan, Lilien, & Rangaswamy, 2002). Different researchers (Teece, Pisano, and Shuen (1997) and El Gizawi (2014)) had criticized the adoption and usefulness of the resource based view theory as a solitary source of competitive advantage to the emergence to prominence of dynamic capabilities theory. The researchers argued that the resource based view approach in isolation is not adequate to sustain a competitive advantage and dynamic capabilities were essential for organizations to identify, understand and acquire new set of competencies that must drive the right level of adaptation and agility to changing business and competitive environments (El Gizawi (2014); Teece, Pisano, and Shuen (1997)).

The capability and function of technological opportunism (i.e. sensing and responding capabilities to technological developments) enable organizations to incorporate new or emerging technologies into existing or new products or new markets while providing an advantage to make proactive and informed strategic decisions in the marketplace over the competitors (Srinivasan, Lilien, and Rangaswamy, 2002; Sarkees, 2011; Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012 and Chen and Lien, 2013). These business practises increase the likelihood of achieving a solid and sustainable corporate business performance ((Srinivasan, Lilien, and Rangaswamy, 2002; Sarkees, 2011; Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012 and Chen and Lien, 2013). In the face of rigid technological turbulence, higher levels of technological opportunism

provides organizations with an edge and ability to manage unexpected technological changes relatively easier than the competition and further intensifies their operational and strategic positionings (Srinivasan, Lilien, and Rangaswamy, 2002; Sarkees, 2011; Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012 and Chen and Lien, 2013). With the evolution of technologies, technological opportunism must enable firms to effectively identify and recombine resources to manage technological developments through inimitable strategic management and organizational practices (Srinivasan, Lilien, and Rangaswamy, 2002; Sarkees, 2011; Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012 and Chen and Lien, 2013). Technologically opportunistic organizations seek to obtain strategic positioning advantages over the competition in exploiting opportunities inherently derived from changing technological landscape supported by the development of in-house applications based on adopted technologies (Srinivasan, Lilien, and Rangaswamy, 2002; Sarkees, 2011; Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012 and Chen and Lien, 2013).

The organizational dynamic capability to manage technological developments in order to seek and maintain a competitive advantage appears to relate to the strategic planning flexibility capability of the firm. From an entrepreneurship standpoint, this implies potential existence of corporate entrepreneurial orientation on the empirically tested association of technological opportunism and firm performance. However, previous research studies have primarily covered the association of technological opportunism and firm performance with no consideration of the moderating and mediating effects of strategic management and entrepreneurship (Srinivasan, Lilien, and Rangaswamy, 2002; Sarkees, 2011; Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012 and Chen and Lien, 2013). These are potentially missed opportunities to investigate deeply into the nature of the cause and effect variables (Baron & Kenny, 1986). For various decades, hypothesized relationships which involved moderation and mediation effects have been vital to the advancement of the strategic management research (Aguinis, Edwards, & Bradley, 2016). Aguinis et al (2016) explained that

moderator variables tend to influence the conditions of the main relationship between independent variable and dependent variable in the context of its magnitude or direction. On the other hand, mediation variables transmit the effect of the independent variable on the outcome variable (Baron & Kenny, 1986). An attempt to further understand whether strategic entrepreneurship mediates or moderates the effect of technological opportunism on firm performance will advance both strategic management and entrepreneurship fields of research. As such, this study aims to expand an existing theoretical knowledge by investigating the moderating and mediating effects of entrepreneurial orientation and planning flexibility (merged as “strategic entrepreneurship” construct) on the relationship of technological opportunism and firm performance in the context of a South African banking institution. The following relationships were investigated as part of the study:

- The degree to which firm performance is explained by technological opportunism;
- The mediation influence of strategic entrepreneurship (i.e. entrepreneurial orientation and planning flexibility) on technological opportunism and firm performance; and
- The moderation influence of strategic entrepreneurship (i.e. entrepreneurial orientation and planning flexibility) on technological opportunism and firm performance.

1.2 CONTEXT OF THE STUDY

PwC reported that the rise and interconnectivity of the emerging markets of South America, Asia, Africa and the Middle East (termed ‘SAAAME’ by PwC) is creating and presenting various set of opportunities that surpass conventional logic of risk and reward and potentially demand a rethink of organizational structures and business models (Dawson, 2013). According to Vanguard Research Report (Lemco, 2016), since early 2000s, the BRICS countries have experienced significant growth in their economies relative to the developed countries. The five BRICS countries’ economies

contributed 9% of global gross domestic product (GDP) in 2001 and this percentage had significantly increased to 25% of global GDP in 2016 (Lemco, 2016). From a demographics point of view, the BRICS countries accounted for 41% of the world's population in 2016 (Lemco, 2016).

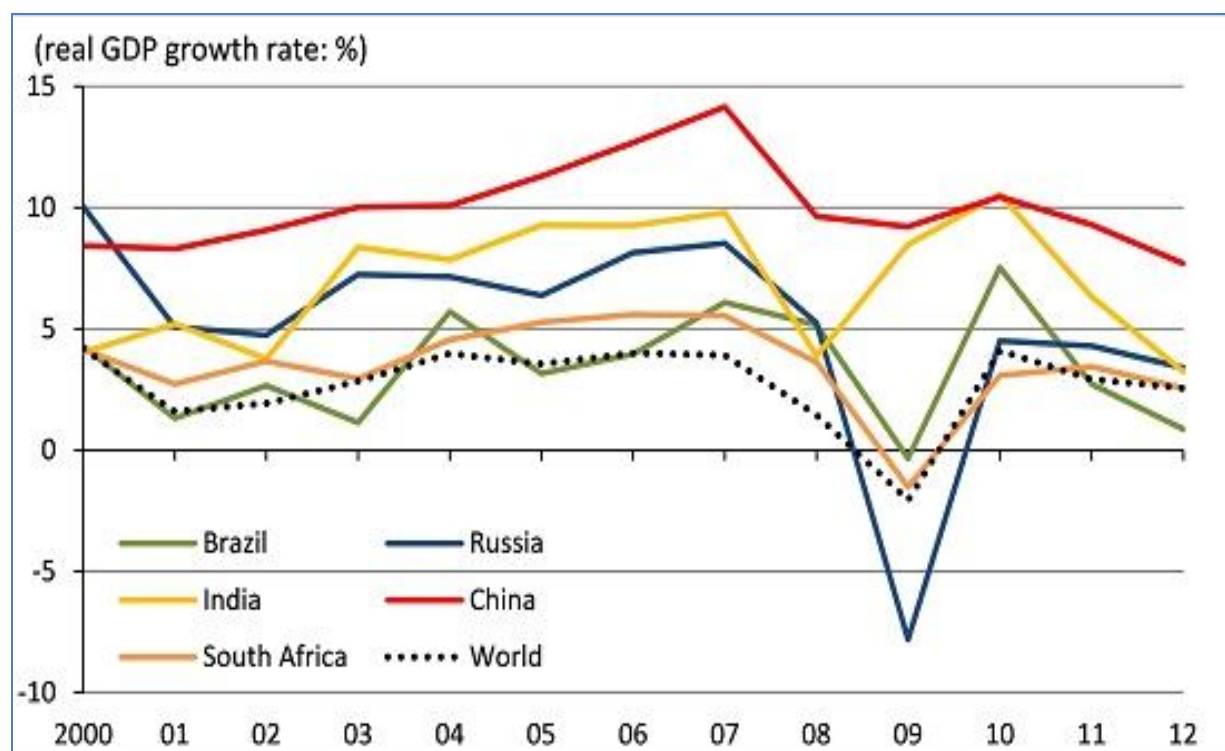


Figure 1: Real GDP Annual Growth Rate
Electronic Source: (Egawa, 2014)

Notwithstanding the observed historical GDP and demographics growth rates, the structural transformation of China, which has been the main driver of BRICS, has added to the current woes of BRICS (Esposito, 2017). Among these emerging economies, India remains the only country which has shown signs of strong potential for growth (Esposito, 2017). The slowdown in the economic growth of the BRICS countries not only requires closer attention to underlying causes, but requires closer attention as to what corporate entrepreneurial factors; country and industrial sector specific factors had

stimulated the growth and what has changed? Slower economic growth in BRICS deepens an existing challenge of reducing unemployment, inequality and poverty across the emerging countries. The real GDP growth rates across BRICS countries are shown in **Figure 1**.

According to the World Economic Forum (WEF), there has been a significant fundamental shift as to how human beings produce, consume and relate to one another and this is mainly driven by the convergence of the physical world, the digital world and human beings (Mölders, 2016). This has significant implications for service delivery by both the private and public sector in developing and emerging countries and offers tremendous opportunities to advance economic development goals by providing access to financial, energy, healthcare and education services (Mölders, 2016). In line with the global and emerging technological developments, the study is aimed at investigating organizational technological capabilities (including organizational level of technology adoption) and its association to firm performance; and how this relationship is mediated and / or moderated by strategic entrepreneurship (i.e. entrepreneurial orientation and planning flexibility) within the context of a South African banking institution that is faced with internally and externally driven strengths, weaknesses, opportunities and threats posed by the emerging economies.

1.3 PROBLEM STATEMENT

During the proceedings of the 2017 World Economic Forum meetings in Davos, commentators have observed that the world is evolving into a Fourth Industrial Revolution which involves developments in cloud computing, genetics, artificial intelligence, robotics, the internet of things, nanotechnology, 3D printing and biotechnology, etc. (Schwab, 2017). Commentators are of the view that this world revolution will not only involve a significant change and disruption in what and how we are living our lives and doing business, but it will fundamentally challenge who we are

(Schwab, 2017). More specifically, various industries are facing explosive developments in these new technologies, but organizations are adopting technologies at a rather slower pace than expected (Srinivasan, Lilien, and Rangaswamy, 2002; Sarkees, 2011; Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012 and Chen and Lien, 2013).

The lack of dynamic organizations with an ability to strategically manage human, social and financial capital has led to an increased difference between the rate of newly developed technologies and how these are adopted (Srinivasan, Lilien, and Rangaswamy, 2002; Sarkees, 2011; Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012 and Chen and Lien, 2013). The previous researchers advocated for technological opportunism to account for the identified differences in the implementation of emerging technologies among firms. Technological opportunistic firms are in ideal positions to explore and exploit potential opportunities or avoid threats presented by the emerging technologies (Srinivasan, Lilien, and Rangaswamy, 2002; Sarkees, 2011; Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012 and Chen and Lien, 2013).

Technology sensing and responding dynamic capabilities should place organizations in relatively better competitive positions to identify new business, customer segments and markets presented by the exploration and exploitation of the emerging technologies. Further, organizations are more likely to leverage off emerging technologies through innovation and launching of new products and services in line with the latent and expressed customer needs which should enhance customer experience, increase customer lifetime values and financial profitability. Logical reasoning and literature suggests a positive association of technological opportunistic organizations and their underlying financial performance. Further, the association tends to suggest an implied existence of strategic entrepreneurship within an organization and it is proposed for further investigation in this study.

This research problem was formulated for empirical validation:

To what extent does strategic entrepreneurship (i.e. entrepreneurial orientation and planning flexibility) mediate or moderate the relationship between technological opportunism and firm performance within the context of a South African banking institution?

1.4 SIGNIFICANCE OF THE STUDY

Firm performance and technological opportunism studies are not entirely new albeit limited; various studies have examined the influence of technological capabilities on corporate performance (Srinivasan, Lilien, and Rangaswamy, 2002; Sarkees, 2011; Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012 and Chen and Lien, 2013). According to the student researcher, there are no studies on the mediating and moderating influence of strategic entrepreneurship on technological opportunism and firm performance. Various researchers have re-affirmed that strategic entrepreneurship is an emerging area of research interest, but there is no research that sufficiently and empirically addresses the implied existence of strategic entrepreneurship on the link of technological opportunism and firm performance. The few research papers available are linked with the opportunistic exploration processes embedded within technological opportunism through understanding and acquiring knowledge about technological developments which seems to indicate that technological opportunism has an implied relationship with entrepreneurial orientation (Srinivasan, Lilien, and Rangaswamy, 2002; Sarkees, 2011; Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012 and Chen and Lien, 2013).

The organizational dynamic capability to manage technological developments in order to seek and maintain a competitive advantage appears to relate to the planning flexibility capability of the organization. Collectively, this implies a potential existence of entrepreneurial orientation and planning flexibility on the empirically tested association of technological opportunism and firm performance. However, empirical research

studies have previously covered the association of technological opportunism and firm performance without taking into account the moderating and mediating effects of strategic entrepreneurship (Srinivasan, Lilien, and Rangaswamy, 2002; Sarkees, 2011; Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012 and Chen and Lien, 2013). From a practical viewpoint, understanding and acquiring the entrepreneurial knowledge of technological developments and adoption of such technology as part of the South African financial services business model innovation have become a strategic imperative as this is considered a new driver of competitive advantage (Casperini, 2015). The competitiveness of the banking institutions is fundamental to national efforts of growing the economy of South Africa while improving enterprise development.

This study intends to fill the gap in the academic literature and business practice through an effort in understanding whether there is an implied moderation and mediation effects of strategic entrepreneurship on the relationship between technological sensing and responding capabilities and firm performance. Broadly, the academic and practical contributions expected to be gained from the study are:

- The research has important considerations as it should assist in further recognizing the emphasis on entrepreneurial activities within an emerging markets context. Further understanding will be obtained on how technological opportunism and strategic management practices are successfully implemented within an emerging markets context to achieve higher levels of firm performance. This should provide practitioners with a guideline on how to develop enabling entrepreneurial strategies.
- Given that strategic entrepreneurship remains an emerging subject area and moderating and mediating effects of strategic entrepreneurship on the link of technological opportunism and firm performance has not been empirically tested to the knowledge of the student researcher, the outcomes of the research will aim to build on the evidence based literature of strategic entrepreneurship within an emerging markets context.

- The research outcomes could be utilized by human resources practitioners as part of broader entrepreneurial transformational initiatives in existing organizations.
- Notwithstanding that the developed economies are shifting towards customer experience-based economies, South Africa remains on a journey of catching up to become a knowledge-based economy from an efficiency-driven economy, the research outcomes are likely to contribute towards the pursuit of this economic developmental objective.

1.5 RESEARCH LIMITATIONS

The study focused on one banking organization and excludes other banks and the rest of financial services industries. Other industry sectors may be considered as part of future research. Prior research included other industries such as manufacturing (Chen and Lien, 2013; Sarkees, 2011). The study focused primarily on technological opportunism and strategic entrepreneurship factors that are likely to positively influence firm performance. Strategic entrepreneurship is delimited to two constructs, namely: entrepreneurial orientation and planning flexibility. Entrepreneurial orientation was delimited further to risk-taking, innovation and proactiveness to the exclusion of competitive aggressiveness and autonomy operational measures that were considered as part of an entrepreneurial orientation construct in prior research studies.

Although Lumpkin and Dess (1996) included competitive aggressiveness and autonomy as part of an entrepreneurial orientation construct, many empirical research studies (for instance, Khandwalla, 1977; Miller and Friesen, 1982; Miller, 1983; Ginsberg, 1985; Morris and Paul, 1987; Covin and Slevin, 1989; Dess, Lumpkin, and Covin, 1997; Barringer and Bluedorn, 1999; Wiklund and Shepherd (2003, 2005); Avlonitis and Salavou, 2007; Li, Huang and Tsai, 2009; and Murimbika and Urban, 2015) opted to focus on risk-taking; innovation and proactiveness as these are considered broadly as

adequate variables to operationally measure the construct of entrepreneurial orientation.

Strategic management as a process of planning, formulation and implementation of an organizational strategy over a long term aims to achieve a competitive advantage through the strategic combination and management of resources (i.e. human, social and financial capital) and meeting evolving customer needs and stakeholder expectations in challenging business environments (Urban and Venter, 2015). Strategic management process is a method by which senior management of the organization set out to formulate, implement and evaluate a strategy that can lead to a sustainable competitive advantage (Urban and Venter, 2015). Not all strategic management practices within a bank will be empirically assessed or tested in the study; however this will only be measured through a planning flexibility variable and the control effects of an external environment. The effects of the external environment conditions will be controlled through technological turbulence and competition hostility variables.

The quantitative data was collected from executives, heads of teams, senior managers and managers only as these individuals are likely to understand the intricacies of technological opportunism, firm performance and strategic entrepreneurship practices within a banking institution and should provide reliable and trustworthy responses. The targeted participants (i.e. employees) were based in South Africa only (i.e. the sampled banking does have a footprint outside of South Africa, but these employees were not included).

1.6 DEFINITION OF TERMS

The definitions of the key terms and concepts used for the research report are as follows:

Technological Opportunism (TO): This is defined as an organizational capability to sense and respond to technological developments in anticipation of creating sources of competitive advantage (Srinivasan, Lilien, & Rangaswamy, 2002). Implicitly, there are two distinct dimensions of technological opportunism, namely: technological-sensing capability (TSC) and technological-response capability (TRC). TSC is a level of an organizational ability to acquire and understand knowledge about new technological developments. TRC is the degree of an organizational willingness and ability to respond to the technological developments that it believes may affect its competitive positioning (Srinivasan, Lilien, & Rangaswamy, 2002).

Firm Performance: Performance is defined as a perceptual measure of how well or poorly the firm is doing relative to the competition (Phandya & Rao, 1998). Financial measures such as revenue growth, market share, new product success rate, return on investment and profitability are utilized collectively and collaboratively to estimate firm performance relative to the competition as perceived by the statements provided by the respondents (Chen & Lien, 2013).

Entrepreneurial Orientation (EO): EO is the key processes, practices and decision making activities at a company level that lead to the creation of new markets. In the context of a corporate company, EO implies a dominant entrepreneurial proclivity. (Urban and Venter, 2015).

Strategy: This is defined as a direction and scope of an organization over a long term which is aimed at achieving a sustainable and differentiated advantage over the competitors through strategic combination and management of critical resources (i.e.

human, social and financial capital) and meeting the latent and expressed customer needs while fulfilling stakeholder expectations in challenging business environments (Urban and Venter, 2015).

Strategic Planning Process: This is a method by which senior management of the organization set out to formulate, implement and evaluate a strategy that can lead to a sustainable competitive advantage (Urban and Venter, 2015).

Planning Flexibility: This is an organizational strategic capability to change and respond quickly to changing environmental conditions without comprising its competitive advantage (Murimbika & Urban, 2015).

Strategic Entrepreneurship: The multi-disciplinary concept of strategic entrepreneurship is a combination of entrepreneurship and strategic management theories and disciplines. Strategic entrepreneurship enables senior management in an organization to simultaneously exploit their competitive advantages while identifying and exploring opportunities that present innovations that should be the foundation of future revenues and competitive advantage. (Urban & Venter, 2015).

1.7 UNDERLYING ASSUMPTIONS

- Respondents were allocated sufficient time to questionnaires given the importance of the technological opportunism, entrepreneurship and strategic management practices within an organization.
- Respondents possessed adequate technological opportunism, entrepreneurship and strategic management knowledge, its operational and business performance implications.
- Current economic conditions, structural and shareholder changes within the bank did not influence the respondents' ability to be biased and untruthful.

- Respondents provided genuine and honest responses to the questionnaires.
- Respondents could select not to disclose certain information or discontinue with the research survey altogether at any given time.
- Respondents targeted and sampled were sufficient to obtain adequate data for statistical driven analysis.
- Where the participants requested for feedback regarding the outcomes of the study, the student researcher in consultation with the Supervisor should be able to comply with such requests although the feedback will not be provided in the form of physical distribution of the final research report.

1.8 STRUCTURE OF THE RESEARCH STUDY

After an introductory chapter, the next chapter begins the empirical research by delineating the literature review on the background of the concepts, frameworks and theories for the technological opportunism construct and then set out to identify relevant indicators of the firm performance construct and underlying definitions. Resource based view and dynamic capability theories as well as technology acceptance models are identified as primary and applicable theories and models which support technological opportunism. Technological opportunism is then constructed as an independent variable while a firm performance construct is a dependent variable whereby its variance is positively explained by technological opportunism.

Chapter II then develops an underlying reasoning on the relationship between technological opportunism and firm performance based on previous empirical research studies and the connections are discussed in detail to draw on the first hypothesis of the study. Chapter II then explains the concept of entrepreneurship as a process of opportunity identification and exploitation and entrepreneurship is supported by the notion of an entrepreneurial process; opportunity identification and development theory; resource based view and dynamic capability theories; and the enterprise growth theory.

Chapter II further conceptualizes the notion of corporate entrepreneurship (CE) and identifies two supporting models for CE and drivers of corporate entrepreneurial orientation (OE). The underlying organizational conditions, antecedents or drivers of OE are identified as organizational structure, management support, rewards, time and resource availability and rewards / reinforcement.

Based on the resource based view and dynamic capability theories and foundations for technological opportunism and empirical research, Chapter II further proposes the logical reasoning of the moderating and mediating relationship between OE and technological opportunism. Chapter II draws onto a close by discussing a second hypothesis of the logic of the moderating and mediating relationship between strategic management (i.e. specifically planning flexibility) and technological opportunism. Chapter II then identifies and discusses control variables as technological turbulence and competitive hostility and closes by mapping out a conceptual model for the empirical research.

Chapter III introduces the research methods adopted through the identification of applicable world views and philosophies, research design, population and sampling considerations. Chapter III then identifies a research instrument adopted through the discussion of the scales and measurements validity, data collection procedures including applicable pilot tests conducted. Chapter III further discusses applicable ethical considerations, statistical techniques that were adopted to validate the identified hypothesis, moderation and mediation hypotheses. Chapter III ends with the research assumptions and limitations and what was primarily considered in order to improve the degree of reliability and validity of the results given the assumptions and limitations noted.

Chapter IV presents the empirical research results, descriptive analysis, scales and measurement validity results and hypothesis testing results. Chapter V discusses in

detail the confirmation of its empirically based expectations that technological opportunism dimensions are positively associated with the organizational level firm performance construct. Chapter V also reveals the empirical results that were not necessarily in line with what the student researcher had proposed as part of Chapter II and insights and alternatives are offered for the moderation and mediation deviations of the findings. Chapter VI ends with the observations on the significance of the study relative to what we hypothesized, and then finally discusses practical and academic implications for the future research.

CHAPTER 2 – LITERATURE REVIEW

2.1 INTRODUCTION

The study is aimed at investigating organizational technology capabilities and its association to firm performance; and how the relationship is mediated and / or moderated by strategic entrepreneurship (entrepreneurial orientation and planning flexibility). The background, characteristics and potential relationships to entrepreneurial orientation; planning flexibility and strategic entrepreneurship concepts will be presented.

Technological opportunism is an organizational capability to sense and respond to technological developments in pursuit of creating and sustaining a competitive advantage (Srinivasan, Lilien, and Rangaswamy, 2002). Technological opportunism is rooted in dynamic resource based view theory because organizations leverage off their resources in order to develop the required technology knowledge that is a pre-requisite in enabling organizational agility and dynamism to external environmental changes.

In South Africa, financial services technologies (Fintech companies) continue to place banking institutions on the defensive which may require untimed decision-making responses and uncalculated technology investments. Entrepreneurship and innovation has been identified as a silver-bullet solution in how banks should anticipate financial technology developments in pursuit of defending their respective customer segments and market positions.

Entrepreneurship is an opportunity recognition and exploitation process while strategic management emphasizes the strategic need to leverage of the organizational resources and capabilities in order to create and sustain a competitive advantage. The study aims

to contribute towards theory and literature building through an investigation of the moderating and mediating effects of entrepreneurship and strategic management on the technological opportunism-firm performance relationship.

This chapter will begin by defining technological opportunism and firm performance. Specifically, the South African context of financial technology, theoretical background, constructs and concepts of technological opportunism, firm performance and corporate entrepreneurship will be discussed. The background and characteristics of an entrepreneurial orientation; planning flexibility and strategic entrepreneurship concepts will be presented. Finally, the hypotheses and models of the associations between the research constructs and variables are outlined.

2.2 FINANCIAL TECHNOLOGY CONTEXT

Financial services technological developments are placing local and global banks on the defensive and subsequently require untimed decision-making responses which may lead to uncalculated technology investments. This is not appropriate for the short-term operations and long-term strategic gains of the organizations (Sarkees, 2011). Chen and Lien (2013) argued some technology innovators, being market leaders in launching new products and services with associated pioneering advantages, do not always beat the competition in capturing and appropriating value created by these innovations (Chen & Lien, 2013). One of the business challenges facing organizations is obtaining the right level of information and effective adoption of such technological innovations (Voola, Casimir, Carlson, Adnihotri, & Anushree, 2012). There is an observed high correlation between a country's per-capita income level as compared to the degree to which digital technologies are adopted and available to critical economic players in that country, according to a Digital Adoption Index created by the World Bank and Microsoft (Figure 2, (Mölders, 2016)). This is depicted in the graph below:

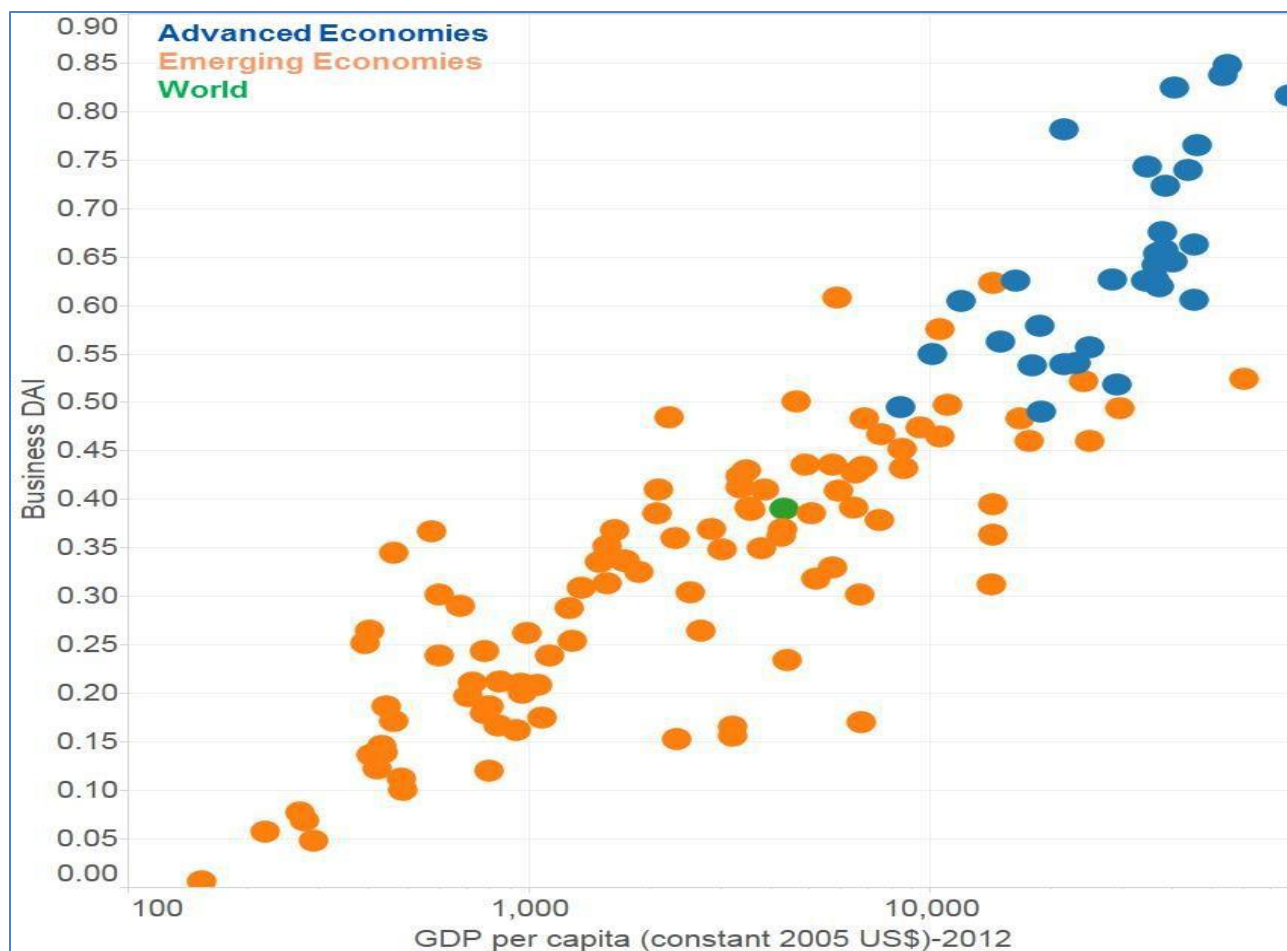


Figure 2: Digital Adoption Index

(Source: Mölders, 2016, pg. 4)

**The business sub-index is an average of four normalized indicators: 1) the percentage of businesses with websites, 2) the number of secure servers per million residents, 3) downloads speed (Kbps), and 4) 3G coverage in the country.*

The structure of the South African economy has shifted away from manufacturing towards financial and government services. Over the past 10 years, the contribution of manufacturing has significantly decreased from 19% to 11% in 2004 (Mothata, 2014). The economic structural shift has seen gains for the retail, wholesale, government and financial services. This suggests that the South African economy is slowly shifting from

an efficiency driven economy to a knowledge based economy. Financial services remain one of the biggest contributors towards the South Africa's GDP. Further, South African financial services industrial sector is highly ranked by global standards. This provides for a worthy platform in empirical research seeking to understand the role of the sector in the South African economy in the context of corporate entrepreneurial thinking and financial technology innovation. The change in the structure of the South African economy over a 10-year period is demonstrated in Figure 3:

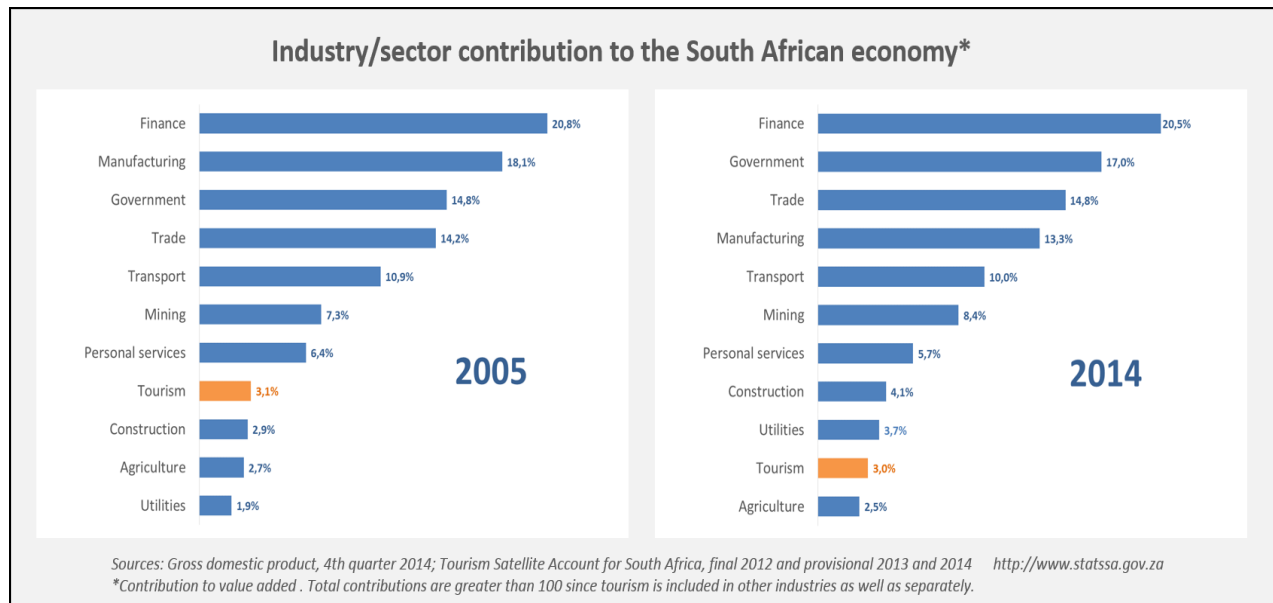


Figure 3: South African GDP by Sector (2004 – 2014)

Source: (Statistics SA Website (Unknown, 2016))

2.3 TECHNOLOGICAL OPPORTUNISM CONTEXT AND THEORY

Technological opportunism is defined as an organizational capability which enables organizations to sense and respond to technological developments in order to create a competitive advantage (Srinivasan, Lilien, & Rangaswamy, 2002). Technological-sensing and technological-response capabilities are two underlying dimensions of

technological opportunism (Srinivasan, Lilien, and Rangaswamy, 2002; Sarkees, 2011; Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012 and Chen and Lien, 2013).

2.3.1 Theoretical Underpinnings of Technological Opportunism

What is technology? Simplistically, technology is an extension of human capabilities in order to satisfy the needs or wants. The word technology was derived from the early 17th century Greek which means 'systematic treatment'. The word 'tekhnologia' in turn is derived from two different words, *tekhneh* for 'art or craft' and '-logia' (or -ology) for a specific phenomenon under study. Thus, technology's origins might more literally be taken to mean 'the study or science of making or doing' (Venter & Urban, 2015). Technology is further described to mean 'the application of scientific knowledge for practical purposes, especially in a specific industry' (Venter & Urban, 2015). Technology involves physical set of systems that utilizes inputs in its processes in pursuit of producing outputs that creates value (Phaal, Farrukh, & Probert, 2004).

Technology encompasses of the knowledge of *know-how* and *know-why*, products, services, processes, methods, tools and input-output systems adopted with an objective of generating goods and / or services that are of business value (Phaal, Farrukh and Probert, 2004). The technological ability to identify opportunities and convert such possibilities, potentials and ideas into realities made technology an invaluable business asset to various start-ups, growing and established organizations locally and globally. During the 21st century, technology which was customarily housed in people's minds and systems of the organizations was regarded as a competitive advantage that will enable the business to have a sustainable leading and cutting edge that is more valuable than the firm's physical assets or its simple accounting worth (Phaal, Farrukh and Probert, 2004).

Technology innovation is the creation, capturing and management of commercial value through the identification, exploration and exploitation of technological opportunities

(Phaal, Farrukh, & Probert, 2004). The direction of travel for the 21st century is moving towards an economy that is based in technology and knowledge management whereas previous centuries were associated with factor and efficiency driven economies (Urban et al., 2012). In the 21st century, individuals and organizations are now expected to invest in significant resources and knowledge in order to be alert, recognize and anticipate technology driven opportunities (Urban et al., 2012).

2.3.2 The Rise of Emerging Technologies

Today, the rise and adoption of emerging technologies in the context of the Fourth Industrial Revolution is critical to the existence and future sustainability of any organizations including the old-style banking institutions within the emerging markets. The emerging technologies of the Fourth Industrial Resolution have been conceptualized as science-driven innovations which can potentially create new industries or transform existing ones through an introduction of innovative solutions or value propositions (Halaweh, 2013). As an example, Apple and the iPod were identified as the type of emerging technology that disrupted the market share of the DVD's and record label companies (Halaweh, 2013).

The application of the word 'science' suggests that emerging technologies are commercialized from some form of research and development (R&D) and most emerging technologies are initiated as conceptualized ideas in R&D activities before they are created, developed and recognized as valuable market solutions. The normal business dictionary defines emerging technologies as "new technologies which are currently developing or will be developed over the next five to ten years, and which will substantially alter the business and social environment". Halaweh (2013) argued against the considerations of this definition as it includes new technology as emerging technologies and this is a misconception about emerging technologies. Under this misconception, technologies can be classified as 'emerging' in one spatial context even though it is described as 'established/mature' in another (Halaweh, 2013).

On the other hand, Rotolo et al (2015) conceptualized emerging technologies as early phase of development technologies. This implies that key aspects such as the technology characteristics, its context of use or the configuration of the actor network and their related roles remain uncertain and non-specific (Rotolo, Hicks, & Martin, 2015). Further, Rotolo et al (2015) described the emerging technologies as a technology which demonstrates high potential but its value has not been recognized or secured any kind of market consensus. Halaweh (2013) summarized emerging technologies specifically within the information and communication technology (ICT) domain into six characteristics, namely: 1) Uncertainty is high, 2) Network effects, 3) Costs, 4) Unobvious social and ethical impact, 5) Limited to creator or inventor country, and 6) Not fully investigated and researched. These characteristics are summarized in Table 1:

Table 1: Characteristics of ET within an ICT Domain
(Source: Halaweh, 2013, pg. 112)

Characteristics	Description
Emerging technologies uncertainty	The uncertainty associated with emerging technologies takes several forms with unknown and unpredictable values and outcomes, such as standards and specifications (maturity), business models, price, and adoption rate uncertainties. As time passes, the emerging technologies become more matured and diffused and the number of adopters increases while costs drop. In contrast, ethical and social concerns might increase as emerging technologies are used in new applications.
Emerging technologies network effect	The value of an emerging technologies increases by increasing the number of emerging technologies users.
Emerging technologies costs	The cost of owning the emerging technologies is high, and the cost of substituting traditional technology with the emerging technologies is high.
Unobvious emerging	The social and ethical impacts associated with the use of emerging

technologies impact	technologies are unseen, unknown, or unexpected before its adoption/use or at an early stage of the emerging technologies life cycle.
Emerging technologies is limited to creator or inventor country (availability of emerging technologies)	Emerging technologies are usually available for use in a particular context or in the country that creates or invents it.
Emerging technologies are not fully investigated and researched	Most of the materials on emerging technologies are white papers and technical reports produced by the manufacturers of the emerging technologies with little scientific and academic research.

Rotolo et al (2015) conducted research on various technology innovation studies in pursuit of understanding the meaning of emerging technologies and summarized emerging technologies into five characteristics, namely: 1) Radical change or novelty, 2) Relatively fast growth, 3) Coherence, 4) Prominent impact, and 5) Uncertainty and ambiguity. They characterized the early stages of the emerging technologies development ('pre-emergence') with relatively higher levels of radical change or novelty while an associated impact of such technology could still be relatively low (Rotolo, Hicks, & Martin, 2015). The researchers (Rotolo, Hicks, & Martin, 2015) argued that multiple communities are generally part of its initial development and the boundaries of the technology may not yet be delineated (i.e. low levels of coherence).

Further, the early stage growth is relatively slow while its future development remains associated with high levels of uncertainty and ambiguity – the technology may not even emerge and market validated (Rotolo, Hicks, & Martin, 2015). Rotolo et al (2015) further argued that technology may obtain momentum – i.e. the development and performance trajectories may be observed once the market starts validating its value and the technology becomes more coherent. The associated impact of an emerging

technology will be less risky as the technology starts taking shape and gaining public acceptance through the intended market, researchers, publications, patents, researchers, prototypes/products, etc. (Rotolo et al, 2015).

At the same time, the radical novelty of the technology is likely to weaken in the domain or context where the technology is perceived as emerging (Rotolo et al, 2015). Rotolo et al (2015) considered 'emergence' as the stage where the characteristics of emergence are subject to dramatic change. Rotolo et al (2015) concluded that an underlying impact and growth of the technology reaches its maturity or declining stage as the technology begin losing its radical novelty when possible performance outcomes are known and complete. At this stage, the adoption and use of the technology may have become well-accepted – the technology enters in a 'post-emergence' period. Research findings and explanations of an emerging technology provided by Rotolo et al (2015) supports the S-shaped curve of the technological adoption life cycle which is qualitatively depicted in Figure 4:

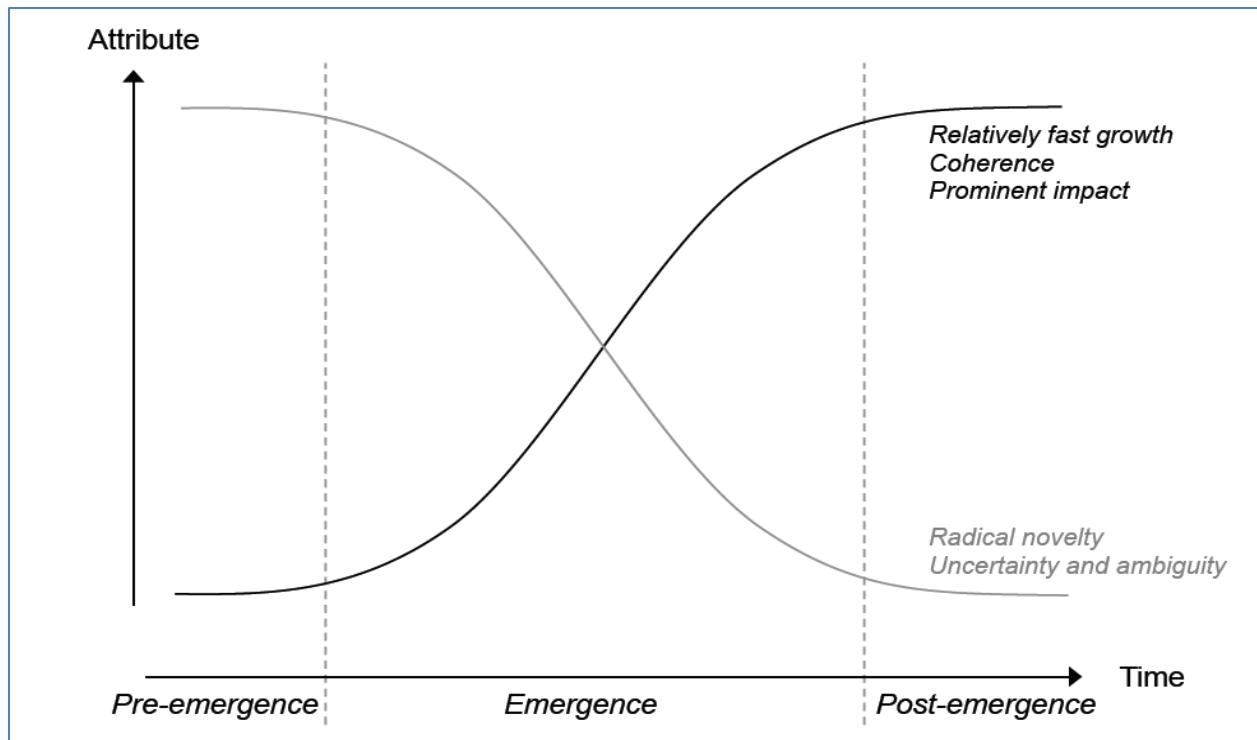


Figure 4: Pre-emergence, Emergence and Post-Emergence: Attributes of ET

Source: (Rotolo et al, 2015, pg. 15).

2.3.3 Resource Based View Theory

Previous researchers (Chen and Lien, 2012; Sarkees, 2011; Srinivasan et al., 2002; Voola et al., 2012) are of the view that RBV is a suitable theoretical framework for studying technological capabilities because RBV links organizational resources and capabilities with competitive advantages (Lucia-Palacios, Bordonaba-Juste, Polo-Redondo, & Grünhagen, 2014). Other previous researchers (El Gizawi (2014); Teece, Pisano, and Shuen (1997)) have criticized the usefulness of the resource based view approach as a primary source of competitive advantage. They argue that the resource based view approach on its own is not sufficient to sustain a competitive advantage and dynamic capabilities are a necessity for organizations to understand and acquire new set of competencies and capabilities in order to maintain their competitive advantage and acquire an ability to respond to changing business and competitive landscapes (El Gizawi (2014); Teece, Pisano, and Shuen (1997)). Researchers explained that the main

principle is organizations tend to collect resources that are viewed as valuable, rare, imperfectly imitable and non-substitutable (VRIN's) – i.e. resources that enable organizations to leverage and sustain competitive advantages. Teece et al (1997) argue that the collection of resources only represents one perspective and does not necessarily mean the organizations will be able to collectively and collaboratively address market and technological developments of the external environment. Thus, organizations have to develop dynamic capabilities in order to achieve and sustain competitive advantages. (El Gizawi (2014); Teece, Pisano, and Shuen (1997)).

2.3.4 Dynamic Capability Theory

Technological opportunism is ingrained in the dynamic capabilities theory (Teece, Pisano, and Shuen, 1997). Teece et al (1997) explained that dynamic capabilities are new forms of competitive advantages that were not previously identified as core elements of the resource based view approach. Dynamic refers to the organizational self-renewal capacity to learn new competencies in order to align to the changing business environment as specific innovative responses are required when time-to-market is of an essence with the rapid technological changes and the competition being unpredictable (Teece, Pisano, and Shuen, 1997). The concept of 'capabilities' focuses on the role of strategic management practices to adjust, integrate and combine organizational resources including skills and functional competencies in pursuit of alignment to the changing business environment (El Gizawi, 2014).

Findings of El Gizawi (2014) and Teece et al (1997) are consistent over the prevailing need of dynamic capabilities and strategic management of resources (i.e. resource based view), but researchers (Eisenhardt & Martin, 2000) have presumed an existence of adequate and quality human capital resources within organizations to be able to know what and how to adapt to the changing business environments presented by technological advances or what and how to identify and learn new appropriate competencies (Daft & Weick, 1984). It is critical that the comparative level of human

capital resources of each organization or even country is considered in order to adequately assess the relevance and fitness of the dynamic capability theory in particular within the context of the emerging markets. The relative degree of human capital is at the core of entrepreneurship and previous research positively associates its relative level of existence with the firm performance and competitive advantage.

Specifically, the South African emerging economy context may not possess the right level, quality of, and access to human capital resources that ensures the relevance or applicability of the implementation of the dynamic capability theory within a South African environment. Further, societal and cultural factors must be considered as a potential barrier to the effective application of the dynamic capability theory. Human societal and cultural factors as they relate to the applicability of the dynamic capability theory within the context of the South African banking environment should be considered when the research results of the study are obtained, discussed and reported. From human capital point of view, practitioners argue that organizations need a balance of technological capabilities and human resources for effective adoption and continued use of technologies, in order to ensure positive effect on firm performance (Augier & Teece, 2007).

Mishra (2015) explains that technology adoption and knowledge creation is a multi-layered process, with each stage consisting of two broad parts – one part is very conducive to digitisation and automation while the other “human element” part is less so. Digital technologies can easily automate routine, transaction-intensive tasks, such as data collection and information gathering / distribution. Mishra (2015) further explains that as one climbs up the triangle, curating knowledge, filtering insights, an application of emerging technologies in actual societal and business problems will require capabilities that involve human judgment, intelligence and discretion (Mishra, 2015). The human capital element application is what is called the “complements” to technology. For effective adoption and continued use of emerging technologies, the

practitioners need the right balance and combination of technology and human capital complements. The human capital element application is what is called the 'complements' to technology and this is graphically shown in Figure 5:

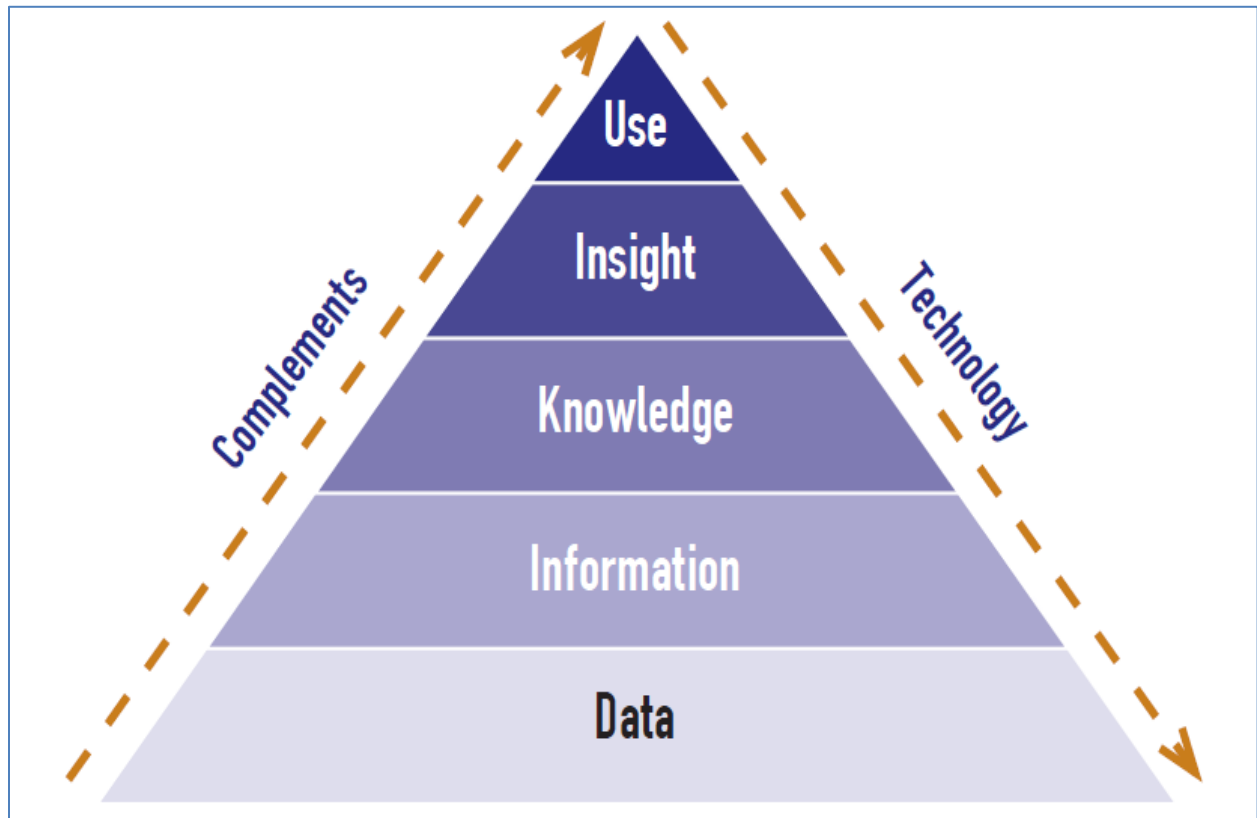


Figure 5: Technology and its Complements
(Source: Mishra, 2015, pg. 5)

Coined from the dynamic capability theory (Chen & Lien, 2013), technological opportunism is defined as an organizational capability which enables an organization to sense and respond to new technologies in anticipation of creating sources of competitive advantages (Srinivasan, Lilien, & Rangaswamy, 2002). The dynamic capabilities' approach reiterates an organizational unique capacity from being imitated in order to shape, reshape, combine and recombine the resources base of the firm in response to emerging technologies and markets (Chen & Lien, 2013). When applied

effectively, technological opportunism should enable the organizations to draw on different areas of technology infrastructure and expertise to meet the needs of different market segments – in particular latent and expressed customer needs (Chen & Lien, 2013). Chen and Lien (2013) explains that technological opportunistic organizations frequently scan the environment for information about the new or emerging technologies that are viewed as potential areas of growth in pursuit of re-adjusting business strategies in order to exploit opportunities or lessen risk exposures posed by the technological developments (Chen & Lien, 2013). The responding to and adoption of new or emerging technologies aspect of the literature suggests that some elements of technological opportunism are rooted in the diffusion of innovation theory and technology acceptance models.

2.3.5 Technology Acceptance Model

One of the well-known models related to technology adoption and acceptance including continued use is the technology acceptance model (TAM) originally proposed by Davis in 1986 (Davis, 1989 and Davis, Bagozzi, and Warshaw, 1989). TAM is described as a theoretical model with a proven track record in helping to explain and predict user behavior of information technology (Legris, Ingham, & Collette, 2003). TAM is an influential extension of theory of reasoned action (TRA) and various scholars adjusted TRA to propose TAM in further understanding why the users adopted or rejected specific types of information technology (Davis, 1989; Davis, Bagozzi, and Warshaw, 1989; and Park, 2009). TAM provides the foundation of how external factors influence belief, attitude, and intention to use the technology. Two cognitive beliefs are specifically identified by TAM, namely: perceived ease of use and perceived usefulness.

TAM theorizes that an end user's final adoption and continued use of the technology system is directly or indirectly influenced by the perceived usefulness of the system, perceived ease of the system, the users' attitudes and behavioral intentions. Technology system users' beliefs are fundamental thoughts that individuals harbour

about a technology. Further, when these beliefs are matters or foundations for which technology evaluation or judgments are based, they become or represent attitudes towards the adoption of such technology. Deeply held and long lasting attitudes (either positive or negative) are likely to influence the users' behavioral intentions towards the use of the technology. TAM proposes that external factors (environmental context) will also affect the user's attitude, intention and actual use of the technology through mediated effects on perceived usefulness and perceived ease of use (Park, 2009). The diagrammatical application of TAM is shown in Figure 6:

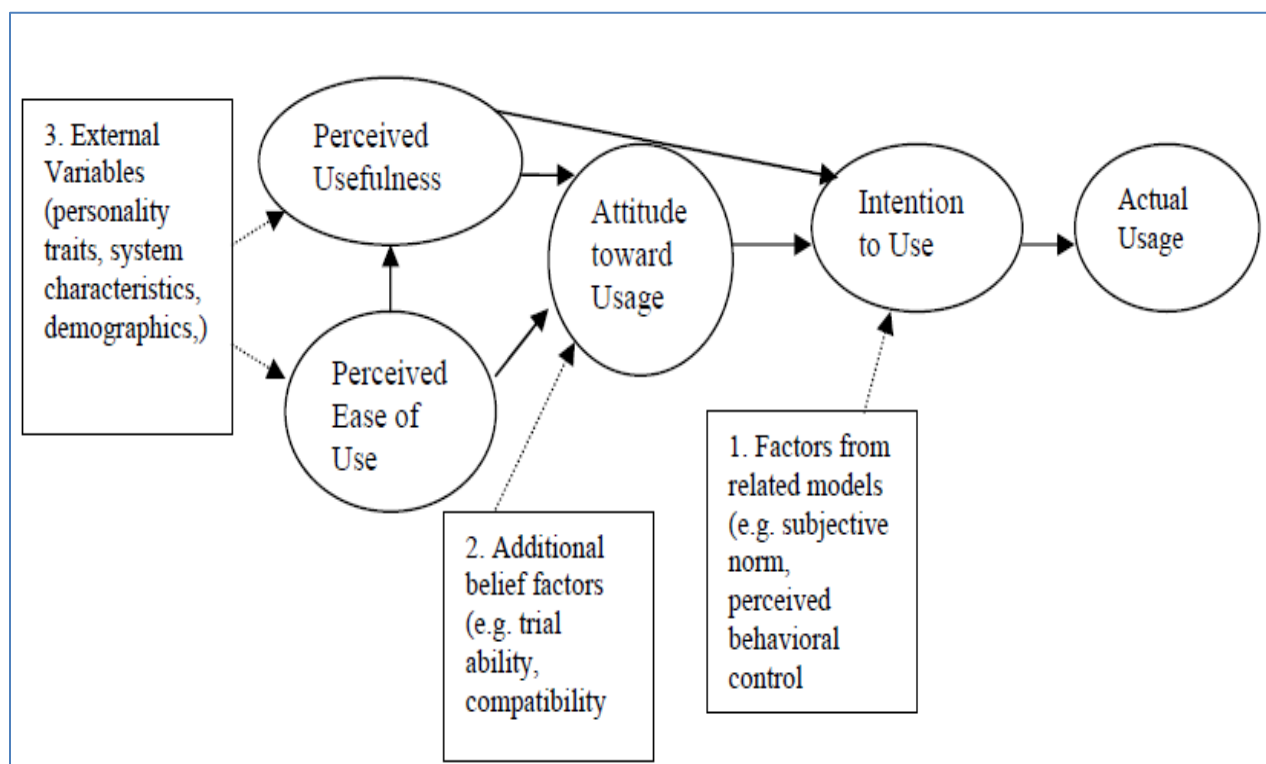


Figure 6: Original technology acceptance model (TAM)
(Source: Park, 2009, pg. 151)

Within the context of the South African banking institutions, traditional transactional banking jobs such as cash deposits, balance enquiries and making online payments were integrated into self-service (i.e. automated teller machines, mobile and online

banking) channels by the banks in the mid-2000's. Banks have long adopted automated systems in order to streamline their banking processes. As an example, South African credit card issuers have integrated credit card limit increase requests and lost credit card reporting into their digital and automated channels. A significant number of banking customers have adopted and accepted online banking services as part of their day to day normal lives. Although, brick and mortar branches remain in use, there are a growing number of customers who prefer digital channels over traditional banking channels. Whilst security risks exist when using digital banking channels, a significant increase in customer numbers suggests that there is a growing customer market that perceives digital banking channels as a value-add to ease of banking experience.

South African banking institutions perceive the use of digital and automated channels as strategically imperative in increasing efficiencies and as a competitive advantage. This observed historical adoption within a South African context and use of digital banking platforms is a direct and positive indicator of how banks have successfully automated critical banking processes in order to improve banking services and this has yielded positive results for customers' convenience and experience. This is supported by the view of Daugherty et al (2016) that at least 70% of banking executives globally are making significantly more investments in emerging artificial intelligence banking technologies than they did in 2013 and this is a positive indication of global adoption rates (Daugherty, Carrel-Billiard, & Biltz, 2016).

Diffusion of technology innovation or customer technology adoption remains an important factor in understanding organizational risk appetite for technological opportunism and its influence on the adoption of technological innovations (Srinivasan, Lilien, & Rangaswamy, 2002). Historical customer utilization of technology driven banking services is a direct and positive indicator of how banks in the emerging markets have adopted emerging technologies to improve banking processes, customer service and customer experience (Daugherty, Carrel-Billiard, & Biltz, 2016). Although customer

technology adoption is not in scope of the empirical research, once research results are obtained, there is an underlying impact of historical technology adoption by the customers on the effect of technological opportunism on firm performance that should be considered within the context of the technological developments research findings. Further contextual analysis may be required to evaluate the role of technology adoption as to what extent does technological opportunism explain firm performance or whether this should be a potential area of future research.

2.4 FIRM PERFORMANCE THEORY AND INDICATORS

Curtis and Jackson (1962) first proposed the formative measurement model of firm performance and subsequently challenged its underlying attributes of associated positive measures as a prerequisite (Riefler & Roth, 2008). Riefler and Roth (2008) further argue that reflective measures tend to display negative or zero correlations in spite of capturing the same construct. Alternatives were required to be considered in order to determine which formative measures directly caused constructs instead of measures with positive associations (Riefler & Roth, 2008). The construct received its underlying meaning from these measures and as such firm performance is the dependent variable and firm performance indicators are explanatory or independent variables.

Firm performance indicators are based on the formative measurement model and consists of five indicators, namely: 1) *profitability*, 2) *revenue growth*, 2) *return on investment*, 4) *market share*, and 5) *new product success rate*. Participants provided responses on each perceived firm performance indicator relative to the competitors in their primary served markets (Chen & Lien, 2013). The performance indicators or measures are causes of the firm performance construct as opposed to the effects measures.

2.4.1 New Product Success Rate

This is expressed as a percentage of all new products launched by the bank which are perceived to be successful in the market relative to key competitors (Chen & Lien, 2013). The relative words in this definition is “perceived to be successful” as this does not explain perceived to be successful based on the perspective of whom as the product has consumers and producers? Although it is noted that at least 80% of products fail, the research surveys concluded that the drivers of new product success rates were affordability, convenience, brand recognition and novelty (The Nielsen Company, 2015). Notwithstanding these factors of new product success rates, these are geared towards the consumption side of the product and do not consider the drivers of production which are very important to the success of the products.

Nielsen research found that consumers have a strong appetite for product innovation as they are increasingly expecting more choice and demanding than ever before (The Nielsen Company, 2015). It was further noted that the top innovations launched to market in the U.S. generated more than \$50million revenue in their first year. In Europe, the top innovations produced upwards of £/€10 million in their launch year. Generally, product innovation helps companies to remain relevant to customers and can possibly build up a long-term customer loyalty (The Nielsen Company, 2015). The study intends to establish to what extent technological opportunism explains an overall firm performance measured as a combination of new product success rates, return on investment, revenue growth, market share and profitability.

2.4.2 Return on Investment

Return on investment is typically adopted for investment decisions based on their level of efficiencies and this is ROI perceived in the market relative to key competitors (Chen & Lien, 2013). Fundamentally, if the calculated result is greater than zero, then costs of the investment incurred are exceeded by the returns irrespective of absolute value or percentage. One can perform the ROI calculation by dividing the net return from an

investment by the cost of the investment and then expressing this as a percentage (AutoDesk Report, 2016). A critical point to consider is that ROI needs to be viewed within the context of timelines, consistency of formula application, and accuracy of precision and technology investment S-curves. In each case, the calculation of ROI and resource allocation on that basis becomes complex when set against the backdrop of organizational short-term, medium and long-term objectives (AutoDesk Report, 2016). Organizations need to set their risk appetite levels of ROI over a specific time period given all the risks and opportunity costs of the technology investment. The study intends to determine the effect of technological opportunism on overall firm performance measured as a combination of new product success rates, return on investment, revenue growth, market share and profitability.

2.4.3 Revenue Growth Rate

This is expressed as a percentage of the amount by which the average revenue or volume of the bank's products or services has grown over the past year (i.e. year to year comparisons) relative to key competitors (Chen & Lien, 2013). Understanding the pace of company growth is a fundamental component of any stock or share analysis. When an organization is selling a product or service, the revenue growth rate is the most fundamental factor to determine its success. For investors, growth rates typically represent the compounded annualized rate of growth of the company's revenues, earnings, dividends and even macro concepts such as GDP and the economy as a whole. The ability to sense and respond to technological developments or changing customer needs and markets enable the technologically opportunistic organizations to be the first to market with their technology driven products or services.

In turn, this creates an innovative reputation among the early adopters of technology and may claim a market leader among customers as a financial services provider of leading edge products and services (Wind and Mahajan, 1997; Gatignon and Xuereb, 1997 ; Chandy and Tellis, 2000 and Sorescu, Chandy, and Prabhu, 2003). Further, the

effect of the competitive reputation generally creates a new pipeline of customers and creates the potential opportunity for technologically opportunistic firms to price their products or services at a premium as they took on additional innovative risk or generate positive word-of-mouth (Wind & Mahajan, 1997). These underlying business value drivers are likely to enhance revenue and firm performance (Gatignon & Xuereb, 1997). The study intends to determine the effect of technological opportunism on overall firm performance measured as a combination of new product success rates, return on investment, revenue growth, market share and profitability.

2.4.4 Market Share

This is expressed as a percentage of an industry or total revenues of the industry that is generated by a bank over a specified time period relative to the competition. Market share may be calculated by summing up the bank's total sales or revenues over a specified period and dividing this by the total sales or revenues of the industry over the same period (Chen & Lien, 2013). Fundamentally 'happy' customers with positive customer experience can contribute towards converting the non-customers into customers through increased new product or services and this in turn generate additional market share opportunities and increased firm value (Michel, Brown, & Gallan, 2008).

Technological capable companies tend to build momentum in terms of the network value effect as they increase the number and value of their customer base. This is positive for attracting and negotiating supplier contracts and increased economies of scale through various products and services delivered through optimized channels and operations. The overall effect is likely to have a positive impact on the market share while reducing the cost base of the organization which in turn provides an organization with an added advantage and increased corporate value. The study intends to determine the effect of technological opportunism on overall firm performance

measured as a combination of new product success rates, return on investment, revenue growth, market share and profitability.

2.4.5 Profitability

This is expressed as an ability of the bank to earn a profit over a specified period relative to key competitors. A profit is generally what remains of the revenue generated by the bank after it has paid all expenses directly related to the generation of those revenues, such as producing a product or service, and other expenses related to the operational activities of the bank (Chen & Lien, 2013). Sarkees (2011) reaffirmed that technologically opportunistic firms are typically open to new ideas, creativity and innovation which is a fundamental element of revolutionary organizations. These organizations rely on their agility to adapt to new processes, procedures and making optimal allocation and utilization of resources and dynamic capabilities (Sarkees, 2011).

The level of agility and adaptability embedded in the technological opportunistic firms allows for seamless incorporation of identified technological developments into product and service development cycles (Sarkees, 2011). The potential outcomes are likely to include increases in speed of product development, enhanced product features, or marketing excellence (Chen & Lien, 2013). In turn, these actions will provide products and services that are highly valued by customers and perhaps will pay price premiums to obtain (Gatignon & Xuereb, 1997). Furthermore, the costs will be kept at low levels given the flexibility and speed of adaptation. Coupled with potentially higher prices, this is likely to create potential for increased margins (Sarkees, 2011). The study intends to determine the effect of technological opportunism on overall firm performance measured as a combination of new product success rates, return on investment, revenue growth, market share and profitability.

2.5 TECHNOLOGICAL OPPORTUNISM AND FIRM PERFORMANCE HYPOTHESIS DEVELOPMENT

Technological opportunism capabilities which are embedded within existing organizations (i.e. sense and respond activities to technological developments enable organizations to incorporate new or emerging technologies into existing or new products) increase the opportunities of the first-mover advantage in order to make proactive and better strategic moves over the competitors (Chen & Lien, 2013). The effect of technological opportunism and firm performance has been empirically proven to directly or indirectly lead to the achievement of sustainable competitive advantages (Chen & Lien, 2013). Firms sense the technological developments and disruptions through their investments in resources, day-to-day operational activities, and formal and informal processes across functional areas, in order to create a firm-wide capability (Stern, McKee, & Rose, 2007)

On the one hand, internal technology developments are increasingly being supported and allocated additional resources within and outside of industries (Chen and Lien, 2012; Sarkees, 2011; Srinivasan et al., 2002; Voola et al., 2012). The strong sensing environment enables organizations to identify potentially mutually beneficial strategic alliances or external relationships which will generate additional competitive advantages in the form of new innovations (Chandy, Prabhu, & Antia, 2003). A different point of view is it may be beneficial for organizations to take hedging positions through an acquisition of alternative new technologies (Stern, McKee, & Rose, 2007). Srinivansan et al (2002) further argued that technological developments were historically observed to have been underlying drivers of competition that destroyed monopolies and created new markets (Srinivasan, Lilien, & Rangaswamy, 2002).

In the face of unyielding technology turbulence, high technological capability provides organizations with an advantage to better manage their industry specific disruptive

technologies more seamlessly than their competitors and further understand underlying strategic and operational impacts (Chen & Lien, 2013). However, there needs to be an alignment between the sensing and responding capabilities for the organizations to derive competitive advantage over other organizations. The fundamental principle is that the stronger the match or alignment between technology sensing capability and technology responding capability, the greater the combined effect of technological opportunism on a dependent variable – in this case firm performance (Roberts & Grover, 2012).

Organizations aligned in their sensing and responding activities are more likely to generate additional commercial value from their technological opportunistic capabilities (Roberts & Grover, 2012). With the evolution of emerging technologies, aligned levels of technological opportunism are likely to enable firms to effectively and efficiently identify and recombine new resources to manage technological developments through inimitable strategic management and organizational practices (Roberts & Grover, 2012). Technologically opportunistic organizations seek to obtain relative positional advantages over the competition in exploiting business opportunities derived from the changes in the technological landscape supported by speedy responses through the development of in-house applications based on adopted technologies (Chen & Lien, 2013).

Technological opportunism is in principle very similar to the concept of market orientation – i.e. gathering, disseminating and responding to market intelligence as these relate to changing customer demands and needs (Kohli & Jaworski, 1990). Kohlie and Jaworski (1990) argue that technological opportunism does differ however in two important ways. Firstly, market orientation focuses on the needs of the customers and insights through market intelligence while technological opportunism varies in that sensing capability may be applied to any form of information obtained through a distributed value network of relationships (e.g. suppliers, government, emerging

industries, education, etc.) in pursuit of competitive business transformation (Kohli & Jaworski, 1990). Second, although responding to change is required depending on circumstances, this is generally risky and may not derive positive results for the firm (De Luca & Atuahene-Gima, 2007). Based on the association of these two capabilities (i.e. market orientation and technological opportunism), Strandholmm et al (2004) deduced that misalignment of the levels of technological opportunism may cause adverse financial implications for the organizations (Strandholmm, Kumar, & Subramanian, 2004).

Some organizations have an ability to sense technological developments which are relevant to their business activities (high sensing capability) but fail to respond to these developments in an agile manner (low responding capability) (Strandholmm, Kumar, & Subramanian, 2004). In the 1970s, Xerox was able to sense imminent changes in their computing industry and internally developed various computing innovations, but these technology innovations were never brought to market in a timely manner (Strandholmm, Kumar, & Subramanian, 2004). Xerox was able to sense required shifts in technological developments as a result of changes in customer demand, they were unable to quickly respond by launching these required products into the market. Other corporates may not have an ability to sense market and technological developments, but possess high level of responding capability (Strandholmm, Kumar, & Subramanian, 2004).

Despite an organizational ability to seamlessly respond to market and technology opportunities, the organizations normally fail to sense the technology opportunities or sense the incorrect opportunities (Strandholmm, Kumar, & Subramanian, 2004). Further, it is likely that technological opportunism may result in reduced firm revenues when products and services are developed too early or too advanced for the prevailing customer demands and needs (Dhebar, 1996). Firms will not only fail to allocate resources and capabilities to the correct projects thus increased opportunity costs, there is a likelihood of a revenue decline as customers fail to adopt and purchase these

products or services from the firm (Sarkees, 2011). Despite this, the risk of doing nothing and not ensure that the firm is technologically opportunistic far outweighs the opportunity costs of “advanced products” as the firm may become too complacent (Robertson, Eliashberg, & Rymon, 1995) and become another example of Codec or Blackberry and as a result become myopia (Atuahene-Gima, 2005). Myopic firms may not necessarily be suffering from a disease of complacency but are generally sheltered into narrow-minded thinking and thus do not view, sense and see the need to respond to technological opportunities on the horizon (Levinthal & March, 1993)

On the other hand, there is a technology sensing–response–firm performance process which exists that needs to be considered in order to better understand the contextual effect of technological opportunism on firm performance. Contrary to the matching perspective, there is a mediation perspective on alignment of sensing and responding capabilities which is anchored with respect to a particular criterion variable (Venkatraman, 1989). Conceptually, the mediation perspective suggests that one needs to investigate how technological opportunism works from a process viewpoint. Building on the dynamic capability framework, Teece (2007) argues, “An enterprise's ability to manage competitor threats and to reconfigure itself is dependent on its investment activity, which is in turn dependent on its ability to sense an opportunity”. Accordingly, the firm's performance is highly reliant on its willingness and ability to respond to technological opportunities (Hult, Ketchen, & Slate, 2005).

In turn, the technological capability of the organization to respond to technological developments is innately dependent on its ability to sense those opportunities (Teece, 2007). Hence, an organization with higher technology sensing capability cannot be effectively managed in order create technologically derived commercial value if such an organization has weak responding capabilities (Teece, 2007). Likewise, a strong technology responding capability cannot be leveraged successfully if such an organization fails to sense technology-based market opportunities (Teece, 2007).

Following this logical reasoning, technology responding capability should mediate the relationship between technology sensing capability and firm performance for technological opportunism to be positively associated with firm performance.

Yet, so much emphasis exists on whether firms are generating value through its technological resources and capabilities or they settle for how things are in terms of the status quo (Benner & Tushman, 2002). The underlying objective of technological opportunism is to leverage off the technological changes that are impacting an existing business environment and its status quo (Sarkees, 2011). In responding to continuous technological changes or discontinuous technological disruptions, one expected outcome in the balance of probabilities is new product or service innovations (Sarkees, 2011). Product and service innovations can increase firm value if they are priced accordingly to ensure customers are aware that they are paying for pioneering efforts and first-to-market products and services (Chaney, Devinney, & Winer, 1991). Pioneering product and service based innovations is what the market of the early adopters of technology innovation expect from technologically opportunistic firms (Pauwels, Silva-Risso, Srinivasan, & Hanssens, 2004). This is a business opportunity to identify and acquire new customer segments for the purposes of increasing cash flows (Moorman & Miner, 1997).

The identified qualitative and quantitative driven benefits of first-to-market position, new customers, enhanced cash flow advantages, improved customer experience amongst others is likely to result in higher market values (Sarkees, 2011). Embracing such technologies means taking the lead in terms of the direction of travel for the specific industry the firm operates in which brings about its own advantages. For example, Wal-Mart's internal distribution system did not necessarily increase new products that were launched to market, but was a technological leap at that specific time. This continues today to provide a significant competitive advantage to Wal-mart and is the foundation

of demand and supply forces for their firm's shares which in turn has resulted in its high market value (Sarkees, 2011).

The sensing and responding nature of technological opportunism indicates that an organization needs to make resource and capabilities allocation of investments in physical assets, technical skills, and IT processes such that the capability is effectively embedded across an organization. The technology resource and capability investments (forgone opportunity costs) and the resulting analysis of information gained through sensing and appropriate actions identified for response purposes may differ over time such that some organizations may be stronger in technological opportunism than others, supporting the resource-based view. Although, the literature suggests that these technological investments are intended to derive positive financial returns while increasing competitive advantage, it is worth noting that firm performance has been empirically tested to increase over a longer period of time subject to the performance conditions of the technology adoption S-curves as diagrammatically shown in Figure 7. Although this is not central to the empirical research, the impact of the technology adoption S-curves are vital into further understanding the contextual impact of technological opportunism on firm performance.

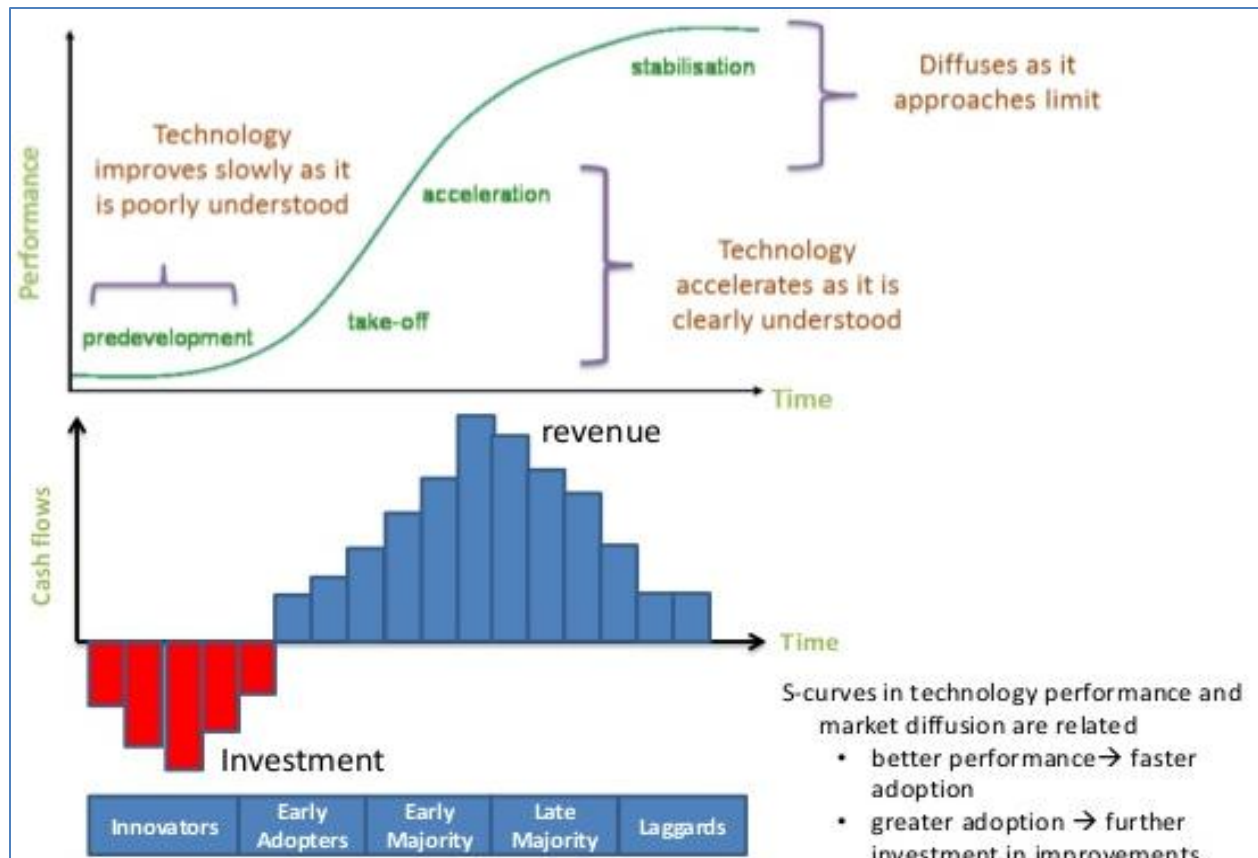


Figure 7: Technology S-Curves
(Electronic Source: Patoriya, 2017)

Research findings presented by Voola et al (2012) agree with those identified by Chen and Lien (2013), Sarkees (2011) and Strandholmm et al (2004) as it relates to the expected effect of technological opportunism on underlying competitive advantage, Voola et al (2012) however emphasized the importance of complementary capabilities. Voola et al (2012) argued that what is instrumental in protecting technological capabilities from competitor imitation is that of the ambiguity concerning the connections between actions and results (Voola, Casimir, Carlson, Adnihotri, & Anushree, 2012). Complementarity, which refers to an increase in marginal return derived from a capability when this is being utilized in combination with another capability, is a crucial

concept in strategy, particularly with regard to barriers to imitation and sustainable competitive advantage (Voola, Casimir, Carlson, Adnihotri, & Anushree, 2012).

Voola further explained that complementarity is critical for synergies to be developed amongst complementary capabilities as a lack of analysis over the complements may compromise the optimal level of profitability of the organization when the firm fails to realize its full potential due partly to the oversight mistake (Voola, Casimir, Carlson, Adnihotri, & Anushree, 2012). Voola et al (2012) concluded that technological opportunism and its consideration along other complementary capabilities within an organization will achieve competitive uniqueness and sustainable firm performance (Voola, Casimir, Carlson, Adnihotri, & Anushree, 2012). In addition, technological opportunistic organizations have an ability to manage changes in technology and search for competitive advantages (Bstieler, 2005) and superior grasp of the underlying impacts of changing technologies on strategic and operational decisions (Capon & Glazer, 1985).

Notwithstanding that Voola et al (2012) emphasized the importance of analysing complementary capabilities, other researchers are in agreement with Sarkees (2011) and Chen and Lien (2013) that constant scanning and surveillance of technological changes supported by the willingness to adopt what is strategically relevant for the organization is likely to sustain competitive advantage in a rapidly changing environments (Olavarrieta & Friedmann, 2008). The finding is consistent with the organizational dynamic capabilities theory in terms of dynamically addressing circumstances of the market dynamism, identify new markets, customers and in turn create innovative products which lead to positive firm performance (Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012; Sarkees, 2011; and Chen and Lien, 2013). To operationalize the technological opportunism construct, it is important to redefine technological opportunism. The literature has described technological opportunism as a function of technology sensing and responding capabilities. Although they could have

been value in further understanding whether the sensing or responding capabilities are reactive or proactive, these two technological opportunism dimensions (i.e. sensing and responding capabilities) have been identified for the study. The previously empirically researched relationship between the constructs of technological opportunism and firm performance will be validated for positive association within the context of a South African banking institution.

Hypothesis 1: Higher levels of technological opportunism are positively associated with higher levels of firm performance

2.6 ENTREPRENEURSHIP CONTEXT AND THEORY

The Global Entrepreneurship Monitor (GEM) model recognizes that entrepreneurial activity, attitudes, intentions and motivations are positive influences of economic growth in the national economies (Herrington, Kew, & Kew, 2015). The 2014 GEM South Africa report found that an entrepreneurial activity rate (EAR) observed in South Africa is very low for a developing nation – a quarter of that experienced by other sub-Saharan African countries (Herrington, Kew, & Kew, 2015). This suggests that it is important to understand whether lower levels of entrepreneurial activity could be contributing towards a sharp decline in aggregate GDP growth. GDP per capita measured in purchasing power parity (PPP) is graphically depicted in Figure 8:

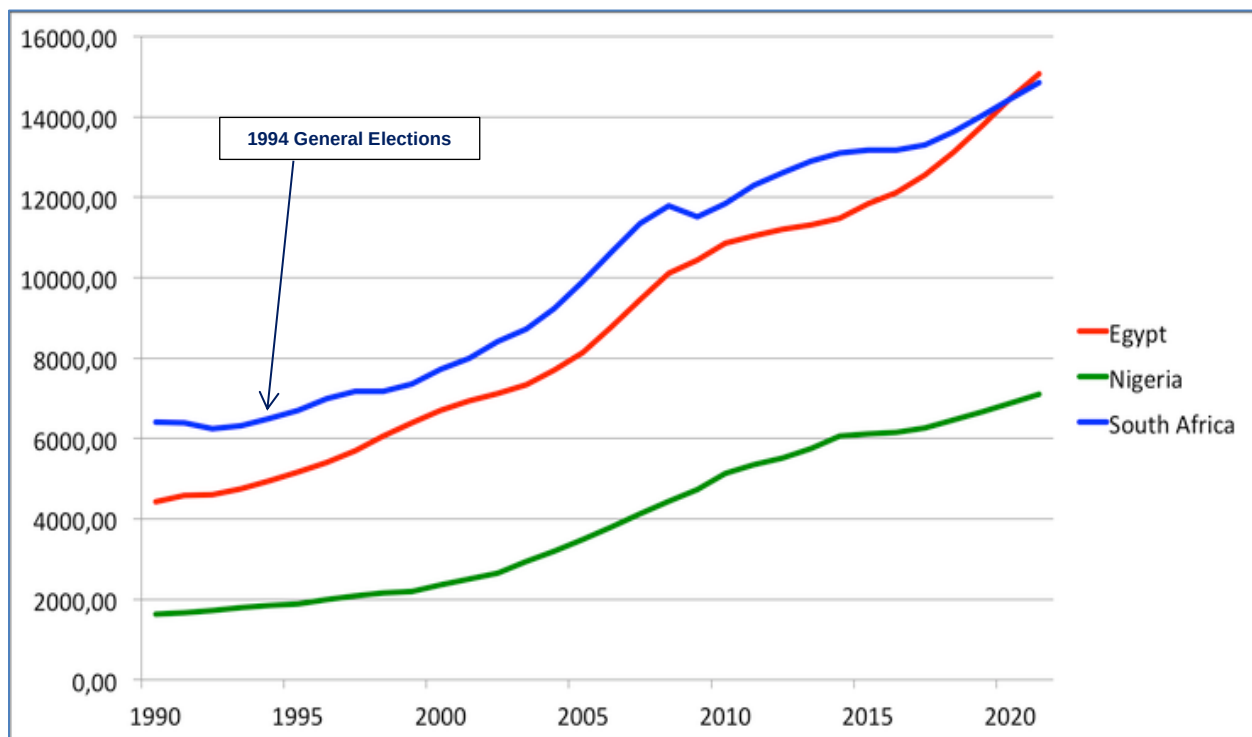


Figure 8: Purchasing-power-parity (PPP) GDP Per Capita (US Dollars)

Source: (International Monetary Fund Website, 2016)

Despite slowing to 1.4% real GDP growth rate in 2015, South Africa remains among the largest in the African continent and could best represent the priorities of the African continent in the BRICS countries (Lemco, 2016). The South Africa's GDP figures relative to the biggest economies in Africa (i.e. Nigeria and Egypt) have been rising since 1994 which is the year that marked the first general elections in South Africa. To what extent has the role of entrepreneurship played a role towards contributing to this GDP, specifically in the financial services sector that has emerged as one of the biggest sectors in South Africa and this study aims to investigate whether entrepreneurial orientation has any influential effect on technological opportunism and performance of a banking institution.

Entrepreneurship is a dynamic capability of innovating and identifying opportunities with a purpose of creating a new business venture to create wealth and absorption of earnings and risks of the business venture (Hisrich and Peters, 1998; Shane and Venkataraman, 2000). The exploration and exploitation of opportunities including a combination of required resources fall within the definition of entrepreneurship. Shane (2003) defined entrepreneurship as a situational opportunity where an individual can create a new means-end mechanism for organizing resources to earn a profit (Shane, 2003). The emphasis of the entrepreneurial opportunity definition is placed on the actual creation of the new means-end mechanism instead of operating or improvising within an old new means-end framework (Shane, 2003).

When selecting a suitable definition of entrepreneurship, it is essential that we differentiate between the event-driven entrepreneurship and the entrepreneurial process (Lumpkin & Dess, 1996). The process of opportunity-focused entrepreneurship described by Shane and Venkataraman (2000) and Hisrich and Peters (1998) will be adopted within this study as this is viewed as a process of creativity and innovation, opportunity identification and recognition in pursuit of new venture and wealth creation including an absorption of the associated risks and earnings of a new business venture

(Hisrich and Peters, 1998; Shane and Venkataraman, 2000). The definition encompasses various approaches adopted to instill the culture of entrepreneurial opportunity exploration and exploitation supported by a combination of resources required to establish and grow a business venture.

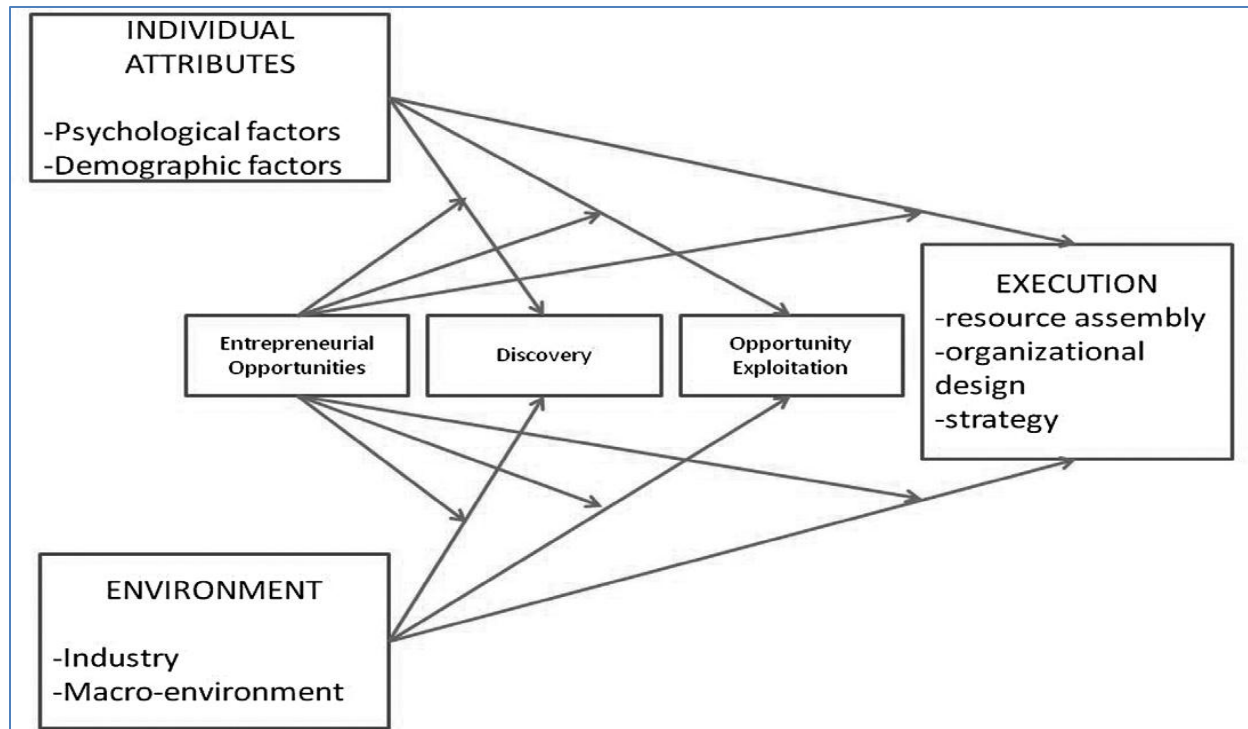


Figure 9: Model of Shane's Entrepreneurial Process
(Source: Shane, 2003, pg. 11)

Kirzner (1973) and Schumpeter (1934) disagreed with the findings that entrepreneurial opportunities entailed an introduction of new information or differential access to existing information. Kirzner (1973) argued in favour of the former as every individual is different and their efficient use of assembled resources is based on differential access to existing information they possess (Kirzner, 1973). In contrast, Schumpeter (1934) described that the creation of new information in the form of technological changes, political or regulatory factors, micro-economic and social factors are central to explaining the existence of business opportunities (Schumpeter, 1934). The

entrepreneurial process model conceptualized by Shane (2003) highlights the existence, discovery and exploitation of opportunities which generally leads to resource acquisition, strategy, process organization and entrepreneurial performance. Figure 9 displays a graphical depiction of the entrepreneurial model as founded by Shane (2003):

2.6.1 The Notion of Entrepreneurial Process

In this section, we will provide an overview of the two main views of the notion of the entrepreneurial process from Schumpeter (1934) and Kirzner (1973) and briefly discuss an impact of institutional factors on these notions. Schumpeter (1934) viewed an entrepreneur as an innovator while Kirzner (1973) viewed the notion of entrepreneurship as an arbitrage (Boettke & Coyne, 2001). Schumpeter (1934) based his analysis in a general state of equilibrium and views the market process as a dynamic driven process by creative destruction. Further, Schumpeter (1934) associated the creative destruction market process of new combinations and economic development to innovation and identified an entrepreneur as the catalyst of such innovation (Boettke & Coyne, 2001). According to Boettke and Coyne (2001), Schumpeter (1934) further emphasized that the entrepreneur working under societal institutional framework will need to adapt his actions on the basis of the incentive structures that are in place.

While similarities between Schumpeter's and Kirzner's notions of entrepreneurship have been noted, there are glaring differences on the market process and this has resulted in different views of the role of the entrepreneur. Kirzner (1973) stated that markets tend towards equilibrium as a result of the discovery and exploitation of entrepreneurial opportunities (Boettke & Coyne, 2001). The underlying principle of Kirzner's notion of entrepreneurial process is alertness to opportunities and how entrepreneurs discover the knowledge previously unknown. This knowledge in entrepreneurial discoveries or realizations of errors made by the market participants and these errors provide scope

for profit opportunities if the participants can move into a state that is less erroneous than before (Boettke & Coyne, 2001).

Table 2: Total Entrepreneurial Activity in South Africa (2005 to 2015)
Source: (South African 2015/16 GEM Report, pg. 17)

	2005	2009	2013	2014	2015
Black African – opportunity-driven	22.9*	49.1	58.3	59.8	43.3
Black African – necessity-driven	29.3	30.1	27.4	24.8	24.2
Coloured – opportunity-driven	9.3	3.0	1.5	3.4	4.8
Coloured – necessity driven	2.1	0.6	1.2	1.7	2.8
Indian – opportunity-driven	6.4	1.8	1.8	3.0	4.4
Indian – necessity-driven	3.6	0.6	0.9	0.0	1.6
White – opportunity-driven	19.3	9.7	7.3	4.7	14.3
White – necessity-driven	3.6	1.2	0.9	1.7	3.6

Alertness to opportunities is a resource that entrepreneurs need to possess before they can use other resources of opportunity exploitation and evaluation. Although opportunity-driven entrepreneurial activity levels have deteriorated since 2013 (Table 2), it is encouraging to note that total entrepreneurial activity (TEA) that is opportunity-motivated as opposed to necessity-driven has increased significantly compared to the historical levels of 2005. Table 2 is demonstrating such a trend. Kirzner (1973) also acknowledged the role an entrepreneur needs to play in enterprise and economic development as they have to be seen as responding to opportunities rather than creating them (Boettke & Coyne, 2001).

2.6.2 Opportunity Identification and Development Theory

Shane (2003) defined an entrepreneurial opportunity as a situation where an individual entrepreneur can create a new means-ends framework for organizing resources in order to earn a profit (Shane, 2003). An emphasis of the entrepreneurial opportunity definition is placed on the actual creation of the new means-ends framework as

opposed to operating or improvising within an old new means-ends framework. Kirzner (1973) and Schumpeter (1934) disagreed over whether the existence of entrepreneurial opportunities entailed an introduction of new information or differential access to existing information (Kirzner (1973), Schumpeter (1934)). Kirzner (1973) argued in favour of the former (i.e. differential access to existing information) due to the fact that every individual is different and their beliefs about the efficient use of assembled resources are based on the differential access to information they possess. On the basis of the differential access to existing information, Kirzner (1973) continued to argue that individual's decision-making process is not always optimal, which creates shortages or surpluses in the markets. When individuals identify the opportunities to respond to these observed shortages or surpluses, they obtain and recombine resources to sell output that will yield economic profit (Kirzner, 1973). In contrast, Schumpeter (1934) described that the creation of new information in the form of technological changes, political or regulatory factors, micro-economic and social factors are fundamental to the explanation and understanding of the existence of business opportunities.

According to the 2015/16 South African GEM report, an appropriated skilled and educated workforce with the capacity for innovation is critical to an economy's competitiveness, productivity and sustainable growth (Herrington & Kew, 2016). Herrington and Kew (2016) re-emphasized that a robust education system is one of the primary pillars for a competitive country, as it has been empirically proven that quality education system has a positive influence on self-efficacy and self-confidence of the individuals which increases the chances of such individuals starting their business enterprises (Herrington & Kew, 2016). Entrepreneurial capitals including entrepreneurial education or skills are therefore critical resources that have to be identified and combined for the creation and development of enterprises within the context of individual, firm level and environmental factors which are relevant or applicable to an entrepreneurial process. Entrepreneurial capitals in terms of access to finance, information or knowledge, markets, social and business contacts are associated with

the identification and combination of resources. Resource based theory (RBT) is relevant to entrepreneurship as it was identified to be a relevant theory for technological opportunism.

2.6.3 Resource Based View (RBV) Theory

Resource based theory plays a critical role in determining the success or failure of an enterprise as an ability to identify and exploit opportunities is regarded as a resource whilst the combination of such resources in order to create and develop enterprises is also regarded as a primary resource (Alvareza & Busenitz, 2001). In strategic management, a resource based view (RBV) is defined as the combination of organizational resources that are rare, valuable and unique in ensuring that an enterprise leverages off its resources in order to sustain a competitive advantage (Otache & Mahmood, 2015). Venter and Boris (2015) indicated that once human capabilities are combined, they become competencies and the entrepreneurial ventures are built and reliant on their competencies and resources to be innovative and such competencies are called “core competencies” once they are leveraged as a competitive advantage.

2.6.4 Dynamic Capability Theory

Entrepreneurship has been associated with the dynamic capability theory as entrepreneurship is a form of entrepreneurial thinking and recognizing opportunities and understanding how to dynamically capitalize on them (Teece et al, 1997). Teece et al (1997) further explain that dynamic capabilities are new forms of entrepreneurial capital resources and a source of competitive advantage that were not previously emphasized as core elements of the resource based theory. Dynamic refers to the self-renewal capacity of an enterprise to learn new competencies in order to align to the changing business environment as specific innovative responses are required when time-to-market is of an essence with the changing marketing landscape and the competition being unpredictable (Teece, Pisano, and Shuen, 1997). The concept of ‘capabilities’

focuses on the role of strategic management practices to adjust, integrate and combine organizational resources including skills and functional competencies to align to the changing business environment (El Gizawi, 2014).

2.6.5 Enterprise Growth Theory

According to Mao (2009), an enterprise growth is defined as a development process of the enterprise from weak to strong and from small to big (Mao, 2009). The fundamental meanings of development tend to surpass those meanings of growth as the development stage is the growth out of nothing before growth and subsequent stages. Whilst a lot of attention was provided to the discussions over the “Asian miracle”, this miracle appears to be different in Africa. Researchers argue that the prevailing conditions facing entrepreneurs in many African countries “make simply surviving a miracle” (Rogerson, 2001). The challenges facing the enterprises in the African economies are “to turn the miracle of survival into the miracle of growth” and for this to be a success, Africans needs to take the responsibility of being the agents of change and turn African problems into business innovations and grow their enterprises (Rogerson, 2001).

Enterprise growth stages are divided into two: 1) the survival capability of the enterprise and 2) the sustainable development capability of the enterprise. Various factors affect the survival ability of the enterprise, but specifically the foundation of the enterprise sustainable growth is its ability to survive (Mao, 2009). When there is strong competition in the market, the generation of survival ability tends to depend on underlying resources such as human capital, financial capital, adoption of new technology and level of innovation capability (i.e. originality possessed by the enterprise and new product launch rates) and this can enable the enterprise to gain a competition advantage (Mao, 2009).

The sustainable development ability of the enterprise takes place once the enterprise survives in the market on the basis of its distinct survival ability and the nature and uniqueness of the business internal and external circumstances being faced by the enterprise (Mao, 2009). Once an enterprise is led in a way that will ensure that they can swiftly handle their business circumstances while maintaining a momentum of growth, the enterprise may begin to be an enterprise candidate that can possess the sustainable development ability to exceed its own business objectives and continue developing (Mao, 2009). However, the enterprise growth should be considered from multiple points of views and dynamics as it is impractical to attribute enterprises' underlying reasons for survival and sustainable development to one certain aspect in the development process of an enterprise (Mao, 2009). Enterprise growth theory is applicable in established corporate organizations when new products, services, corporate venturing / alliances are formed as part of their innovation process because the existence and survival of such initiatives is predominantly reliant on the level of entrepreneurial climate and spirit embedded in such an established corporate organization.

2.7 CORPORATE ENTREPRENEURSHIP THEORY

Corporate Entrepreneurship (CE) is recognized as a mechanism for promoting entrepreneurial processes within an existing and well established organization in order to sustain a competitive advantage (van Antwerpen, 2012). Boris and Venter (2015) defined CE as the creation of a new organization or strategic renewal or innovation by a group of individuals within an established organization (Venter & Urban, 2015). CE is termed as an improvement process which enables the utilization of employees' innovative skills, knowledge and capabilities (Venter & Urban, 2015). The resource based-view (RBV) of CE is the organizational resources that are rare, valuable and unique (Otache & Mahmood, 2015). RBV is a foundation of a competitive advantage which is capable of achieving significant business growth (Otache & Mahmood, 2015).

When human capabilities are combined, these become competencies and organizations build and rely on its competencies to be innovative and those competencies are then called “core competencies” once these are leveraged as a competitive advantage (Venter & Urban, 2015). In light of RBV, CE can be accepted as a resource that can provide well-established firms with a competitive advantage. Existing organizations have to achieve sustainable competitive advantage to remain competitive (van Antwerpen, 2012). This suggests that existing organizations have to strategically innovate in order to remain competitive and CE has empirically been associated with higher levels of business performance and competitive advantage.

2.7.1 Integrative Model of Corporate Entrepreneurship

The integrative model of corporate entrepreneurship (CE) strategy was identified by the research work of Kuratko et al (2011). The study specifically focused on an organization's ability to initiate and sustain a competitive advantage through the continuous application of entrepreneurial practices within an existing organization. The integrative model of CE strategy is different from previous models of entrepreneurial phenomenon in existing organizations in four critical components shown in Figure 10 below (Urban, 2012). This study was derived to evaluate the relationships between external technological changes (i.e. triggers whether technological opportunism exists within an organization), entrepreneurial strategic vision (i.e. which includes strategic management context and practices), entrepreneurial behaviours (i.e. disposition towards entrepreneurial activity) and the combination of the constructs aims to collectively predict firm performance. Figure 10 depicts such relationships. All constructs interact with each other within an existing organizational environment and suggests that this will contribute toward the literature of corporate entrepreneurship through an evaluation of the effectiveness of corporate entrepreneurial activities within a banking institution.

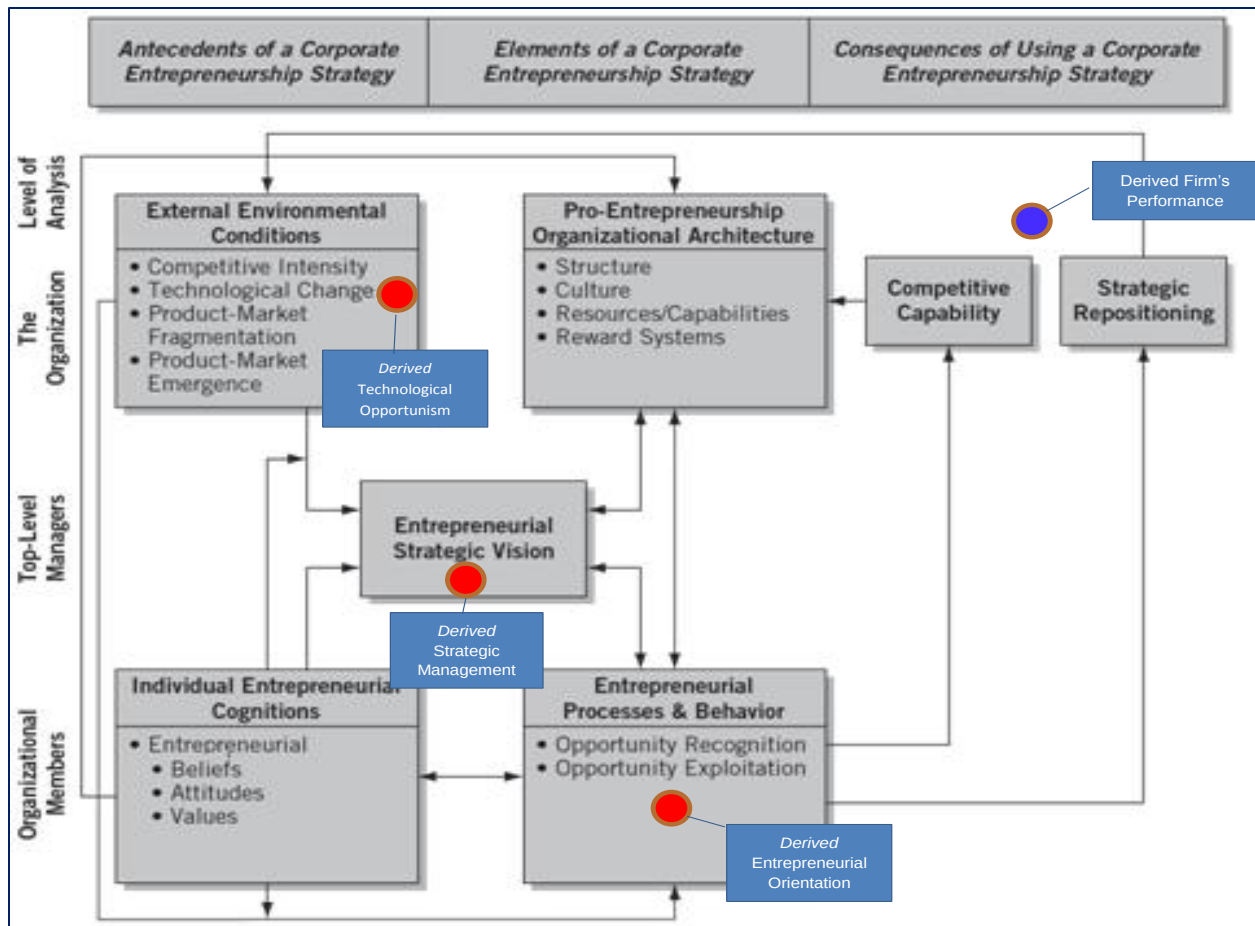


Figure 10: Corporate Entrepreneurship Strategy Integrative Model

Source: (Urban et al, 2012, pg. 40)

2.7.2 Sustaining Corporate Entrepreneurship Model

The research work of Kuratko et al (2011) identified a framework or model that focused on an organization's ability to initiate and sustain corporate entrepreneurship on a continuous basis (Kuratko, Morris, & Covin, 2011). The model demonstrates that sustainability is contingent upon individual members of the organization to continually innovate in pursuit of sustaining entrepreneurial activities. In turn, the perceptions are supposed to result in the allocation of required resources and necessary organizational support (Kuratko, Morris, & Covin, 2011). The model demonstrates key relationships that are combined within an existing organization to produce sustained entrepreneurial

activities. The model illustrates that there is a transformational trigger (i.e. internal or external event that creates an opportunity or threat to an existing organization) that would act as a catalyst for a strategic change – i.e. corporate entrepreneurial strategy implementation (e.g. a new product or service or process improvements) (Kuratko, Morris, & Covin, 2011). The entrepreneurial activity is driven by employees within an existing organization. The organizational factors (i.e. organizational structure, management support, rewards, time and resource availability and rewards or reinforcement) are employees' perceived role for their underlying impact on corporate entrepreneurial spirit and activity which is either real or not present within an existing organization (Kuratko, Morris, & Covin, 2011). This determines and sustains the existence of entrepreneurial orientation (EO) or behaviour by the employees of an existing organization (Kuratko, Morris, & Covin, 2011). This model is graphically depicted in Figure 11:

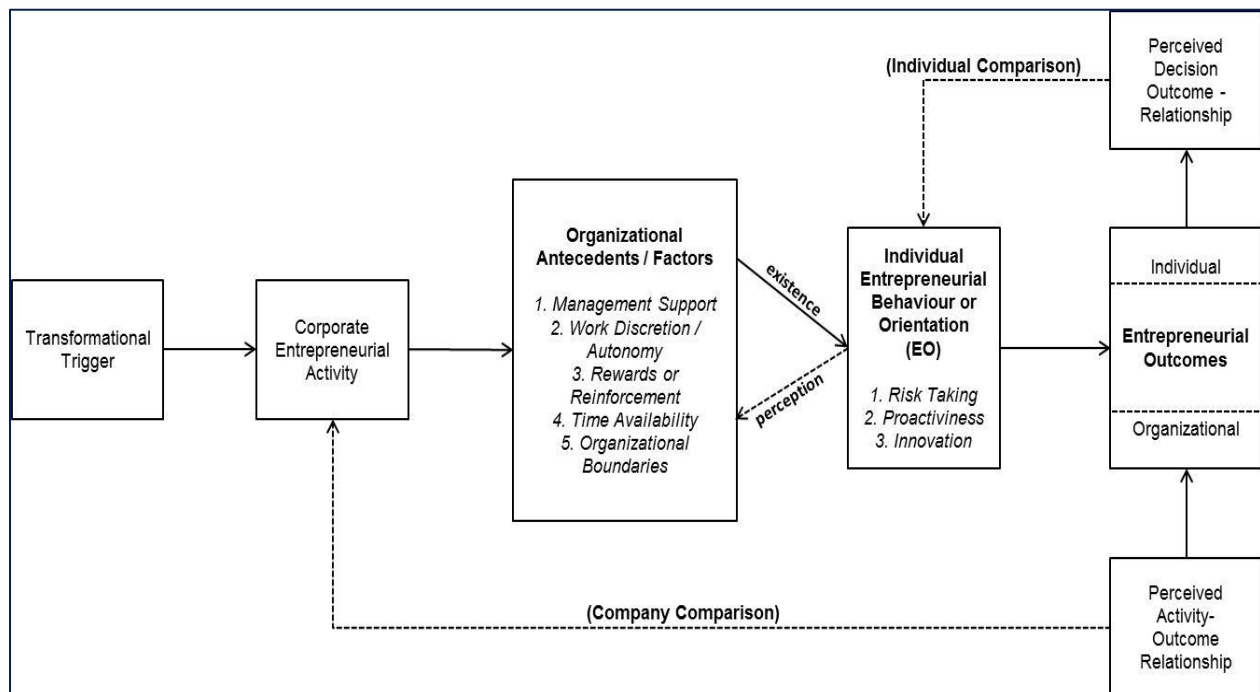


Figure 11: Sustaining Corporate Entrepreneurship: A Proposed Model

Source: (Kuratko, Hornsby and Covin, 2011, pg. 51)

2.8 ORGANIZATIONAL CONDITIONS OF CORPORATE ENTREPRENEURIAL ORIENTATION

Based on corporate entrepreneurship models (Figure 10 and 11), the potential drivers of corporate entrepreneurial orientation are organizational architectures (i.e. Structure, Culture, Resources or Capabilities and Reward Systems) and five organizational factors were identified as key dimensions of the organizational entrepreneurial climate which are likely to influence a level of entrepreneurial orientation (EO) in an existing organization, namely: 1) Management Support; 2) Work Discretion or Autonomy; 3) Rewards or Reinforcement; 4) Time Availability; and 5) Organizational Boundaries. The organizational conditions are briefly discussed next.

2.8.1 Management Support

According to Scheepers, Hough and Bloom (2008), corporate entrepreneurship top management support is described as the willingness of management and an organisation to accept and embrace new ideas or methods; the degree to which promotion or career progression possibilities are linked to entrepreneurial orientation (EO). Kuratko, Hornsby and Covin (2014) defines 'top management support' as the degree to which employees perceive the top managers' support and how they encourage and enable an entrepreneurial behavior within an organization. This includes how top management advocates and advance innovative ideas and provide the necessary resources that employees need to initiate entrepreneurial actions. Organizational innovative outcomes have been found to have a direct positive relationship with top management support (Kuratko, Hornsby, & Covin, 2014). According to Bayarçelik et al (2014), top management support generally manifests itself in project and idea development. Further, the simple idea under the management support dimension is to reassure employees to believe that the creation of innovation ideas is embedded within their day to day operational tasks (Bayarçelik & Özşahinb, 2014).

2.8.2 Work Discretion and Autonomy

Previous research by Bayarçelik et al (2014) describes the work discretion or autonomy as the employees' ability and willingness to be self-sufficient and self-directed in pursuit of entrepreneurial opportunities in an existing organization. The employees are empowered to remain free to act independently in order to make key decisions as it relates to the pursuit of innovative ideas or opportunities. The dimension determines the extent of employees' own decision-making power and responsibility in their roles; the company's attitude towards failure; and the degree of freedom that employees possess when pursuing their own initiatives (Scheepers, Hough, & Bloom, 2008). Higher levels of employee involvement in decision making process have been empirically proven to increase employees' innovative performance. Further, Bayarçelik et al (2014) has emphasized that management support in combination with an enhancement of autonomy enables the employees to take on and sustain risky but innovative projects in an organization.

2.8.3 Rewards and Reinforcement

Kuratko, Hornsby and Covin (2014) describe 'rewards or reinforcement' as the degree to which how employees perceive the adoption of organizational systems that reward based on entrepreneurial activity and success. Further, reward systems that enable innovation and risk taking have been known to have a strong influence on the habits and tendencies of individuals to behave entrepreneurially (Kuratko, Hornsby, & Covin, 2014). Various studies have identified a positive relationship between 'reward and resource availability' and entrepreneurial behavior by middle- and first-level managers (Kuratko, Hornsby, & Covin, 2014). Existing organizations have to formulate reward systems which are based on clear objectives, feedback, individual influence and entrepreneurial performance outcomes. In addition, every employee within an existing organization has different needs and is motivated by different things and organizations need to take cognizance of the uniqueness of individuals' needs when designing reward systems (Bayarçelik & Özşahinb, 2014).

2.8.4 Time Availability

This dimension of the organizational factors is based on the premise that individuals need adequate time allocated to create new and innovative ideas. Existing organizations must moderate the employees' workload and reduce time constraints on job tasks and enable employees to collaborate with others to focus on strategic problem solving (Bayarçelik & Özşahinb, 2014). For this dimension, employees have to indicate their perceived agreement or disagreement with statements regarding the time they have to allocate on resolving wider organizational issues other than their regular job responsibilities and workload (Scheepers, Hough, & Bloom, 2008). Previous research suggests that availability of time among employees is a vital resource for generating entrepreneurial initiatives. As an example, Kuratko, Hornsby and Covin (2014) explained that the availability of time and resources can enable corporate entrepreneurs to explore and exploit opportunities for innovation which may not be considered by their normal course of day to day work schedules.

2.8.5 Organizational Boundaries

Kuratko, Hornsby and Covin (2014) have described this organizational dimension as the extent to which employees perceive whether there are flexible organizational boundaries that are suitable in the promotion of entrepreneurial activity within an existing organization as they allow for the flow of information between the organization and an external environment, as well as between departments/divisions. Kuratko, Hornsby and Covin (2014) further argue that the innovative performance outcomes generally materialize when innovation is treated as a purposeful (as opposed to chaotic) and structured process.

2.9 ENTREPRENEURIAL ORIENTATION THEORY

Over 30 years ago, Miller (1983) proposed that corporate entrepreneurial orientation (EO) is a foundational basis of an existing business that simultaneously demonstrates risk-taking, proactiveness and innovation in its overall business model and operational activities. Miller (1983) further conceived of EO as a construct is comprised of all three sub-dimensions which must positively co-vary for EO to be manifested within an organization. In the case where co-variation between innovativeness, risk-taking and proactiveness does not exist, the presence of EO cannot be claimed to exist within an organization (Miller, 1983). Contrary to Miller (1983), Lumpkin and Dess (1996) claimed that the dimensions that characterize EO do not necessarily need to positively co-exist in order for EO to be present within an organization.

Nonetheless, many researchers have since adopted a similar approach as Miller (1983) in terms of describing a degree of entrepreneurship within an existing organization based on how employees demonstrates these three attributes in their strategic decision making and day-to-day operations (Ginsberg, 1985; Covin and Slevin, 1989; Barringer and Bluedorn, 1999; and Wiklund and Shepherd, 2005). The three dimensional make-up of corporate entrepreneurial orientation construct continues to be supported by more recent empirical research studies. EO is broadly defined as the decision making activities at the level of an existing company which leads to the creation of new markets and renewal of products and services.

The adoption of EO presents organizations with an ability to evaluate strategic decision making through entrepreneurial lenses. Sufficient body of knowledge exists that describe and provide literature support to the EO construct and its underlying dimensions. Chokesikarin (2014) defines EO as management's preferences and intention of adopting dynamic entrepreneurial attitudes which could be summarized by three core behavioral dimensions, namely: risk taking, proactiveness, and

innovativeness. The behavioral dimensions that represent the degree of entrepreneurship within an existing organization (Chokesikarin, 2014) are tabled in Table 3:

Table 3: Dimensions of Entrepreneurial Orientation

Source: (Dess & Lumpkin, 2005)

Risk Taking	Making decisions and taking action without certain knowledge of probable outcomes: some undertakings may also involve making substantial resource commitments in the process of venturing forward
Proactiveness	A forward-looking perspective characteristic of a marketplace leader that has the foresight to seize opportunities in anticipation of future demand
Innovation	A willingness to introduce newness and novelty through experimentation and creative processes aimed at developing new products and services as well as new processes.

2.10 STRATEGIC MANAGEMENT THEORY

How do companies achieve and sustain competitive advantage? That is the most important question that a strategic management discipline is in place to respond to (Teece, Pisano, & Shuen, 1997). Strategic management is a decision-making process which enables an organization to analyse and take actions for the creation and sustainability of its competitive advantage. Strategic management is a planning method that determines long-term planning for the attainment of long-term company performance (Rouse and Daellenbach, 1999). Strategic management is an iterative process that has four common phases: analysis, formulation, implementation and evaluation of strategic plans (Urban & Venter, 2015).

Strategic management governs how the fundamental operational activities of the company are advanced in order to ensure the continuous renewal and growth of the firm (Kuratko & Audretsch, 2009). Further, strategic management provides an internal and external contextual analysis of determining business strategies that translate into

the operations of the organization (Kuratko & Audretsch, 2009). Further, strategic management involves the design, formulation and implementation of long-term plans for the management of the identified external opportunities and threats while taking into account the internal resources as it relates to underlying strengths and weaknesses of the organization (Ketchen, Ireland, & Snow, 2007). Kuratko and Audretsch (2009) agreed that the process of strategic management is utilized to match the external or environmental factors of the changing business environment with a core focus on management and leveraging of the internal resources and capabilities which are foundations for achieving and sustaining the competitive advantage (Kuratko & Audretsch, 2009). Strategic management as a construct within a bank will be delimited and measured through strategic planning flexibility dimension and the control effects of business environmental factors in technological turbulence and competition hostility.

2.11 STRATEGIC ENTREPRENEURSHIP AND TECHNOLOGICAL OPPORTUNISM HYPOTHESIS DEVELOPMENT

Previous research has pointed out to an important consideration and scholarly question with practical relevance in the economic environments as to how organizations pursue the creation of value and sustainable competitive advantage while exploiting opportunities supported by a strategic combination of resources? (Hitt, Ireland, Sirmon, & Trahms, 2011). Strategic entrepreneurship is based on the primary consideration and centers on the fields of entrepreneurship and strategic management. The strategic management discipline aims to acquire and understand knowledge that relates to the causes of firm performance differentials across organizations as competitive positioning and advantage underpins an organizational ability to create value and wealth for customers, shareholders and broader society (Hitt, Ireland, Sirmon, & Trahms, 2011).

The outcomes of the acquisition and understanding of the knowledge as this relates to the causes of firm performance and competitive advantage are to dynamically align the

company value propositions to the requirements of the market circumstances based on the combined organizational resources and capabilities. Shane and Venkataraman (2000) and Hisrich and Peters (1998) described entrepreneurship as a process of innovation and creativity, opportunity identification and exploitation in pursuit of new venture and wealth creation including an absorption of earnings and risks of the business venture (Hisrich and Peters, 1998; Shane and Venkataraman, 2000).

Entrepreneurship and strategic management are dynamic capabilities with specific focus on increasing firm performance (Kuratko & Audretsch, 2009). Kuratko et al further explain that strategic management calls for organizations to leverage entrepreneurship in promoting product, process, and service innovations within a specific environmental context (Kuratko, Morris, & Covin, 2011). In the context of an existing organization, an integration of entrepreneurship and strategic management implies a dominant strategic entrepreneurial proclivity (Urban and Venter, 2015). The dominant strategic entrepreneurial inclination has been adopted by many organizations as their dominant logic in order to capture and appropriate value in pursuit of achieving and sustaining competitive advantage (Kuratko, Morris, & Covin, 2011).

The interesting notion of dominant logic is the way in which management would frame and articulate their respective business cases to make critical resource allocations (Kuratko, Morris, & Covin, 2011). For example, the dominant logic of Discovery is an ethos of entrepreneurship and innovation and resource allocation decisions are vetted through their innovation criteria before being adopted. The dominant logic attempts to appropriate value through a prevailing mindset and an underlying pillar of the focus of procedures and systems in the company. As a dominant logic, entrepreneurial orientation of an organization promotes creativity and innovations, strategic nimbleness and flexibility throughout the organization and the focus of the company is opportunity identification, new sources of value identification and innovations associated with processes and products that will lead to greater profitability (Kuratko, Morris, & Covin,

2011). Therefore, strategic entrepreneurship is a dynamic capability within an organization that is concerned with exploration and exploitation behaviours as this relates to entrepreneurial opportunities and its competitive advantage.

For an organization to have a capability to sense and respond to technological developments, it is unlikely that strategic entrepreneurship capability in the form of entrepreneurial orientation and planning flexibility is not complementary to an effective application of technological opportunism within an organization. The opportunity-seeking and advantage-seeking behaviours are more encompassing including how organizations achieve and sustain a competitive advantage through opportunity identification and combination of strategic resources. The strategic combination of resources includes human, social and financial capital. Technological sensing and responding capability is a critical component of human capital when measured at an individual level and associated with strategic entrepreneurship.

Given that strategic entrepreneurship remains an emerging discipline and the moderating and mediating effects of strategic entrepreneurship on technological opportunism-firm performance relationship has not been empirically tested and appears to be implied within technological opportunism, it is hypothesized that entrepreneurial orientation and planning flexibility (i.e. strategic entrepreneurship) has a moderating and / or mediating effect on the technological opportunism and firm performance.

2.11.1 Literature Support for Strategic Entrepreneurship as Mediator and Moderator

For various decades, hypothesized relationships which involved moderation and mediation effects have been critical to the development of strategic management research (Aguinis, Edwards, & Bradley, 2016). Aguinis et al (2016) referred to moderators as those independent variables that influence the interaction factors (i.e. direction or level of magnitude or both) of the primary relationship between independent

variables and an outcome variable being validated. Aguinis et al (2016) demonstrated that moderators do not need to be present for the existence of the relationship between independent variables and an outcome variable. On the other hand, mediation variables transmit the effect of the independent variable on the outcome variable and the mediator's implicit presence or existence (although not necessarily explicit in the regression model) is fundamental to their definition and impact on the relationship between independent variables and dependent variable (Baron & Kenny, 1986). Thus, the study of cause-and-effect relationships has been the quest of many researchers in behavioral science (Wu & Zumbo, 2008). Wu and Zumbo (2008) tends to argue that testing causal relationships not only verifies the in-depth theories of the researchers about a phenomenon of the study but responds to practical questions around whether an intervention or treatment variable achieved its intended or expected effect.

Mediation and moderation are causal models as when one studies these variables, a mediator is an intervening or rather third variable that links a cause and effect relationship between a predictor variable and an outcome variable (Baron & Kenny, 1986). A moderator is a third variable that modifies a causal effect either through changing its direction (i.e. positive, negative or reverse) and strength of such relationship between the independent variable and dependent variable (Baron & Kenny, 1986). Aguinis et al (2016) agreed that the moderation effect is statistically termed an "interaction" effect where the intensity or direction of the relationship between an independent variable and the dependent variable could be changed by the specific uncontrollable level (e.g. gender as in male or female) or the behavioural value (e.g. level of attitude, motivation, entrepreneurship) of the moderator variable. Simplistically, a moderator could be as an example a dimmer which its primary objective is to change the strength of a switch on the lighting (Wu & Zumbo, 2008).

In the context of our study, strategic entrepreneurship is hypothesized to be the cause and effect linkage between technological opportunism and firm performance

relationship. In other words, strategic entrepreneurship is hypothesized to be a causal model that explains the underlying process of “why” and “how” a cause-and-effect happens between technological opportunism and firm performance (Wu & Zumbo, 2008). For the primary effect to be positive and statistically significant, strategic entrepreneurship has to be present within a banking institution. The mediational analysis of strategic entrepreneurship attempts to determine the transitional process that positively directs the relationship from technological opportunism to firm performance. In a simplistic mediational model, technological opportunism is assumed to cause strategic entrepreneurship, and in turn, strategic entrepreneurship causes firm performance. That's why a mediation effect is known as an indirect effect, intermediating effect or intervening effect (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002).

On the other hand, the researcher intends to study whether specific levels of strategic entrepreneurship as a moderator variable modifies the strength or direction (i.e. positive or negative or reverse) of a causal relationship model between technological opportunism and firm performance. In essence, the term “moderation effect” has historically been argued for causal models (Baron & Kenny, 1986). Wu and Zumbo agreed that a moderation effect is a reserved case of an interaction effect, i.e. a causal interaction effect, which needs causal theory and design behind the data as a prerequisite. In essence, the student researcher wishes to expand the research knowledge through exploring whether a specific level of strategic entrepreneurship (i.e. entrepreneurial orientation and planning flexibility) changes the intensity or direction (moderation analysis) of an existing causal relationship between technological opportunism and firm performance. Meaning, mediation and moderation analysis should be specifically treated as independent and mutually exclusive set of analyses whereby their regression results have no bearing on one another and should not be viewed in such light. According to Baron and Kenny (1986), other researchers are generally

inclined to believe that an intervening or interaction variable must either be a mediator or moderator in a cause-and-effect relationship and not both.

Notwithstanding, specific circumstances do require logical reasoning and tolerance for the examination of both mediation and moderation effects of one third variable in a relationship (Baron & Kenny, 1986). Various previous studies have been conducted whereby one variable was adopted to mediate or moderate the main effect relationship with varying degrees of research findings. For instance in Ghana, Saltson and Nsiah (2015) pursued to investigate motivation as both mediators and moderators in the relationship between perceived organizational support (POS) and employee job performance. Findings demonstrated a positive effect of POS on employee job performance, but failed to support any of the mediating or moderating roles of motivation in this relationship (Saltson & Nsiah, 2015). In another study in New Zealand, authors investigated moderating and mediating effects of coping strategies by Chinese American and European American Adolescents (Jose & Hunsinger, 2005). Among the findings, avoidance-coping behaviors and problem-focused were identified to moderate the effect of stress on negative adjustment for Chinese American youth while the same was not evidenced for the European American youth (Jose & Hunsinger, 2005).

In a different study in Indonesia, three researchers attempted to determine whether job satisfaction moderated and mediated the relationship between commitment to change and change leadership (Wulandari, Mangundjayab, & Utoyo, 2015). The research results showed that satisfaction in your job was required to be present to mediate the the relationship between commitment to change and change leadership (Wulandari, Mangundjayab, & Utoyo, 2015). Last but not least in China, there is a study that was pursued to discover whether an investment in reseach and development had a mediating and moderating effect on the relationship between corporate governance and firm performance (Zhang, Chen, & Feng, 2014). Their findings did not support the

moderation effect, but instead R&D investment mediated the relationship between corporate governance and firm performance (Zhang, Chen, & Feng, 2014).

The pursuit of this study to further understand whether strategic entrepreneurship mediates and moderates the effect of technological opportunism on firm performance will advance both strategic management and entrepreneurship fields of research in an emerging markets context. Strategic entrepreneurship was measured by two operational dimensions in entrepreneurial orientation and planning flexibility. In turn, entrepreneurial orientation was measured by the well-established operational variables in risk-taking, innovation and proactiveness. The hypothesized relationships between the two constructs of technological opportunism and strategic entrepreneurship will be empirically tested for validation as summarized below:

- **Hypothesis 2 (Mediator):** The primary relationship between technological opportunism and firm performance is mediated by strategic entrepreneurship such that a direct or indirect existence of the relationship is positively associated with strategic entrepreneurship.
- **Hypothesis 3 (Moderator):** The primary relationship between technological opportunism and firm performance is moderated by strategic entrepreneurship such that a direction and strength of the relationship is determined by the specific level of strategic entrepreneurship.

Similarly, the underlying constructs of strategic entrepreneurship in the form of entrepreneurial orientation (i.e. risk taking, proactiveness and innovation) and planning flexibility will be operationally measured to determine whether there are mediation and moderation effects between technological opportunism and firm performance (i.e. measured as a combination of new product success rates, return on investment, revenue growth, market share and profitability).

2.11.2 Risk Taking and Technological Opportunism Hypothesis Development

Corporate risk-taking behaviour is described as an organizational inclination to invest in entrepreneurial initiatives with an outcome that is uncertain or unknown and operate in highly leveraged positions (Lumpkin and Dess, 1996). Risk taking is related to the disposition to allocate more resources to projects where there is relatively high cost of potential failure (Miller and Friesen, 1978). In addition, risk taking behaviour widely reflects the desire of the organization to refrain from the tried-and-tested and venture into uncertainty or unknown that is likely to yield high financial returns (Wiklund & Shepherd, 2005). Corporate risk taking is theorized as the organizational behaviour and attitude to create a new business venture in pursuit of corporate growth and profitability through a toleration of estimated probable losses (Bulut & Yilmaz, 2008). Lumpkin and Dess (2001) researched and explained that risk-taking is an ability to be bold in your decision making in terms of identifying and exploiting opportunities in pursuit of creating a new enterprise, combine required resources into the business venture while the foreseeable outcomes of its success or failure are unknown.

Based on the viewpoints of various researchers, it can be deduced that risk taking behaviour can be associated with resource and dynamic capability theories as an organization will have to be resourceful in order to take risks and leverage its dynamic capabilities in order to yield a return on its investments. Further, risk taking activities are very similar to investing in technology resources and knowledge in order to be increase alertness to technology opportunities and respond swiftly in order to leverage of the developed knowledge. The propensity to take on risks can be associated to technology development investments without any guaranteed financial return. Therefore, risk taking behaviour may be implied within technological opportunism as customer outcomes are unknown in terms of market orientation and adaptation to technology innovations. The researcher will investigate the mediating and moderating effects of the amount of the risk taking activities on technological opportunism and firm performance (i.e. measured as a combination of new product success rates, return on

investment, revenue growth, market share and profitability). The following hypothesis will be empirically validated as part of the entrepreneurial orientation dimension under the strategic entrepreneurship construct:

- **Hypothesis 2.1 (Mediator):** The primary relationship between technological opportunism and firm performance is mediated by risk taking such that a direct or indirect existence of the relationship is positively associated with risk taking.
- **Hypothesis 3.1 (Moderator):** The primary relationship between technological opportunism and firm performance is moderated by risk taking such that a direction and strength of the relationship is determined by the specific level of risk taking.

2.11.3 Proactiveness and Technological Opportunism Hypothesis Development

Proactiveness is an organizational ability to scan the environment in anticipation of changing trends and responding on future demands in the marketplace, thereby creating a first to market advantage over competitors (Lumpkin and Dess, 1996). Proactiveness takes a market position of forward-looking through capitalizing on business opportunities that are created by changing trends and future developments (Wiklund and Shepherd, 2005). Proactiveness is not about anticipating and responding to the wrong opportunities or customer needs; an organizational response needs to create value through the satisfaction of the market opportunities by being the first mover into the market (Bulut and Yilmaz, 2008). In other words, proactiveness is an exploration and exploitation process of identified opportunity in pursuit of creating market value for the unexpressed future needs of the customers including presenting new products or services faster than the competitors (Lumpkin and Dess, 2001).

Technological opportunism is an organizational capability to sense (anticipate) and respond to opportunities presented by technological changes or developments in anticipation of creating sources of competitive advantage (Srinivasan, Lilien, & Rangaswamy, 2002). To some degree, an organization would have to be implicitly proactive in their strategic and operational decision making in order to timeously sense

and respond to the technological developments. The researcher will examine the mediating and moderating effects of the level of proactiveness on technological opportunism and firm performance (i.e. measured as a combination of new product success rates, return on investment, revenue growth, market share and profitability). The following hypothesis will be empirically validated as part of the entrepreneurial orientation dimension under the strategic entrepreneurship construct:

- **Hypothesis 2.2 (Mediator):** The primary relationship between technological opportunism and firm performance is mediated by proactiveness such that a direct or indirect existence of the relationship is positively associated with proactiveness.
- **Hypothesis 3.2 (Moderator):** The primary relationship between technological opportunism and firm performance is moderated by proactiveness such that a direction and strength of the relationship is determined by the specific level of proactiveness.

2.11.4 Innovation and Technological Opportunism Hypothesis Development

Innovation is defined as the foundational basis of competitiveness in terms of the means and resources by which organizations anticipate and fulfill the demand and unmet needs of customers and the technology by which organizations leverage of. (Barbosa, 2014). Innovation is the process of creating ideas, practice, or object that employees or an organization adopt and implement as new (Damanpour, 1991). Further, innovation is defined as the inclination of an organization to emphasize on research and development investments, new or improved processes, new or improved products, new or improved services and general improvement or development and adoption of new technologies in the industry (Slevin & Covin, 1990). On the other hand, innovation is defined as an initiated process of concept or idea generation and is concluded with market introduction that creates value for targeted customers (Freeman & Engel, 2007). The level of innovativeness suggests an organizational propensity to offer originality and newness through experimentation and research at new products, services and new processes development (Dess and Lumpkin, 2005; Lumpkin and Dess, 2001). Not all

experiments are likely to be successful thus termed experiments, but an organization which does not challenge the status quo of its business model and operations is likely not to recognize business growth opportunities and associated new market segments. Identification of innovation opportunities needs organizations to be resourceful in terms of research and development in order to ensure the generation of such ideas in turn creates value for the targeted customers.

The effectiveness of innovation could be associated with the application of the resource based view and dynamic capability theories over an ability of the organization to combine resources in order to dynamically generate ideas and economic value. Further, diffusion of innovation theory is very similar to the technology acceptance model which assists in explaining and predicting end user behavior of information technology. The innovation process is therefore likely to be embedded within an organization when it senses and responds to technological developments as external change forces internal change of organizational behaviour. The researcher aims to determine mediating and moderating effects of the degree of innovativeness on technological opportunism and firm performance (i.e. measured as a combination of new product success rates, return on investment, revenue growth, market share and profitability). The following hypothesis will be empirically validated as part of the entrepreneurial orientation dimension under the strategic entrepreneurship construct:

- **Hypothesis 2.3 (Mediator):** The primary relationship between technological opportunism and firm performance is mediated by innovation such that a direct or indirect existence of the relationship is positively associated with innovation.
- **Hypothesis 3.3 (Moderator):** The primary relationship between technological opportunism and firm performance is moderated by innovation such that a direction and strength of the relationship is determined by the specific level of innovation.

2.11.5 Entrepreneurial Orientation and Technological Opportunism Hypothesis Development

Based on the three dimensions of EO previously discussed, EO is the 'driving force behind the organizational pursuit of the entrepreneurial activities' (Kollmann & Stöckmann, 2012). Kollmann and Stöckmann described EO as the essence which captivates the manifestation of an entrepreneurial disposition toward, instead of an actual involvement in, entrepreneurial activity within an existing organization (Kollmann & Stöckmann, 2012). Many researchers (Ginsberg, 1985; Covin and Slevin, 1989; Barringer and Bluedorn, 1999; and Wiklund and Shepherd, 2005) asserted that it is also worth consideration to mention that EO represents a continuum which ranges from more or less conservative to more or less entrepreneurial firms. EO embodies the management culture and style that is adopted by senior management as it relates to their entrepreneurial dominant logic of the ways of working within their organizations. The researcher hypothesizes to investigate the mediating and moderating effects of the level of entrepreneurial orientation on technological opportunism and firm performance (i.e. measured as a combination of new product success rates, return on investment, revenue growth, market share and profitability). The following hypotheses will be empirically validated as part of the strategic entrepreneurship construct:

- **Hypothesis 2.4 (Mediator):** The primary relationship between technological opportunism and firm performance is mediated by entrepreneurial orientation such that a direct or indirect existence of the relationship is positively associated with entrepreneurial orientation.
- **Hypothesis 3.4 (Moderator):** The primary relationship between technological opportunism and firm performance is moderated by entrepreneurial orientation such that a direction and strength of the relationship is determined by the specific level of entrepreneurial orientation.

2.11.6 Planning Flexibility and Technological Opportunism Hypothesis

Development

According to Murimbika and Urban (2015), planning flexibility allows entrepreneurial organizations to dynamically tweak their strategic plans in response to changes in external environmental factors including an anticipation of technological developments and proactive response in order to leverage off these technological opportunities. A high degree of organizational planning flexibility enables swift strategic and operational response to changes in external business environment which leads to opportunity exploration and exploitation towards an achievement of sustainable competitive advantage (Murimbika & Urban, 2015). On the contrary, a low organizational posture of planning flexibility is associated with lower organizational agility towards changing business circumstances to enable an organization to recognize and exploit business opportunities imposed by the changing environment (Murimbika & Urban, 2015). From previous discussions, it was noted that some organizations have an ability to sense technological developments which are relevant to their business activities (high technological sensing capability) but fail to respond to these developments in an agile manner (low technologic responding capability) (Strandholmm, Kumar, and Subramanian, 2004). The same logic can be applied to the degree of organizational planning flexibility and how this would impact on firm performance.

As adopted for technological opportunism construct, planning flexibility is also rooted in the application of the dynamic resource based view theory as a concept of 'capabilities' focuses on the role of strategic management practices to adjust, integrate and allocate organizational resources including skills and functional competencies to align to the changing business environment (El Gizawi, 2014). The focus of strategic planning flexibility has been on how organizations adapt to environmental changes including technological developments by being alert to identifying and exploiting opportunities presented by uncertainties and discontinuities to improve firm performance (Murimbika & Urban, 2015). The implied presence of planning flexibility in the application of

technological opportunism offers the logical hypothesis to investigate the mediating and moderating effects of the level of planning flexibility on technological opportunism and firm performance (i.e. measured as a combination of new product success rates, return on investment, revenue growth, market share and profitability). The following hypothesis will be empirically validated as part of the strategic management dimension under the strategic entrepreneurship construct:

- **Hypothesis 2.5 (Mediator):** The primary relationship between technological opportunism and firm performance is mediated by planning flexibility such that a direct or indirect existence of the relationship is positively associated with planning flexibility.
- **Hypothesis 3.5 (Moderator):** The primary relationship between technological opportunism and firm performance is moderated by planning flexibility such that a direction and strength of the relationship is determined by the specific level of planning flexibility.

2.12 CONTROL VARIABLES

The empirical research includes two control variables in the form of technological turbulence and competitive hostility. Technological turbulence is the pace of technology change in any market (Jaworski & Kohli, 1993), which implies the volatility of, unpredictability of, or/and an inability to anticipate and understand technological developments or changes in the external environment (Bstieler, 2005). For example, the short lifespan of technological innovations and customer undesirability are attributes of highly technologically turbulent business environments (Chen & Lien, 2013). Technological uncertainty and complexity in such industries tend to raise significant inherent risks (Soh & Roberts, 2003). According to Chen and Lien (2013), competitive hostility captures the level of intensity with regards to the concentration, vigor, and aggressiveness of inter-company competition that exists in the company's target customer segments and industry environment. Firms that operate in hostile market

conditions are inclined to raise their level of competitive advantage through innovation and proactive business activities because this represents an organizational competence and capability for gaining and sustaining market leadership (Lumpkin and Dess, 1996).

Various researchers have observed and theorised a positive relationship between the degree of technological opportunism and firm performance, however one should be cautious around industry specific context as this relates to technological turbulence and competition hostility. Technological turbulence and competitive hostility in a specific industrial sector are likely to impact the effectiveness of the technological opportunism on firm performance as low technological turbulence associated with low competitive hostility may not necessarily result in increased firm performance if the organization timely scanned or sensed and responded to the technological advances in the market ahead of the competition. In turn, high technological turbulence supported by high competitive intensity requires firms to adopt a proactive and aggressive technology sensing and adoption strategy if as an example the competitors were quick to respond to technological advances in their respective industrial sectors. Perhaps, the competitive advantage position in this case is to be a strategic follower in adopting the new technologies as opposed to being proactive in pursuit of achieving earnings while absorbing risks presented by disruptive technological developments. The researcher opted to include technological turbulence and competitive hostility in the empirical research as control variables between hypothesized and proposed models relationships.

2.13 CONCLUSION OF THE LITERATURE REVIEW

This chapter reviewed an existing body of empirical knowledge on the theories, constructs and concepts of strategic entrepreneurship as this relates to technological opportunism and firm performance. Technological opportunism and firm performance empirical research are not exclusively new, but no studies (according to the knowledge

of the student researcher) have been conducted on the moderating and mediating effects of strategic entrepreneurship on technological opportunism and firm performance. Various researchers re-affirmed that strategic entrepreneurship is an emerging area of research interest, but there is no research that adequately addresses the implied existence of strategic entrepreneurship on the link of technological opportunism and firm performance.

Research studies have extensively covered an association of technological opportunism and firm performance without taking into account the potential moderating and mediating effects of strategic entrepreneurship. The limited empirical research appears to be connected to the opportunistic exploration processes embedded within technological opportunism through understanding and acquiring knowledge about technological developments which seems to indicate that technological opportunism has an indirect relationship with entrepreneurial orientation.

The dynamic resource based view capability to manage technological developments to seek or maintain a competitive advantage was deduced to relate to the planning flexibility capability of the firm. The proposed combination of entrepreneurial orientation and planning flexibility suggested a potential existence of strategic entrepreneurship on the empirically tested association of technological opportunism and firm performance. The researcher aims to investigate the moderating and mediating effects of strategic entrepreneurship on the relationship between technological opportunism and firm performance within the context of a South African banking institution.

2.13.1 Hypothesis 1

Higher levels of technological opportunism are positively associated with higher levels of firm performance

2.13.2 Hypothesis 2 (Mediation)

The primary relationship between technological opportunism and firm performance is mediated by strategic entrepreneurship such that a direct or indirect existence of the relationship is positively associated with strategic entrepreneurship.

- **Hypothesis 2.1 (Mediator):** The primary relationship between technological opportunism and firm performance is mediated by risk taking such that a direct or indirect existence of the relationship is positively associated with risk taking.
- **Hypothesis 2.2 (Mediator):** The primary relationship between technological opportunism and firm performance is mediated by proactiveness such that a direct or indirect existence of the relationship is positively associated with proactiveness.
- **Hypothesis 2.3 (Mediator):** The primary relationship between technological opportunism and firm performance is mediated by innovation such that a direct or indirect existence of the relationship is positively associated with innovation.
- **Hypothesis 2.4 (Mediator):** The primary relationship between technological opportunism and firm performance is mediated by entrepreneurial orientation such that a direct or indirect existence of the relationship is positively associated with entrepreneurial orientation.
- **Hypothesis 2.5 (Mediator):** The primary relationship between technological opportunism and firm performance is mediated by planning flexibility such that a direct or indirect existence of the relationship is positively associated with planning flexibility.

2.13.3 Hypothesis 3 (Moderation)

The primary relationship between technological opportunism and firm performance is moderated by strategic entrepreneurship such that a direction and strength of the relationship is determined by the specific level of strategic entrepreneurship.

- **Hypothesis 3.1 (Moderator):** The primary relationship between technological opportunism and firm performance is moderated by risk taking such that a direction and strength of the relationship is determined by the specific level of risk taking.

- **Hypothesis 3.2 (Moderator):** The primary relationship between technological opportunism and firm performance is moderated by proactiveness such that a direction and strength of the relationship is determined by the specific level of proactiveness.
- **Hypothesis 3.3 (Moderator):** The primary relationship between technological opportunism and firm performance is moderated by innovation such that a direction and strength of the relationship is determined by the specific level of innovation.
- **Hypothesis 3.4 (Moderator):** The primary relationship between technological opportunism and firm performance is moderated by entrepreneurial orientation such that a direction and strength of the relationship is determined by the specific level of entrepreneurial orientation.
- **Hypothesis 3.5 (Moderator):** The primary relationship between technological opportunism and firm performance is moderated by planning flexibility such that a direction and strength of the relationship is determined by the specific level of planning flexibility.

2.13.4 Conceptual Research Model

Hypotheses in the research constructs and variables are graphically displayed in Figure 12:

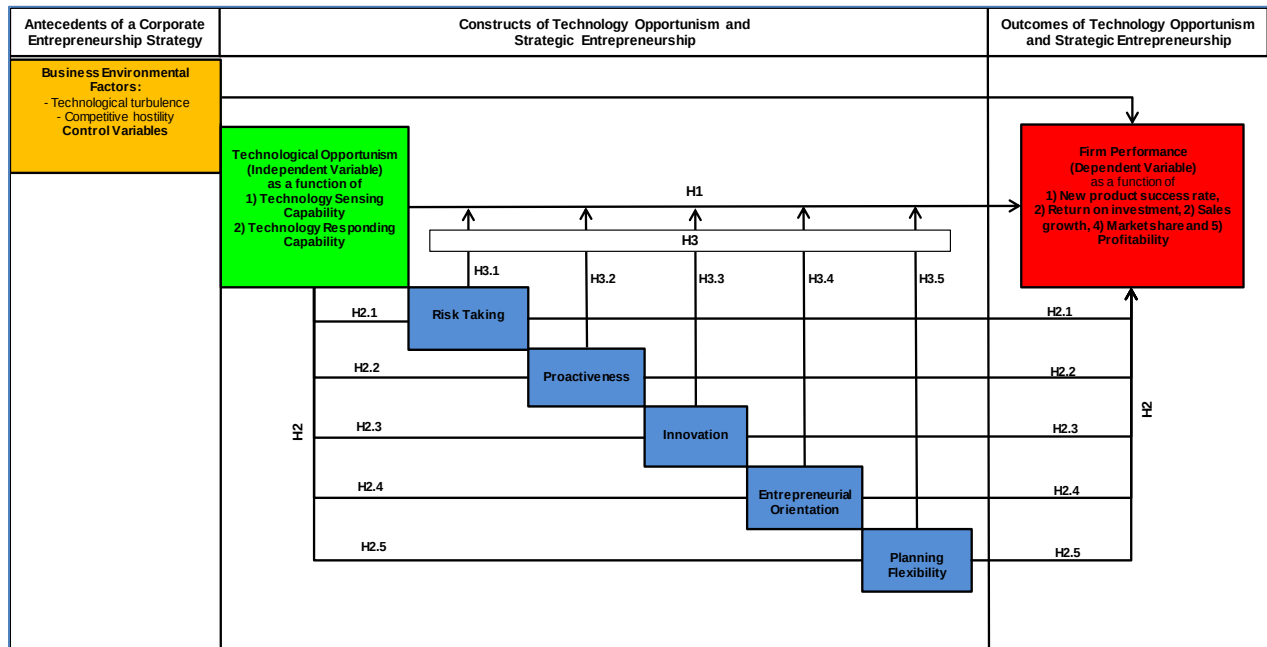


Figure 12: Conceptual Research Model

(Source: Kuratko et al, 2009, Chien-Wei Chen and Nai-Hwa Lien, 2013 and Murimbika and Urban, 2015)

CHAPTER 3 – RESEARCH METHODOLOGY

3.1 INTRODUCTION

Given a positivist epistemology perspective held by the student researcher, the empirical research followed a quantitative deductive method. A cross sectional survey-type research design was adopted through the administration of a structured questionnaire. The quantitative data was collected from 347 respondents in a banking institution and multiple regression models were adopted to validate the identified hypotheses.

Albeit known limitations imposed by the statistical methods and results, the applied statistical methods aided with validating the effect of technological opportunism (independent variable) on firm performance (dependent variable). Sensing and responding to technological developments within a South African banking context is heavily reliant on external factors and internal organizational resources and capability to recognize such technological opportunities before potential exploitation of such opportunity with an objective of creating sustainable entrepreneurial organizations.

The study intended to perform an empirical investigation on the effects of strategic entrepreneurship (i.e. entrepreneurial orientation and planning flexibility) on the relationship between technological opportunism and firm performance within an emerging markets context of a banking institution. Therefore, a unit of population and sample respondent analysis was a randomly selected set of senior personnel in a South African banking institution.

This chapter begins by outlining the philosophical paradigms of the researcher in pursuit of qualifying the research design and methods which were adopted. The population,

sampling approaches and sizes will be clarified. The chapter will further outline the research instrument adopted including the objective detail of measurement and scale items. This section will close by discussing the data collection procedures, ethical issues, statistical analysis techniques, limitations and reliability and validity considerations.

3.2 PHILOSOPHICAL PARADIGMS

Epistemology perspective of the research study was positivist with a specific focus on comprehending, evaluating and analyzing the degree of the interrelationships between operational variables and constructs. Further, theory was generated through logical reasoning but that could be empirically validated through inspection of historical literature globally. The researcher is of the world view that there is one reality that is known within the confidence levels of probability (ontology perspective is one objective / realist view). Through sourcing of quantitative data from the sampled executives, team heads, senior managers, managers of an unnamed banking institution using a predetermined research instrument (Cooper and Schindler, 2014), the student researcher managed to uphold objectivity and independence. The researcher did not impose his own views on the responses gathered and subsequent findings produced. The technological opportunism and entrepreneurial orientation studies have previously covered the investigation, evaluation and understanding of casual and influencing relationships among constructs and business performance (Dess & Lumpkin, 2005). Previous empirical research studies were primarily focused on understanding technological opportunism and its relationship with firm performance (Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012; Chen and Lien, 2013).

Although overlaps exist between technological opportunistic activities, entrepreneurial and strategic behaviours of seeking and exploiting opportunities while achieving and sustaining a competitive advantage, to the researcher's knowledge, there are no

empirical research studies that were conducted (at the time of this empirical research) to explain the extent of such relationships. For research studies where strategic entrepreneurship-firm performance (Dess & Lumpkin, 2005) or technological opportunism-firm performance (Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012; Chen and Lien, 2013) were a specific focus of study and the methodological approach was meta-analytical. Hypotheses development from existing literature based on theories of technological opportunism and strategic entrepreneurship provided objectivity and independence for qualifying or disqualifying the validity of the theoretical frameworks and assessment of their relative level of influence on the research constructs under investigation.

3.3 RESEARCH APPROACH

Cooper and Schindler (2014) suggested two approaches to scientific research, namely: deductive and inductive research. Deductive theory is focused on testing theory using explanatory techniques while inductive research is a theory building approach that adopts exploratory techniques to determine patterns and relationships among constructs (Cooper and Schindler, 2014). Literature suggests that technological opportunism is a multi-dimensional construct (Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012; Chen and Lien, 2013) measured by two operational dimensions (i.e. dynamic sensing and responding capabilities). Strategic entrepreneurship is a multi-dimensional construct (Hitt, Ireland, Sirmon, and Trahms, 2011) (Mohutsiwa, 2012) collectively measured by two operational dimensions (i.e. entrepreneurial orientation and planning flexibility). Multi-dimensional constructs are collectively measured by a number of variables to ensure reliability and validity of results (Cooper and Schindler, 2014). The levels of constructs and variables are outlined in Table 4 for the conceptual research model.

Table 4: Levels of Research Constructs**(Sources: Chien-Wei Chen and Nai-Hwa Lien, (2013 and Murimbika and Urban, 2015)**

Variable Type	Level 1 Construct	Level 2 Construct	Level 3 Construct
Independent Variable	Technological Opportunism	Technological Sensing Capability	
		Technological Responding Capability	
Independent Variable	Strategic Entrepreneurship	Entrepreneurial Orientation	Risk Taking
			Proactiveness
			Innovation
Dependent Variable	Firm Performance	Planning Flexibility	
		New Product Success Rate	
		Return on Investment	
		Revenue Growth	
		Market Share	
		Profitability	

The research study followed a quantitative deductive approach of collecting and extracting usable statistical information through completed online structured questionnaires from senior banking personnel as respondents. The body of research knowledge specifically related to technological opportunism; firm performance; entrepreneurial orientation and planning flexibility constructs and supporting frameworks, theories, models from existing empirical studies were utilized to formulate a hypotheses and responding to questions on inter-relationships between the constructs under review. Fundamentally, the research study is based on the premise that relationships co-exist between the constructs and variables under review. The empirical research was founded in various technology, entrepreneurship and strategic management frameworks, theories and models, namely: resource based view theory; dynamic capability theory; technology acceptance model; model of entrepreneurial process; opportunity identification and development theory; enterprise growth theory and corporate entrepreneurship models.

On the basis of the theories and interrelationships, the requirements of scientific research stipulate that hypotheses should be clearly identified and stated to enable unbiased statistical testing. The hypotheses are generally worded as positive research hypotheses as opposed to statistical language in the form of null and alternative hypotheses. The empirical research seeks to obtain evidence based support from the statistical analysis. The hypotheses for the study are restated below:

- **H1** – Higher levels of technological opportunism are positively associated with higher levels of firm performance
- **H2** – The primary relationship between technological opportunism and firm performance is mediated by strategic entrepreneurship such that a direct or indirect existence of the relationship is positively associated with strategic entrepreneurship.
 - H2.1 – The primary relationship between technological opportunism and firm performance is mediated by risk taking such that a direct or indirect existence of the relationship is positively associated with risk taking.
 - H2.2 – The primary relationship between technological opportunism and firm performance is mediated by proactiveness such that a direct or indirect existence of the relationship is positively associated with proactiveness.
 - H2.3 – The primary relationship between technological opportunism and firm performance is mediated by innovation such that a direct or indirect existence of the relationship is positively associated with innovation.
 - H2.4 – The primary relationship between technological opportunism and firm performance is mediated by entrepreneurial orientation such that a direct or indirect existence of the relationship is positively associated with entrepreneurial orientation.
 - H2.5 – The primary relationship between technological opportunism and firm performance is mediated by planning flexibility such that a direct or indirect existence of the relationship is positively associated with planning flexibility.
- **H3** – The primary relationship between technological opportunism and firm performance is moderated by strategic entrepreneurship such that a direction and

strength of the relationship is determined by the specific level of strategic entrepreneurship.

- H3.1 – The primary relationship between technological opportunism and firm performance is moderated by risk taking such that a direction and strength of the relationship is determined by the specific level of risk taking.
- H3.2 – The primary relationship between technological opportunism and firm performance is moderated by proactiveness such that a direction and strength of the relationship is determined by the specific level of proactiveness.
- H3.3 – The primary relationship between technological opportunism and firm performance is moderated by innovation such that a direction and strength of the relationship is determined by the specific level of innovation.
- H3.4 – The primary relationship between technological opportunism and firm performance is moderated by entrepreneurial orientation such that a direction and strength of the relationship is determined by the specific level of entrepreneurial orientation.
- H3.5 – The primary relationship between technological opportunism and firm performance is moderated by planning flexibility such that a direction and strength of the relationship is determined by the specific level of planning flexibility.

The approach adopted in our study was a design, development, testing and operational implementation of the online survey with pre-determined structured questions around the research constructs under review. The quantitative data was collected directly from an online platform (to limit human capturing error) and analysed, cleaned and utilized for statistical analysis (Field, 2009). The researcher distributed an email with the hyperlink of an online structured survey to the banking institution's senior personnel for voluntary completion of their own perceptions of the banking institutions' relative level of technological opportunism; firm performance; entrepreneurial orientation and planning flexibility.

Similar research studies could have been underway during the time period of the research project. To anticipate this, the prevailing literature review was continuously reviewed during the course of the research project to ensure ongoing relevance of the empirical research outcomes, analysis and potential recommendations. Consequently, the student researcher validated the theories and influential association between technological opportunism, entrepreneurial orientation, planning flexibility, technological turbulence, competitive hostility and firm performance. The results obtained aims to extend theoretical literature building as the relationships between technological opportunism and strategic entrepreneurship constructs do not seem to have been empirically explored and validated.

3.4 RESEARCH DESIGN

This is an operational plan compiled to find responses to the research questions (Cooper and Schindler, 2014). This will be a cross sectional study aimed at investigating and explaining the extent of a relationship between technological opportunistic, strategic entrepreneurship activities and firm performance. This cross sectional survey-type research design was adopted through the administration of structured online questionnaires. The survey is a process of collecting data either qualitatively or quantitatively through questionnaires where targeted respondents are requested to respond to questions related to technological opportunism, entrepreneurial orientation, planning flexibility, technological turbulence, competitive hostility and firm performance constructs (Cooper and Schindler, 2014). Closed ended and structured research questionnaire was developed online and the student researcher distributed an email with the hyperlink of an online structured survey to the banking institution's senior personnel for voluntary completion of their own perceptions of the banking institutions' relative level of technological opportunism, entrepreneurial orientation, planning flexibility, technological turbulence, competitive hostility and firm performance. Online surveys are very instrumental and effective for the collection of data from large samples

because they are anonymous, automated, cost effective and faster, and can reach geographically disseminated target populations (Wegner, 2007).

The email listing of the potential respondents was sourced from an updated human resources database although the email recipients generally distrust unsolicited emails and this could have adversely impacted response rates. The student researcher is a current employee of the selected banking institution and in order to increase participation in the self-administered survey, the student researcher leveraged off his own work email address to distribute the hyperlink of an online structured survey. In addition, an official Wits Business School (WBS) ethics letter (Refer to *Appendix C, Ethics Letter*) was attached to ensure confidentiality, anonymity and ethical conduct. The student researcher experienced few instances whereby participants were concerned about the source and purpose of the research and why / how they were selected as part of the sample. The researcher had provided his direct contact details and WBS telephone numbers on the email distribution and encouraged any recipient to directly contact the student researcher or WBS for additional detail of the research purpose and explanations in the case of any queries or concerns. The student researcher handled the minimal queries or concerns which were raised in a professional manner and assured the recipients of the nature of the research being for academic purposes only; their anonymity and voluntary nature of the online survey. This alleviated their concerns and fears and the recipients were encouraged to complete an online survey.

3.5 POPULATION AND SAMPLING

3.5.1 Population

In statistical terms, the targeted population is the collection of elements about which extrapolations and interpretations can be drawn (Cooper and Schindler, 2014). The employees of the banking institution across the 10 Sub-Saharan African countries

where the bank operates represent the total population. However, the targeted population only included South African executives, team heads, senior managers, managers (i.e. corporate grade Associate Vice President (AVP) and upwards) as this group of individuals is adequately senior to understand and comprehend the complexities, practices and implications of technological opportunism, entrepreneurial orientation and strategic entrepreneurship within the South African context, its practices, implications and how these directly or indirectly influence perceived firm performance relative to the competition. The target population is deemed necessary and appropriate because of the enabling and strategically imperative role technology plays in identifying and creating business growth opportunities in order to sustain a competitive advantage.

The banking institution's employees with a corporate grade of less than an 'AVP' (relatively junior band within the banking institution) were excluded from the target population as they were not expected to fully understand and comprehend the business activities associated with technological opportunism, entrepreneurial orientation, planning flexibility, technological turbulence, competitive hostility and firm performance and underlying practical implications within the banking institution. Their inclusion within the population could have compromised the quality of the responses and subsequently the reliability and validity of the research results and increased measurement bias or error.

3.5.2 Sample and sampling method

Sampling is a process of selecting research-specific elements in the population upon which inferences will be made about the entire population (Cooper and Schindler, 2014). The compelling and underlying reasons for the sampling method for this empirical research were associated with 1) email data access convenience as the student researcher is a current employee of the banking institution that is a unit of analysis; 2) costs management; and 3) speed and turnaround time for collating the required data considering the deadlines of the research submission dates to Wits

Business School. The rest of the African continent could have been included as part of the sample, but the researcher made a conscious decision to exclude this population in order to maximize validity and reliability of the research findings. Further, the empirical research findings could have been skewed by the potential lack of specific South African business knowledge as it relates to local technological developments, level of entrepreneurial orientation, planning flexibility, technological turbulence, competitive hostility and firm performance relative to the local banking competitors.

The primary reason for the sampling method was also practicality, proximity and time and speed of data collection. However, the probability sampling method was adopted for random selection purposes (Cooper and Schindler, 2014). The probability sample was drawn for the study to ensure that employees within the target population have an equal chance of selection. The banking institution employees' database was sourced from human resources for minimum sample size selection. Primary exclusions were performed (i.e. a corporate grade of less than AVP and employees based outside of South Africa). Remaining employees after exclusions were randomized for final sample selection.

The expected sample response target was at least 200 based on the average response rate of similar empirical studies within the South African context. Given the nature of voluntary participation of employee respondents in a survey-type research, the likelihood of lower than expected response rates was considered. If the response rate observed was significantly lower than the proposed minimum of 200 during the data collection process, the researcher had planned to implement further actions by sending additional reminders to the targeted email recipients to encourage participation including obtaining senior executive buy-in or sponsor in order to encourage broader participation within the target population. Further, follow up emails and telephone calls were planned to be performed on specific intervals, e.g. friendly reminders before the deadline, no response after the deadline, 5/10 days post the deadline, etc. Given the observed

response rate discussed below, the student researcher did not have to send out follow up emails, telephone calls or escalate for senior executive buy-in or sponsor and this minimizes the potential level of measurement bias.

The researcher distributed an email with the hyperlink of an online questionnaire to 1,848 randomly selected employees of the banking institution. 509 responses were obtained during the entire 45 days of the data collection period which translated into an original 28% response rate. After review of the completed online questionnaires with an objective of identifying useable responses, the completed questionnaires which could not be utilized equaled 162. Therefore, an outstanding 347 (i.e. 162 subtracted from 509 total responses) completed questionnaires were available for the quantitative statistical analysis and represented a useable response rate of 19%. When adopting multiple regression analysis methods or structural equation modeling, the minimum sample requirements are fifty responses (Cooper and Schindler, 2014). The research study obtained a sample size of 347 useable completed responses and this is adequate to address any statistical significance areas of concern.

3.6 MEASUREMENT INSTRUMENT

The quantitative data was collated using an online structured questionnaire that was administered through an email distributed to the banking institution employees and allowed the employees a period of 45 days to respond before the online questionnaire was decommissioned to enable final data collection and analysis. An online questionnaire is a structured form containing a set of pre-conceived questions (Cooper and Schindler, 2014). In this case, the questionnaire was closed-ended and took approximately 10 to 15 minutes for completion based on the pilot testing phase. The instrument (questionnaire) has been designed to collate specific information related to technological opportunistic practices, entrepreneurial orientation and planning flexibility. The research instrument is written in plain English given that this is a South African

official business language and this should enable easier knowledge sharing or transfer of the research outcomes globally. The research instrument included details that introduce the study, instructions, consent form details and background details that supported the identified research constructs. Constructs within the measuring instrument take into account construct definitions in line with the theory. In turn, the constructs are operationalized through various question items within a questionnaire.

3.6.1 Design of the pilot testing of the measurement instrument

The researcher scheduled an official meeting with one of the banking institution's senior executives. The senior executive is an acclaimed coach and mentor for a technology innovation hub of this banking institution. The innovation hub seeks to attract and support the most innovative and disruptive technology business ventures in the field of financial services and health care. The senior executive was considered necessary and appropriate to discuss the research instrument, its appropriateness for the banking institution and potential protocols within the banking institution that had to be observed in order to minimize potential barriers to the participation in the study. Further, the researcher solicited the services of an employee with a PhD acquired in one of South African best universities. Specifically, the PhD employee was requested to provide his independent insights of the design of the research instrument and his feedback was incorporated back into the design and development of the online research instrument.

Ten employees of the banking institution who are adequately senior within an internal audit function to understand the intricacies of technological opportunism and strategic entrepreneurship were requested to participate in the pilot study through a provision and completion of consent forms and online questionnaires. Although ten is very low, this was a random selection of employees based in the Johannesburg Head Office for the convenience of proximity, observation, timely collection and subsequent discussion and feedback to establish respondent experience over the completion process.

The critical factor of pilot testing the research instrument was to confirm that the measurement items clearly addressed the research problem, hypotheses and questions. The questionnaire was divided into seven areas of interest (constructs) and these related to (1) Demographics; (2) Technological Opportunism; (3) Technological Turbulence; (4) Competitive Hostility; (5) Entrepreneurial Orientation; (6) Planning Flexibility; and (7) Perceived Firm's Performance Relative to Competitors. The questionnaire was produced in simple English with some business terms or language adopted in some areas.

Specific issues that a research intended to uncover from participants in this pilot of the research instrument included (but not limited to): (1) an ability to follow the instructions in the covering letter; (2) an ability to understand specific measurement items and relate to the research constructs, the terminology adopted, the flow of statements and the sequence of questions; (3) The format, including the font and layout; (5) the length of the questionnaire as it specifically relates to the time taken to complete the questionnaire; and (6) any other comments provided by the participants which may influence the structure of the questionnaire and participation in the final study thereof.

3.6.2 Results of the pilot testing of the measurement instrument

All ten participants responded to the questionnaire and physically signed the Wits Business School consent forms with few questions raised on why the study was being conducted and data privacy concerns were raised. These were all addressed through the consent forms which were explained to and signed by the respondents. Electronic responses from the ten participants were transferred into computer software (i.e. MS Excel) by a student researcher. The information was independently verified by a data analytics colleague that was experienced in statistical analysis. Data was primarily analysed using descriptive statistics of the demographic information, specifically categorical data about level of seniority, gender, number of years within the bank, department and highest level of education. The student researcher also interviewed the

respondents to establish whether they were concerned about completing the demographic information and no concerns were noted. Technological opportunism, entrepreneurial orientation, technology turbulence, competitive hostility, planning flexibility and firm's relative performance constructs were further analysed for their means and standard deviations.

Respondents completed the questionnaires in 10-15 minutes on average and all questions were answered with clear understanding and comprehension of the research objectives and constructs. The collective feedback obtained from the senior executive; PhD participant and ten targeted employees through observation of the data collection process was discussed with these multi-stakeholders and slightly modified back into the research instrument. The research measurement items adopted a multiple-choice format, for example, multiple-choice options provide a respondent with an option of only one answer. The multiple-choice, single response scale was appropriate (Cooper and Schindler, 2014).

The survey instrument summarized in Table 5 was developed based on previous theoretical literature that relates to the research constructs under review. The measurement scale comprised of multi-item sub-scales for the constructs and demographic information. Previously developed and utilized research instruments were identified and adopted to operationalize the constructs for technological opportunism, entrepreneurial orientation, planning flexibility and firm performance and control variables in technology turbulence and competitive hostility.

Table 5: Literature Supported Measurement Instruments

#	Author (s) (Year)	Construct	Scale	Alpha
1	Chien-Wei Chen and Nai-Hwa Lien (2013)	Technology Opportunism [i.e. Technology Sensing and Technology Responding Capabilities]	Eight-item scale	$\alpha = 0.84$
2		Firm Performance	Five perceptual performance indicators relative to the competitors. The indicators are 1) profitability, 2) revenue growth, 2) return on investment, 4) market share, and 5) new product success rate	Not Applicable
3		Technology Turbulence	Four-item scale	$\alpha = 0.84$
4		Competitive Hostility	Five-item scale	$\alpha = 0.84$
5	Murimbika and Urban (2015)	Entrepreneurial Orientation [innovation, risk-taking and proactiveness]	Nine-item scale	$\alpha = \text{over } 70$
6		Planning Flexibility	Nine-item scale	$\alpha = 0.83$

The demographic questions which were selected and included by the student researcher were based on what the student researcher considered to be objective and relevant information for the business profile of the respondents. The demographic questions included the respondent's corporate position within the bank, gender, how long they have been within the bank, the function of their department and formal level of education attained. The information collectively provided an indication of the profile of the respondents to assess and establish the level of reasonableness of the information as these questions indicated the level of education, industry knowledge and experience possessed by each respondent.

Technological opportunism constructs items were adopted from empirical research by Srinivasan, Lilien, and Rangaswamy, (2002); Sarkees (2011); Voola, Casimir, Carlson, Adnihotri, and Anushree (2012) and Chen and Lien (2013). The technological opportunism items included ratings of technology sensing and technology responding capabilities. Specifically, the respondents were requested to identify and assess the perceived sensing and responding capability of the banking institution as it relates to

technological developments or changes. The eight items representing technological opportunism construct were measured using a seven-point Likert scale.

The study adopted measures of firm performance construct from empirical research by Chen and Lien (2013). The respondents were requested to provide ratings as it relates to the degree of perceived performance indicators relative to the competitors within the bank's primary served markets. The performance indicators were new product success rate, return on investment, revenue growth rate, market share and profitability. The five items representing firm performance construct were measured using a seven-point Likert scale.

Entrepreneurial orientation constructs items were adopted from empirical research by Khandwalla (1977); Miller and Friesen (1982); Miller (1983); Ginsberg (1985); Morris and Paul (1987); Covin and Slevin (1989); Dess, Lumpkin, and Covin (1997); Barringer and Bluedorn (1999); Wiklund and Shepherd (2003, 2005); Avlonitis and Salavou (2007); Li, Huang and Tsai (2009); and Murimbika and Urban (2015). The entrepreneurial orientation items included ratings of proactiveness, innovation and risk taking behaviours. The respondents were asked to provide ratings on the perceived collective management style of the bank's key decision makers as it relates to proactiveness, innovation and risk taking. The nine items representing entrepreneurial orientation construct were measured using a seven-point Likert scale.

Planning flexibility constructs items were adopted from empirical research by Murimbika and Urban (2015). The planning flexibility statements within the research instrument were intended to indicate the level of difficult for the bank to change its strategic plan to adjust to each of various contingencies or possibilities. The contingencies related to technological changes, political and economic climate, competition, government regulations, changes in customer needs and preferences, and emergence of

unexpected threats and opportunities. The nine items representing planning flexibility construct were measured using a seven-point Likert scale.

The study adopted measures of control variable constructs in technological turbulence and competitive hostility from empirical research by Chen and Lien (2013). Technological turbulence and competitive construct items within the research instrument intended to obtain respondent's perceptions on the rate of change in technology and severity of the competition experienced within the South African banking industrial sector. The nine items representing technological turbulence (i.e. four items) and competitive hostility (five items) construct were measured using a seven-point Likert scales.

Based on the observed Chronbach's Alpha (Refer to Table 5 above) from the previous empirical research, it is conclusive that all the research instruments had good and excellent levels of reliability. Data was seven-point Likert-scaled before it was subjected to capturing and statistical analysis. The advantage of seven-point scales was an opportunity for more flexibility and variability among respondents. Various components of validity of the research instruments (Cooper and Schindler, 2014) were identified as follows:

3.6.3 Content validity

According to Cooper at al (2014), the test determines whether the research instrument contents adequately represent the interest of research phenomenon in terms of constructs and variables under review. Responses were solicited from relatively senior individuals (executives, team heads, senior managers, managers with a corporate grade of AVP and above) to ensure trustworthy information was obtained. The evaluation of the research instrument by both the researcher's Supervisor and Statistician's including piloting phase confirmed that the questionnaire had face / content validity. The research instrument was not significantly amended as this could

have compromised the validity of the content. Reliance in terms of validity of the content was placed on pre-existing research instruments.

3.6.4 Criterion validity

Compare performance of operational measures of constructs against a predetermined set of criteria (Cooper and Schindler, 2014). The research instrument was not significantly amended as this could compromise the validity of the criterion. Reliance in terms of validity of the criterion was placed on pre-existing research instruments.

3.6.5 Discriminant validity

This represents a degree of the distinctiveness of the operational variables from other variables within a construct (Cooper and Schindler, 2014). As an example, there should be high correlation between proactiveness, risk taking and innovativeness when EO construct is being measured, but there should be low correlation between Strategic Entrepreneurship and Technological Opportunism constructs as these should be independent of one another. The correlations of the operational measures were assessed by the student researcher in order to illustrate distinction of constructs from one another and there was clear distinction between the constructs.

3.6.6 Convergent validity

Actual agreement of the results of measures obtained independently of one another. The convergent validity assessment is intended to ensure that the instrument is testing what it was developed and designed to measure (Cooper and Schindler, 2014). The correlation among items within the construct were identified and interpreted. The analysis of correlations was adequate and reasonable to confirm convergent validity.

The introductory letter and detailed research instrument are included as Appendix 1 and 2.

3.7 DATA COLLECTION PROCEDURES

The identified hypotheses determine the process of gathering data through specific methods (Kock, 2007). For quantitative empirical research, Creswell (2008) confirmed that a survey research is a suitable data collection strategy of enquiry. The purpose of the empirical research was communicated to the target population alongside the distribution of the online electronic questionnaire hyperlink. Quantitative data was collected from an online structured questionnaire that was setup through Wits Business School Qualtrics electronic survey tool and emails distributed.

Although the student researcher had planned to distribute follow up emails and make additional telephone calls at different intervals including physical face-to-face meetings to gather adequate responses, this was not considered necessary as sufficient responses were obtained during the first 45 days of the data collection process. Prior to the final distribution of the email with an online questionnaire hyperlink, the questionnaire was piloted to at least 10 respondents to identify and reduce potential errors, challenges or misunderstandings that might not have been initially identified nor anticipated during actual data collection.

Minor adjustments and amendments were made to the initial structured questionnaire after the piloting phase. After the pilot testing phase and minor amendments (where applicable), the questionnaire was evaluated by the student's Supervisor as part of the research proposal review and approval process. The structured questionnaire was verified by a Statistician before being coded onto the WBS Qualtrics electronic survey tool and when the data was collected and transferred into IBM Social Package for Social Scientist (SPSS) software for further data analysis. The email distribution was supported by a Wits Business School letter of endorsement of the online questionnaire. This improved the integrity of the empirical research among the banking institution's

employee participants and this is considered to have contributed positively to the achieved response rates.

3.8 ETHICAL CONSIDERATIONS

From an ethics perspective, survey questionnaires included confidentiality and anonymity clauses to protect respondents' information from being misused or disclosed for purposes that were not intended for the completion of the empirical research. In the case where information is required to be disclosed, consent will be solicited from the respondents in advance. In instances where respondents needed further clarification with regard to the questionnaire or findings of the empirical research, the student researcher will seek advice of the university and provide clarity or feedback over an email or telephone. The banking institution employees' databases were obtained from human resources for the final random sample selection process and the confidential information was not shared beyond the practical application of the study.

3.9 DATA ANALYSIS TECHNIQUES

Online questionnaires completed by employee responders for the purposes of empirical data collection. The quantitative data was collected automatically and imported into IBM Social Package for Social Scientist (SPSS) software provided by Wits Business School (WBS). The advantage of the automated process is prevention of human errors through manual capturing of quantitative data into MS Excel software before this is transferred into statistical software.

When adopting a multiple regression analysis, a minimum sample of 50 responses is required (Cooper and Schindler, 2014). A sample size of 347 was obtained for this empirical research and this is considered adequate to conduct explanatory data analysis. Explanatory data analysis (EDA) is a process that was adopted to extrapolate or infer observations on descriptive statistics and frequencies to identify relationships,

indications of key relationships or clues (Cooper and Schindler, 2014). Therefore, descriptive statistics, p-values, correlations and multiple regressions of variables were extrapolated for analysis and interpretation. Hypothesis testing for statistical significance levels (p-values) were calculated to test the probabilities that variables are likely described by the relationship with other variables. The mean, median and mode illustrated common averages across the data points. Standard deviations were calculated to show the degree of variability (i.e. inconsistencies) from the mean. Frequencies were adopted to arrange data from the lowest to highest with counts and percentages (Cooper and Schindler, 2014 and Field, 2009). For example, males accounted for 46% of the respondents whilst females accounted for 53%.

Multivariate analysis demands that assumptions underlying statistical techniques be tested for distinct variables and for a multivariate model (Cooper and Schindler, 2014). The measures of the constructs (i.e. technological opportunism and strategic entrepreneurship) were tested for normality requirements. Normality is an assumption to multivariate analyses as significant deviations from normality are likely to produce results which are not statistically valid.

The primary statistical tool adopted to validate the hypotheses was multiple regressions. Multiple regressions are capable of testing, analyzing and explaining the relationship among two or more interval or ordinal scaled variables (Cooper and Schindler, 2008; Field, 2009). Multiple regression analysis is regarded as suitable for explaining the extent of relationships of a single dependent variable (DV). In our empirical research, this is an explanation of the variance of firm performance (dependent variable) by technological opportunism (independent variable) and moderator / mediator variables in strategic entrepreneurship. The multiple regression techniques assisted the student researcher in further understanding the underlying predictive power or strength, direction and shape of the relationships.

A multiple regression model is normally expressed as follows:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \dots + \beta_nX_n + \varepsilon$$

Where:

Y = outcome / dependent variable;

β_0 = a constant which is the value of Y when X is zero;

β_n = regression co-efficient;

X_i = predictor / independent variable and

ε = error term

The empirical research performed an empirical investigation on the moderation and mediation effects of strategic entrepreneurship (i.e. entrepreneurial orientation and planning flexibility as mediator or moderator variables) on the relationship between technological opportunism (independent variable) and firm performance (dependent variable) within an emerging markets context of a banking institution. Multiple regression analysis utilizes independent variables to predict the dependent variable (Cooper and Schindler, 2014).

Multiple regressions are adopted when a student researcher has a number of independent and mediator or moderator variables to predict the dependent variable (Cooper and Schindler, 2008; Field, 2009). Hierarchical multiple regression analysis were adopted to evaluate the effects of moderating or mediating effects of strategic entrepreneurship (i.e. entrepreneurial orientation and planning flexibility) on the technological opportunism and firm performance relationship. Through an adoption of the hierarchical multiple regressions, the empirical research considered the following as part of the statistical steps (Table 6):

Table 6: Consideration Steps for Moderation and Mediation Tests
(Source: Baron & Kenny, 1986)

Moderation	Mediation
<i>The individual contribution of the variables in the hierarchical multiple regression model:</i>	<i>The conditions for mediation effect in the hierarchical multiple regressions were that:</i>
• The simultaneous assessment between all the independent and moderator variables and the dependent variable	• There is a significant relationship between the independent variable and the dependent variable;
• The moderation effect of the interaction variable to the above relationships	• There is a significant relationship between the independent variable and the mediator variable; and
• The positive change in the gradient of the above stated relationships along all values of the moderator variable.	• The addition of the mediator variable into the model resulted in a decline in the coefficient of the original independent variable

The coefficient of determination R^2 was adopted to calculate the aspects of the variance of the outcome variable explained by explanatory variables. This is a measure of the model's strength or good fit or level of prediction (Cooper and Schindler, 2014). The underlying value of the coefficient of determination R^2 for any model increases when a sample size is too small or reduced and the model reaches a point of saturation and tends to over-predict. Adjusted R^2 is in place to correct the situation of over-prediction through taking into account number of predictors in the model and the measure is considered reliable, in particular, when comparing models with different numbers of predictors (Cooper and Schindler, 2014). Both the coefficient of determination R^2 and adjusted R^2 were produced and analysed in the study.

Effect size (ES) were adopted to confirm if the results were statistically significant or not in practice or operation. The effect sizes provide an objective measure of the significance of an effect. The coefficient of determination R^2 will determine effect size. The coefficient of determination R^2 is a good instinctive measure (Field, 2009).

The categories of effect size were taken into account for determining statistically significant tests (Cooper and Schindler, 2014):

- $R^2 = .1$ (low or weak) effect describes 10 percent of the total variance;
- $R^2 = .3$ (moderate or medium) effect explains 30 percent of the total variance;
- $R^2 = .5$ (high or strong) accounts for 50 percent of the total variance, an effect that is likely to be visible in operation and practice.

The empirical research was aimed at determining the effect size of technological opportunism (independent variable) on firm performance (dependent variable). Further, the strategic entrepreneurship moderation and mediation effect sizes on the relationship between technological opportunism and firm performance were determined.

Bi-variate relationships were tested through the Pearson correlation coefficients. The Pearson correlation coefficient was adopted to determine bi-variate relations and ranges between $+1$ to -1 . Correlation coefficient reports the degree and the association directions within the model (Cooper and Schindler, 2014). The degree refers to the variables which change in unison or opposition while the sign indicates the association direction (Cooper and Schindler, 2014). A correlation coefficient of any degree, sign or significance levels does not conclude on any causation effects. For example, the hypothesis of the empirical research is specified as technological opportunism is positively associated with firm performance. This is interpreted as meaning that the predictor variable (technological opportunism) and outcome variable (firm performance) change in the same direction. Significance levels for hypothesis testing were performed using the p-values or significance levels. p-value suggested the probability a variable is likely explained by relationship with other variables (Cooper and Schindler, 2014; Field, 2009). Variables that were found to be significant were those where p-values is less than .01 or .005 as this means that the variation between the variables is bigger than the sample error (Cooper and Schindler, 2014).

3.10 LIMITATIONS OF THE STUDY

Research studies generally have their own areas of limitations and the following areas were identified for this study:

- The research study was voluntary in terms of participation and executives, heads, senior managers or managers may not have prioritized the completion of the questionnaires.
- The study focused on one banking institution in South Africa and excluded all other companies or sectors in other Sub-Saharan Africa.
- The study focused on enabling technological opportunism and strategic entrepreneurship factors that are likely to positively influence firm performance to the exclusion of other factors that are also likely to positively influence firm performance.
- Executives, team heads, senior managers or managers (i.e. sampling frame) were the only population within the banking institution that was likely to understand the practices and complexities of technological opportunism and strategic entrepreneurship thus the rest of the employees were excluded from the target population.
- The majority of the literature review is based on empirical research conducted within context of the developed countries with very minimal exceptions from China.

3.11 RELIABILITY AND VALIDITY

Internal validity can be described as the degree to which the outcomes of the study can be ascribed to measure the underlying constructs considered for the study (Cooper and Schindler, 2014). Validity translates into the accuracy of results and quality of research process.

3.11.1 Internal validity

To define the extent to which a research instrument provides adequate coverage or explains the research objectives and outcomes (Cooper and Schindler, 2014). The internal instrument procedure validity relates to whether the data collection procedures statistically represent the operational variables (Cooper and Schindler, 2014). The utilization of valid and referenced measures of technological opportunism, firm performance, entrepreneurial orientation, technological turbulence and competitive hostility constructs are expected to improve the study validity. Before proceeding with the exploratory factor analysis, the student researcher validated the underlying assumptions that adequate correlations existed among the operational measures through an adoption of the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity.

Through an application of principal component extraction and varimax rotation, factor analysis was adopted to identify latent constructs or dimensions. The decision on the number of factors to be loaded was determined based on the following considerations (Cooper and Schindler, 2014). 1) The selection of factors with eigenvalues *greater than 1.0*; 2) A pre-determined number of factors based on historical literature research; and 3) Adequate factors to meet a qualifying percentage (60%) of explained variance. A combination of these criteria was adopted for validity of the data derived from factor loadings. For sample sizes greater than 100 respondents, it is recommended that factor loadings are assessed as follows: 1) ± 0.40 are acceptable at a minimum; 2) ± 0.5 or greater is significant; and 3) > 1.7 suggests a very well structure of the construct or dimension (Cooper and Schindler, 2014).

3.11.2 External validity

The generalization of the study results relates to the external validity of the study for other geographical locations or settings (Cooper and Schindler, 2014). A probability sampling approach was adopted when selecting a sample and this will increase the

degree to which the research findings may be generalized across heterogeneous populations and reasonable response rate of 347 was obtained from a data collection process and this is adequate for the purposes of generalizing the study results. Further, operational measures of constructs were tested for validity within the study and this should improve the levels of legitimacy for the study.

3.11.3 Reliability

Cooper et al (2014) described this as the level of degree to which procedures will provide similar results when tested through repeated trials and the measure is regarded as reliable to the extent that it consistently produce the same results (Cooper and Schindler, 2014). Reliability tests were performed through an adoption of Cronbach's Alpha (α) as this indicates whether an instrument may be interpreted consistently across different situations (Cooper and Schindler, 2008). If Cronbach's Alpha (α) is greater than 0.7, then an internal consistency reliability is deemed to be good although the lower limit of 0.6 remains acceptable in exploratory research studies. Once Cronbach's Alpha (α) is less than 0.6, then an internal consistency reliability is deemed to be poor. Despite that this reliability test may not be adequate; to some extent the reliability of the measurement instrument is a critical condition for validity. The utilization of reliable and referenced measures of construct should improve the study reliability.

CHAPTER 4 – PRESENTATION OF RESULTS

4.1 INTRODUCTION

This chapter presents the results of the empirical research in the form of demographic descriptive analysis in terms of frequencies, means and standard deviations, scales and measurements validity results and hypotheses testing results. Figures and tables are adopted for ease of reading and interpretation of empirical results. The measurement instrument with seven-Likert scale items was utilized to assess and measure the effect of technological opportunism on firm performance of the banking institution. The research instrument included seven-Likert scale items to measure strategic entrepreneurship construct in the form of three entrepreneurial orientation dimensions (i.e. proactiveness, innovation and risk taking) and planning flexibility. Control variable constructs in technological turbulence and competitive hostility were included as part of the research instrument. In total, the research instrument had 45 questions with six sections: 1) Demographics, 2) Technological Opportunism, 3) Entrepreneurial Orientation, 4) Planning Flexibility, 5) Firm Performance, 6) External Business Environmental Factors in Technological Turbulence and Competitive Hostility.

The quantitative online response data was imported automatically into IBM SPSS statistical software for analysis. The automated transfer of data limited the potential human errors that could have taken place as a result of manual capturing of data into MS Excel software. Empirical results of the research were produced, presented and analysed using explanatory data analysis, which computes descriptive statistics and frequencies to detect and analyse patterns and relationships. The preliminary explanatory data analysis enables for flexibility to assess and respond to patterns and relationships revealed (where applicable). Further, statistical procedures and empirical

research results included measurement and scales validity tests; Cronbach's coefficients, correlation coefficients and regression analysis.

4.2 DEMOGRAPHIC PROFILE OF RESPONDENTS

The banking institution's respondent demographic profile assessment was measured by requesting the respondents their optional status of gender, highest level of education attained, corporate grade / position held within the bank, the years of experience within the banking institution and functional area of their department. In total, 509 responses were received from the completion of the online quantitative survey. Of these responses, 162 were classified as tainted because these were incomplete and the outstanding 347 responses were used for empirical research. Responses multiplied by the 45 questions individually answered by the respondents translated into 15,615 data points for empirical data analysis.

The demographic profile of the respondents indicated that a majority of the respondents were employees with at least tertiary education and bachelor's degrees, they were in middle and senior management positions across various functional areas of the bank, and they had been in the same banking institution for at least 10 years. Collectively, the majority of respondents represent a group of individuals with significant amount of experience backed up by their tertiary level of education. This is likely to increase the credibility of the information to be analysed to determine the moderating and mediating effects of strategic entrepreneurship on technological opportunism and firm performance.

4.2.1 Gender Distribution

The representative sample of 347 responses was made up of 46% male respondents, 53% female respondents and the other 1% opted not to indicate their gender as "opt not to answer" option was provided within the research instrument for ethical reasons and

compliance requirements to non-discriminatory laws and policies of South Africa. The gender distribution is shown in Figure 13.

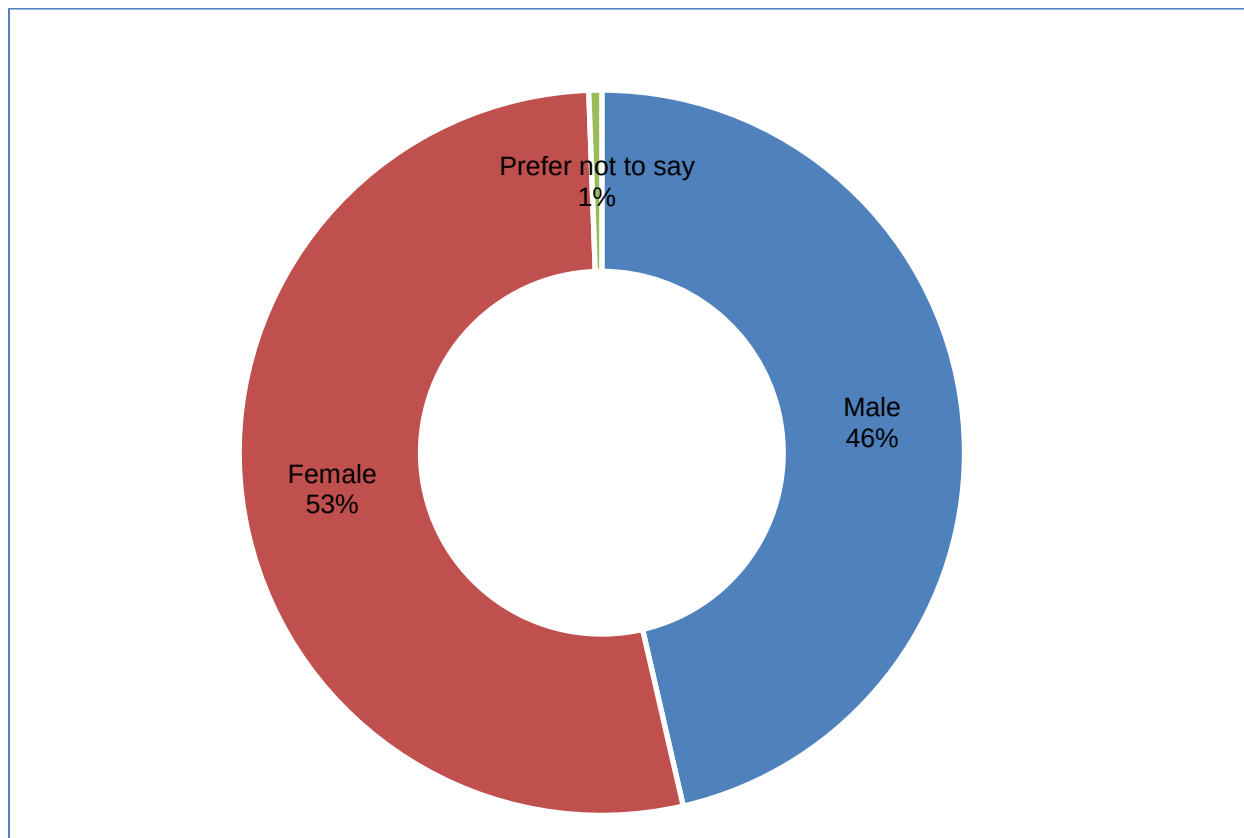


Figure 13: Gender Distribution

4.2.2 Highest Level of Education

The distribution of the highest level of education achieved by the respondents is illustrated in Figure 14. The majority of respondents (42%) have achieved a Bachelor's degree or Diploma level of education while Honour's, Master's and Doctorate degrees were circa 23% of the respondents. Further, 34% of the respondents had only attended and completed high school and some tertiary level of education.

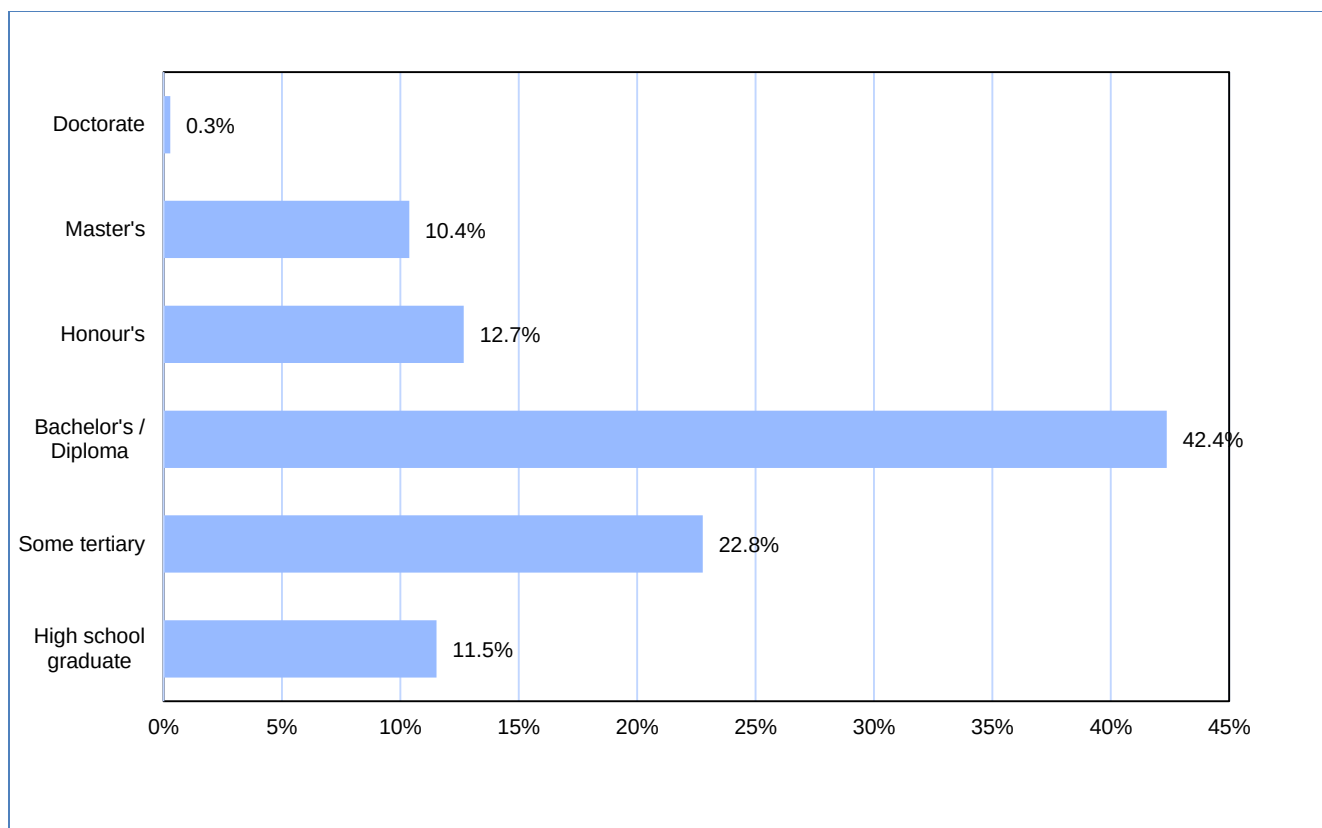


Figure 14: Highest Level of Education Achieved

4.2.3 Corporate Position / Grade

Figure 15 outlines the corporate positions of the respondents to the online survey. The highest proportion of employees were Senior Management (31.7%) followed by Middle Management (28.2%), and Non-Management personnel (22.5%). Non-Management category is primarily employees who were classified as “Professionals” in terms of their corporate grade. The Principal/Director, Executive and C-Suite corporate level represents less than 10% of the respondents to the survey. Almost 2% of the respondents did not state their corporate grade or role within the bank and this is not regarded as adequately material to impact the validity and reliability of the findings in terms of level of seniority of the respondents.

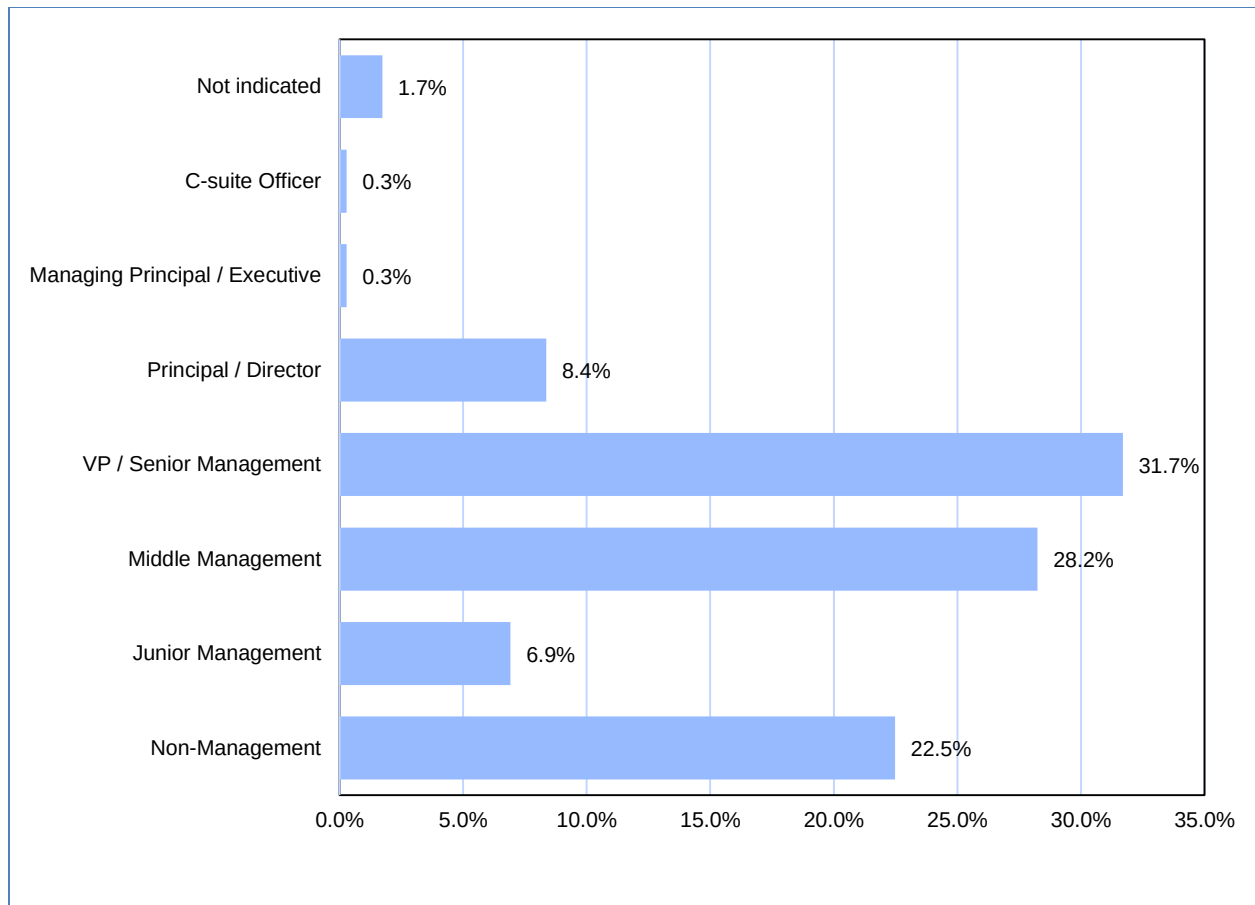


Figure 15: Corporate Position Held

4.2.4 Level of Banking Experience

The respondents indicated the amount of experience that they had accumulated in the bank. The results are shown in Figure 16 and suggest that 70% of the sampled employees had 10 years or more experience in the bank with only 1% that had less than 2 years' experience in the bank. The profile of respondents shows that at least 38% of the respondents have been in the banking institution for 20 years or more.

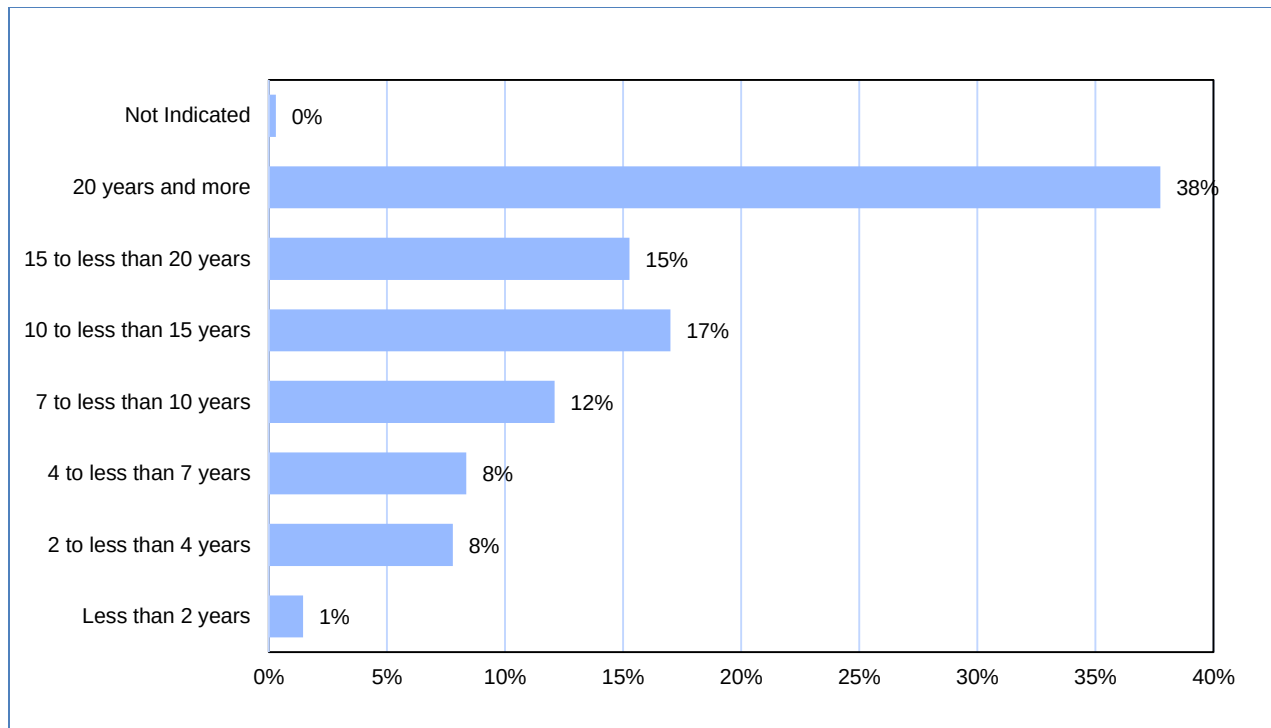


Figure 16: Years of Experience at the Bank

4.2.5 Functional Area

Figure 17 shows the distribution of the functions of the various departments represented in the sample. The frequency distribution indicates that the respondents belonged to different departments with varying levels of functional responsibility. The departments represented in the sample were mainly responsible for Product management (15%), Channel / Distribution / Coverage (14%), Operations (12%), Finance (11%). The profile also shows that 11% of respondents selected “Other” for a functional area, but an outstanding 89% is deemed adequate for respondents that identified their functional area of responsibility.

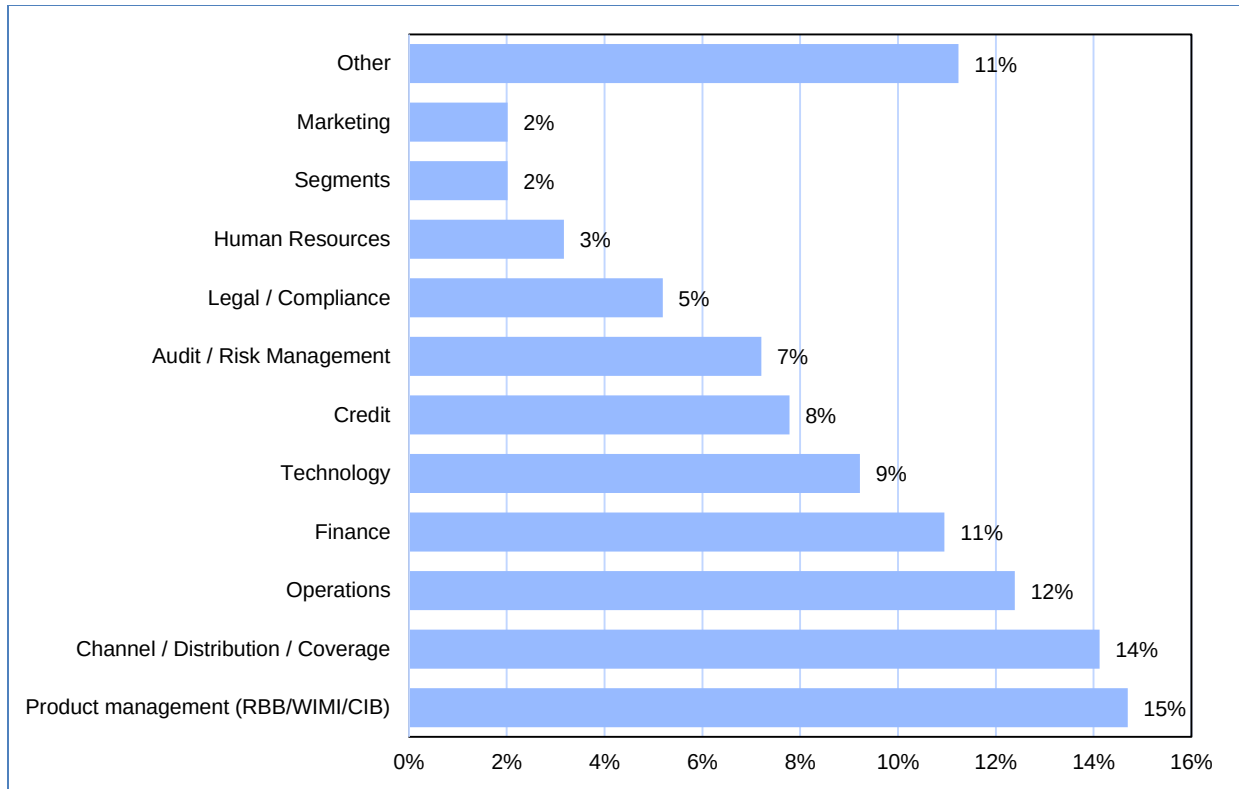


Figure 17: Functional Department

4.3 VALIDITY OF MEASUREMENT SCALES

4.3.1 Scale Validity

Exploratory factor analysis was conducted to assess the validity of the hypothesised constructs. The results are shown in Table 7 and Table 8. The measurement scale for Entrepreneurial Orientation items was reversed before data analysis (i.e. 7=1, 6=2, 5=3, 4=4, 3=5, 2=6, and 1=7) because the items were negatively worded in the original research instruments.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity values are shown in Table 7. All the KMO values were greater than the minimum required value of 0.5. This implies that the sample was adequate to conduct

factor analysis for the different constructs. The Bartlett's Test of Sphericity had significant p-values that were less than 0.05 as required and this suggest that factor analysis could be fitted.

Table 7: KMO and Bartlett's Test for all Constructs

Entrepreneurial Orientation – Innovation		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.500
Bartlett's Test of Sphericity	Approx. Chi-Square	111.476
	df	1
	Sig.	.000
Entrepreneurial Orientation – Risk Taking		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.649
Bartlett's Test of Sphericity	Approx. Chi-Square	220.319
	df	3
	Sig.	.000
Entrepreneurial Orientation – Pro-activeness		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.649
Bartlett's Test of Sphericity	Approx. Chi-Square	184.813
	df	3
	Sig.	.000
Technological Opportunism		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.883
Bartlett's Test of Sphericity	Approx. Chi-Square	1792.698
	df	28
	Sig.	0.000
Planning Flexibility		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.910
Bartlett's Test of Sphericity	Approx. Chi-Square	1615.265
	df	36
	Sig.	0.000
Perceived Bank's Performance Relative to Competitors		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.862
Bartlett's Test of Sphericity	Approx. Chi-Square	1171.648
	df	10

	Sig.	.000
Technological Turbulence		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.708
Bartlett's Test of Sphericity	Approx. Chi-Square	401.650
	df	3
	Sig.	.000
Competitive Hostility		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.757
Bartlett's Test of Sphericity	Approx. Chi-Square	343.046
	df	10
	Sig.	.000

Table 8 shows the results of the final construct composition, factor loadings for the items in each factor and the total variance explained.

Table 8: Scale Validity: Factor Analysis

Construct	Items	Factor Loading	Total Variance Explained
Technological Opportunism	Q10 We generally respond very quickly to technological changes in the environment (S)	.864	62%
	Q12 For some reason, we are generally quick to respond to new technologies (R)	.834	
	Q8 We are often quick to know about changes in technologies that might affect our business (R)	.827	
	Q6 We are often one of the first in our industry to know about technological developments that may p...(S)	.803	
	Q9 We periodically review the likely effect of changes in technology on our business (S)	.786	
	Q11 This bank is ahead of the industry in responding to new technologies (R)	.784	
	Q7 We actively look for information on technological changes in the environment that are likely to a...(S)	.780	
	Q13 We tend to invest in new technologies although this may cause our current investments to lose value (R)	.563	
Innovation	Q17 To the best of my knowledge, there are no new lines of products or services that the bank has mar...	.874	76%
	Q18 To the best of my knowledge, changes in product or service lines have been mostly of a minor natu...	.874	

Risk Taking	Q16 In general, the leaders within the bank favour a cautious 'wait and see' approach in order to min...	.859	65%
	Q15 In general, the leaders within the bank favour low risk projects with normal and certain rates of...	.785	
	Q22 In general, the leaders of our bank believe that owing to the nature of the environment, it is be...	.764	
Pro-activeness	Q20 In dealing with the competitors, we as a bank are very seldom the first bank to introduce new pro...	.842	63%
	Q19 In dealing with the competitors, we as a bank typically respond to actions which were initiated b...	.767	
	Q21 In dealing with the competitors, we as a bank typically tend to avoid competitive clashes, prefer...	.763	
Planning Flexibility	Q23 The emergence of a new technology	.767	57%
	Q24 Shifts in economic conditions	.780	
	Q25 The market entry of new competition	.781	
	Q26 Changes in government regulations	.645	
	Q27 Shifts in customer needs and preferences	.814	
	Q28 Modification in supplier strategies	.739	
	Q29 The emergence of an unexpected opportunity	.776	
	Q30 The emergence of an unexpected threat	.790	
	Q31 Political developments that affect the banking industry	.690	
Perceived Bank's Performance Relative to Competitors	Q32 New product success rate (%)	.810	74%
	Q33 Return on investment (RoI) (%)	.868	
	Q34 Revenue growth rate (%)	.900	
	Q35 Market share (%)	.828	
	Q36 Profitability (%)	.884	
Technological turbulence	Q39 The technology in our industry is changing rapidly	.890	75%
	Q40 A large number of new product ideas have come from technological breakthroughs in our industry	.880	
	Q38 Technological changes provide big opportunities in our industry	.827	
Competitive hostility	Q42 Competition exists in a variety of aspects, e.g. pricing, product quality, customer service, etc.	.792	49%
	Q43 Competitors are always able to match their opponents' market attacks readily	.745	
	Q41 Competition in the market is cut-throat	.713	
	Q44 Price competition is a hallmark of the market	.646	
	Q45 There are frequent product introductions or modifications	.575	

Exploratory factor analysis for the Technological Opportunism construct was hypothesised to have 8 items and retained one factor with all the 8 items. The retained construct explained 62% of variation in the items in the scale.

Strategic Entrepreneurship (SE) which had two hypothesised sub-constructs Entrepreneurial Orientation (9 items) and Planning Flexibility (9 items). Planning Flexibility retained one factor which explained 57% of variation in the items of the construct. The Entrepreneurial Orientation construct was split further into 3 sub-constructs namely; Innovation (2 items) after the removal of the item “In general, the leaders within the bank favour a strong emphasis on the marketing of tried and tested” was removed since it had a factor loading less than 0.4, Pro-activeness (3 items) and Risk taking (3 items). The three sub-constructs each retained one factor which explained 76%, 63% and 63% respectively.

The Perceived Bank's Performance Relative to Competitors (Firm Performance) construct retained one factor which had all the hypothesized 5 items. The retained factor explained 74% of variance in the items.

The External Environmental Conditions construct had 2 hypothesized sub-constructs, namely Technological turbulence (4 items) and Competitive hostility (5 items). Factor analysis for each of these retained one factor a piece. The item “*It is very difficult to forecast where the technology in our industry will be in the next 2 to 3 years*” was removed from the Technological turbulence sub-construct as it had factor loadings that is less than 0.4. The retained factors explained 75% and 49% respectively. All the items within the various constructs / factors loaded highly onto their respective factors. Thus, scale validity was fully supported.

4.3.2 Scale Reliability

Cronbach's Alpha was computed for each of the constructs and sub-constructs to assess the reliability of the scale. The results are shown in Table 9.

Table 9: Reliability of Scale

Construct	Number of items	Chronbach's Alpha	Level of Reliability
Technological Opportunism	8	0.909	Excellent
Innovation	2	0.692	Questionable
Risk Taking	3	0.726	Acceptable
Pro-activeness	3	0.701	Acceptable
Planning Flexibility	9	0.904	Excellent
Firm Performance	5	0.908	Excellent
Technological turbulence	4	0.834	Good
Competitive hostility	5	0.721	Acceptable

Table 9 demonstrates that Technological Opportunism (8 items, $\alpha = 0.909$), Planning Flexibility (9 items, $\alpha = 0.904$) and Firm Performance (5 items, $\alpha = 0.908$) had excellent level of reliability since the Cronbach's Alpha values were greater than 0.9. Technological turbulence (4 items, $\alpha = 0.834$) had good level of reliability while Competitive hostility (5 items, $\alpha = 0.721$), Risk Taking (3 items, $\alpha = 0.726$), Pro-activeness (3 items, $\alpha = 0.701$) had acceptable reliability level since the Alpha values were greater than 0.7. The Innovation sub-construct (2 items, $\alpha = 0.692$) had a questionable reliability level. Since all the constructs had Cronbach's Alpha values that were greater than 0.5, below which the values become unacceptable, a summated scale (Refer to Table 10) for each construct was computed by getting the average or mean of the items within the scale.

4.4 DESCRIPTIVE STATISTICS OF THE CONSTRUCTS

The summated scale for each construct and sub-construct was computed by finding the average of the items in the scale. The descriptive statistics for the constructs in terms of means and standard deviations are shown in Table 10. Risk Taking (mean = 4.67) was the highest rated construct followed by Pro-activeness (mean = 4.40) then Planning Flexibility (mean = 4.18) and Technological Opportunism (mean = 3.71). The lowest rated constructs were control variables in Competitive Hostility (2.56) and Technological Turbulence (mean = 2.30). However, Technological Turbulence and Competitive Hostility constructs were negatively worded and the lowest rated should be interpreted as reflective of higher agreement to statements by respondents. This means that the perceived environmental conditions in the banking sector are viewed as of higher Technological Turbulence (read as transposed mean of 4.70) and Competitive Hostility (read as transposed mean = 4.44).

Table 10: Descriptive Statistics and Pearson's Correlation

Variable	M	SD	1	2	3	4	5	6	7	8
1. Technological Opportunism	3.71	1.24	1							
2. Innovation	3.38	1.45	.14**	1						
3. Risk Taking	4.67	1.11	0.05	.34***	1					
4. Pro-activeness	4.40	1.25	.31***	.43***	.55***	1				
5. Planning Flexibility	4.18	1.16	.50***	0.09	-0.01	.24***	1			
6. Technological Turbulence	2.30	1.06	.20***	.16***	-.16***	0.04	.12**	1		
7. Competitive Hostility	2.56	0.84	.10*	0.06	-.17***	-0.05	0.04	.41***	1	
8. Firm Performance	3.37	1.03	.52***	.22***	0.06	.29***	.55***	.20***	.21***	1

Pearson's Correlation was computed to determine and assess the relationship between constructs before the calculation and analysis of the multiple regressions. Correlations are not to be interpreted as causation effects as there might be other variables or

constructs that are not part of the empirical research study that might affect causal relationships between variables or constructs. The examination of the correlation matrix must be performed to determine the potential existence of multi-collinearity among explanatory variables. Low correlation coefficients between the explanatory variables suggest the absence of multi-collinearity between independent variables.

The computed correlation coefficients in Table 10 range between -0.17 and 0.55 and a number of significant correlations between constructs do exist. Technological opportunism was significant and positively correlated to Innovation ($r = 0.14$, $p < 0.05$), Proactiveness ($r = 0.31$, $p < 0.01$), Planning Flexibility ($r = 0.50$, $p < 0.01$) and Technological Turbulence ($r = 0.20$, $p < 0.01$). Innovation was significant and positively correlated to Risk Taking ($r = 0.34$, $p < 0.01$), Proactiveness ($r = .43$, $p < 0.01$) and Technological Turbulence ($r = 0.16$, $p < 0.01$). Risk taking was significant and positively correlated to Proactiveness ($r = 0.55$, $p < 0.01$), and negatively correlated to Technological Turbulence ($r = -0.16$, $p < 0.01$) and Competitive Hostility ($r = -0.17$, $p < 0.01$). Proactiveness was significant and positively correlated to Planning Flexibility ($r = 0.24$, $p < 0.01$).

Further, Planning Flexibility was significant and positively correlated to Technological Turbulence ($r = 0.12$, $p < 0.05$). Technological Turbulence was significant and positively correlated to Competitive Hostility ($r = 0.41$, $p < 0.01$). The observed Pearson correlations between the measures of Entrepreneurial Orientation constructs (i.e. Risk taking, Innovation and Proactiveness) are expected to be vastly correlated as they are part of one construct (entrepreneurial orientation). Other observed Pearson correlations are deemed to be moderate and suggests that the constructs are distinct and supports discriminant validity. Further, Pearson correlation coefficients between the underlying explanatory variables indicate the absence of multicollinearity.

The correlation coefficients show that each of Technological Opportunism ($r = 0.52$, p -value < 0.001), Planning Flexibility ($r = 0.55$, p -value < 0.001), Innovation ($r = 0.22$, p -value < 0.001), Pro-activeness ($r = 0.29$, p -value < 0.001), Technological Turbulence ($r = 0.20$, p -value < 0.001) and Competitive Hostility ($r = 0.21$, p -value < 0.001) were positively related to Firm Performance since the p -values were less than 0.05 and the coefficients were positive. Risk Taking was not significantly correlated with Firm Performance since the p -value was greater than 0.05 ($r = 0.06$, p -value > 0.1).

4.5 HYPOTHESIS RESULTS ON MEDIATION EFFECTS

Hypothesis 1: Higher levels of technological opportunism are positively associated with higher levels of firm performance

Hypothesis 2 (Mediation): The primary relationship between technological opportunism and firm performance is mediated by strategic entrepreneurship such that a direct or indirect existence of the relationship is positively associated with strategic entrepreneurship.

- Hypothesis 2.1 (Mediator): The primary relationship between technological opportunism and firm performance is mediated by risk taking such that a direct or indirect existence of the relationship is positively associated with risk taking.
- Hypothesis 2.2 (Mediator): The primary relationship between technological opportunism and firm performance is mediated by proactiveness such that a direct or indirect existence of the relationship is positively associated with proactiveness.
- Hypothesis 2.3 (Mediator): The primary relationship between technological opportunism and firm performance is mediated by innovation such that a direct or indirect existence of the relationship is positively associated with innovation.
- Hypothesis 2.4 (Mediator): The primary relationship between technological opportunism and firm performance is mediated by entrepreneurial orientation such

that a direct or indirect existence of the relationship is positively associated with entrepreneurial orientation.

- Hypothesis 2.5 (Mediator): The primary relationship between technological opportunism and firm performance is mediated by planning flexibility such that a direct or indirect existence of the relationship is positively associated with planning flexibility.

A regression model with Firm Performance as the dependent variable, Technological Opportunism as the independent variable and Strategic Entrepreneurship (i.e. combination of Entrepreneurial Orientation variables in Proactiveness, Innovation, Risk Taking; and Planning Flexibility) as the mediating variable was fitted. The 2 External Environmental Conditions; Technological turbulence and Competitive hostility were control variables. Thus, 2 models each with one of the 2 Strategic Entrepreneurship constructs (i.e. Entrepreneurial Orientation dimensions in Innovation, Proactiveness and Risk Taking; and Planning Flexibility) as the mediators were fitted. The results are shown on Table 11 below:

Table 11: Entrepreneurial Orientations mediating relationship between Technological Opportunism and Firm Performance

	Technological Opportunism > Firm Performance			Technological Opportunism + Innovation > Firm Performance			Technological Opportunism > Innovation		
	B	SE	β	B	SE	β	B	SE	β
Intercept	1.29***	0.2		1.03***	0.21		2.50***	0.33	
Technological turbulence	0.04	0.05	0.04	0.02	0.05	0.02	0.18**	0.08	0.13
Competitive hostility	0.17***	0.06	0.14	0.17***	0.06	0.14	0.01	0.10	0.00
Technological Opportunism	0.42***	0.04	0.5	0.41***	0.04	0.49	0.12*	0.06	0.1
Innovation				0.10***	0.03	0.14			
F	40.42***			49.22***			4.05***		
R ²	0.32			0.3			0.03		
	Technological Opportunism > Firm Performance			Technological Opportunism + Pro-activeness > Firm Performance			Technological Opportunism > Pro-activeness		
	B	SE	β	B	SE	β	B	SE	β
Intercept	1.33***	0.2		0.88***	0.24		3.51***	0.28	
Technological turbulence	0.04	0.05	0.04	0.03	0.05	0.03	0.01	0.07	0.01
Competitive hostility	0.16***	0.06	0.13	0.18***	0.06	0.14	-0.12	0.08	-0.08
Technological Opportunism	0.42***	0.04	0.5	0.37***	0.04	0.45	0.32***	0.05	0.32
Pro-activeness				0.13***	0.04	0.16			
F	38.47***			46.42***			12.87***		
R ²	0.31			0.29			0.1		
	Technological Opportunism > Firm Performance			Technological Opportunism + Risk Taking > Firm Performance			Technological Opportunism > Risk Taking		
	B	SE	β	B	SE	β	B	SE	β
Intercept	1.29***	0.2		1.01***	0.3		5.12***	0.25	
Technological turbulence	0.04	0.05	0.04	0.05	0.05	0.05	-0.13**	0.06	-0.13
Competitive hostility	0.17***	0.06	0.14	0.18***	0.06	0.15	-0.17**	0.08	-0.13
Technological Opportunism	0.42***	0.04	0.5	0.41***	0.04	0.5	0.08	0.05	0.09
Risk Taking				0.05	0.04	0.06			
F	37.38***			49.22***			5.55***		
R ²	0.31			0.3			0.05		

Notes for parameters: B = unstandardized parameters, β = standardized parameters, *** = $p < .01$, ** = $p < .05$, * = $p < .10$.

Notes for differences: ^a Intercept differences expressed as % of raw difference if >5%, slope differences are for β s. [†] Small = $< .05$ for β s, $< .03$ for R^2

The compulsory underlying conditions for mediation effect are the following (Baron & Kenny, 1986):

1. *There is a significant relationship between the independent variable and the dependent variable;*
2. *There is a significant relationship between the independent variable and the mediator variable; and*
3. *The addition of the mediator variable into the model will result in a decline in the coefficient of the original independent variable.*

For **Pro-activeness**, **Condition 1** for mediation is met because there is a significant relationship between Firm Performance and Technological Opportunism ($B = 0.42^{***}$, $\beta = 0.50$, $p\text{-value} < 0.001$) since the p -value was less than 0.05. **Condition 2** is met because Technological Opportunism ($B = 32^{***}$, $\beta = 32$, $p\text{-value} < 0.001$) has a significant impact on Pro-activeness. **Condition 3** is met because the coefficient for Technological Opportunism declined from 0.42 to 0.37 after adding the mediator variable into the model. Thus, since all the three conditions are met, this implies that Pro-activeness mediates the relationship between Technological Opportunism and Firm Performance.

For **Innovation** and **Risk Taking**, the second condition that the independent variable should be significantly related with the mediator variable is not met. Therefore, **Innovation** and **Risk Taking** do not mediate the relationship between Technological Opportunism and Firm Performance.

Table 12: Entrepreneurial Orientation mediating relationship between Technological Opportunism and Firm Performance

	Technological Opportunism > Firm Performance			Technological Opportunism + Entrepreneurial Orientation > Firm Performance			Technological Opportunism > Entrepreneurial Orientation		
	B	SE	β	B	SE	β	B	SE	β
Intercept	1.29***	0.2		1.90***	0.28		4.09***	0.22	
Technological turbulence	0.04	0.05	0.04	0.04	0.05	0.04	0.01	0.06	0.01
Competitive hostility	0.17***	0.06	0.14	0.19***	0.06	0.16	0.12*	0.07	0.1
Technological Opportunism	0.42***	0.04	0.5	0.39***	0.04	0.47	-0.18***	0.04	-0.22
Entrepreneurial Orientation				-0.15***	0.05	-0.14			
F	40.33***			49.22***			6.63***		
R ²	0.32			0.3			0.06		
Notes for parameters: B = unstandardized parameters, β = standardized parameters, *** = $p < .01$, ** = $p < .05$, * = $p < .10$.									
Notes for differences: ^a Intercept differences expressed as % of raw difference if >5%, slope differences are for β s. [†] Small = < .05 for β s, < .03 for R ²									

Condition 1 is met because there is a significant relationship between firm performance and Technological Opportunism (B = 0.42***, β = 0.50, p-value < 0.001) since the p-value was less than 0.05.

Condition 2 is met because Technological Opportunism (B = -0.18***, β = -0.22, p-value < 0.001) has a significant impact on Entrepreneurial Orientation.

Condition 3 is met because the coefficient for Technological Opportunism declined from 0.42 to 0.39 after adding the mediator variable into the model. Thus, since all the 3 conditions are met, this implies that Entrepreneurial Orientation does mediate the relationship between Technological Opportunism and Firm Performance.

Table 13: Planning Flexibility mediating relationship between Technological Opportunism and Firm Performance

	Technological Opportunism > Firm Performance			Technological Opportunism + Planning Flexibility > Firm Performance			Technological Opportunism > Planning Flexibility		
	B	SE	β	B	SE	β	B	SE	β
Intercept	1.29***	0.2		0.44**	0.21		2.44***	0.23	
Technological turbulence	0.04	0.05	0.04	0.03	0.05	0.03	0.03	0.06	0.03
Competitive hostility	0.17***	0.06	0.14	0.18***	0.06	0.15	-0.02	0.07	-0.02
Technological Opportunism	0.42***	0.04	0.5	0.26***	0.04	0.31	0.46***	0.05	0.49
Planning Flexibility				0.35***	0.04	0.39			
F	61.03***			49.22***			36.95***		
R ²	0.42			0.3			0.25		
Notes for parameters: B = unstandardized parameters, β = standardized parameters, *** = $p < .01$, ** = $p < .05$, * = $p < .10$.									
Notes for differences: ^a Intercept differences expressed as % of raw difference if >5%, slope differences are for β s. [†] Small = < .05 for β s, < .03 for R ²									

Condition 1 for mediation is met because there is a significant relationship between Firm Performance and Technological Opportunism (B = 0.42***, β = 0.50, p-value < 0.001) since the p-value was less than 0.05.

Condition 2 is met because Technological Opportunism (B = 46***, β = 0.49, p-value < 0.001) has a significant impact on Planning Flexibility.

Condition 3 is met because the coefficient for Technological Opportunism declined from 0.42 to 0.26 after adding the mediator variable into the model. Thus, since all the three conditions are met, it implies that Planning Flexibility mediates the relationship between Technological Opportunism and Firm Performance.

Table 14: Strategic Entrepreneurship mediating the relationship between Technological Opportunism and Firm Performance

	Technological Opportunism > Firm Performance			Technological Opportunism + Strategic Entrepreneurship > Firm Performance			Technological Opportunism > Strategic Entrepreneurship		
	B	SE	β	B	SE	β	B	SE	β
Intercept	1.77***	0.15		0.24	0.25		3.20***	0.12	
Technological Opportunism	0.43***	0.04	0.52	0.29***	0.04	0.35	0.29***	0.03	0.46
Strategic Entrepreneurship				0.48***	0.06	0.36			
F	101.40***			127.76***			93.55***		
R ²	0.37			0.27			0.21		
Notes for parameters: B = unstandardized parameters, β = standardized parameters, *** = $p < .01$, ** = $p < .05$, * = $p < .10$.									
Notes for differences: ^a Intercept differences expressed as % of raw difference if >5%, slope differences are for β s. [†] Small = < .05 for β s, < .03 for R ²									

Condition 1 for mediation is met because there is a significant relationship between Technological Opportunism and Firm Performance (B = 0.43***, β = 0.52, p-value < 0.001) since the p-value was less than 0.05.

Condition 2 is met because Technological Opportunism (B = 0.29***, β = 0.35, p-value < 0.001) has a significant impact on Strategic Entrepreneurship.

Condition 3 is met because the coefficient for Technological Opportunism declined from 0.43 to 0.29 after adding the mediator variable into the model. Thus, since all the 3 conditions are met, it implies that Strategic Entrepreneurship partially explains the relationship between Technological Opportunism and Firm Performance.

4.6 HYPOTHESIS RESULTS ON MODERATION EFFECTS

Hypothesis 1: Higher levels of technological opportunism are positively associated with higher levels of firm performance

Hypothesis 3 (Moderation): The primary relationship between technological opportunism and firm performance is moderated by strategic entrepreneurship such that a direction and strength of the relationship is determined by the specific level of strategic entrepreneurship.

- Hypothesis 3.1 (Moderator): The primary relationship between technological opportunism and firm performance is moderated by risk taking such that a direction and strength of the relationship is determined by the specific level of risk taking.
- Hypothesis 3.2 (Moderator): The primary relationship between technological opportunism and firm performance is moderated by proactiveness such that a direction and strength of the relationship is determined by the specific level of proactiveness.
- Hypothesis 3.3 (Moderator): The primary relationship between technological opportunism and firm performance is moderated by innovation such that a direction and strength of the relationship is determined by the specific level of innovation.
- Hypothesis 3.4 (Moderator): The primary relationship between technological opportunism and firm performance is moderated by entrepreneurial orientation such that a direction and strength of the relationship is determined by the specific level of entrepreneurial orientation.
- Hypothesis 3.5 (Moderator): The primary relationship between technological opportunism and firm performance is moderated by planning flexibility such that a direction and strength of the relationship is determined by the specific level of planning flexibility.

A regression model with Firm Performance as the dependent variable, Technological Opportunism as the independent variable and Strategic Entrepreneurship (i.e. combination of Entrepreneurial Orientation variables in Proactiveness, Innovation, Risk Taking; and Planning Flexibility) as the moderating variable was fitted. The 2 External Environmental Conditions; Technological turbulence and Competitive hostility were control variables. Thus, 2 models each with one of the two Strategic Entrepreneurship constructs (i.e. Entrepreneurial Orientation dimensions in Innovation, Proactiveness and Risk Taking; and Planning Flexibility) as the moderator. The results are shown in Table 15:

Table 15: Entrepreneurial Orientations moderating variable relationship between Technological Opportunism and Firm Performance

Moderation Regressions						
Proactiveness Moderation	Model 1		Model 2		Model 3	
	B	β	B	β	B	β
Intercept	2.87***	0	2.84***	0	2.9***	0
Technological turbulence	0.04	0.04	0.03	0.03	0.02	0.02
Competitive hostility	0.16***	0.13	0.18***	0.14	0.17***	0.14
Technological Opportunism	0.42***	0.5	0.37***	0.45	0.38***	0.46
Pro-activeness			0.13***	0.16	0.12***	0.15
Technological Opportunism x Pro-activeness					-0.04	-0.07
R ²	0.30		0.31		0.32	
Innovation Moderation	Model 1		Model 2		Model 3	
	B	β	B	β	B	β
Intercept	2.84***	0	2.88***	0	2.87***	0
Technological turbulence	0.04	0.04	0.02	0.02	0.02	0.02
Competitive hostility	0.17***	0.14	0.17***	0.14	0.18***	0.14
Technological Opportunism	0.42***	0.5	0.41***	0.49	0.4***	0.49
Innovation			0.1***	0.14	0.1***	0.15
Technological Opportunism x Innovation					0.01	0.02
R ²	0.3		0.32		0.32	
Risk Taking Moderation	Model 1		Model 2		Model 3	
	B	β	B	β	B	β
Intercept	2.84***	0	2.8***	0	2.77***	0
Technological turbulence	0.04	0.04	0.05	0.05	0.06	0.06
Competitive hostility	0.17***	0.14	0.18***	0.15	0.19***	0.15
Technological Opportunism	0.42***	0.5	0.41***	0.5	0.41***	0.5
Risk Taking			0.05	0.06	0.06	0.06
Technological Opportunism x Risk Taking					0.03	0.04
R ²	0.3		0.31		0.31	

Notes: *** = $p < .01$, ** = $p < .05$, * = $p < .10$

Model 1 shows that Technological Opportunism ($B = 0.42$, $\beta = 0.5$, $p\text{-value} < 0.01$) is positively related to Firm Performance. The relationship is positive because the coefficient is greater than zero and is significant because the $p\text{-value}$ is less than 0.05 (the significance level).

Model 2 shows that there is a significant positive relationship between Firm Performance and each of Pro-activeness ($B = 0.13$, $\beta = 0.16$, $p\text{-value} < 0.01$) and Innovation ($B = 0.10$, $\beta = 0.14$, $p\text{-value} < 0.01$) since the $p\text{-values}$ were less than 0.01 and the coefficients were positive. The relationship between Firm Performance and Risk Taking ($B = 0.05$, $\beta = 0.06$, $p\text{-value} > 0.1$) is however not significant since the $p\text{-value}$ was greater than 0.05.

Model 3 shows that an addition of the interaction variables (Technological Opportunism)*(Proactiveness, Innovation and Risk Taking) on to the model is however not significant although there is an increase on the R-square from 0.3. Further, the coefficient of the interaction variables (Proactiveness, Innovation and Risk Taking) is not significantly different from Zero. This implies that Proactiveness, Innovation and Risk Taking do not moderate the relationship between Technological Opportunism and Firm Performance (Baron & Kenny, 1986).

Table 16: Entrepreneurial Orientation moderating variable relationship between Technological Opportunism and Firm Performance

Entrepreneurial Orientation	Model 1		Model 2		Model 3	
	B	β	B	β	B	β
Intercept	2.84***	0	2.79***	0	2.8***	0
Technological turbulence	0.04	0.04	0.04	0.04	0.04	0.04
Competitive hostility	0.17***	0.14	0.19***	0.16	0.19***	0.16
Technological Opportunism	0.42***	0.5	0.39***	0.47	0.39***	0.47
Entrepreneurial Orientation			-0.15***	-0.14	-0.15***	-0.14
Technological Opportunism x Entrepreneurial Orientation					0.01	0.01
R ²	0.30		0.32		0.32	

Notes: *** = $p < .01$, ** = $p < .05$, * = $p < .10$

Model 2 shows that there is a significant negative relationship between Firm Performance and Entrepreneurial Orientation ($B = -0.15$, $\beta = -0.14$, $p\text{-value} < 0.01$). **Model 3** shows that the addition of the interaction variable (Technological Opportunism x Entrepreneurial Orientation) onto the model did not increase the R-square. Further, the coefficient for the interaction variable ($B = 0.01$, $\beta = 0.01$, $p\text{-value} > 0.05$) is not significantly different from Zero. This implies that Entrepreneurial Orientation as a sub-construct of Strategic Entrepreneurship does not moderate the relationship between Technological Opportunism and Firm Performance (Baron & Kenny, 1986).

Table 17: Planning Flexibility moderating variable relationship between Technological Opportunism and Firm Performance

Moderation Regressions						
Planning Flexibility	Model 1		Model 2		Model 3	
	B	β	B	β	B	β
Intercept	2.84***	0	2.85***	0	2.89***	0
Technological turbulence	0.04	0.04	0.03	0.03	0.03	0.03
Competitive hostility	0.17***	0.14	0.18***	0.15	0.18***	0.15
Technological Opportunism	0.42***	0.5	0.26***	0.31	0.27***	0.32
Planning Flexibility			0.35***	0.39	0.32***	0.37
Technological Opportunism x Planning Flexibility					-0.07**	-0.11
R ²	0.30		0.42		0.43	

Notes: *** = $p < .01$, ** = $p < .05$, * = $p < .10$

Model 2 shows that there is a significant positive relationship between Firm Performance and Planning Flexibility ($B = 0.35$, $\beta = 0.39$, $p\text{-value} < 0.001$). **Model 3** shows that the addition of the interaction variable (Technological Opportunism x Planning Flexibility) on to the model resulted in an increase on the R-square from 0.42 to 0.43. The coefficient of the interaction variable ($B = -0.07$, $\beta = -0.11$, $p\text{-value} < 0.05$) is significantly different from Zero. This implies that Planning Flexibility as sub-construct of Strategic Entrepreneurship moderates the relationship between Technological Opportunism and Firm Performance (Baron & Kenny, 1986). The graph below shows

the changes in the relationship between Technological Opportunism and Firm Performance at different levels of planning flexibility.

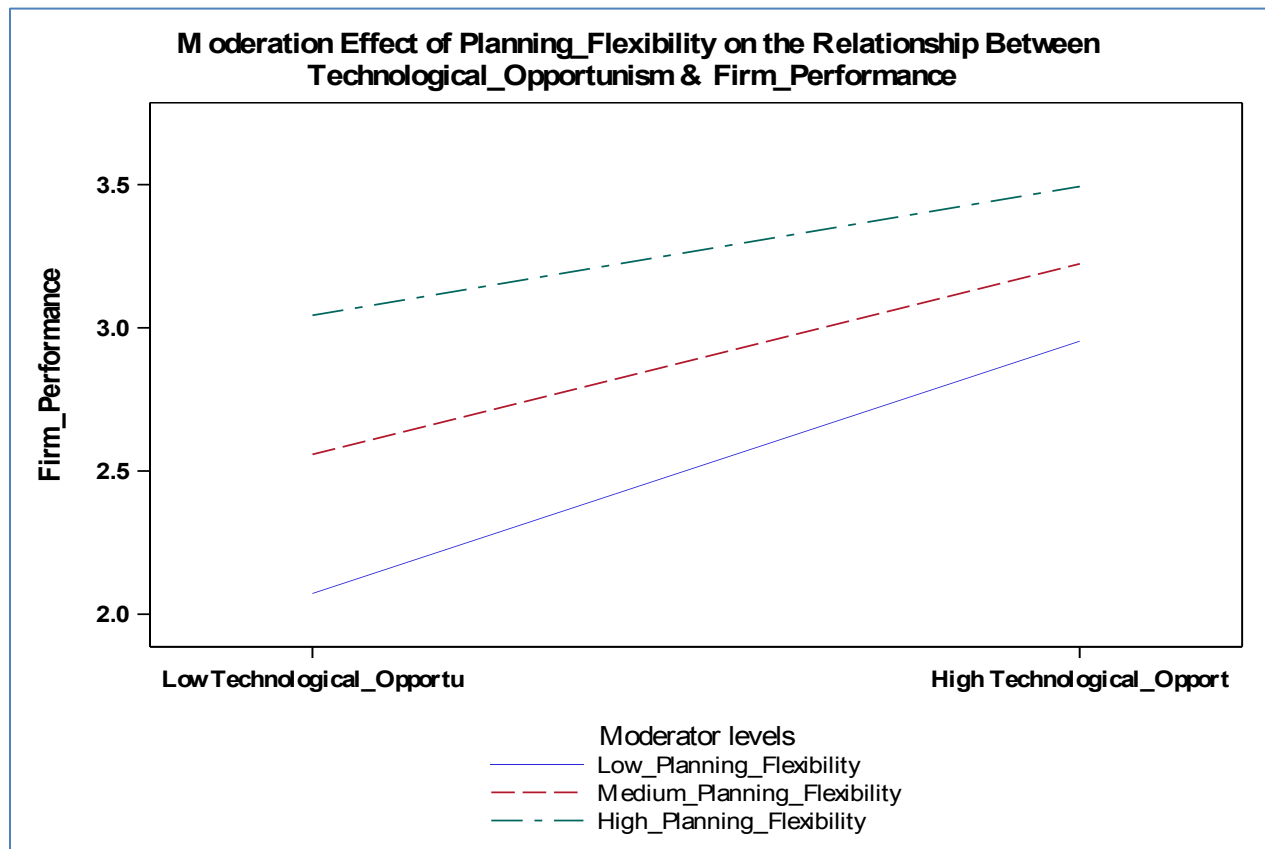


Figure 18: Planning Flexibility Moderation Effect

Figure 18 demonstrates that the relationship between Technological Opportunism and Firm Performance is the strongest at low levels of Planning Flexibility as indicated by the steepness of the bold blue line and weakest at high levels of Planning Flexibility.

Table 18: Strategic Entrepreneurship moderating variable relationship Technological Opportunism and Firm Performance

Moderation Regressions						
Strategic Entrepreneurship	Model 1		Model 2		Model 3	
	B	β	B	β	B	β
Intercept	3.37***	0	3.37***	0	3.42***	0
Technological Opportunism	0.43***	0.52	0.29***	0.35	0.3***	0.36
Strategic Entrepreneurship			0.48***	0.36	0.45***	0.34
Technological Opportunism x Strategic Entrepreneurship					-0.1**	-0.1
R ²	0.27		0.37		0.38	

Model 2 shows that there is a significant positive relationship between Firm Performance and Strategic Entrepreneurship ($B = 0.48$, $\beta = 0.36$, $p\text{-value} < 0.001$).

Model 3 shows that the addition of the interaction variable (Technological Opportunism x Strategic Entrepreneurship) on to the model resulted in an increase on the R-square from 0.37 to 0.38. The coefficient of the interaction variable ($B = -0.1$, $\beta = -0.1$, $p\text{-value} < 0.05$) is significantly different from Zero. This implies that Strategic Entrepreneurship moderates the relationship between Technological Opportunism and Firm Performance (Baron & Kenny, 1986). The graph below shows the changes in the relationship between Technological Opportunism and Firm Performance at different levels of Strategic Entrepreneurship.

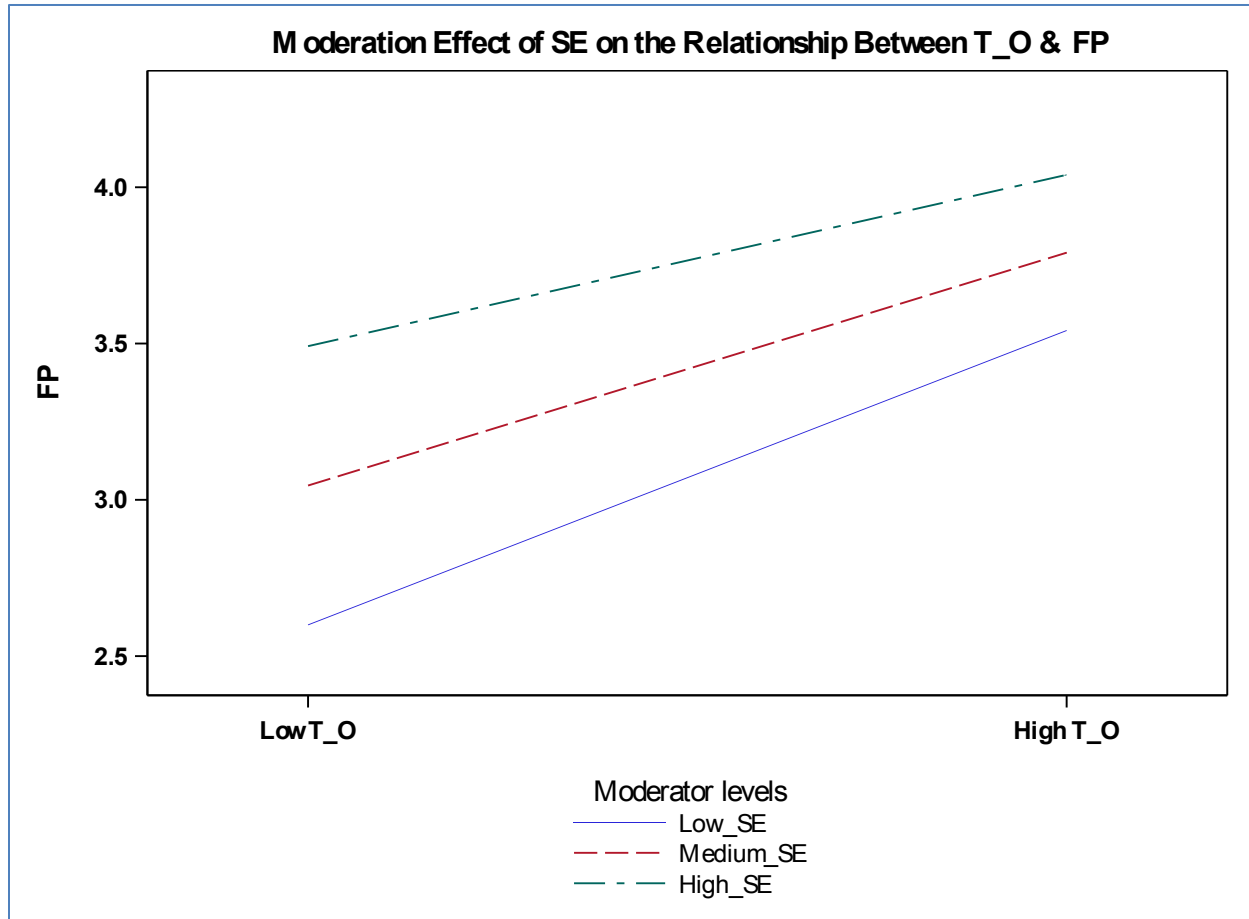


Figure 19: Strategic Entrepreneurship Moderation Effect

Lower levels of strategic entrepreneurship strengthen the positive relationship between technological opportunism and firm performance.

4.6 SUMMARY OF THE RESULTS

Table 19: Summary of Multiple Regression Model Results

#	Main Construct (IV)	Hypothesis No	Level of Construct	Mediator Test	Moderator Test	Significance Level?	R ²	Coefficient (B)	βeta	p-value
1	Technological Opportunism	H1	Level 1	No	No	Supported	0.30	0.42***	0.50	<0.01
2	Strategic Entrepreneurship	H2	Level 1	Yes	No	Supported	0.27	0.48***	0.06	<0.01
3	Risk taking	H2.1	Level 3	Yes	No	Not Supported	0.30	0.05	0.04	> 0.1
4	Pro-activeness	H2.2	Level 3	Yes	No	Supported	0.29	0.37***	0.04	<0.01
5	Innovation	H2.3	Level 3	Yes	No	Not Supported	0.30	0.10***	0.03	<0.01
6	Entrepreneurial Orientation	H2.4	Level 2	Yes	No	Supported	0.30	0.39***	0.04	<0.01
7	Planning Flexibility	H2.5	Level 2	Yes	No	Supported	0.30	0.26***	0.04	<0.01
8	Strategic Entrepreneurship	H3	Level 1	No	Yes	Supported	0.38	-0.1**	-0.1	<0.05
9	Risk taking	H3.1	Level 3	No	Yes	Not Supported	0.32	0.03	0.04	> 0.1
10	Proactiveness	H3.2	Level 3	No	Yes	Not Supported	0.32	-0.04	-0.1	> 0.1
11	Innovation	H3.3	Level 3	No	Yes	Not Supported	0.31	0.01	0.02	> 0.1
12	Entrepreneurial Orientation	H3.4	Level 2	No	Yes	Not Supported	0.32	0.01	0.01	> 0.1
13	Planning Flexibility	H3.5	Level 2	No	Yes	Supported	0.43	-0.07**	-0.1	<0.05

Hypotheses Supported or Not?	Supported (7 out of 13)	Not Supported (6 out of 13)
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CHAPTER 5 – DISCUSSION OF THE RESULTS

5.1 INTRODUCTION

This chapter is a detailed presentation supported by the interpretation of the statistical results of the study. The researcher sought out to synthesize and integrate the statistical results from the quantitative study with the literature review. The demographic profile of the study participants will be summarized and this will be followed by an in-depth discussion of the results of hypotheses and lastly the chapter closes with a summary of the key findings.

5.2 DEMOGRAPHIC PROFILE OF THE RESPONDENTS

5.2.1 Gender Distribution

The representative sample of 347 responses was made up of 46% male respondents, 53% female respondents and the other 1% opted not to indicate their gender as “opt not to answer”. The majority proportion of females within the study improved the diversity of inclusion of the opinions and perceptions considered for empirical research findings as historical research outcomes were generally dominated by the opinions or perceptions of males. Further, gender diversity inclusion within a corporate sector continues to be strategically imperative in terms of driving future competitive sustainability of the organizations. The diversity inclusion of females in our local and global economies is critical in reversing the historical economic imbalances in our economies. As such, these statistical empirical results need to be viewed in a positive and constructive light of how best could these be incorporated into the economic development of females as the empirical results of the study appear to be geared towards females. Future research can consider additional statistical analysis of the hypotheses by gender distribution in order to establish whether females produced different results in terms of

the relationship between technological opportunism and firm performance and the mediating and mediation roles being played by strategic entrepreneurship.

5.2.2 Highest Level of Education

The majority of respondents (42%) have achieved a Bachelor's degree or Diploma level of education while Honour's, Master's and Doctorate degrees were circa 23% of the respondents. On the other hand, 34% of the respondents had attended and completed high school and some tertiary level of education. Collectively, this suggests that at least 65% of the respondents had at least attained a university degree level of academic education. Based on 2015/16 South African GEM report and resource based view theory, an appropriated skilled and educated workforce with the capacity for innovation is fundamental to an economy's competitiveness, productivity and sustainable growth (Herrington and Kew, 2016 and Alvareza and Busenitz, 2001).

Herrington and Kew (2016) reinforced that an education system is one of the primary pillars for a competitive country, as it has been empirically proven that quality education has a positive influence on self-efficacy and self-confidence of the individuals which increases the chances of such individuals being entrepreneurial and innovative (Herrington & Kew, 2016). Entrepreneurial education or innovative skills is important resources that should be identified and combined for the development and sustainability of the organization within the context of technological opportunism and strategic entrepreneurship.

The observed level of education in the sample of empirical study bodes well for the academic aspect of human intellectual capacity of the banking institution's employees although significant improvement is required at Doctorate and Master's degree level as this academic profile of the population has been empirically known to possess cutting edge management and leadership thinking which is supported by their academic research and development efforts. The highest level of academic education achieved

contributes towards human capital resources of the organization and therefore critical for supporting entrepreneurial activities in pursuit of achieving a sustainable competitive advantage.

In terms of the reliability of the perceived views and perceptions, the empirical results indicate that academically qualified individuals were included within the sample of the study to increase its level of trustworthiness as theoretical underpinnings support that educational qualifications remain fundamental to the development of human capital resources and capability within an established organization as this is empirically associated with increased business performance and stay abreast of technological trends and developments. According to the resource-based view (RBV), organizations can achieve competitive advantages by developing resources and capabilities. In terms of RBV, capabilities are a combination of skills and accumulated experience or knowledge which is exercised through organizational processes and allows organizations to coordinate activities and make use of their assets. The observed level of education in the sample of empirical study supports the resource based view theory.

5.2.3 Corporate Position / Grade

The highest proportion of employees were Senior Management (31.7%) followed by Middle Management (28.2%), and Non-Management personnel (22.5%). Non-Management category is primarily employees who were classified as “Professionals” in terms of their corporate grade. The Principal/Director, Executive and C-Suite corporate level represents less than 10% of the respondents to the survey. Despite the fact that this response is very low, it is proportionate to the Principal/Director, Executive and C-Suite population which occupies these corporate roles in the banking institutions and thus does not reduce the level of reliability and validity of the research findings. Based on specific profile of the level of seniority, the employees that participated in the study possessed the right level of technical and business knowledge to understand the objectives of the empirical research as it relates to the dynamics and intricacies of the

effects of technological opportunism on firm performance as well as potential underlying effects of strategic entrepreneurship on technological opportunism and firm performance relationship.

5.2.4 Level of Banking Experience

The respondents indicated the amount of experience that they had accumulated in the bank. 70% of the sampled employees had 10 years or more experience in the bank with only 1% that had less than 2 years' experience in the bank. At least 38% of the respondents have been in the banking institution for 20 years or more. The profile of respondents indicate that the majority of the sampled employees are expected to be familiar and knowledgeable about the banking institution to ensure that the responses provided were reflective of the organizational entrepreneurial climate within the banking institution. There is higher level of employee loyalty being demonstrated by this profile of respondents. Notwithstanding an age of the respondents not being requested, it is reasonable to expect an average age of the respondents to be at least 40 years old or more since they have accumulated a vast amount of working experience.

Various researchers have found that working experience is an important component of the human capital resources required by corporate entrepreneurs in order to drive growth and sustainability within existing organizations (Urban, et al., 2012)). Findings of El Gizawi (2014) and Teece et al (1997) are consistent over the prevailing need of dynamic capabilities and strategic management of human capital resources (i.e. resource based theory), but an assumption and implication under the resource based view theory is that there are adequate human capital resources within banking institutions to be agile and dynamically adapt to the changing environmental factors presented by technological developments. It is therefore important that the comparative level of access to the individuals with the right level of working experience (and education) is considered to adequately assess the relevance and applicability of the dynamic capability theory in the context of an emerging economy.

The South African emerging economy may not possess the right level of banking or entrepreneurial experience, quality of, and access to required experience to ensure the relevance or applicability of the dynamic capability theory within a South African environment. Given the profile of the working experience of the individuals in the study, the dynamic and resource based theories is found to be applicable and may be effectively adopted by the working experience profile observed within the study. It was expected that the profile of respondents is more geared towards senior and experienced individuals given the adoption of the pre-selection criteria of the middle and senior management and upwards corporate level or grade. The observed level of banking experience in the sample of empirical study supports the resource based view theory. The organizational factors such as succession planning and effective knowledge transfer should be considered in line with the development of the pipeline of senior and experienced respondents observed within the survey sample.

5.2.5 Functional Area

The frequency distribution indicates that the respondents belonged to different departments with varying levels of functional responsibility. The departments represented in the sample were mainly responsible for Product management (15%), Channel / Distribution / Coverage (14%), Operations (12%), Finance (11%). The departmental profile of respondents show that 11% of respondents selected “Other” for a functional area, but an outstanding 89% is deemed adequate for respondents that identified their functional area of responsibility. The distribution of the respondents supports the banking industry’s expectations and norms that the majority of the employees in an organization belong to Product, Channel/Distribution/Coverage, Operations, Technology and Finance areas.

The profile of the respondents in respect of the departments indicates a balance of functional experience in the respondents that had specialized knowledge in technology, finance and operations supported by product, channel and distribution / coverage

experience. This supports cross-functional knowledge of the operating model of business and its underlying value chain of how they produce and deliver products and services to their banking customers. Further, the profile suggests that the respondents had adequate understanding of how best can technology and its developments be leveraged across the business value chain in order to increase customer experience and subsequently increases business performance.

5.3 DESCRIPTIVE STATISTICS OF THE CONSTRUCTS

The descriptive statistics for the constructs in terms of means and standard deviations were shown in Chapter 4 (Table 10). Risk Taking (mean = 4.67) was the highest rated construct followed by Pro-activeness (mean = 4.40) then Planning Flexibility (mean = 4.18) and Technological Opportunism (mean = 3.71). The lowest rated constructs were control variables in Competitive Hostility (mean = 2.56) and Technological Turbulence (mean = 2.30). However, Technological Turbulence and Competitive Hostility constructs were negatively worded and therefore the lowest rated should be interpreted as reflective of higher agreement to statements by respondents. This means that the perceived environmental conditions in the banking sector are viewed as of higher Technological Turbulence (read as transposed mean of 4.70) and Competitive Hostility (read as transposed mean = 4.44).

Pearson's correlation was computed to determine and assess the relationships between constructs before the calculation and analysis of the multiple regressions. Very low correlation coefficients between the explanatory variables were observed and this suggests the absence of multi-collinearity between the independent variables. The correlation coefficients show that each of Technological Opportunism ($r = 0.52$, $p\text{-value} < 0.001$), Planning Flexibility ($r = 0.55$, $p\text{-value} < 0.001$), Innovation ($r = 0.22$, $p\text{-value} < 0.001$), Pro-activeness ($r = 0.29$, $p\text{-value} < 0.001$), Technological Turbulence ($r = 0.20$, $p\text{-value} < 0.001$) and Competitive Hostility ($r = 0.21$, $p\text{-value} < 0.001$) were positively

related to Firm Performance since the p-values were less than 0.05 and the coefficients were positive. The positive correlation coefficients between these constructs and firm performance support the literature as these organizational factors for instance technological opportunism, proactiveness, planning flexibility and innovation have been empirically validated to hold a positive correlation with firm performance (Lumpkin and Dess, 1996, Chen and Lien, 2012; Sarkees, 2011; Srinivasan et al., 2002; Voola et al., 2012, Bulut and Yilmaz, 2008; and Murimbika and Urban, 2015).

Nevertheless, risk taking was not significantly correlated with firm performance since the p-value was greater than 0.05 ($r = 0.06$, $p\text{-value} > 0.1$). The observed high risk taking (mean = 4.67) with low to moderate variability (standard deviation = 1.11) coupled with no statistically significant correlation ($p\text{-value} > 0.1$) to technological opportunism and firm performance suggests that there is high perceived risk taking by the banking institution, but the financial returns are not perceived to be aligned to such risk taking behaviour and thus do not translate into positive firm performance. The low to moderate standard deviation suggests that there was low to moderate variability in the responses provided by the survey participants.

Organizational risk taking is theorized as the behaviour and attitude to create a new business venture in pursuit of corporate growth and profitability through a toleration of estimated probable losses (Bulut & Yilmaz, 2008). Risk taking is related to the disposition to allocate additional resources to technological projects where there is relatively high cost of potential failure (Miller and Friesen, 1978). Risk taking behaviour widely reflects the desire of the organization to refrain from the tried-and-tested and venture into uncertainty or unknown that is likely to yield high financial returns (Wiklund & Shepherd, 2005). Statistical results of the study suggest there is high perceived organizational risk to absorb financial losses as this is not positively correlated to both technological opportunism and firm performance. In essence, the organization is perceived as it does not leverage off technological opportunities to better manage

perceived risk within the banking institution while taking an advantage of an upside in business returns. The relationship between risk taking behaviour and firm performance will be further explored and discussed under the hypothesis section 5.6 below.

5.4 DISCUSSION IN RELATION TO HYPOTHESIS 1

H1: Higher levels of technological opportunism are positively associated with higher levels of firm performance

In Chapter 2, the researcher hypothesized based on literature review that there is a positive association between technological opportunism and firm performance. Technological opportunism capabilities embedded within existing organizations increases the opportunities of the first-mover advantage in order to make proactive and better strategic moves over the competitors (Chen & Lien, 2013). Technological-sensing and technological-responding capabilities are two underlying dimensions of technological opportunism (Srinivasan, Lilien, and Rangaswamy, 2002; Sarkees, 2011; Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012 and Chen and Lien, 2013) and these capabilities were argued to positively influence firm performance.

Firm performance was measured by a combination of profitability, revenue growth, return on investment, market share and new product success rate. Participants provided responses on each perceived firm performance indicator relative to the competitors in their primary served markets (Chen & Lien, 2013). The statistical results in Chapter 4 (Table 11) support the literature review (H1) and rejected the null hypothesis. The R^2 was significant at 30 percent (0.30; $p < 0.01$) and this indicates 30 percent of variance in firm performance is explained by technological opportunism. Perceived firm performance relative to the competitors was significant and positively correlated to technological opportunism $r(347) = 0.52$ and $p < 0.01$.

The proposition that organizations need to align their strategy with the changes in their external environments is self-evident in organizational strategic management and entrepreneurship research. The organizational external environment embodies various factors (e.g. PESTEL analysis) that are considered in strategic decision-making processes of the organization. Various researchers (Chen and Lien, 2012; Sarkees, 2011; Srinivasan et al., 2002; Voola et al., 2012) argued in favour of the resource based view (RBV) being an appropriate theoretical framework for understanding strategic management and technological capabilities since RBV links organizational resources and capabilities with competitive advantages (Lucia-Palacios, Bordonaba-Juste, Polo-Redondo, & Grünhagen, 2014).

In the contrary, Teece et al (1997) argued that technological opportunism was ingrained in the dynamic capabilities theory which are explained as new sources of competitive advantage that were not previously identified as core elements of the resource based view approach, i.e. strategic management of resources and capabilities. The combination of resource based view and dynamic capability theories culminated into the dynamic resource based view approach which is now being studied to be a cornerstone of strategic management practices and its influential impact on organizational business performance and competitive advantage. The statistical support of the positive association of technological opportunism and firm performance indicates there is effective application of the dynamic resource based view within the banking institution.

The empirical results of the study suggest that executives and senior managers should encourage management practices that foster technological opportunism as a method to improve firm performance and sustainable competitiveness in today's uncertain and complex global environment. Various researchers (Chen and Lien, 2012; Sarkees, 2011; Srinivasan et al., 2002; Voola et al., 2012) argued in favour of technological opportunism under the resource based view approach as what ought to be implemented in order to increase firm performance. Therefore, the executives and senior managers

should profit from implementing organizational strategies that encourage and increase the firm's level of technological opportunism.

This empirical results also supported the model for corporate entrepreneurship that demonstrates that sustainability is contingent upon individual members of the organization to continually innovate in pursuit of sustaining entrepreneurial activities (Kuratko, Morris, & Covin, 2011), firms' executives and managers should introduce organizational factors that will drive technological opportunism within an organization such as enabling organizational structures, incentives, autonomy / work discretion and provision of resources and suitable training. The empirical research suggests adoption of technological opportunism as a vital potential source of sustainable economic growth and job creation in the South African economy.

Customer technology adoption (i.e. diffusion theory of innovation) remains an important factor in understanding organizational risk appetite for technological opportunism and its influence on the adoption of technological innovations (Srinivasan, Lilien, & Rangaswamy, 2002). Customer utilization of technology driven banking services is a direct and positive indicator of how banks in the emerging markets have historically adopted emerging technologies to improve banking processes, customer service and customer experience (Daugherty, Carrel-Billiard, & Biltz, 2016). Although diffusion theory of innovation was not studied as part of this empirical study, it is implied when technological opportunism is found to be positively associated with firm performance as 30% of firm performance was explained by technological opportunism. What is implied in this relationship is that customers must have adopted the technologies that were discovered and leveraged by the banking institution. In section 6.4, the researcher intends to suggest further research in pursuit of understanding the influence of the technology adoption by customers in the context of an emerging economy such as South Africa.

The statistical results of the study adequately supported the principal role that technological opportunism plays in enhancing firm performance. The alternate hypothesis (H1) was supported and retained ($R^2=0.30$; $p<0.01$). The research supported the resource based view theory, dynamic capabilities theory, model for corporate entrepreneurship and there was implied support for technology adoption model and diffusion theory of innovation.

5.5 DISCUSSION IN RELATION TO HYPOTHESES 2 and 3

H2 (Mediation): The primary relationship between technological opportunism and firm performance is mediated by strategic entrepreneurship such that a direct or indirect existence of the relationship is positively associated with strategic entrepreneurship.

H3 (Moderation): The primary relationship between technological opportunism and firm performance is moderated by strategic entrepreneurship such that a direction and strength of the relationship is determined by the specific level of strategic entrepreneurship.

In Chapter 2, the researcher hypothesized based on literature review that strategic entrepreneurship mediates and moderates the relationship between technological opportunism and firm performance. Chapter 2 summarized strategic management as a process that involves the design, formulation and implementation of long-term plans for the management of the identified external opportunities and threats while taking into account the internal resources as it relates to underlying strengths and weaknesses of the organization (Ketchen, Ireland, & Snow, 2007). A number of years ago, Miller (1983) proposed that corporate entrepreneurial orientation (EO) as a foundational basis of an existing business that simultaneously demonstrates risk-taking, proactiveness and innovation in its overall business model and operational activities.

Planning flexibility and entrepreneurial orientation (EO) were constructed to be a proxy for strategic entrepreneurship. Strategic entrepreneurship is a combination of the makings which the business adopts to reinvent itself through creativity and innovations across their value chain of firm strategy, product offerings, markets served and internal organization and this is aimed at the achievement of competitive advantage (Crizan-Mitra & Borza, 2011). In short, strategic entrepreneurship is a combination of opportunity seeking behaviour (i.e. entrepreneurial orientation) and competitive advantage seeking behaviour (i.e. strategic management).

Firstly, strategic entrepreneurship was hypothesized as the cause and effect linkage between technological opportunism and firm performance relationship (H2). In other words, strategic entrepreneurship is a causal model that explains the underlying process of “why” and “how” a cause-and-effect happens between technological opportunism and firm performance (Wu & Zumbo, 2008). Secondly, the specific levels of strategic entrepreneurship as a moderator variable modifies the strength or direction (i.e. positive or negative or reverse) of a causal relationship model between technological opportunism and firm performance (H3).

The statistical results in Chapter 4 support hypothesis H2 and rejected the null hypothesis for mediation (H2). The R^2 was significant at 27 percent (0.27; $p < 0.01$) and this suggests 27 percent of variance in the positive relationship between technological opportunism and firm performance is explained by strategic entrepreneurship. Strategic entrepreneurship was significant and positively associated with technological opportunism ($B = 0.48$ and $p < 0.01$). In essence, the results of the study suggest that technological opportunism positively influences strategic entrepreneurship and in turn, strategic entrepreneurship positively influences firm performance.

Technological opportunism has a direct relationship with firm performance although this influence decreased when strategic entrepreneurship was introduced into the model.

Meaning strategic entrepreneurship has a partial mediation effect on the relationship between technological opportunism and firm performance. The statistical result indicates that there is perceived entrepreneurial orientation and planning flexibility within the banking institution that is indirectly influencing the relationship between technological opportunism and firm performance. As part of organizational entrepreneurial renewal efforts, management should continue to provide management support, resources, work discretion, rewards and reinforcements to encourage entrepreneurial orientation and planning flexibility as this is fundamental to positive firm performance and subsequent competitive advantage. Although mediation was supported, an investment in strategic entrepreneurial behaviour within an organization should be considered in line with the moderation effects as this will determine the direction and strength of the relationship between technological opportunism and firm performance.

Statistical results in Chapter 4 support the moderation effect (H3) between technological opportunism and firm performance. The R^2 was significant at 38 percent (0.38; $p < 0.01$) and this suggests 38 percent of variance in the moderation effect (i.e. directional and level of magnitude) in the relationship between technological opportunism and firm performance is influenced by strategic entrepreneurship. Strategic entrepreneurship practices were significant and negatively associated with the relationship between technological opportunism and firm performance ($B = -0.01$ and $p < 0.05$). The interpretation of the statistical result indicates that lower levels of strategic entrepreneurship strengthen the positive relationship between technological opportunism and firm performance. The lower levels of strategic entrepreneurial organizations are associated with the lower levels of entrepreneurial orientation and planning flexibility, but this intensifies the positive relationship between technological opportunism and firm performance.

Conversely, the higher levels of strategic entrepreneurship are positively associated with higher levels of entrepreneurial orientation and planning flexibility and in turn this

weakens the positive relationship between technological opportunism and firm performance. This is plotted in Figure 19 (Chapter 4). As part of organizational entrepreneurial renewal efforts, management should strive for an appropriate balance between the levels of strategic management and technological opportunism to ensure that an optimum level of firm performance is achieved. Strategic management practices embraced within the banking institution should not compromise the relationship between technological opportunism and firm performance in light of local and global focus on technological advancements which should be leveraged to increase firm performance and competitive advantage.

The strategic management discipline aims to acquire and understand knowledge that relates to the causes of firm performance differentials across organizations as competitive positioning and advantage underpins an organizational ability to create value and wealth for customers, shareholders and broader society (Hitt, Ireland, Sirmon, & Trahms, 2011). The outcomes of the acquisition and understanding of the knowledge as this relates to the causes of firm performance and competitive advantage are to dynamically align the company value propositions to the requirements of the market circumstances based on the combined organizational resources and capabilities. Shane and Venkataraman (2000) and Hisrich and Peters (1998) described entrepreneurship as a process of innovation and creativity, opportunity identification and exploitation in pursuit of new venture and wealth creation including an absorption of earnings and risks of the business venture (Hisrich and Peters, 1998; Shane and Venkataraman, 2000).

In our empirical study, entrepreneurial orientation (section 5.9) was found not to moderate the relationship between technological opportunism and firm performance while strategic planning flexibility (section 5.10) was found to moderate the relationship. The implication of the lack of the entrepreneurial orientation moderation effect is that the positive relationship between technological opportunism and firm performance will not be influenced by entrepreneurial behaviour such that its fundamental direction or

weakness will not be impacted by negative or positive movements in the level of entrepreneurial behaviour within an organization. Conversely, the implication of the planning flexibility moderation effect is that the positive relationship between technological opportunism and firm performance will be influenced by only planning flexibility activities within an organization such that its direction or weakness will be impacted by negative or positive movements in the level of planning flexibility activities within an organization.

In essence, planning flexibility as a sub-construct has tipped the scales and resulted in significant mediation effect for strategic entrepreneurship. Planning flexibility is one of the strategic management practices which measure the level of an organizational capability to change and respond quickly to changing environmental conditions without comprising its competitive advantage (Murimbika & Urban, 2015). The planning flexibility instrument measured the organizational degree of flexibility to respond to various contingencies or possibilities that may affect its firm performance and competitive advantage.

The contingencies or possibilities included in the research instrument related to technological changes, political and economic climate, competition, government regulations, changes in customer needs and preferences, and emergence of unexpected threats and opportunities. This implies that the higher focus on planning flexibility requires an organization to pay more attention and respond to broader environmental issues (as opposed to technological changes only). For example, an organization needs to invest and develop environmental scanning resources and capability in order to sense and respond to other contingencies or possibilities over and above sensing and responding to technological developments. The finding of our empirical study is in line with this business logic where the relationship between technological opportunism and firm performance weakens when an organization tends

to focus on broader strategic planning flexibility activities (instead of a specific focus on technological changes as required by technological opportunism).

The researcher could not find any specific empirical studies on strategic entrepreneurship as both a mediator and moderator between technological opportunism and firm performance. The empirical findings were not supported by the previous studies conducted on the primary relationship between technological opportunism and firm performance (Srinivasan, Lilien, and Rangaswamy, 2002; Sarkees, 2011; Voola, Casimir, Carlson, Adnihotri, and Anushree, 2012 and Chen and Lien, 2013). Other research studies focused on the primary investigation of the relationship between strategic entrepreneurship and firm performance. From the beginning, the researcher sought out to extend literature and knowledge in the fields of technology, strategic management and entrepreneurship through challenging whether the relationship between technological opportunism and firm performance was in fact influenced by strategic management and entrepreneurship organizational factors which were premised as the strategic management in the study.

The previous empirical research of note though is a study by Saemundsson and Holmén (2011) which investigated the influence of technological changes on individuals' ability to identify and explore entrepreneurial opportunities for the purposes of creating new products, services or businesses. These researchers proposed to investigate that the introduction of new development tools in technology will change knowledge-barriers to entry and enable the development of specialized knowledge and skills that were previously required to identify and exploit entrepreneurial opportunities (Saemundsson & Holmén, 2011). Saemundsson and Holmén (2011) agreed with Shane (2000) that previous experience and gained knowledge shaped what entrepreneurial opportunities individuals are likely to discover and convert into viable products, services or businesses (Saemundsson & Holmén, 2011).

This approach implies that external knowledge development, such as the introduction and adoption of emerging technologies, influenced which individuals were likely to identify and exploit entrepreneurial opportunities and in turn increased the levels of organizational entrepreneurial orientation (McMullen & Shepherd, 2006). As discussed under section 5.9, entrepreneurial orientation was found to mediate the relationship between technological opportunism and firm performance. In essence, the mediation effect of strategic entrepreneurship on the relationship between technological opportunism and firm performance supports the human capital, dynamic capabilities and resource based view theories.

The integrative model of corporate entrepreneurship (CE) strategy was identified by the research work of Kuratko et al (2011). The study specifically focused on an organizational ability to initiate and sustain a competitive advantage through the continuous application of entrepreneurial practices within an existing organization. This study was derived to evaluate the relationships between external technological changes (i.e. triggers whether technological opportunism exists within an organization), entrepreneurial strategic vision (i.e. which includes strategic management context and practices), entrepreneurial behaviours (i.e. disposition towards entrepreneurial activity) and the combination of these constructs aims to collectively predict firm performance.

In addition, the research work of Kuratko et al (2011) identified a framework or model that focused on an organizational ability to initiate and sustain corporate entrepreneurship on a continuous basis (Kuratko, Morris, & Covin, 2011). The model demonstrates that sustainability is subject to the individual members of the organization being able to continually innovate in pursuit of sustaining entrepreneurial activities. The strategic management mediation and moderation model results of the empirical study provide statistically significant support for the corporate entrepreneurship frameworks and models. The alternate hypotheses (H2 and H3) were supported and retained (H2, $R^2=0.27$; $p<0.01$ and H3, $R^2=0.38$; $p<0.05$).

5.6 DISCUSSION IN RELATION TO HYPOTHESES 2.1 and 3.1

Hypothesis 2.1 (Mediator): The primary relationship between technological opportunism and firm performance is mediated by risk taking such that a direct or indirect existence of the relationship is positively associated with risk taking.

Hypothesis 3.1 (Moderator): The primary relationship between technological opportunism and firm performance is moderated by risk taking such that a direction and strength of the relationship is determined by the specific level of risk taking.

In Chapter 2, the researcher hypothesized based on literature review that the perceived organizational risk taking behaviour mediates and moderates the relationship between technological opportunism and firm performance. According to Lumpkin and Dess (2001), risk-taking is an ability to be bold in your decision making in terms of discovering and exploiting opportunities in pursuit of creating a new enterprise, combine required resources into the business venture while the foreseeable outcomes of its success or failure are unknown. Risk taking behaviour reflects the desire of the organization to refrain from the tried-and-tested and venture into uncertainty or unknown that is likely to yield high financial returns (Wiklund & Shepherd, 2005).

The statistical results in Chapter 4 (Table 11 and Table 15) did not support the hypotheses and accepted the null hypothesis for both mediation (H2.1) and moderation (H3.1). Technological opportunism is not significantly associated risk taking behaviour (i.e. there is no relationship between the two variables). As discussed under section 5.3 (Table 10), there were no significant correlations found between risk taking construct and technological opportunism and firm performance. The relatively high mean for the risk taking behaviour in section 5.3 (Table 10) indicates there is high perceived organizational risk to absorb financial losses as this construct is not positively

associated to both technological opportunism and firm performance. In essence, the organization is perceived as it does not leverage off technological opportunities to better manage perceived risk within the banking institution while taking an advantage of an upside in business returns.

As mentioned, risk taking behaviour was found not to moderate the relationship between technological opportunism and firm performance. The implication of this result is the positive relationship between technological opportunism and firm performance will not be influenced by risk taking behaviour such that its underlying direction or weakness will not be impacted by negative or positive movements in the level of risk taking within an organization. The researcher could not find specific empirical studies on risk taking behaviour as both a mediator and moderator between technological opportunism and firm performance. The alternate hypotheses (H2.1 and H3.1) were not supported.

5.7 DISCUSSION IN RELATION TO HYPOTHESES 2.2 and 3.2

Hypothesis 2.2 (Mediator): The primary relationship between technological opportunism and firm performance is mediated by proactiveness such that a direct or indirect existence of the relationship is positively associated with proactiveness.

Hypothesis 3.2 (Moderator): The primary relationship between technological opportunism and firm performance is moderated by proactiveness such that a direction and strength of the relationship is determined by the specific level of proactiveness.

In Chapter 2, the researcher hypothesized based on literature review that the perceived organizational proactiveness behaviour mediates and moderates the relationship between technological opportunism and firm performance. Proactiveness is an organizational ability to scan the environment in anticipation of changing trends and

responding on future demands in the marketplace, thereby creating a first to market advantage over competitors (Lumpkin and Dess, 1996). In other words, proactiveness is an exploration and exploitation process of identified opportunities in pursuit of creating market value for the unexpressed future needs of the customers including presenting new products or services faster than the competitors (Lumpkin and Dess, 2001). Proactiveness takes a market position of forward-looking through capitalizing on business opportunities that are created by changing trends and future developments (Wiklund and Shepherd, 2005).

The statistical results in Chapter 4 (Table 11 and Table 15) supported the literature and accepted hypothesis H2.2 (mediation). The R^2 was significant at 29 percent (0.29; $p < 0.01$) and this suggests 29 percent of variance in the positive relationship between technological opportunism and firm performance is explained by proactiveness. Proactiveness is significant and positively correlated with technological opportunism $r(347) = 0.31$ and $p < 0.01$. Proactiveness is positively influenced by technological opportunism and in turn, proactiveness positively affects firm performance (i.e. mediation). The statistical result suggests a perceived existence of proactiveness within the banking institution that is indirectly impacting the relationship between technological opportunism and firm performance.

Proactiveness is one of the fundamental dimensions of entrepreneurial orientation and management is encouraged to implement organizational structures and reward employees that exhibit proactiveness as a potential capability. Urban et al (2012) argued that capabilities are combined to become core competencies when organizations continuously improve their firm performance and competitive advantage based on such competencies. Therefore, the mediation effect result supports a resource based view and human capital theories. Although mediation was supported, an investment in proactive behaviour within an organization needs to be considered in line

with the moderation effects as this will determine the underlying direction and strength of the relationship between technological opportunism and firm performance.

Proactiveness is not significantly associated with technological opportunism and firm performance to confirm statistical support for moderation effect. The main effect relationship between technological opportunism and firm performance is not influenced by proactiveness such that its principal direction or weakness will not be influenced by any negative or positive movements in the level of proactiveness within an organization. The researcher could not find specific empirical studies on proactiveness as both a mediator and moderator between technological opportunism and firm performance. However, the statistical mediation results supported the empirical study by Saemundsson and Holmén (2011). The alternate hypothesis (H2.2) was supported and retained (H2.2, $R^2=0.29$; $p<0.01$) while the alternate hypothesis (H3.2) was not supported.

5.8 DISCUSSION IN RELATION TO HYPOTHESES 2.3 and 3.3

Hypothesis 2.3 (Mediator): The primary relationship between technological opportunism and firm performance is mediated by innovation such that a direct or indirect existence of the relationship is positively associated with innovation.

Hypothesis 3.3 (Moderator): The primary relationship between technological opportunism and firm performance is moderated by innovation such that a direction and strength of the relationship is determined by the specific level of innovation.

In Chapter 2, the researcher hypothesized based on literature review that the perceived organizational innovative behaviour mediates and moderates the relationship between technological opportunism and firm performance. Innovation is an initiated process of

concept or idea generation and is concluded with market introduction that creates value for targeted customers (Freeman & Engel, 2007). The level of innovativeness suggests an organizational propensity to offer originality and newness through experimentation and research at new products, services and new processes development (Dess and Lumpkin, 2005; Lumpkin and Dess, 2001).

The statistical results in Chapter 4 (Table 11 and Table 15) did not support the hypotheses and accepted the null hypothesis for both mediation (H2.3) and moderation (H3.3). There is a low correlation between technological opportunism and level of innovation $r(347)=0.14$, $p>0.05$). Yet, there is no significant causal model relationships to support either mediation or moderation effects. The mean of 3.38 (lowest amongst explanatory variables) and standard deviation of 1.45 (the highest amongst explanatory variables) for innovation in section 5.3 (Table 10) indicates there is low perceived levels of innovation within an organization.

The organization is perceived as it does not take advantage of technological innovations in pursuit of creating new products, services or processes. Innovation is not significantly associated with technological opportunism and firm performance to confirm support for moderation effect. The relationship between technological opportunism and firm performance is not statistically influenced by innovation such that its underlying direction or weakness is determined by any specific movements in the level of innovation. The researcher could not find specific empirical studies on innovation as both a mediator and moderator between technological opportunism and firm performance. The alternate hypotheses (H2.3 and H3.3) were not supported.

5.9 DISCUSSION IN RELATION TO HYPOTHESES 2.4 and 3.4

Hypothesis 2.4 (Mediator): The primary relationship between technological opportunism and firm performance is mediated by entrepreneurial orientation

such that a direct or indirect existence of the relationship is positively associated with entrepreneurial orientation.

Hypothesis 3.4 (Moderator): The primary relationship between technological opportunism and firm performance is moderated by entrepreneurial orientation such that a direction and strength of the relationship is determined by the specific level of entrepreneurial orientation.

In Chapter 2, the researcher hypothesized based on literature review that the perceived organizational entrepreneurial orientation mediates and moderates the relationship between technological opportunism and firm performance. A number of years ago, Miller (1983) proposed that corporate entrepreneurial orientation (EO) as a foundational basis of an existing business should simultaneously demonstrates risk-taking, proactiveness and innovation in its overall business model and operational activities. Miller (1983) conceived of EO as a construct that is comprised of all three sub-dimensions which must positively co-vary for EO to be manifested within an organization. The adoption of EO presents organizations with an ability to evaluate strategic decision making through entrepreneurial lenses. Chokesikarin (2014) defined EO as management's preferences and intention of adopting dynamic entrepreneurial attitudes which could be summarized by these three core behavioral dimensions in risk taking, proactiveness and innovation.

The statistical results in Chapter 4 (Table 11 and Table 15) support the literature and accepted hypothesis H2.4 (mediation). The R^2 was significant at 30 percent (0.30; $p < 0.01$) which indicates a 30 percent of variance in the positive relationship between technological opportunism and firm performance is explained by entrepreneurial orientation. Entrepreneurial orientation is significant and was found to be negatively associated with technological opportunism ($B = -0.18$ and $p < 0.01$). Entrepreneurial orientation is negatively influenced by technological opportunism and in turn,

entrepreneurial orientation affects firm performance (i.e. mediation). The statistical result suggests there is some perceived existence of entrepreneurial orientation in the banking institution that is indirectly influencing the relationship between technological opportunism and firm performance.

Innovation and risk taking behaviour were found not to significantly mediate the relationship between technological opportunism and firm performance while proactiveness mediated the relationship. Essentially, proactiveness sub-construct tipped the scale for entrepreneurial orientation to mediate this relationship as a collective construct. Therefore, proactiveness is fundamental within an organization in terms of its role of positively influencing firm performance. Management should continue to support organizational structures and reward systems that will encourage employees to exhibit as an proactiveness behaviour and capability.

According to Urban et al (2012), the entrepreneurial capabilities which are combined to become core competencies are fundamental to improving firm performance and sustaining competitive advantage. The entrepreneurial orientation mediation effect supports a resource based view and human capital theories. While mediation has been adequately supported, the return in investment in entrepreneurial orientation within an organization should be simultaneously measured in line with the consideration of the impact of the moderation effects since this will determine the fundamental direction and magnitude of the positive relationship between technological opportunism and firm performance.

Entrepreneurial orientation was not statistically supported for moderation effect between technological opportunism and firm performance. The primary relationship between technological opportunism and firm performance is not influenced by entrepreneurial orientation such that its underlying direction or weakness will not be influenced by any negative or positive movements in the level of organizational entrepreneurial orientation.

The researcher could not find specific empirical studies on entrepreneurial orientation mediating and moderating the relationship between technological opportunism and firm performance. Nonetheless, the statistical mediation results supported the empirical study by Saemundsson and Holmén (2011). The alternate hypothesis (H2.4) was supported and retained (H2.4, $R^2=0.30$; $p<0.01$) while the alternate hypothesis (H3.4) was not supported.

5.10 DISCUSSION IN RELATION TO HYPOTHESES 2.5 and 3.5

H2.5 (Mediation): The primary relationship between technological opportunism and firm performance is mediated by planning flexibility such that a direct or indirect existence of the relationship is positively associated with planning flexibility.

H3.5 (Moderation): The primary relationship between technological opportunism and firm performance is moderated by planning flexibility such that a direction and strength of the relationship is determined by the specific level of planning flexibility.

In Chapter 2, the researcher hypothesized based on literature review that planning flexibility mediates and moderates the relationship between technological opportunism and firm performance. The frequency and magnitude of change in the banking's competitive landscape requires banks to have strategic planning flexibility in place in order to achieve and sustain business performance. Planning flexibility allows organizations to change their strategic plans in response to external environmental factors including an anticipation of technological developments and proactive response in order to leverage off technological opportunities (Murimbika and Urban, 2015). The high degree of planning flexibility enables strategic and operational response to changes in external business environment which leads to opportunity exploration and

exploitation towards an achievement of sustainable competitive advantage (Murimbika & Urban, 2015). Conversely, a low organizational posture of planning flexibility is associated with lower organizational agility towards changing business circumstances to enable the organization to recognize and exploit opportunities presented by a changing environment (Murimbika & Urban, 2015).

The statistical results in Chapter 4 (Table 13) support the literature review (H2.5) and rejected the null hypothesis for mediation (H2.5). The R^2 was significant at 30 percent (0.30; $p < 0.01$). The 30 percent of variance in the positive relationship between technological opportunism and firm performance is explained by planning flexibility. Statistical support for mediation effect indicates a perceived existence of an organizational ability to dynamically develop and implement strategic plans. In essence, the results of the study indicate that technological opportunism positively influences planning flexibility and in turn, planning flexibility influences firm performance. As part of strategic renewal efforts, management should provide support, resources, work discretion, rewards and reinforcements to encourage planning flexibility as this is vital to improving firm performance and competitive advantage. Although mediation was supported, organizational planning flexibility should be adopted in consideration with the potential moderation effects since this will govern the direction and magnitude of the relationship between technological opportunism and firm performance.

Statistical results in Chapter 4 (Table 17) support the moderation effect (H3.5) between technological opportunism and firm performance. The R^2 was significant at 43 percent (0.43; $p < 0.01$). The 43 percent of variance in the moderation effect in the relationship between technological opportunism and firm performance is influenced by planning flexibility. Organizational planning flexibility was significant and negatively associated with the relationship between technological opportunism and firm performance ($B = -0.07$ and $p < 0.05$). The moderation effect result indicates that lower levels of planning flexibility strengthen the positive relationship between technological opportunism and

firm performance. The lower levels of planning flexibility intensify the positive relationship between technological opportunism and firm performance. Equally, the higher levels of planning flexibility weaken the positive relationship between technological opportunism and firm performance. This is plotted in Figure 18 (Chapter 4). The strategic renewal efforts in the banking institution should strive for an appropriate balance between the levels of planning flexibility and technological opportunism to ensure that an optimum level of firm performance is achieved.

The contingencies or possibilities included in the planning flexibility research instrument related to technological changes, political and economic climate, competition, government regulations, changes in customer needs and preferences, and emergence of unexpected threats and opportunities. This implies that the higher focus on planning flexibility requires an organization to respond to broader environmental issues instead of responding to technological developments only. For example, an organization needs to invest and develop environmental scanning resources and capability in order to sense and respond to other contingencies or possibilities over and above technological developments. The finding of our empirical study supports this business logic where the relationship between technological opportunism and firm performance weakens when an organization tends to focus on broader planning flexibility activities.

The researcher could not find empirical studies on planning flexibility mediating and moderating the relationship between technological opportunism and firm performance. However, the statistical moderation and mediation results supported the empirical study by Saemundsson and Holmén (2011). Planning flexibility mediation and moderation model results provided statistical support for the corporate entrepreneurship frameworks and models. The alternate hypotheses (H2.5 and H3.5) were supported and retained (H2.5, $R^2=0.30$; $p<0.01$ and H3.5, $R^2=0.43$; $p<0.05$).

5.11 CONCLUSION

The chapter presented the overall findings and detailed interpretation of the research study. The demographic profile of the respondents included a majority of employees with at least tertiary education that were in middle and senior management positions across functional areas of the bank. The majority of the respondents had at least 10 years' of banking experience. The research question of the study investigated whether strategic entrepreneurship mediated and moderated the relationship between technological opportunism and firm performance in the context of a South African banking institution.

Regression results in Chapter 4 (Table 14) support the mediation effect of strategic entrepreneurship and rejected the null hypothesis for mediation (H2). The R^2 was significant at 27 percent (0.27; $p < 0.01$) and suggests 27 percent of variance in the positive relationship between technological opportunism and firm performance is explained by strategic entrepreneurship. Chapter 4 (Table 18) supports the moderation effect (H3) of strategic entrepreneurship between technological opportunism and firm performance. The R^2 was significant at 38 percent (0.38; $p < 0.01$) and suggests 38 percent of variance in moderation effect (i.e. directional and level of magnitude) in the relationship between technological opportunism and firm performance is influenced by strategic entrepreneurship. The alternate hypothesis, in the form of the research question, was supported and retained.

Strategic entrepreneurship mediation effects on the relationship between technological opportunism and firm performance supported the human capital, dynamic capabilities and resource based view theories while the moderation analysis results of strategic entrepreneurship provided sufficient support for the corporate entrepreneurship frameworks and models. Strategic entrepreneurship is new dominant logic in organizations and fundamental to the identification and exploration of technological

opportunities in pursuit of enhancing business performance and sustaining a competitive advantage.

CHAPTER 6 – CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

This chapter intends to expand on the detailed discussions and drawn conclusions. The chapter will summarize the conclusions of the empirical study and then provide implications and recommendations from theoretical, contextual and managerial or practical perspectives. Finally, the chapter will articulate the recommendations for future research.

6.2 CONCLUSIONS OF THE STUDY

The fundamental problem of the study is with the perceived influential relationship between technological opportunism and firm performance within the context of the South African banking institution. The researcher sought out to investigate whether an organizational ability to sense and respond to technological developments influenced their firm performance and subsequently its competitive advantage and sustainability. Various authors (Chen and Lien, 2012; Sarkees, 2011; Srinivasan et al., 2002; Voola et al., 2012) studied the influence of organizational dynamic capabilities to sense and respond to business opportunities presented by technological changes and developments and firm performance measured as a combination of new product success rates, return on investment, revenue growth, market share and profitability.

Previous studies have primarily focused on an underlying relationship between technological opportunism and firm performance, but the researcher sought to extend literature and knowledge in the fields of technology, strategic management and entrepreneurship through challenging whether this relationship was also influenced by

strategic management and entrepreneurship organizational factors. The slowdown in the economic growth of the BRICS countries not only requires closer attention to underlying causes, but requires closer attention as to what corporate entrepreneurial factors; country and industrial sector specific factors had stimulated the growth and what has changed this trajectory. Corporate entrepreneurial orientation supported by strategic planning flexibility was critical in understanding how could organizations turnaround their level of competitiveness which will have an underlying impact on the economic growth of the country (Teece, Pisano, & Shuen, 1997; Rouse and Daellenbach, 1999; Kuratko & Audretsch, 2009; and Urban and Venter, 2015).

The researcher introduced a construct of strategic entrepreneurship (i.e. combination of strategic planning flexibility and corporate entrepreneurial orientation) as a proxy for strategic entrepreneurship and proposed whether this construct was implied in the relationship between technological opportunism and firm performance? Strategic entrepreneurship was hypothesized as a mediator and moderator of the relationship between technological opportunism and firm performance. Firstly, the researcher hypothesized that strategic entrepreneurship was positively associated or caused by technological opportunism and in turn subsequently and positively impacted on firm performance (i.e. mediation model). Secondly, the researcher hypothesized that strategic entrepreneurship was likely to be an interaction variable in terms of the direction and level of magnitude (moderation model) of the relationship between technological opportunism and firm performance.

The empirical results of the study are significant to the development of research and literature in emerging markets such as South Africa and the rest of African continent. Firstly, the study is fundamental to academic research advancement and refinement of existing theories in technology, strategic management and entrepreneurship in the context of an emerging economy. Secondly, the development of technology sensing and responding resources and capability to leverage technological opportunities has to

be viewed as a strategic enabler to business performance and competitive advantage which is positive for economic development purposes. Thirdly, the study of an interdependence of strategic management and corporate entrepreneurial orientation to technological opportunism is imperative to understanding how could these innovative practices be leveraged within an existing organizational ecosystem. From a South African economic development viewpoint, a financial services sector contributes at least 20% towards a gross domestic product (GDP) of South African and in essence, understanding underlying organizational factors that influence the firm performance and corporate sustainability thereof is in the best interest of growing this stagnant economy in pursuit of reducing high current levels of unemployment.

Quantitative data for the research was collected from the employees of the South African banking institution through an online research survey. Employees were requested to provide their underlying views or perceptions of organizational technological opportunism, strategic entrepreneurship (i.e. entrepreneurial orientation and strategic planning flexibility), technological turbulence and competitive hostility; and these constructs were individually and collectively analysed in line with their influential impact to firm performance. Firm performance was measured by new product success rates, return on investment, revenue growth, market share and profitability.

Overall result suggests a positive relationship between technological opportunism and firm performance. The collective statistical results indicate that strategic entrepreneurship both mediates and moderates this relationship, but the individual statistical results for underlying constructs for entrepreneurial orientation (i.e. risk taking, proactiveness and innovation) do not provide support for the moderation effects although proactiveness was found to support the mediation effect of this relationship.

6.3 IMPLICATIONS AND RECOMMENDATIONS

6.3.1 Theoretical Implications

The empirical results of our study have several implications that contribute to the theory of technological opportunism. Firstly, the researcher expanded the theoretical frameworks of technological capabilities through understanding the influence of technological opportunism on firm performance. Our statistical results are consistent with previous research findings authors (Chen and Lien, 2012; Sarkees, 2011; Srinivasan et al., 2002; Voola et al., 2012) indicating that technological opportunism affects firm performance. While the importance of discovering and exploiting entrepreneurial opportunities in the creation of business ventures and improving firm performance is well recognized (Kirzner, 1973 and Schumpeter, 1934), understanding the influential role of technological innovation in differential access to information and knowledge and how this enabled organizations to sense and respond to technological opportunities is another step in an effort to further develop the theory of technological opportunism. The empirical study explored the resource based view, dynamic capabilities and implied diffusion of innovation theories as this relates to technological opportunism construct and its underlying influence and correlation with firm performance. The empirical study provides for additional theoretical prominence and ground for technological opportunism and the application of its underlying sensing and responding capabilities.

Secondly, the theoretical work of various technological opportunism researchers (Chen and Lien, 2012; Sarkees, 2011; Srinivasan et al., 2002; Voola et al., 2012) is extended by proposing that strategic entrepreneurship mediates and moderates the relationship between technological opportunism and firm performance. Planning flexibility and corporate entrepreneurial orientation were constructed to be a proxy for strategic entrepreneurship. Strategic entrepreneurship is a combination of the makings which the business adopts to reinvent itself through creativity and innovations across their value

chain of firm strategy, product offerings, markets served and internal organization and this is aimed at the achievement of competitive advantage (Crizan-Mitra & Borza, 2011). In short, strategic entrepreneurship is a combination of opportunity seeking behaviour (i.e. entrepreneurial orientation) and competitive advantage seeking behaviour (i.e. strategic management). Previous literature has recognized that strategic entrepreneurship holds a positive association with firm performance and the researcher sought out to investigate whether strategic entrepreneurship was not implied between technological opportunism and firm performance relationship and if so, how and to what extent? The researcher could not find specific empirical studies on the mediating and moderating effects of strategic entrepreneurship on technological opportunism and firm performance. The researcher's hypothesis was adequately supported and thus makes a significant contribution to the theoretical literature.

Thirdly, the empirical study of strategic management and entrepreneurship through the newly formed strategic entrepreneurship construct is a relatively new phenomenon in terms of the relative level of accumulated academic literature. The empirical study provides for additional ground for theoretical claims for the positive effect of strategic entrepreneurship on firm performance through technological opportunism. The study supported the previous empirical research by Saemundsson and Holmén (2011) which studied the influence of technological changes on individuals' ability to identify and explore entrepreneurial opportunities for the purposes of creating new products, services or businesses. Saemundsson and Holmén (2011) confirmed that the introduction of new development tools in technology significantly changed knowledge-barriers to entry and enabled the development of specialized knowledge and skills that were previously required to identify and exploit entrepreneurial opportunities.

The fourth contribution to the technology, strategic management and entrepreneurship research theories is that the empirical-based approach to classify different levels of strategic entrepreneurship as a moderator enabled deeper understanding and insight of

the important theoretical construct. Strategic entrepreneurship practices were significant and negatively associated with the relationship between technological opportunism and firm performance. The implication of the empirical research indicates that lower levels of strategic entrepreneurship strengthen the positive relationship between technological opportunism and firm performance. The lower levels of strategic entrepreneurial organizations are associated with the lower levels of entrepreneurial orientation and planning flexibility, but this intensifies the positive relationship between technological opportunism and firm performance. Equally, the higher levels of strategic entrepreneurship are positively associated with higher levels of entrepreneurial orientation and planning flexibility and in turn this weakens the positive relationship between technological opportunism and firm performance. The research contributes to development and refinement of empirical literature on corporate entrepreneurship.

6.3.2 Contextual Implications

PwC reported that the rise and interconnectivity of the emerging markets of South America, Asia, Africa and the Middle East (termed 'SAAAME' by PwC) is creating and presenting various set of opportunities that surpass conventional logic of risk and reward and potentially demand a rethink of organizational structures and business models (Dawson, 2013). According to Vanguard Research Report (Lemco, 2016), since early 2000s, the BRICS countries have experienced significant growth in their economies relative to the developed countries. The five BRICS countries' economies contributed 9% of global gross domestic product (GDP) in 2001 and this percentage had significantly increased to 25% of global GDP in 2016 (Lemco, 2016). From a demographics point of view, these BRICS countries accounted for 41% of the world's population in 2016 (Lemco, 2016).

From a South African economic development viewpoint, a financial services sector contributes at least 20% towards a GDP of South African. In essence, understanding underlying organizational factors that influence corporate performance and sustainability

thereof is in the best interest of growing this stagnant economy in pursuit of reducing high current levels of unemployment. The empirical research contributes to the development of strategic management and entrepreneurship research in the context of South Africa and may be generalized across the African continent and the rest of emerging economies. From an international context, the present study projects a snapshot of an empirical research view from an emerging economy context as many results of the research surveys generally support (or disprove) those findings derived from developed economies (e.g. USA, UK, the EU, etc.). However, caution should be exercised when making precise predictions using this study because of very low observed R^2 (some were lower 30%) and research findings should be subjected to more research and further confirmations.

6.3.3 Managerial and Practical Considerations

The empirical research provides various managerial implications for the practice of technological opportunism and strategic entrepreneurship in pursuit of improving firm performance within the context of an emerging economy. The representative sample of 347 responses was made up of 46% male respondents, 53% female respondents. Gender diversity inclusion within a corporate sector is strategically imperative in terms of driving future competitive sustainability of the organizations. The diversity inclusion of females in our local and global economies is critical in reversing the historical economic imbalances in our economies. The statistical empirical results need to be viewed in a positive and constructive light of how best could these be incorporated into the economic development of females as the empirical results of the study appear to be geared towards females.

The observed level of education and years of working experience in the sample of empirical study bodes well for the human intellectual capacity of the banking institution's employees although significant improvement is required at Doctorate and Master's degree level. The highest level of academic education achieved contributes towards

human capital resources of the organization and thus critical for supporting entrepreneurial activities in pursuit of achieving a sustainable competitive advantage. According to the 2015/16 South African GEM report, an appropriated skilled and educated workforce with the capacity for technological innovation is critical to an economy's competitiveness, productivity and sustainable growth (Herrington & Kew, 2016).

Technological education or skills are critical resources that have to be identified and combined for the creation and development of enterprises within the context of individual, firm level and environmental factors which are relevant or applicable to an entrepreneurial process (Herrington & Kew, 2016). The managerial implication and assumption under the resource based view theory is that there are adequate human capital resources within organizations to adapt to the changing business environments presented by technological developments. Further, it is important that the comparative level of access to the individuals with the right level of working experience and education is considered to adequately assess the relevance and applicability of the dynamic capability theory in an emerging economy such as South Africa. The organizational factors such as succession planning and effective knowledge transfer should be considered in line with the development of the pipeline of senior and experienced respondents observed within the survey.

The statistical support of the positive association of technological opportunism and firm performance indicates there is effective application of the dynamic resource based view within the banking institution. This suggests that executives and senior managers should encourage management practices that foster technological opportunism as a method to improve firm performance and sustainable competitiveness in today's uncertain and complex global environment. Various researchers (Chen and Lien, 2012; Sarkees, 2011; Srinivasan et al., 2002; Voola et al., 2012) argued in favour of technological opportunism under the resource based view approach as what ought to

be implemented in order to increase firm performance. Therefore, corporate executives and senior managers should profit from implementing organizational strategies that encourage and increase the firm's level of technological opportunism and strategic entrepreneurship.

The structure of the South African economy has shifted away from manufacturing towards financial and government services. Over the past 10 years, the contribution of manufacturing has significantly decreased from 19% to 11% in 2004 (Mothata, 2014). The economic structural shift has seen gains for the retail, wholesale, government and financial services. This suggests that the South African economy is slowly shifting from an efficiency driven economy to a knowledge based economy. Financial services remain one of the biggest contributors towards the South Africa's GDP. Further, South African financial services industrial sector is highly ranked by global standards.

This provides for a worthy platform in empirical research seeking to understand the role of the financial services industrial sector in the South African economy in the context of corporate entrepreneurial thinking and financial technology innovation. The empirical research suggests adoption of technological opportunism as an important potential source of sustainable economic growth and job creation in the financial services sector (which includes banking) of South African economy. Government and policy makers are encouraged to design support programs and initiatives that should foster and incentive corporate organizations that prioritize the strategic initiatives and training solutions associated with the adoption of technological opportunism and strategic entrepreneurship in their organizations.

Empirical results of the study indicated that technological opportunism positively influences planning flexibility and in turn, planning flexibility influences firm performance. As part of strategic renewal efforts, corporate executives and senior managers should provide support, resources, work discretion, rewards and reinforcements to encourage

planning flexibility as this is vital to improved firm performance and competitive advantage. Although mediation was supported, organizational planning flexibility should be adopted in consideration with the potential moderation effects since this will govern the direction and magnitude of the relationship between technological opportunism and firm performance. Corporate executives and senior managers should strive for an appropriate balance between the levels of planning flexibility and technological opportunism to ensure that an optimum level of firm performance is achieved.

6.4 SUGGESTIONS FOR FUTURE RESEARCH

The premise of the study is the perceived influential relationship between technological opportunism and firm performance within the context of the South African banking institution. The researcher sought out to investigate whether an organizational ability to sense and respond to technological developments influenced their firm performance and subsequently its competitive advantage and sustainability. Firm performance was measured as a combination of new product success rates, return on investment, revenue growth, market share and profitability. Previous studies have primarily focused on an underlying relationship between technological opportunism and firm performance, but the researcher challenged whether this relationship was mediated and moderated by strategic management.

Various future research opportunities were identified from this study. The empirical sample is based on South African employees from one established banking institution, and thus the empirical results may not be applicable to organizations in other industries or small to medium enterprises. Future research may consider an investigation of the mediating and moderating role of strategic entrepreneurship in the relationship between technological opportunism and firm performance in non-banking sectorial industries, such as telecommunications or the pharmaceutical industry. Future research can consider additional statistical analysis of the hypotheses by demographic categories in

order to establish whether different results exist in terms of the relationship between technological opportunism and firm performance and the mediating and mediation roles being played by strategic entrepreneurship in this relationship.

The investigation of the study can be extended to countries outside of South Africa. Other definitions of firm performance may also be considered or the underlying measures of firm performance may be considered individually. Technology adoption appears to be implied in the relationship of technological opportunism and firm performance. Future research should extend to investigate the interdependence between customer technology adoption factors and influence of technological opportunism on firm performance.

In addition, entrepreneurial orientation was found not to moderate the relationship between technological opportunism and firm performance. Future research calls for an exacting consideration of the interplay of entrepreneurial orientation, entrepreneurial behavioral activity, and technological opportunism and firm performance. Future research calls for technological opportunism construct to be broken into sensing and responding constructs in order to understand whether there is sensing-responding-firm performance mediation relationship.

Some organizations have an ability to sense technological developments which are relevant to their business activities (high sensing capability) but fail to respond to these developments in an agile manner (low responding capability) (Strandholmm, Kumar, & Subramanian, 2004). Other corporates may not have an ability to sense market and technological developments, but possess high level of responding capability (Strandholmm, Kumar, & Subramanian, 2004). Future research calls for an exacting consideration of the interplay between these levels of technological capabilities.

6.5 CONCLUSIONS

In closing, there is no doubt that further research is pre-requisite in order to reach a stage whereby empirical studies with regards to the relationship between the mediating and moderating effects of strategic management on technological opportunism and firm performance are sound, endorsed and legitimate. This study pursued to extend a deeper understanding and insight into influential organizational factors that ought to be considered by policymakers, corporate executives and academics when strategic plans are formulated and implemented. Hopefully, this empirical study offered a stride in the right direction as to what are the underlying considerations of dynamic adoption of technological innovations and how this can be leveraged in differential access to new information and knowledge about improving firm performance and competitive advantage. Overall, the study contributes to empirical literature on technology innovations, strategic management and entrepreneurship.

In the 2017 World Economic Forum (WEF), the commentators had observed that the world is evolving into a Fourth Industrial Revolution which includes developments in cloud computing, genetics, artificial intelligence, robotics, the internet of things, nanotechnology, 3D printing and biotechnology, etc. (Schwab, 2017). The 2017 WEF was themed “responsible and responsive leadership” in pursuit of global multi-stakeholder engagement and collaboration as how global leaders should respond to the technological developments in a socially responsible and inclusive manner in order to preserve humanity and social coherence. There has been a significant fundamental shift as to how human beings produce, consume and relate to one another and this is driven by the convergence of the physical world, the digital world and human beings (Mölders, 2016).

Organizational and socio-economic resources and capabilities (or lack of) to sense and respond to such global technology-driven developments and challenges will have

serious implications for both the private and public sector. Equally, this offers tremendous opportunities to advance economic development goals by making the right strategic choices. The prevailing strategic entrepreneurial inclination has been adopted by many as their dominant logic in order to capture and appropriate economic value in pursuit of achieving and sustaining competitive advantage (Kuratko, Morris, & Covin, 2011). Nevertheless, the strategic choice viewpoint argues that the firm or a country has the freedom to decide on their strategies, but the success of such strategies will always be influenced by the external environment factors. We live in hope and I do hope we let our academic research guides us to make the right strategic choices.

REFERENCES

- Adler, P., & Kwon, S. (2002). Social Capital: Prospect for a New Concept. *Academy of Management Review*, 27(1).
- Aguinis, H., Edwards, J. R., & Bradley, K. J. (2016). Improving Our Understanding of Moderation and Mediation in Strategic Management Research. *Organizational Research Methods*, 1-21.
- Alvareza, S. A., & Busenitz, L. W. (2001). The entrepreneurship of resource-based theory. *Journal of Management*, 755–775.
- Atuahene-Gima, K. (2005). Resolving the capability–rigidity paradox in new product innovation. *Journal of Marketing*, 61-85.
- Augier, M., & Teece, D. (2007). Dynamic capabilities and multinational enterprise: Penrosean insights and omissions. *Management International Review*, 175–192.
- AutoDesk Report. (2016, February 2). *ROI and the Architect - Calculating the Return on Technology Investment*. Retrieved from ROI and the Architect - Calculating the Return on Technology Investment: http://damassets.autodesk.net/content/dam/autodesk/www/solutions/pdf/ROI_and_the_Architect.pdf
- Avlonitis, G., & Salavou, H. (2007). Entrepreneurial orientation of SMEs, product innovativeness, and performance. *Journal of Business Research*, 566-575.
- Barbosa, E. (2014). Organizational culture oriented for innovation: Influencing variables. *The Małopolska School of Economics in Tarnów Research Papers Collection*, 37-45.

- Baron, R. M., & Kenny, D. A. (1986). The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*, 1173-1182.
- Barringer, B., & Bluedorn, A. (1999). The relationship between corporate entrepreneurship and strategic management. *Strategic Management Journal*, 421-444.
- Bayarçelik, E. B., & Özşahinb, M. (2014). How Entrepreneurial climate effects firm performance? *Procedia - Social and Behavioral Sciences*, Vol 150, 823 – 833.
- Benner, M. J., & Tushman, M. L. (2002). Process management and technological innovation: A longitudinal study of the photography and paint industries. *Administrative Science Quarterly*, 676-706.
- Boettke, P. J., & Coyne, C. J. (2001). *Entrepreneurship and Development: Cause or Consequence?* Fairfax, VA: George Mason University.
- Bstieler, L. (2005). The moderating effect of environmental uncertainty on new product development and time efficiency. *Journal of Product Innovation Management*, 267–284.
- Bstieler, L. (2005). The moderating effect of environmental uncertainty on new product development and time efficiency. *Journal of Product Innovation Management*, 267-284.
- Bulut, C., & Yilmaz, C. (2008). Innovative performance impacts of corporate entrepreneurship: an empirical research in Turkey. *Proceedings of Academy of Innovation and Entrepreneurship Conference*, (pp. 414-417). Beijing.
- Capon, N., & Glazer, R. (1985). Marketing and technology: A strategic coalignment. *Journal of Marketing*, 1–14.

- Chandy, R. K., & Tellis, G. (2000). The incumbent's curse? Incumbency, size and radical product innovation. *Journal of Marketing*, 1-17.
- Chandy, R. K., Prabhu, J. C., & Antia, K. D. (2003). What will the future bring? Technology expectations, dominance, and radical product innovation. *Journal of Marketing*, 1–18.
- Chaney, P. K., Devinney, T. M., & Winer, R. S. (1991). The impact of new product introductions on the market value of firms. *Journal of Business*, 573-610.
- Chen, C.-W., & Lien, N.-H. (2013). Technological opportunism and firm performance: moderating contexts. *Journal of Business Research*, 2218-2225.
- Chokesikarin, V. (2014). Entrepreneurial Orientation and Customers Satisfaction: Evidences nearby Khao San Road. *International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering*.
- Claub, T. (2015). Measuring Business Model Innovation: Conceptualization, Scale Development and Proof of Performance. *Research Gate*.
- Cooper, D. R., & Schindler, P. S. (2014). *Business Research Methods*. Singapore.
- Covin, J., & Slevin, D. (1989). Strategic management of small firms in hostile and benign environments. *Strategic Management Journal*, 75-87.
- Creswell, J. W. (2008). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches, Third Edition*.
- Crizan-Mitra, C., & Borza, A. (2011). Strategic Entrepreneurship. *Managerial Challenges of the Contemporary Society*, 170-174.
- Daft, R. L., & Weick, K. E. (1984). Toward a model of organizations as interpretation system. *Academic of Management Review*, 284–295.
- Damanpour, F. (1991). Organizational innovation: A meta-analysis of effects of determinants and moderators. *Academy of Management Journal*, 554–590.

- Daugherty, P., Carrel-Billiard, M., & Biltz, M. J. (2016). Accenture Technology Vision 2016 - People First: The Primacy of People in a Digital Age. Accenture.
- Davis, F. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 319-340.
- Davis, F., Bagozzi, R., & Warshaw, P. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, 982-1003.
- Dawson, A. (2013). *The rise of SAAME: Rethinking risk in a multipolar world*. UK: PwC Resilience.
- De Luca, L. M., & Atuahene-Gima, K. (2007). Market knowledge dimensions and cross functional collaboration: Examining the different routes to product innovation performance. *Journal of Marketing*, 95-112.
- Dess, G. G., & Lumpkin, G. (2005). The Role of Entrepreneurial Orientation in Stimulating Effective Corporate. *The Academy of Management Executive*, 147-156.
- Dess, G. G., Lumpkin, G. T., & Covin, J. (1997). Entrepreneurial strategy making and firm performance: Test of contingency and configurational models. *Strategic Management Journal*, 677-695.
- Dhebar, A. (1996). Speeding high-tech producer, meet the balking consumer. *Sloan Management Review*, 37-49.
- Egawa, A. (2014, February 17). *Bruegel*. Retrieved from Bruegel: <http://bruegel.org/2014/02/decoded-brics/>
- Eisenhardt, K. M., & Martin, J. (2000). Dynamic capabilities: What are they? *Strategic Management Journal*, 1105–1121.

- El Gizawi, N. (2014). *The Dynamic Capabilities Theory: Assessment and Evaluation as a Contributing Theory for Supply Chain Management*. Enschede, Netherlands: 3rd IBA Bachelor Thesis Conference.
- Esposito, M. (2017, January 31). *World Economic Forum*. Retrieved from World Economic Forum: <https://www.weforum.org/agenda/2016/04/what-is-the-state-of-the-brics-economies/>
- Falk, A., & Fischbacher, U. (2000). *A Theory of Reciprocity*. Zurich: Institute of Empirical Research in Economics, University of Zurich, Working Paper Series.
- Fehr, E., & Gächter, S. (2000). The Economics of Reciprocity. *The Journal of Economic Perspectives*, 159-181.
- Field, A. (2009). *Discovering Statistics Using SPSS (Third Edition)*. London: Sage Publication.
- Freel, M. (2005). Perceived environmental uncertainty and innovation in small firms. *Small Business Economics*, 49-64.
- Freeman, J., & Engel, J. (2007). Models of innovation: Startups and mature corporations. *California Management Review*, 94–119.
- Gatignon, H., & Xuereb, J. M. (1997). Strategic orientation of the firm and new product performance. *Journal of Marketing Research*, 77-90.
- Ginsberg, A. (1985). Measuring changes in entrepreneurial orientation allowing industry deregulation: The development of a diagnostic instrument. *Proceedings of the International Council of Small Business* (pp. 50-57). USA: International Council of Small Business.
- Górska, M. (2014). *Does The Uppsala International Model Explain The Internationalization Process of Professional Business Service Firms?* Prague: CBU International Conference On Integration Conference on Integration and Innovation In Science and Education.

- Gupta, P. D., Samapti, G., & Krishnaswami, S. S. (2013). Firm Growth and Its Determinants. *Journal of Innovation and Entrepreneurship*, 2-14.
- Halaweh, M. (2013). Emerging Technology: What is it? *Journal of Technology Management & Innovation*, Volume 8, Issue 3.
- Hassan, Z. A., Schattner, P., & Mazza, D. (2006). Doing a pilot study: why is it essential? *Academy of Family Physicians of Malaysia*, 70-73.
- Herrington, M., & Kew, P. (2016). *South African Report 2015/16 Is South Africa heading for an economic meltdown?* Cape Town: Global Entrepreneurship Monitor.
- Herrington, M., Kew, J., & Kew, P. (2015). *2014 GEM Report South Africa: The crossroads – a goldmine or a time bomb?* Cape Town: Global Entrepreneurship Research Association (GERA).
- Hisrich, R. D., & Peters, M. P. (1998). *Entrepreneurship*. New York: McGraw-Hill.
- Hitt, M. A., Ireland, R. D., Sirmon, D. G., & Trahms, A. C. (2011). Strategic Entrepreneurship: Creating Value for Individuals, Organizations and Society. *Academy of Management Perspectives*, 57 - 75.
- Hult, G., Ketchen, D., & Slate, S. (2005). Market orientation and performance: an integration of disparate approaches. *Strategic Management Journal*, 1173–1181.
- Jaworski, B., & Kohli, A. (1993). Market orientation: Antecedents and consequences. *Journal of Marketing*, 53–70.
- Jose, P. E., & Hunsinger, C. S. (2005). Moderation and Mediation Effects of Coping by Chinese American and European American Adolescents. *The Journal of Genetic Psychology*, 16–43.
- Ketchen, D. J., Ireland, D., & Snow, C. C. (2007). Strategic Entrepreneurship, Collaborative Innovation and Wealth Creation. *Strategic Entrepreneurship Journal*, 371–385.

- Keysar, B., Converse, B. A., Wang, J., & Nicholas, E. (2008). Reciprocity Is Not Give and Take. *Association of Psychological Science*, 1280-1286.
- Khandwalla, P. (1977). *The Design of Organisations*. New York: Harcourt Brace Jovanovich.
- Kirzner, I. (1973). *Competition and Entrepreneurship*. Chicago, USA: University of Chicago Press.
- Kirzner, I. (1973). *Competition and Entrepreneurship*. Chicago, IL, US: University of Chicago Press.
- Kock, C. (2007). Is Practical Reasoning Presumptive? *Informal Logic*, 91-108.
- Kohli, A. K., & Jaworski, B. J. (1990). Market orientation: The construct, research propositions, and managerial implications. *Journal of Marketing*, 1-18.
- Kollmann, T., & Stöckmann, C. (2012). Filling the Entrepreneurial Orientation - Performance Gap: The Mediating Effects of Exploratory and Exploitative Innovations. *Entrepreneurship Theory & Practice*.
- Kumah, O. M., & Omilola, B. (2014). *Small Business is Big Business: UNDP perspective on SMME Development in South Africa*. Johannesburg: United Nations Development Program (UNDP).
- Kuratko, D. F., & Audretsch, D. B. (2009). Strategic Entrepreneurship: Exploring Different Perspectives of an Emerging Concept. *Entrepreneurship Theory & Practice*, 702-720.
- Kuratko, D. F., Hornsby, J. S., & Covin, J. G. (2014). Diagnosing a firm's internal environment for corporate entrepreneurship. *Business Horizons*, Vol. 57, 37—47.
- Kuratko, D., Morris, M., & Covin, J. (2011). *Corporate Innovation and Entrepreneurship*. Canada: South-Western, Cengage Learning .

- Legris, P., Ingham, J., & Colletrette, P. (2003). Why Do People Use Information Technology? A Critical Review of the Technology Acceptance Model. *Information & Management*, 191-204.
- Lemco, J. (2016). *Are emerging markets still built on the BRICS?* Valley Forge: Vanguard Research.
- Levinthal, D. A., & March, J. G. (1993). The myopia of learning. *Strategic Management Journal*, 95-112.
- Li, Y.-H., Huang, J.-W., & Tsai, M.-T. (2009). Entrepreneurial orientation and firm performance: The role of knowledge creation process. *Industrial Marketing Management*, 440–449.
- Lucia-Palacios, L., Bordonaba-Juste, V., Polo-Redondo, Y., & Grünhagen, M. (2014). Technological opportunism effects on IT adoption, intra-firm diffusion and performance: Evidence from the U.S. and Spain. *Journal for Business Research*, 1178–1188.
- Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*, 24, 135-172.
- Lumpkin, G., & Dess, G. (2001). Linking two dimensions of entrepreneurial orientation to firm performance: the moderating role of environment and industry life cycle. *Journal of Business Venturing*, 429-451.
- MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparisons of methods to test mediation and other intervening variable effects. *Psychological Methods*, 83-104.
- Mao, H. (2009). Review on Enterprise Growth Theories. *International Journal of Business and Management*, 20-23.

- McMullen, J. S., & Shepherd, D. A. (2006). Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Academy of Management Review*, 132–152.
- Michel, S., Brown, S. W., & Gallan, A. (2008). An expanded and strategic view of discontinuous innovations: Deploying a service-dominant logic. *Journal of the Academy of Marketing Science*, 54-66.
- Miller, D. (1983). The correlaters of entrepreneurship in three types of firms. *Management Science*, 770-791.
- Miller, D., & Friesen, P. (1978). Archetypes of strategy formulation. *Management Science*, 921-933.
- Miller, D., & Friesen, P. (1982). Innovation in conservative and entrepreneurial firms: Two models of strategic momentum. *Strategic Management Journal*, 1-25.
- Mishra, D. (2015). *Will the Spread of Digital Technologies Spell the End of the Knowledge Divide?* Brookings Blum Roundtable.
- Mohutsiwa, M. (2012). *Strategic Entrepreneurship and Performance of Small and Medium Enterprises in South Africa*. Johannesburg: University of the Witwatersrand.
- Mölders, F. (2016). *Global Productivity Slowdown and The Role of Technology Adoption in Emerging Markets*. Washington: Emcompass IFC World Bank.
- Moorman, C., & Miner, A. S. (1997). The impact of organizational memory in new product performance and creativity. *Journal of Marketing Research*, 91-106.
- Morris, M., & Paul, G. (1987). The relationship between entrepreneurship and marketing in established firms. *Journal of Business Venturing*, 247–259.
- Mothata, L. (2014, August 28). *Statistics South Africa*. Retrieved from Statistics South Africa: <http://blog.investmentsolutions.co.za/shift-in-gdp-structure/>

- Murimbika, M., & Urban, B. (2015). Strategic management practices and corporate: A cluster analysis of financial and business service firms in South Africa. *Africa Journal of Business Management*.
- Olavarrieta, S., & Friedmann, R. (2008). Market orientation, knowledge-related resources and firm performance. *Journal of Business Research*, 623-630.
- Omar, R., & Sapuan, D. A. (2010). Rejuvenating Motivations and Renewing Technology: A Quest for Electronic Endeavor among Malaysian SMEs. *European Journal of Social Sciences*, 457-470.
- Otache, I., & Mahmood, R. (2015). Corporate Entrepreneurship and Business Performance: The Role of External Environment and Organizational Culture: A Proposed Framework. *Mediterranean Journal of Social Sciences*.
- Oviatt, B. M., & McDougall, P. P. (2005). Defining International Entrepreneurship and Modeling the Speed of Internationalization. *Entrepreneurship Theory & Practice*, 537 - 553.
- Park, S. Y. (2009). An Analysis of the Technology Acceptance Model in Understanding University Students' Behavioral Intention to Use e-Learning. *Educational Technology & Society*, 150–162.
- Patoriya, H. (2017, January 21). *Pattern of Innovation*. Retrieved from Pattern of Innovation: <http://www.slideshare.net/HardikPatoriya/pattern-of-innovation-26451519>
- Pauwels, K., Silva-Risso, J., Srinivasan, S., & Hanssens, D. M. (2004). New products, sales promotions and firm value, with application to the automobile industry. *Journal of Marketing*, 142-156.
- Phaal, R., Farrukh, C. J., & Probert, D. R. (2004). Technology roadmapping—A planning framework for evolution and revolution. *Technological Forecasting & Social Change*, 5-26.

- Phandya, A. M., & Rao, N. V. (1998). Diversification and firm performance: An empirical evaluation. *Journal of financial and strategic decisions*, 11(2), 67-81.
- Riefler, P., & Roth, K. P. (2008). Advancing formative measurement models. *Journal of Business Research*, 1203–1218.
- Roberts, N., & Grover, V. (2012). Investigating firm's customer agility and firm performance: The importance of aligning sense and respond capabilities. *Journal of Business Research*, 579–585.
- Robertson, T. S., Eliashberg, J., & Rymon, T. (1995). New product announcement signals and incumbent reactions. *Journal of Marketing*, 1-15.
- Rogerson, C. (2001). In search of the African miracle: debates on successful small enterprise development in Africa. *Habitat International*, 115-142.
- Rotolo, D., Hicks, D., & Martin, B. (2015). *What is an Emerging Technology?* United Kingdom: Science Policy Research Unit.
- Rouse, M. J., & Daellenbach, U. S. (1999). Rethinking research methods for the resource-based perspective: Isolating sources of sustainable competitive advantage. *Strategic Management Journal*, 20, 487-494.
- Saemundsson, R. J., & Holmén, M. (2011). Yes, now we can: Technological change and the exploitation of entrepreneurial opportunities. *Journal of High Technology Management Research*, 102–113.
- Saltson, E., & Nsiah, S. (2015). The mediating and moderating effects of motivation in the relationship between perceived organizational support and employee job performance. *International Journal of Economics, Commerce and Management*, 654-667.
- Sarkees, M. (2011). Understanding the links between technological opportunism, marketing emphasis and firm performance: Implications for B2B. *Industrial Marketing Management*, 785-795.

- Scheepers, M., Hough, J., & Bloom, J. (2008). Nurturing the corporate entrepreneurship capability. *Southern African Business Review*, Volume 12 No. 3, 50-75.
- Schumpeter, J. (1934). *The Theory of Economic Development: An Inquiry into Profits, Capital Credits, Interest, and the Business Cycle*. Cambridge, USA: Havard University Press.
- Schwab, K. (2017). *The Fourth Industrial Revolution*. Davos: World Economic Forum.
- Shane, A. S. (2003). *A General Theory of Entrepreneurship: The Individual-opportunity Nexus*. Northampton: Edward Elgar.
- Shane, S. (2003). *A General Theory of Entrepreneurship The Individual-Opportunity Nexus*. Cheltenham, United Kingdom: Edward Elgar Publishing.
- Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25, 217-226.
- Simonov, A., & Giannetti, M. (2004). On the determinants of entrepreneurial activity: Social norms, economic environment and individual characteristics. *Swedish Economic Policy Review*, 11, 269-313.
- Singer, S., Amorós, J. E., & Arreola, D. M. (2014). *Global Entrepreneurship Monitor 2014 Global Report*. MA, United States: Global Entrepreneurship Research (GERA).
- Slevin, D., & Covin, J. (1990). Juggling entrepreneurial style and organizational structure: How to get your act together. *Sloan Management Review*, 43-54.
- Soh, P., & Roberts, E. (2003). Network of innovators: A longitudinal perspective. *Research Policy*, 1569–1588.
- Sorescu, A., Chandy, R., & Prabhu, J. (2003). Sources and financial consequences of radical innovation: Insights from pharmaceuticals. *Journal of Marketing*, 82-102.

- Srinivasan, R., Lilien, G. L., & Rangaswamy, A. (2002). *Technology Opportunism and Radical Technology Adoption: An Application to e-BUSINESS*. Texas: eBusiness Research Center.
- Stern, N., McKee, D., & Rose, G. M. (2007). Developing the organization's sensemaking capability: Precursor to an adaptive strategic marketing response. *Industrial Marketing Management*, 731–744.
- Strandholmm, K., Kumar, K., & Subramanian, R. (2004). Examining the interrelationships among perceived environmental change, strategic response, managerial characteristics. *Journal of Business Research*, 58–68.
- Teece, D. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 1319–50.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic Capabilities and Strategic Management. *Strategic Management Journal*, 18(7), 509-533.
- Terjesen, S., Hessels, J., & Li, D. (2016, January). Comparative International Entrepreneurship: A Review and Research Agenda. *Journal of Management*, Vol. 42 (No. 1), 299–344.
- The Nielsen Company. (2015). *Looking to Achieve New Product Success - Listen to your Customers*. New York: The Nielsen Global New Product Innovation Survey.
- Twarowska, K., & Kąkol, M. (2013). International Business Strategy - Reasons and Forms of Expansion into Foreign Markets. *Knowledge Management & Innovation*, 1005 - 1011.
- Unknown. (2016, February). *Statistics SA*. Retrieved from Statistics SA: <http://www.statssa.gov.za>

- Urban, B., & Venter, R. (2015). *Entrepreneurship Theory in Practice*. Cape Town: Oxford University Press.
- Urban, B., Barreira, J., Carmichael, T., Dagada, R., Duneas, N., Marcelle, G., & Smith, P. (2012). *Technopreneurship Perspectives on Entrepreneurship A Research Companion*. Cape Town: Pearson.
- Valdez, M. E., & Richardson, J. (2013). Institutional Determinants of Macro-Level Entrepreneurship. *Entrepreneurship Theory & Practice*, 1149 - 1175.
- van Antwerpen, H. (2012). *A proposed corporate entrepreneurial framework in the retail division of an agri-business*. Potchestroom: North-West University.
- Venkatraman, D. (1989). The concept of fit in strategy research: toward verbal and statistical correspondence. *Academic Management Review*, 423-44.
- Venter, R., & Urban, B. (2015). *Entrepreneurship Theory & Practice*. Cape Town: Oxford University Press Southern Africa.
- Voola, R., Casimir, G., Carlson, J., Adnihotri, & Anushree. (2012). The effects of market orientation, technological opportunism, and e-business adoption on performance: A moderated mediation analysis. *Australasian Marketing Journal*, 136 - 146.
- Wegner, T. (2007). *Applied Business Statistics - Methods and Excel-based Applications 2nd Edition*. Juta.
- Welch, C., & Paavilainen-Mäntymäki, E. (2014). Putting Process (Back) In: Research on the Internationalization Process of the Firm. *International Journal of Management Reviews*, Vol. 16, 2–23.
- Wiklund, J., & Shepherd, D. (2003). Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses. *Strategic Management Journal*, 1307–1314.

- Wiklund, J., & Shepherd, D. (2005). Entrepreneurial orientation and small business performance: a configurational approach. *Journal of Business Venturing*, 71-89.
- Wind, J., & Mahajan, V. (1997). Issues and opportunities in new product development: An introduction to the special issue. *Journal of Marketing Research*, 1-12.
- Wu, A. D., & Zumbo, B. D. (2008). Understanding and Using Mediators and Moderators. *Social Indicators Research Journal*, 367–392.
- Wulandari, P., Mangundjayab, W., & Utoyo, D. B. (2015). Is job satisfaction a moderator or mediator on the relationship between change leadership and commitment to change? *Social and Behavioral Sciences*, 104 – 111.
- Zhang, Q., Chen, L., & Feng, T. (2014). Mediation or Moderation? The Role of R&D Investment in the Relationship between Corporate Governance and Firm Performance: Empirical Evidence from the Chinese IT Industry. *Corporate Governance: An International Review*, 501–517.

APPENDIX 1: COVER LETTER AND RESEARCH INSTRUMENT

Dear Colleagues,

I am currently conducting a research study in partial fulfillment of the requirements for a Master's degree specializing in Entrepreneurship and New Venture Creation at Wits Business School (WBS). This is a deductive quantitative study targeted at about 200 to 250 colleagues within the bank to establish the effects of technological opportunism on firm performance and how this relationship is affected by the level of strategic entrepreneurship within Barclays Africa.

I am asking you whether you will be able to respond to the short questions that appropriately represent your views. If you agree, please answer the questions as objectively as possible and to the best of your knowledge. You are also encouraged to ask me any questions or raise concerns at any time about the nature of the research study or the methods being adopted. Please contact me at any time on my email Mandla.Maphumulo@absa.co.za or 011 350 4229.

Please understand that your participation is voluntary and you are not being forced to take part in the study. The choice of whether to participate or not, is yours alone. If you choose not to take part, you will not be affected in any way whatsoever. If you agree to participate, you may stop participating in the research at any time and tell me that you don't want to continue. If you do this there will also be no penalties and you will not be prejudiced in any way.

Confidentiality

Any study records that identify you will be kept confidential to the extent possible by law. The records from your participation may be reviewed by people responsible for making sure that the research is conducted properly, including my academic supervisor Prof. Boris Urban (Boris.Urban@wits.ac.za). All of these people are required to keep your identity confidential. All study records will be destroyed after the completion and marking of my research assignment. I will refer to you by a code number or pseudonym (another name) in the assignment and any further publication.

Risks/Discomforts

At the present time, I do not see any risks in your participation. The risks associated with participation in the study are no greater than those encountered in daily life.

Benefits

There are no immediate benefits to you from participating in the study. However, the study will be extremely helpful to us in understanding the perceived level of entrepreneurial spirit and innovation within Barclays Africa and possibly taking further steps in improving this. If you would like to receive feedback on the research study once it is completed, an arrangement can be made on how best we can share the research outcomes when it is completed sometime after March 2017.

Who to contact if you have been harmed or have any concerns

The research study has been approved by the Wits Business School. If you have any complaints about ethical aspects of the research or feel that you have been harmed in any way by participating in the study, please contact the Research Office Manager directly at the Wits Business School, Mmabatho Leeuw. Mmabatho.leeuw@wits.ac.za

Block 1

Background information about the respondent: Please select your appropriate response from the options provided below:

Please state your gender?

- ☐ Male
☐ Female
☐

Formal level of education achieved?

- ☐ Less than high school
- ☐ High school graduate
- ☐ Some tertiary
- ☐ Bachelor's / Diploma
- ☐ Honour's
- ☐ Master's
- ☐ Doctorate

Please state your position within the bank?

- ☐ Non-Management
- ☐ Junior Management
- ☐ Middle Management
- ☐ VP / Senior Management
- ☐ Principal / Director
- ☐ Managing Principal / Executive
- ☐ C-suite Officer

How long have you been with the bank?

- ☐ Less than 2 years
- ☐ 2 to less than 4 years
- ☐ 4 to less than 7 years
- ☐ 7 to less than 10 years
- ☐ 10 to less than 15 years
- ☐ 15 to less than 20 years
- ☐ 20 years and more

Generally classify the function of your department?

- ☐ Product management (RBB/WIM/CIB)
- ☐ Finance
- ☐ Audit / Risk Management
- ☐ Credit
- ☐ Legal / Compliance
- ☐ Channel / Distribution / Coverage
- ☐ Segments
- ☐ Operations
- ☐ Marketing
- ☐ Human Resources
- ☐ Technology
- ☐ Other

The following statements are meant to identify and assess the perceived capability of the bank to sense and respond to technological developments. Please indicate a response that best represents your views.

We are often one of the first in our industry to know about technological developments that may potentially affect our business

Strongly Agree Agree Somewhat agree Neutral Somewhat disagree Disagree Strongly disagree

☐ ☐ ☐ ☐ ☐ ☐ ☐

We actively look for information on technological changes in the environment that are likely to affect our business

Strongly agree Agree Somewhat agree Neutral Somewhat disagree Disagree Strongly disagree

☐ ☐ ☐ ☐ ☐ ☐ ☐

We are often quick to know about changes in technologies that might affect our business

Strongly agree Agree Somewhat agree Neutral Somewhat disagree Disagree Strongly disagree

☐ ☐ ☐ ☐ ☐ ☐ ☐

We periodically review the likely effect of changes in technology on our business

Strongly agree Agree Somewhat agree Neutral Somewhat disagree Disagree Strongly disagree

☐ ☐ ☐ ☐ ☐ ☐ ☐

We generally respond very quickly to technological changes in the environment

Strongly agree Agree Somewhat agree Neutral Somewhat disagree Disagree Strongly disagree

☐ ☐ ☐ ☐ ☐ ☐ ☐

This bank is ahead of the industry in responding to new technologies

Strongly agree Agree Somewhat agree Neutral Somewhat disagree Disagree Strongly disagree

☐ ☐ ☐ ☐ ☐ ☐ ☐

For some reason, we are generally quick to respond to new technologies

Strongly agree Agree Somewhat agree Neutral Somewhat disagree Disagree Strongly disagree

☐ ☐ ☐ ☐ ☐ ☐ ☐

We tend to invest in new technologies although this may cause our current investments to lose value

Strongly agree Agree Somewhat agree Neutral Somewhat disagree Disagree Strongly disagree

☐ ☐ ☐ ☐ ☐ ☐ ☐

The following statements are meant to identify the collective management style of the bank's decision makers. Please indicate which response most clearly matches the management style of the executives, senior

management and middle management within the bank by indicating a response that best represents your views.

In general, the leaders within the bank favour a strong emphasis on the marketing of tried and tested products and services

Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree
☐	☐	☐	☐	☐	☐	☐

In general, the leaders within the bank favour low risk projects with normal and certain rates of return

Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree
☐	☐	☐	☐	☐	☐	☐

In general, the leaders within the bank favour a cautious 'wait and see' approach in order to minimize the probability of making costly decisions when faced with uncertainties

Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree
☐	☐	☐	☐	☐	☐	☐

To the best of my knowledge, there are no new lines of products or services that the bank has marketed over the past years

Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree
☐	☐	☐	☐	☐	☐	☐

To the best of my knowledge, changes in product or service lines have been mostly of a minor nature over the past years

Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree
☐	☐	☐	☐	☐	☐	☐

In dealing with the competitors, we as a bank typically respond to actions which were initiated by competitors

Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree
☐	☐	☐	☐	☐	☐	☐

In dealing with the competitors, we as a bank are very seldom the first bank to introduce new products/services, operating technologies, etc

Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree
☐	☐	☐	☐	☐	☐	☐

In dealing with the competitors, we as a bank typically tend to avoid competitive clashes, preferring a more tolerant approach

Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree
☐	☐	☐	☐	☐	☐	☐

In general, the leaders of our bank believe that owing to the nature of the environment, it is best to explore gradually via cautious behavior

Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree
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Please indicate how difficult it is for the bank to change its strategic plan to adjust to each of the following contingencies or possibilities

The emergence of a new technology

Extremely easy Moderately easy Slightly easy Neutral Slightly difficult Moderately difficult Extremely difficult

☐ ☐ ☐ ☐ ☐ ☐ ☐

Shifts in economic conditions

Extremely easy Moderately easy Slightly easy Neutral Slightly difficult Moderately difficult Extremely difficult

☐ ☐ ☐ ☐ ☐ ☐ ☐

The market entry of new competition

Extremely easy Moderately easy Slightly easy Neutral Slightly difficult Moderately difficult Extremely difficult

☐ ☐ ☐ ☐ ☐ ☐ ☐

Changes in government regulations

Extremely easy Moderately easy Slightly easy Neutral Slightly difficult Moderately difficult Extremely difficult

☐ ☐ ☐ ☐ ☐ ☐ ☐

Shifts in customer needs and preferences

Extremely easy Moderately easy Slightly easy Neutral Slightly difficult Moderately difficult Extremely difficult

☐ ☐ ☐ ☐ ☐ ☐ ☐

Modification in supplier strategies

Extremely easy Moderately easy Slightly easy Neutral Slightly difficult Moderately difficult Extremely difficult

☐ ☐ ☐ ☐ ☐ ☐ ☐

The emergence of an unexpected opportunity

Extremely easy Moderately easy Slightly easy Neutral Slightly difficult Moderately difficult Extremely difficult

☐ ☐ ☐ ☐ ☐ ☐ ☐

The emergence of an unexpected threat

Extremely easy Moderately easy Slightly easy Neutral Slightly difficult Moderately difficult Extremely difficult

☐ ☐ ☐ ☐ ☐ ☐ ☐

Political developments that affect the banking industry

Extremely easy Moderately easy Slightly easy Neutral Slightly difficult Moderately difficult Extremely difficult

☐ ☐ ☐ ☐ ☐ ☐ ☐

ack 6

The following areas pertain to the degree of perceived performance indicators relative to the competitors within the bank's primary served markets over the previous three years. Please review each of the indicators and to your

knowledge, indicate your perceived view of Barclays Africa's performance as compared to the competition.

New product success rate (%)

Much better Moderately better Slightly better About the same Slightly worse Moderately worse Much worse

☐ ☐ ☐ ☐ ☐ ☐ ☐

Return on investment (RoI) (%)

Much better Moderately better Slightly better About the same Slightly worse Moderately worse Much worse

☐ ☐ ☐ ☐ ☐ ☐ ☐

Revenue growth rate (%)

Much better Moderately better Slightly better About the same Slightly worse Moderately worse Much worse

☐ ☐ ☐ ☐ ☐ ☐ ☐

Market share (%)

Much better Moderately better Slightly better About the same Slightly worse Moderately worse Much worse

☐ ☐ ☐ ☐ ☐ ☐ ☐

Profitability (%)

Much better Moderately better Slightly better About the same Slightly worse Moderately worse Much worse

☐ ☐ ☐ ☐ ☐ ☐ ☐

Block 5

The following statements pertain to the external environment affecting the banking sector in terms of technological turbulence. Please indicate a response that best represents your views.

It is very difficult to forecast where the technology in our industry will be in the next 2 to 3 years

Strongly agree Agree Somewhat agree Neutral Somewhat disagree Disagree Strongly disagree

☐ ☐ ☐ ☐ ☐ ☐ ☐

Technological changes provide big opportunities in our industry

Strongly agree Agree Somewhat agree Neutral Somewhat disagree Disagree Strongly disagree

☐ ☐ ☐ ☐ ☐ ☐ ☐

The technology in our industry is changing rapidly

Strongly agree Agree Somewhat agree Neutral Somewhat disagree Disagree Strongly disagree

☐ ☐ ☐ ☐ ☐ ☐ ☐

A large number of new product ideas have come from technological breakthroughs in our industry

Strongly agree Agree Somewhat agree Neutral Somewhat disagree Disagree Strongly disagree

☐ ☐ ☐ ☐ ☐ ☐ ☐

The following statements pertain to the external environment affecting the banking sector in terms of competitive hostility. Please indicate a response that best represents your views.

Competition in the market is cut-throat

Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree
☐	☐	☐	☐	☐	☐	☐

Competition exists in a variety of aspects, e.g. pricing, product quality, customer service, etc.

Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree
☐	☐	☐	☐	☐	☐	☐

Competitors are always able to match their opponents' market attacks readily

Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree
☐	☐	☐	☐	☐	☐	☐

Price competition is a hallmark of the market

Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree
☐	☐	☐	☐	☐	☐	☐

There are frequent product introductions or modifications

Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree
☐	☐	☐	☐	☐	☐	☐

APPENDIX 2: CONSISTENCY MATRIX

Objective Statement: Investigate the mediating and moderating effects of strategic entrepreneurship on technological opportunism and firm performance in a context of South African banking institution					
Sub-Objectives	Literature Review	Hypotheses	Source of Data	Type of Data	Data Analysis Methods
Sub-Objective 1 Investigate the extent to which firm performance is explained by technological opportunism	Daugherty, Carrel-Billiard and Biltz (2016) Rotolo, Hicks and Martin (2015) El Gizawi (2014) Chen and Lien (2013) Voola, Casimir, Carlson, Adnihotri and Anushree (2012) Riefler and Roth (2008) Srinivasan, Lilien and Rangaswamy (2002) Teece, Pisano and Shuen (1997)	Hypothesis 1 Higher levels of technological opportunism are positively associated with higher levels of firm performance	Data completion of the technology opportunism eight-item scale and five-item scale perceptual performance indicators relative to the competitors (Refer to research instrument on Appendix 4 post pilot study)	Categorical data for demographic information, interval data for technological opportunism and firm performance constructs (Refer to research instrument on Appendix 1)	Descriptive statistics and frequencies Explanatory data analysis Multiple regression analysis Hierarchical or stepwise regression analysis Multivariate analysis Pearson correlation coefficient Factor analysis The coefficient of determination R^2

Sub-Objective 2 Investigate the mediation effect of strategic entrepreneurship on the relationship between technological opportunism and firm performance	Urban and Venter (2015) Otache and Mahmood (2015) Chokesikarin (2014) Kollmann and Stöckmann (2012) Urban (2012) van Antwerpen (2012) Kuratko, Morris and Covin (2011) Hitt, Ireland, Sirmon and Trahms (2011) Kuratko and Audretsch (2009) Ketchen, Ireland, and Snow (2007) Rouse and Daellenbach (1999) Hisrich and Peters (1998) Teece, Pisano and Shuen (1997)	Hypothesis 2 The primary relationship between technological opportunism and firm performance is mediated by strategic entrepreneurship such that a direct or indirect existence of the relationship is positively associated with strategic entrepreneurship.	Data completion of the entrepreneurial orientation and planning flexibility respective nine-item scales and five-item scale perceptual performance indicators relative to the competitors (Refer to research instrument on Appendix 4 post pilot study)	Categorical data for demographic information, interval data for entrepreneurial orientation, planning flexibility; technological opportunism and firm performance constructs (Refer to research instrument on Appendix 1)	
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Sub-Objective 3 Investigate the moderation effect of strategic entrepreneurship on the relationship between technological opportunism and firm performance		Hypothesis 3 The primary relationship between technological opportunism and firm performance is moderated by strategic entrepreneurship such that a direction and strength of the relationship is determined by the specific level of strategic entrepreneurship.			
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