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**Fintech Start-ups in South Africa:  
A Conceptual Framework to Guide Technology Entrepreneurs**

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## LIST OF ABBREVIATIONS

<b><u>Abbreviation</u></b>	<b><u>Meaning</u></b>
<b>B2B</b>	Business to Business
<b>BEE</b>	Black Economic Empowerment
<b>CIPC</b>	Companies and Intellectual Property Commission
<b>EY</b>	Ernst and Young
<b>FICA</b>	Financial Intelligence Centre Act
<b>FSCA</b>	Financial Sector Conduct Authority of South Africa
<b>FSP</b>	Financial Service Provider
<b>GDP</b>	Gross Domestic Product
<b>IT</b>	Information Technology
<b>M-PESA</b>	Mobile Pesa
<b>MVP</b>	Minimum Viable Product
<b>OCR</b>	Optical Character Recognition
<b>PASA</b>	Payments Association of South Africa
<b>POPI</b>	Protection of Personal Information
<b>RMB</b>	Rand Merchant Bank
<b>SA</b>	South Africa
<b>SARB</b>	South African Reserve Bank
<b>SARS</b>	South African Revenue Services
<b>SME</b>	Small and Medium-Sized Enterprises
<b>TAX</b>	Taxation
<b>TRA</b>	Theory of Reasoned Action
<b>VC</b>	Venture Capitalists

# TABLE OF CONTENTS

1	INTRODUCTION .....	2
1.2	PURPOSE OF THE STUDY .....	5
1.3	PROBLEM STATEMENT .....	6
1.4	RESEARCH QUESTIONS.....	7
1.5	RESEARCH OBJECTIVES .....	7
1.6	ASSUMPTIONS.....	7
1.7	LIMITATIONS .....	8
1.8	BRIEF CHAPTER OVERVIEW.....	8
1.9	CONCLUSION.....	9
2	LITERATURE REVIEW .....	10
2.1	INTRODUCTION .....	10
2.2	ENTREPRENEURSHIP.....	10
2.2.3	ENTREPRENEURIAL SKILL REQUIREMENTS.....	13
2.3	NEW VENTURE CREATION FRAMEWORKS AND MODELS .....	22
2.4	FINTECH.....	31
2.4.2	FINTECH START-UPS .....	32
2.4.5	Fintech Regulation.....	37
2.4.6	Fintech Business Models and Taxonomies .....	39
2.4.7	Fintech Challenges .....	42
2.4.8	Fintech Frameworks .....	43
2.5	PROPOSED CONCEPTUAL FRAMEWORK .....	46
2.5.2	Financial Demands/Needs.....	47
2.5.3	Discovery.....	48
2.5.4	Feasibility Study.....	48
2.5.5	Exploration.....	48
2.5.6	Planning and Formation.....	49
2.5.7	Prototyping.....	49
2.5.8	Patents and Approvals.....	50
2.5.9	Adoption .....	50
2.6	CONCLUSION.....	52
3	METHODOLOGY .....	54
3.1	INTRODUCTION.....	54
3.2	RESEARCH PHILOSOPHY .....	54
3.3	RESEARCH APPROACH .....	55
3.4	METHODOLOGICAL APPROACH .....	56
3.5	RESEARCH DESIGN/STRATEGY .....	57
3.6	DATA COLLECTION.....	58

3.6.1 Data Collection Instruments.....	58
3.6.1.1 Semi-structured interviews.....	58
3.7 INTERVIEW STRUCTURE .....	61
3.8 PARTICIPANTS .....	61
3.8.1 Target population.....	61
3.8.2 Data Saturation.....	<b>Error! Bookmark not defined.</b>
3.8.3 Ethical Considerations .....	62
3.9 DATA ANALYSIS .....	62
3.9.1 Thematic Analysis.....	62
3.9.2 CONCLUSION .....	65
4 ANALYSIS OF FINDINGS .....	66
4.1 INTRODUCTION .....	66
4.2 DESCRIPTION OF PARTICIPANTS .....	66
4.3 FINDINGS AND ANALYSIS .....	69
4.3.1 TOPICS DISCUSSED DURING QUALITATIVE INTERVIEWS .....	70
FIGURE 10 EXTENDED FINTECH VENTURE CREATION CONCEPTUAL FRAMEWORK.....	103
4.5 CONCLUSION .....	104
5 SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS .....	105
5.1 INTRODUCTION .....	105
5.2 SUMMARY .....	105
5.3 SUMMARY OF FINDINGS .....	106
5.3.1 FINDINGS RELATING TO THE KEY FACTORS OR VARIABLES REQUIRED TO ESTABLISH AND SUSTAIN A FINTECH START-UP.....	106
5.3.1.1 Theme 1a: Financial Capital .....	106
5.3.1.2 Theme 2a: Social Capital (Mentorship, Networks and Partnerships).....	107
5.3.1.3 Theme 3a: Adherence to Regulation .....	108
5.3.1.4 Theme 4a: Incubators and Accelerators .....	109
5.3.1.5 Theme 5a: Human Capital .....	109
5.3.1.6 Theme 6a: Discovery of Venture Ideas.....	110
5.3.1.7 Theme 7a: Customer-centric Fintech Platform Development .....	110
5.3.1.8 Theme 8a: Business Development .....	111
5.3.1.9 Theme 9a: Consumer Adoption of Products and Services .....	111
5.3.1.10 Theme 10a: Patents and Trademarks .....	111
5.3.2 FINDINGS OF THE RESEARCH STUDY PERTAINING TO THE TYPICAL CHARACTERISTICS OF A FINTECH START-UP .....	112
5.3.2.1 Theme 1b: Problem-solving.....	112
5.3.2.2 Theme 2b: Innovative .....	113
5.3.2.3 Theme 3b: Good Reputation and Good Brand Value .....	113
5.3.3 FINDINGS OF THE RESEARCH STUDY PERTAINING TO THE SKILLS REQUIRED FOR A FINTECH START-UP .....	113
5.3.3.1 Theme 1c: Problem-solving Skills.....	113

5.3.3.2 Theme 2c: Financial Skills .....	113
5.3.3.3 Theme 3c: Soft Skills .....	114
5.3.3.4 Theme 4c: Entrepreneurial Skills .....	114
5.3.3.5 Theme 5c: Information Technology (IT) Skills.....	114
5.3.3.6 Theme 6c: Business Management Skills .....	114
5.3.4 FINDINGS OF THE RESEARCH STUDY PERTAINING TO THE BARRIERS AND CONTRIBUTORS TO FINTECH START-UP FAILURE .....	115
5.3.4.1 Theme 1d: Regulatory Barriers.....	115
5.3.4.2 Theme 2d: Financial Capital Barriers.....	116
5.3.4.3 Theme 3d: Costly and Scarce Skilled Resources .....	116
5.3.4.4 Theme 4d: Disingenuous Incubators and Accelerators .....	117
5.3.4.5 Theme 5d: Poor Partnerships and Networks .....	117
5.3.4.6 Theme 6d: High Costs .....	117
5.3.4.7 Theme 7d: Literacy Levels.....	118
5.4. FINDINGS OF THE RESEARCH STUDY PERTAINING TO WHAT THE CONSTITUENTS OF A TYPICAL FRAMEWORK FOCUSING ON FINTECH START- UPS IN SOUTH AFRICA WOULD LOOK LIKE.....	118
5.5 SUMMARY OF CONTRIBUTIONS .....	119
5.6 RECOMMENDATIONS .....	120
5.7 LIMITATIONS OF THE RESEARCH STUDY .....	122
5.8 FUTURE RESEARCH .....	122
5.9 CONCLUSION .....	123
REFERENCES .....	126
APPENDIX 1 – SEMI-INTERVIEW SCHEDULE.....	140
APPENDIX 2 – PARTICIPANT INTRODUCTORY LETTER AND CONSENT FORM..	141
APPENDIX 3 – THEMATIC ANALYSIS SCHEDULE EXAMPLE .....	144
APPENDIX 4 – ETHICS APPROVAL.....	148



## LIST OF FIGURES

Figure 1 Gartner Venture Creation Process.....	23
Figure 2 Venture Creation.....	24
Figure 3 Venture Development Process .....	26
Figure 4 Technology Entrepreneurship Development Framework.....	27
Figure 5 Living Labs Entrepreneurial Process .....	29
Figure 6 DF2 Fintech Framework .....	44
Figure 7 Conceptual Framework Fintech .....	45
Figure 8 Proposed Fintech Conceptual Framework.....	46
Figure 9 Extended Fintech Venture Creation Conceptual Framework.....	103

## LIST OF TABLES

Table 1 Start-up Performance Success Factors .....	20
Table 2 Venture Creation Steps.....	29
Table 3 Fintech Business Model Types Summary .....	40
Table 4 Construct Summary .....	51
Table 5 List of Participants.....	66
Table 6 Interview Schedule.....	69

# **Fintech start-ups in South Africa: A Conceptual Framework Guide for Technology Entrepreneurs**

## **ABSTRACT**

Owing to the lack of information and guidelines currently available for technology entrepreneurs, establishing Fintech start-ups in South Africa is challenging. The current literature on Fintech does not provide information highlighting ways in which technology entrepreneurs can establish and sustain Fintech start-ups, nor does it discuss the relevant skills required or the potential entry barriers for Fintech start-ups in the South African context. The purpose of this research is to investigate the factors that make Fintech startups successful, highlight the barriers faced by Fintech startups, elaborate on the skills required, and create a conceptual framework based on the research, that will guide technology entrepreneurs towards successful venture creation. A qualitative research methodology was used in this study using a semi-structured interview with open-ended questions as a research instrument. Financial Capital, Adherence to Regulation and Customer Centric Platform Development were some of the key findings related to establishing and sustaining Fintech start-ups in South Africa. Costly and scarce skilled resources and regulation barriers were some of the contributors to the failure of Fintech start-ups in South Africa. The government needs to assist where they can from a regulation perspective and provide more support to Fintech start-ups. Tax rebates for Fintech start-ups would also help these start-ups survive in South Africa.

**Keywords:** Conceptual framework, Entrepreneurs, Fintech, start-ups, qualitative research, success factors, technology entrepreneurship,

# 1 INTRODUCTION

The introduction of stringent regulatory requirements by financial regulatory boards such as the South African Reserve Bank (SARB), following the 2007/2008 financial crisis, has forced traditional banking institutions to tighten their credit-issuing processes. As a result, small to medium enterprises (SME) have been affected by these regulatory requirements and have been forced to consider alternative means of financing. According to Fatoki (2014), the limited availability of formal SME sector financing has contributed to the high failure rates of South African SMEs and has impeded the growth of SMEs in the economy. A later publication by Fatoki (2018) noted that within the first five years of creation, 75% of South African SMEs fail. The limited availability of formal financing from traditional banks has in turn “created the possibility for new financing alternatives to enter the financial market” (Temelkov & Samonikov, 2018: 26). Furthermore, with the increase of high profile financial scandals, the market has been gearing towards the alternative finance market (Leong, Tan, Xiao, Tan & Sun, 2017). This study will focus on the alternative financial market by investigating fintech start-ups in South Africa.

## 1.1 BACKGROUND INFORMATION

In Sub-Saharan Africa, formal financial schemes provided by governments and global corporations, as well as unofficial sources of financing, remain the main sources of finance for SMEs (Quartey, Turkson, Abor & Iddrisu, 2017). Fintech is known to cater for the unserved market and may be defined as innovative technologies that have the ability to extend the range of financial products offered to the market as well as radically transform financial functions in the world (Nakashima, 2018). Fintech start-ups have been bridging the finance gap by providing alternative sources of financing to SMEs with innovative fintech solutions (Temelkov & Samonikov, 2018). According to EY FinTech Global Network (2019: 25), a little over 56% of the global SMEs have used banking and payment services. This fintech service is the most popular classification followed by insurance, financing and financial management (EY FinTech Global Network; 2019: 25).

Fintech enables the development of innovative service industries and business models (Zavolokina, Dolata & Schwabe, 2016a). Gulamhuseinwala, Bull and Lewis (2015: 18) define the term “fintech” as “firms that combine technology and innovation in order to unsettle the banking industry”. In contrast to this, Lu (2017: 273) describes fintech as “the application of internet technology and innovation in financial activities”. Fintech start-ups provide

consumers with new innovative products and services that allow consumers to generate payments, oversee their investments, attain insurance that is affordable, help consumers reduce their consumer debt and increase their equity financing (Gulamhuseinwala *et al.*, 2015a). An example of a fintech innovation in South Africa is Snapscan which allows consumers to pay for items without using a physical bank card. It is assumed that the fintech revolution caters for those who have been underserved or unserved by traditional financial services (Kuo Chuen & Teo, 2015). Fintech covers a broad range of categories, namely "banking, online lending, payments, wealth management, insurance, and virtual currency" (Lu, 2017: 274).

Fintech start-up formations are often triggered by certain events or driven by certain factors. According to Haddad and Hornuf (2019), the demand for fintech start-ups is higher when an economy is more developed and has a mature traditional capital market. When an economy has a mature traditional or venture capital market, technology entrepreneurs can acquire funding for their start-ups and are able to expand their business operations. The funding of SMEs in these economies is often through the incubators or accelerators launched by traditional financial service providers (Haddad & Hornuf, 2019). Another factor that drives the formation of fintech start-ups is the level of technological advancement within an economy. The more up-to-date the economy is with the latest technology, the higher the possibility of fintech start-ups, as new technologies allow new business models to be formed (Haddad & Hornuf, 2019). Current information technology (IT) developments such as "social computing, big data, internet of things or cloud computing" have allowed fintech start-ups to improve the effectiveness of existing business processes through automation, and have encouraged the creation of new financial solutions for the financial services industry (Puschmann, 2017: 69). Consumer needs, in relation to financial products and solutions, that have not been previously catered for by traditional financial service providers also drive the formation of fintech start-ups (Gomber, Koch & Siering, 2017). For example, card-reader units for smartphones and tablets have allowed merchants to accept debit and credit cards as a means of payment. Other factors that drive fintech start-up formation include the level of gross domestic product (GDP) within an economy; the level of supporting infrastructure within an economy such as mobile phones and secure Internet servers; the size of the labour market; and ease of access to loans and venture capital funding (Haddad & Hornuf, 2019).

The success of a fintech start-up is determined by certain characteristics. Röder, Cardona, Palmér, Werth, Muntermann and Breitner (2018) used a multiple linear regression model to determine the factors that contribute to fintech venture success. Based on their analysis, it was noted that the fintech business model constituent of the product or service offering plays an important role in the success of fintech ventures. The leading characteristics associated with the product or service offering constituent are credit lending, financing and information aggregation. Furthermore, it was noted that the fintech start-ups that generally progress are those that aim for markets that have growth potential such as the credit market (Röder *et al.*, 2018). Low-profit margins, reduced fixed assets, scalability, innovation and ease of compliance are also key characteristics of fintech start-ups (Kuo, Chuen & Teo, 2015).

In Sub-Saharan Africa, South Africa is one of the fastest growing financial technology markets in the world (Koffi, 2016) and fintech adoption rates in South Africa are steadily increasing. According to the EY Fintech Adoption Index 2017, fintech organisations are gaining a higher market share in South Africa because they focus on the customer proposition and utilise technology in a new and innovative manner that is appealing to the market (EY Fintech Global Network, 2017). In 2017, South Africa had a 35% adoption rate, which was 2% higher than the average global rate (EY Fintech Global Network, 2017). The South African fintech adoption rate has since increased to 82%, which indicates how quickly the market is responding to fintech start-ups and their product offering, thus emphasising the need to focus on growing fintech start-ups in South Africa (EY FinTech Global Network, 2019).

Although fintech adoption rates provide technology entrepreneurs with a certain level of comfort, the regulation of fintech may pose a significant challenge for all fintech start-ups in the near future. According to Didenko (2018), the manner in which the financial services industry is regulated is due to change with the introduction of the Financial Sector Regulatory Act, which was signed into law in August 2017 by the president. The Act proposes two novel regulators, namely, the Prudential Authority and the Financial Sector Conduct Authority. In their study, Leong *et al.* (2017) affirmed that regulatory uncertainty is a significant concern for fintech innovators as such regulation may impede the market advantage or existence of fintech start-ups in the future.

Fintech start-ups face additional barriers to market entry that are often difficult to overcome. One of them is the ability of traditional banking institutions to block marketplace access and another is obtaining a banking licence (Loo & Loo, 2018). As a new entrant to the financial market, fintech start-ups and mobile network operators have to apply for a banking licence which can take a couple of months to obtain. Alternatively, they have to find a means to enter the banking sector without a banking licence. The options presented are costly to fintech start-ups in Africa (Alexander, Shi & Solomon, 2017). Traditional banking institutions may hinder fintech start-up operations by blocking their access to consumer data and by using their dominant market position, for example alliance with VISA, thus preventing fintech progression (Loo & Loo, 2018). Furthermore, fintech start-ups that cater to the unserved and the unbanked are often exposed to high credit risk due to limited access to customer financial data (Leong *et al.*, 2017), thus being unable to make fair assessments when providing credit.

Fintech research has also indicated that fintech start-ups often fail because their products frequently focus on the customer journey in the developed economies (Buckley & Webster, 2016). Those who reside in developing economies are often not taken into account when fintech solutions are developed (Koffi, 2016). Developing economies are faced with far more complex obstacles and sometimes do not have the means to access financial services (Buckley & Webster, 2016). Fintech solutions in Sub-Saharan Africa are often tailored to the region's needs and often do not have strong strategies of distribution; therefore, a fintech solution may be adopted and implemented successfully in one country and fail in another (Alexander *et al.*, 2017). Fintechs promote financial inclusion not just by focusing solely on improving the current infrastructure but also by focusing on making current services more accessible. The developing economies often do not have access to the equipment required to utilise fintech products such as smartphones and tablets (Buckley & Webster, 2016). Furthermore, developing economies are faced with common challenges such as the expensive services provided by financial institutions, financial illiteracy and a lack of financial inclusion (Buckley & Webster, 2016).

## **1.2 PURPOSE OF THE STUDY**

This study aims to develop a conceptual framework that can be used as a guideline by technology entrepreneurs in order to establish and sustain their own fintech start-ups in South Africa. The proposed conceptual framework's purpose is to guide fintech startups

towards successful venture creation. It could potentially attract the attention of fintech and/or technology entrepreneurship education programmes currently in the market. Bialetti (2012: 5) sees technology entrepreneurship as an initiative whereby the entrepreneur invests in an initiative with specific individuals and equipment in order to help create value for an organisation and advance knowledge surrounding technology and science. The conceptual framework will be developed according to the following:

- an analysis of fintech business models
- an analysis of venture creation models
- an analysis of technology entrepreneurs, focusing on their characteristics and experience
- success factors identified with regard to technology entrepreneurs (fintech founders) who have established or started their own fintech start-ups, and
- technology entrepreneurs' (fintech founders) knowledge of the financial services industry specifically focusing on how fintech influences this industry.

This study will draw on secondary data from journal articles as well as data obtained from field research conducted by the researcher.

### **1.3 PROBLEM STATEMENT**

In a study conducted by Basole and Patel (2018), it was noted that there has been a steady increase in fintech start-ups over the past decade. However, the rate at which these start-ups are emerging is significantly lower due to the more prominent role of current incumbents and the maturing banking industry. In 2007, 134 fintech start-ups were formed globally and this number increased significantly to 334 in 2011 (Basole & Patel, 2018). However, this number decreased to 115 in 2015, which may indicate that the market barriers to entry have hindered new fintech start-up growth (Basole & Patel, 2018). According to Alexander *et al.* (2017: 5), "South Africa's well-regulated banking sector and aggressive digital banking roadmap are already developing its own system of innovative FinTech solutions, which also represents a major entry barrier for venture capital-backed Fintechs". The distribution of fintech role players is also skewed as only a few such players are situated in Asia, Australia, the Middle East and Africa (Basole & Patel, 2018). These points highlight the significance of promoting fintech start-ups in Africa as there is a significant shortage of fintech start-up players in Africa. However, establishing these start-ups is difficult without sufficient knowledge and experience of the industry as well as sufficient guidelines. A general guideline, highlighting the way technology entrepreneurs can establish and sustain fintech

start-ups, the regulatory implications of fintechs, and fintech business models in an African context, is still not available. There is also limited information regarding fintech start-up creation and fintech sustainability in an African context, hence the study aims to address this gap.

#### **1.4 RESEARCH QUESTIONS**

The main research question that this research addressed is:

*How do technology entrepreneurs establish and sustain successful fintech start-ups in South Africa?*

To address this main question, the following sub-questions were addressed:

- What are the key success factors required to establish and sustain a fintech start-up? (SQ1)
- What are the characteristics of a successful start-up? (SQ2)
- What are the skills required for a fintech start-up? (SQ3)
- What are the entry barriers that contribute to the failure of fintech start-ups? (SQ4)

#### **1.5 RESEARCH OBJECTIVES**

The following research objective was identified:

*To identify the success factors that contribute to the successful establishment and sustainability of Fintech startups in South Africa.*

To meet the main objective, the following sub-objectives were met:

- to identify the key success factors required to establish and sustain a fintech start-up in South Africa
- to identify the characteristics of a successful start-up
- to assess the skills required for a fintech start-up
- to identify the factors that contribute to the failure of fintech start-ups

#### **1.6 ASSUMPTIONS**

The validity of the results of this research paper rest on the following assumptions:



- The technology entrepreneurs interviewed are currently running their own start-ups.
- The technology entrepreneurs used to assist in the development of the framework are not restricted to the South African market.
- Technology entrepreneurs will actively use this framework as a guideline when establishing their start-ups.

## **1.7 LIMITATIONS**

Although there are several research articles related to fintech as a whole, only a few scholars have focused their field of research on fintech start-up establishment and business models. Fintech is a broad subject and there are many opportunities to expand on the fintech topic; however, the number of technology entrepreneur participants is limited. Furthermore, technology entrepreneurs may not adopt the framework proposed.

## **1.8 BRIEF CHAPTER OVERVIEW**

Chapter 1 discussed the background to the research topic, the purpose of the study, the problem statement, the research questions, and the research objectives, as well as the limitations and assumptions of this research.

Chapter 2 focuses on the current literature relating to the research topic. The literature will be explored by viewing it in terms of themes which will be used to construct the framework.

Chapter 3 focuses on the research methodology used and the data collection in order to answer the research questions presented in Chapter 1. This chapter will also explain how the data will be analysed as well as describing the research participants for this study.

Chapter 4 discusses and analyses the research findings and the sub-conclusions.

Chapter 5 contains the final conclusions regarding the research paper and will include a summary of the findings, conclusions and the contributions made by the study, as well as suggestions for future work.

## **1.9 CONCLUSION**

Fintech is a research domain that is gaining popularity; however, not enough emphasis is placed on fintech and its impact on entrepreneurship. In this chapter, the researcher provided context to the fintech research topic as well as the fintech entrepreneurship gap that the researcher aims to fill. The purpose of the study was outlined and the problem statement was expanded on. In order to meet the objective of the study, research questions and research objectives related to the research topic were delineated. Lastly, the limitations and assumptions were articulated. The next chapter will introduce the literature that forms the basis for the framework.

## **2 LITERATURE REVIEW**

### **2.1 INTRODUCTION**

Establishing any form of business is fundamentally important, especially for developing economies that are struggling with high levels of unemployment. The literature on entrepreneurship provides us with information on how entrepreneurs identify ideas that could be turned into business ventures that create employment opportunities. Fintech is an emerging trend that has high potential to shift the way in which the financial industry operates and to create opportunities that not only result in job opportunities but also financial inclusion for those who have been excluded owing to a lack of access to traditional banks and the high costs associated with them (Soriano, 2017). As a result, extensive research has been carried out on both entrepreneurship and fintech over the years to explain both these topics independently. However, little research has been performed to amalgamate both topics and thoroughly understand how each topic has an impact on the other. The new era of fintech that is emerging requires a thorough understanding of how fintech start-ups are formed and how the standard technology entrepreneurship process is used to develop these new start-ups. Fintech start-ups have been explored by several scholars spanning different contexts (Buckley & Webster, 2016; Li, Spigt & Swinkels, 2017; Lu, 2017; Gimpel, Rau & Röglinger, 2018; Temelkov, 2018; Temelkov & Samonikov, 2018; Röder *et al.*, 2018) but none of them have examined the process of forming and sustaining fintech start-ups, especially from the perspective of a developing country. In order to address this gap in the literature, it is important to focus on the technology entrepreneurship process, new venture creation frameworks, the fintech start-up process including business model types and fintech challenges. In this chapter, the researcher aims to explore the current and past literature on the topic to assess whether our main research question can be addressed.

### **2.2 ENTREPRENEURSHIP**

#### **2.2.1 A Brief Overview of Entrepreneurship**

In both the current and past literature, entrepreneurship is viewed differently by different scholars. George and Zahra (2002: 5) view entrepreneurship as the act and process by which societies, regions, organisations or individuals identify and pursue business opportunities to create wealth. Sondari (2014) views entrepreneurship as activities that are known to improve economic growth and to resolve the problem of unemployment.

Entrepreneurship has also been suggested to be a procedure used to create value by amalgamating resources in order to exploit an opportunity (Caruana, Morris & Vella, 1998). The concept focuses on the identification and exploitation of profitable business opportunities in order to obtain private wealth and social wealth (Venkataraman, 2014). Hence, a suitable benchmark for entrepreneurship would consist of the contribution made to society by the individual's entrepreneurial attempt and the economic performance of the entrepreneurial attempt which provides a high return on investment. This applies to all organisations regardless of size and type. The entrepreneurship process consists of the identification of an opportunity, creation of a new business idea, attainment of resources, concept implementation and exploitation of the business venture (Caruana *et al.*, 1998). Scholars have assessed entrepreneurship from an entrepreneurial education perspective (Nafukho & Muyia, 2010; Sondari, 2014), a digital and technology entrepreneurship perspective (Bialetti, 2012; Giones & Brem, 2018) and a social entrepreneurship perspective (Mair, Robinson & Hockerts, 2006) to name just a few. However, they have not directly explored entrepreneurship in relation to fintech. The most applicable literature on entrepreneurship that could be linked to fintech is the digital entrepreneurship and technology entrepreneurship types which are explored further below.

### **2.2.2 Technology and Digital Entrepreneurship**

With the fast-paced evolution of technology, it is no surprise that another entrepreneurship type has been introduced to accommodate the concept of technology as a whole. Bialetti (2012: 5) sees technology entrepreneurship as an initiative whereby the entrepreneur invests in an initiative with specific individuals and equipment in order to help create value for an organisation and advance knowledge surrounding technology and science. In order to derive this definition, Bialetti (2012) focused on identifying common themes regarding technology entrepreneurship from prior literature and found that technology entrepreneurship was about the following:

- scientists and engineers operating and owning SMEs
- discovering the problems associated with the application of specific technology
- establishing new venture creations, inventing new applications or creating opportunities using technical experience, and
- enabling technological change.

The differentiating factor associated with technology entrepreneurship compared to other entrepreneurship types is that technology entrepreneurship focuses on collaborating with

multiple parties in order to implement a solution for technology changes in the future. According to Siyanbola, Aderemi, Egbetokun and Sanni's (2011) definition, technology entrepreneurship involves the procedure for creating new start-ups to exploit technology. It also describes the process of creating commercial value out of technology innovation; hence, highlighting the value of utilising technology innovation in technology entrepreneurship. Emphasis is also placed on the shared vision of the parties implementing these solutions (Bialetti, 2012). According to Badzińska (2016), the concept of technology entrepreneurship is constructed based on increased innovation, new artefacts and increased competition resulting from research which leads to new creations and service offerings. Furthermore, the procedure involved in the formation of technology entrepreneurship is largely based on endogenous factors and business ecosystems. Giones and Miralles (2015: 39) found that entrepreneurs utilise factors such as the marketplace, technological items and social capital, attempting to reduce the uncertainty and succeed in the execution of the technology entrepreneurship procedure.

Past and current literature on technology entrepreneurship cover the definition of technology entrepreneurship (Bialetti, 2012; Giones & Brem, 2018), the teaching and educational elements of technology entrepreneurship (Wells, 2012; Mosey, Guerrero & Greenman, 2017; Shih & Huang, 2017), the technology entrepreneurship development framework (Siyanbola *et al.*, 2011) and technology entrepreneurship from a signalling theory perspective (Giones & Miralles, 2015) to name just a few. However, little has been done to illustrate the correlation between technology entrepreneurship and fintech, which is what the researcher hopes to expand further on in the current research. Giones and Brem (2018) found that the standard definition for technology entrepreneurship needed to be expanded to accommodate recent developments in digitisation. The term “digital technology entrepreneurship” was introduced in order to expand on Bialetti’s definition. Giones and Brem (2018) describe digital technology entrepreneurship as a form of entrepreneurship that focuses on identifying opportunities related to building artefacts that are digital. Furthermore, the authors found that it was important to introduce this definition in order to help entrepreneurs aiming to establish their own businesses and to ensure that they make a conscious decision regarding the type of technology entrepreneurship they would want to identify themselves with. Tohanean and Weiss (2019) note that digitalisation is derived from the digital strategy of the organisation. It highlights the digitisation goals and objectives, along with the projects that need to be implemented for the successful execution of the

digital strategy, which would cascade into organisation-wide goals. The concept of digital entrepreneurship merges entrepreneurship with the digitisation strategy of organisations that individuals are accountable for; hence, the relevance of digital artefacts and the digital strategy that would need to be considered.

### **2.2.3 Entrepreneurial Skill Requirements**

Prior to determining the skills required by entrepreneurs, a thorough understanding of the term “skill” is required. Dating back to the 1990s, Attewell (1990) evaluated skill using four schools of thought, namely, ethnomethodology, positivism, neo-Weberian and Marxism. The author found that skill is complicated to define and measure. In terms of ethnomethodology theory, it was noted that many skills are often overlooked, and people’s skillset and knowledge vary. In addition, people place a lot of emphasis on a person’s ability to analytically make decisions, which has little bearing on an individual’s ability to perform. Positivists theory notes that it is often difficult to measure skill due to its inherent complexity, however, positivists still believe that skills need to be measured in order to be valid. According to the Weberian theory, skill is dependent on a number of factors such as the number of resources in the market available to perform the task, the people who fill a specific job role and the individuals excluded from the role, along with the association of a specific work task and another task being performed (Attewell, 1990).

Weberian theory also highlights that skill is not just a feature of the task being performed but is also a feature of the task not being performed. Marxists believe that skill is non-existent if the benchmark for assessing an individual’s skill set is dependent on their ability to perform tasks in a capitalist role. None of the schools of thought clearly state what skill means and how it can be assessed. Hence, it can be deduced that skill is difficult to clearly define, articulate and measure. Fast forward to 2013 when Chell (2013) assessed the fundamental skills associated with the entrepreneurial process. The author stated that the concept of skill in itself is complicated and that researchers have utilised it in different ways over the years (Chell, 2013). Based on the findings, it was noted that the foundational skills required by individuals to excel in entrepreneurship, a corporate environment and life in general are acquired through education and are then further enhanced through experience. Skill is also associated with how proficiently a task is performed within a specific context and environment. Furthermore, the author suggests that the skills required for entrepreneurship

and innovation are valued subjectively based on society, politics and the current state of the economy. Skill is also dependent on an individual's social class or status and can be valued based on that (Chell, 2013).

Mamabolo, Kerrin and Kele (2017) attempted to highlight the specific skills required for entrepreneurs in South Africa. The authors noted that entrepreneurship is a key economic growth driver which is driven by the creation of new business ventures that lead to increased employment. As a result of its significance, certain skills are required for all entrepreneurs to ensure that there is an effective execution of business venturing. Business management skills, technical skills, entrepreneurial skills, personal skill, behavioural and motivational skills, as well as social and interpersonal skills, were all highlighted as significant skills required to be an entrepreneur in South Africa (Mamabolo *et al.*, 2017: 4). Several other authors have recognised the significance of these skills for entrepreneurs. Ladzani and Van Vuuren (2003) highlighted entrepreneurial and business skills as significant for entrepreneurial performance training. According to these authors, entrepreneurial skills consist of the ability of the user to be (1) creative, (2) innovative, (3) risk tolerant, (4) able to seek opportunities, (5) a visionary, and (6) seek guidance from successful entrepreneurs. The business skills required are management, financial, marketing, human resources, operational and business plan compilation skills (Ladzani & Van Vuuren, 2003).

In comparison, Oakey (2003) listed accounting, marketing, fundraising, personnel and strategy skills as the business management skills required by technical entrepreneurs during the formation of high technology firms. In addition, Oakey highlighted important technical management skills required by technical entrepreneurs such as entrepreneurs' ability to (1) create new and unique products, (2) lead research and development teams, (3) acknowledge the business management skills required, and (4) create opportunities for further development. These skills correspond to those highlighted by Mamabolo *et al.* (2017). Technical skills have also been highlighted as a contributing factor for the successful operation of various entrepreneurial business ventures (Campus, Harrison & Paul, 2018). Roodt (2005: 27) performed an assessment of the skills required for those who have chosen to be self-employed. The results indicated skills that were statistically significant for entrepreneurs, namely, "leadership skills, networking skills, perseverance, pro-activity, technical skills, electronic networking skills, information funding skills, financial skills,

managerial skills, internal communication skills, innovation skills and general skills” (Roodt, 2005: 27).

Kuzmina-Merlino and Saksonova (2018) evaluated the skills, knowledge and competencies required by entrepreneurs in the fintech sector in Latvia. The authors found that fintech entrepreneurs require banking or finance knowledge and information technology knowledge. For fintech entrepreneurs to be competent in the field, they need to be entrepreneurial, be adaptable to change, be open and willing to learn, have a strong network, possess leadership abilities and have a good understanding of the industry that they are operating in. Furthermore, the entrepreneurs need to possess the following skills:

- soft skills
- entrepreneurial skills
- information technology skills
- mathematical skills
- technical skills, and
- finance skills.

The authors also identified education around fintech as a gap in the market when it comes to skills, knowledge and competencies. In South Africa, entrepreneurship skills for traditional entrepreneurship have been explored but not for financial technology entrepreneurship. Hence, this is currently a gap in the literature.

#### **2.2.4 Factors Influencing the Success or Failure of a Start-up**

Bocken (2015) explored the role of venture capitalists in the success of sustainable start-ups. The venture capitalist’s role, inspiration, investment propositions, and the barriers and enablers of successful start-up ventures were assessed. Based on the author’s findings, it was noted that the key critical success factors of venture creation were business model innovation (e.g. value propositions), collaborations (between companies as well as the different industries) and a strong business case. The key factors driving the failure of start-ups consisted of short-term investment thinking, an incumbent industry that is difficult to compete with, and a lack of credible investors with investment knowledge. Lasch, Le Roy and Yami (2007) focused on the growth factors of start-ups within the information communication technology (ICT) sector. Accordingly, the number of clients at start-up, the size of the start-up and the founders of the start-up was found to have an influence on the growth of ICT start-ups. Furthermore, the international market and new capital were seen to



be positively significant in the growth rates of start-ups in the ICT sector. These findings are similar to those indicated by Santisteban and Mauricio (2017), who identified 21 success factors of IT start-ups; however, a few differences were also identified. Santisteban and Mauricio (2017) indicate that the previous experience of the founding team had a positive impact on the success of start-ups whereas the opposite was indicated to be true by Lasch *et al.* (2007).

The factors that were similar in these studies were the size of the start-up and the founder's leadership. In addition to these, Santisteban and Mauricio (2017: 10-11) identified other success factors, namely, experience in the industry of the founding team, founding team's academic background, technical and business competencies of the founding team, research and development experience of the founding team, management experience, leadership of the entrepreneur, gender of the founder, entrepreneur age, age of the organisation, initial start-up motivation, governmental support, venture capital, competency levels of the start-up, innovation, location, vigour of the external environment, policies linked to science and technology, collaboration and strategic partnering. Song, Podoyntsyna, Van der Bij & Halman (2008) suggest that new venture success factors consist of the founding team size, financial capital, scope of the market, the firm's age, integration of the supply chain, marketing and industry experience as well as patent protection. Previous experience in starting a start-up had no significant value for the success of new ventures, a finding which is aligned to the research conducted by Lasch *et al.* (2007). Human capital was seen to have no significant impact on start-up success in some studies (Lasch *et al.*, 2007; Stuetzer *et al.*, 2012), whereas in others it seemed to have a significant bearing on start-up success (Hormiga & Batista-Canino, 2010).

Stuetzer, Goethner and Cantner (2012) assessed the effect of promising entrepreneurs' skill sets in the development of new venture creation. According to the results, entrepreneurs with higher levels of broadened skills (likened to entrepreneurs with lower skills) took on an estimate of 39% more tasks towards the operation of new venture creations (Stuetzer *et al.*, 2012: 188). It was also noted that a broadened skill set assisted entrepreneurs in accelerating the growth of their start-ups. In conjunction with this, Baum and Locke's (2004) results suggested that certain variables of an entrepreneur's characteristics, skill set, and motivation are important forecasters of venture growth. New resource skills, as opposed to organizational skills, were seen to be a strong predictor of new venture growth. In addition,

it was found that further research would need to be conducted on the relationship between the organising skill of the entrepreneur and the tenacity of the entrepreneur. In order for a venture to be a success, Groenewegen and Langen (2012) suggested that the starter has to be an entrepreneur with specific traits and human capital, the organisation in itself needs to possess specific characteristics and the innovation needs to provide potential consumers with unique advantages.

Zahra (1996) assessed the correlation between technology strategy and new venture performance. Independent venture and corporate venture technology strategies were the focal points of the study. The findings indicated that technology strategy would be an imperative factor in new venture performance and the results would differ based on venture origin. In addition, technology strategies would need to be tailored to specific venture types in order for the benefits to be realised. Resource and development use, and innovation were also indicated as predictors of independent venture performance. According to Giardino, Wang and Abrahamsson (2014), the irregularity between strategies implemented by management and the execution thereof can result in start-up failure. In addition, start-ups fail due to their inability to understand the problem and provide the right solution. Neglecting the learning process is also a symptom of start-up failure.

Shah and Smith (2010) noted how intellectual property affects high-tech firm survival. The assessment of intellectual property was done in conjunction with three types of prior knowledge of the founder of the firm. Based on the results, it was noted that intellectual property has no significance for a firm's survival when assessed alone. However, the type of prior knowledge does have significance. The findings suggest that specific types of prior knowledge allow founders to put a firm's intellectual property to use in better ways to improve the performance of the firm. Littunen (2000: 68) uncovered the effect of networks and the local environment traits of firm survival and found that the survival of new firms had a high dependence on internal networks as opposed to external networks. According to the author internal networks enhance innovation, efficiency and competitive advantage. In addition, a firm's market environment has an impact on its growth opportunities and its survival. Local environmental characteristics often affect new firms in the initial stages of new venture creation. Specific values and beliefs are said to have a positive impact on the formation of new firms and there is often a moderating relationship between the entrepreneurs' beliefs and their intention to establish a start-up (Davidsson & Wiklund, 1995; Phan, Wong & Wang, 2002).

Mazzarol, Volery, Doss and Thein (1999) conducted a study to identify the factors believed to be important in terms of serving as either barriers or triggers to small business start-up. The study provided insights on the impact of demographic variables on business start-ups. The authors identified that the information in previous research model formation frameworks did not factor in entrepreneurs who were in the process of forming a business. Based on their assessment, gender, previous employment and redundancy were highlighted as having a negative impact on small business formation. In order to come to this conclusion, Mazzarol *et al.* (1997: 51) utilised and amended Bird's (1988) view of the contexts of entrepreneurial intentionality by including the links between the variables discussed in their review of the start-ups. The direction of the relationships was included. The authors present the conceptual model of organisation formation. The model focuses on small business start-up barriers and triggers. This model is not suitable for the study as it does not factor in other start-up requirements such as business plans and the like and does not take into account factors and barriers specific to fintech start-ups. Hence, our study will attempt to fill this gap.

Song *et al.* (2008: 18) performed a meta-analysis of new technology ventures and compiled a theoretical framework based on their findings. The lines linking each category indicate the fit. According to Song *et al.* (2008: 18), in the entrepreneurial team category, researchers mainly identified members' characteristics; knowledge, skills and experience; beliefs and values; and behaviours and leadership styles as factors for new technology venture success. However, the author noted that cognitive biases and the quality of the team members' experiences would also need to be considered. In the entrepreneurial opportunities category, researchers focused on opportunity dimensions, environmental traits and market features. The author noted that further research would need to consider the direct relationship between opportunity dimensions as well as internationalisation. The strategic and organisational category consisted of strategies, organisational structures, business processes and systems. However, further research on the relationship between strategies and the environmental traits need to be assessed against new technology venture performance. Financial capital, collaboration between firms and networks, intellectual property, as well as organisational characteristics, fall under the entrepreneurial resources category; however, more emphasis needs to be placed on the qualitative characteristics of resources. In **Table 1**, the researcher summarised all the start-up factors derived from the literature to assess the differences and similarities. It was noted that the leadership style,

intellectual property, experience and competitive strategy were highlighted as not having a significant impact on a start-up for some research studies (Mazzarol *et al.*, 1991; Shah & Smith, 2010; Giardino *et al.*, 2014; Santisteban & Mauricio, 2017)

Table 1 Start-up Performance Success Factors (Source: Author's own)

<b>Start-up Performance Success Factors</b>				
<b>Constituent Reference number</b>	<b>Constituents of start-up performance (Song <i>et al.</i> (2008, p.18))</b>	<b>Start-up performance success factors highlighted</b>	<b>Indicated in other references as Success factors</b>	<b>Indicated to have no significant impact on start-up success</b>
C1	1. Entrepreneurial Team	1. Members Characteristics	Baum & Locke (2004), Groenewegen & Langen (2012)	-
		2. Experience	Lasch, Le Roy & Yami (2007)	Santisteban (2017), Mazzarol <i>et al.</i> (2007, p.51)
		3. Knowledge	Shah & Smith (2010)	-
		4. Skills	Stuetzer, Goethner & Cantner (2012); Baum & Locke (2004)	-
		5. Values and Beliefs	Phan, Wong & Wang (2002); Davidsson & Wiklund (1995)	-
		6. Behaviours	-	-
		7. Leadership Style	Lasch, Le Roy & Yami (2007), Song <i>et al.</i> (2008)	Santisteban (2017)
C2	2. Entrepreneurial Resources	8. Financial Capital & Investments	Santisteban (2017), Song <i>et al.</i> (2008)	-
		9. IP	-	Shah & Smith (2010)

		<b>10. Partnerships</b>	Santisteban (2017)	-
		<b>11. Networks</b>	Bocken (2015), Littunen (2000)	-
		<b>12. Institutional characteristics</b>	Groenewegen & Langen (2012)	-
C3	<b>3. Entrepreneurial Opportunity</b>	<b>13. Environmental characteristics</b>	Littunen (2000)	-
		<b>14. Opportunity dimensions</b>	Becker, Brem & Knyphausen-Aufseß (2015), Choi & Gray (2008), Caruana, Morris & Vella (1998), Song <i>et al.</i> (2008), Venkataraman (2014)	-
		<b>15. Market characteristics</b>	Littunen (2000)	-
C4	<b>4. Strategic and Organizational Fit</b>	<b>16. Competitive strategy</b>	Zahra (1996)	Giardino, Wang & Abrahamsson (2014)
		<b>17. Structure</b>	-	-
		<b>18. Processes</b>	Gartner (2011)	-
		<b>19. Systems</b>	-	-
C5	<b>5. Innovation*</b>	<b>20. Innovation</b>	Bocken (2015), Zahra (1996), Groenewegen & Langen (2012)	

\*Factor added based on information in Bocken (2015) who indicates the importance of innovation for ICT start-ups

## 2.3 NEW VENTURE CREATION FRAMEWORKS AND MODELS

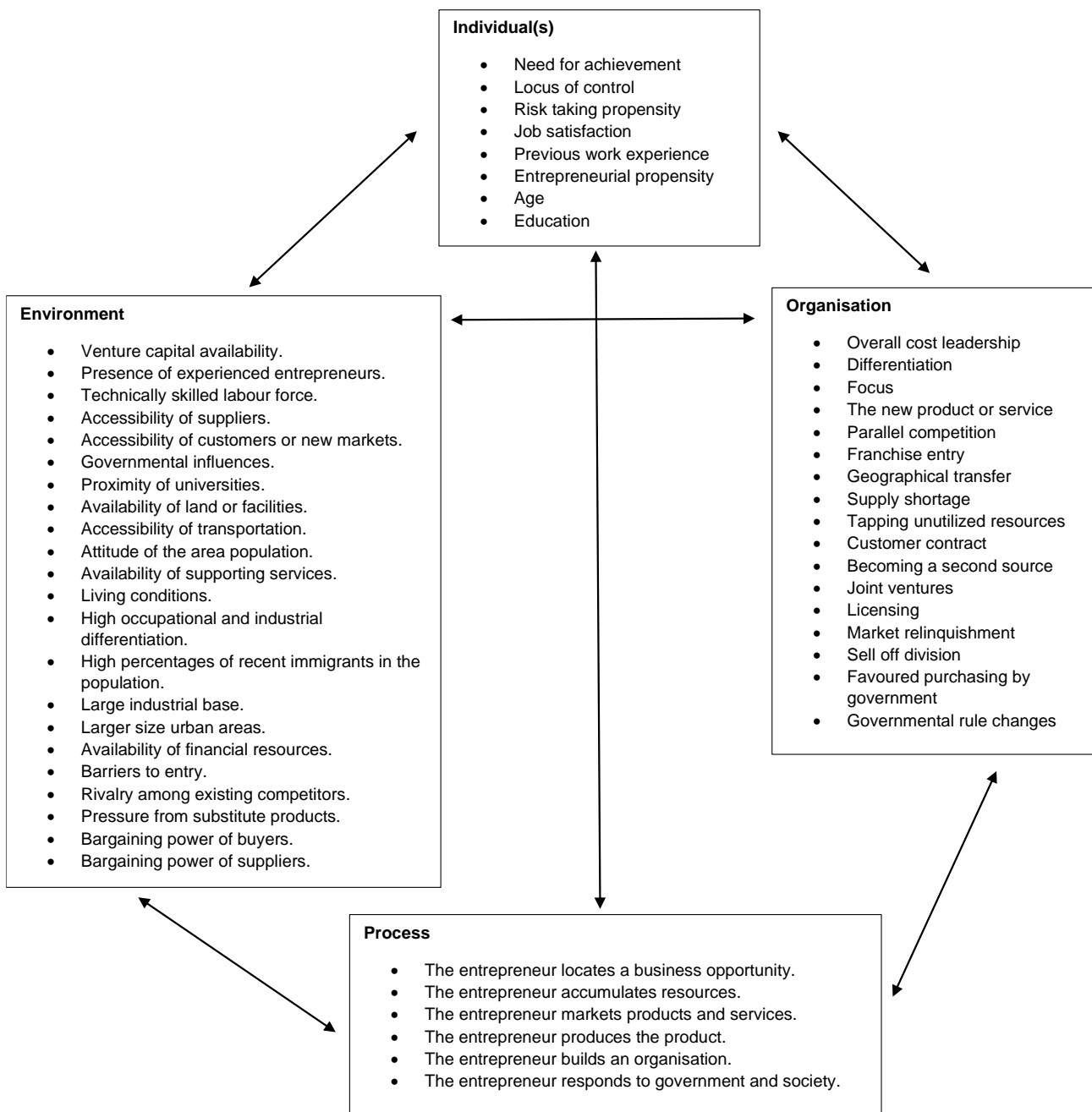
Entrepreneurship and venture creation frameworks are important for determining the elements required to start a business, start-up or new venture. This is particularly important to assist in the development of a technology entrepreneurship framework. Gartner (2011) created a conceptual framework that described new venture creation. The framework explained new venture creation focusing on four elements, namely:

- The individual(s) – the personnel in charge of starting the new entity
- The organisation – the type of entity that the individuals described above are starting
- The environment – the external factors that influence the new entity
- New venture process – the actions or steps taken by the individuals in order to start the venture

**Figure 1** includes all the variables in new venture creation. The new venture process steps that need to be taken by the entrepreneur were broken down as follows:

- locate the business opportunity
- gather resources
- market products and services
- construct the organisation, and
- respond to the state and society.

Gartner (2011) noted that the conceptual framework was produced in order to illustrate the complexity of new venture creations. Furthermore, he noted that researchers needed to consider broadening their descriptions of new ventures and to discontinue viewing entrepreneurs as a standardised population.



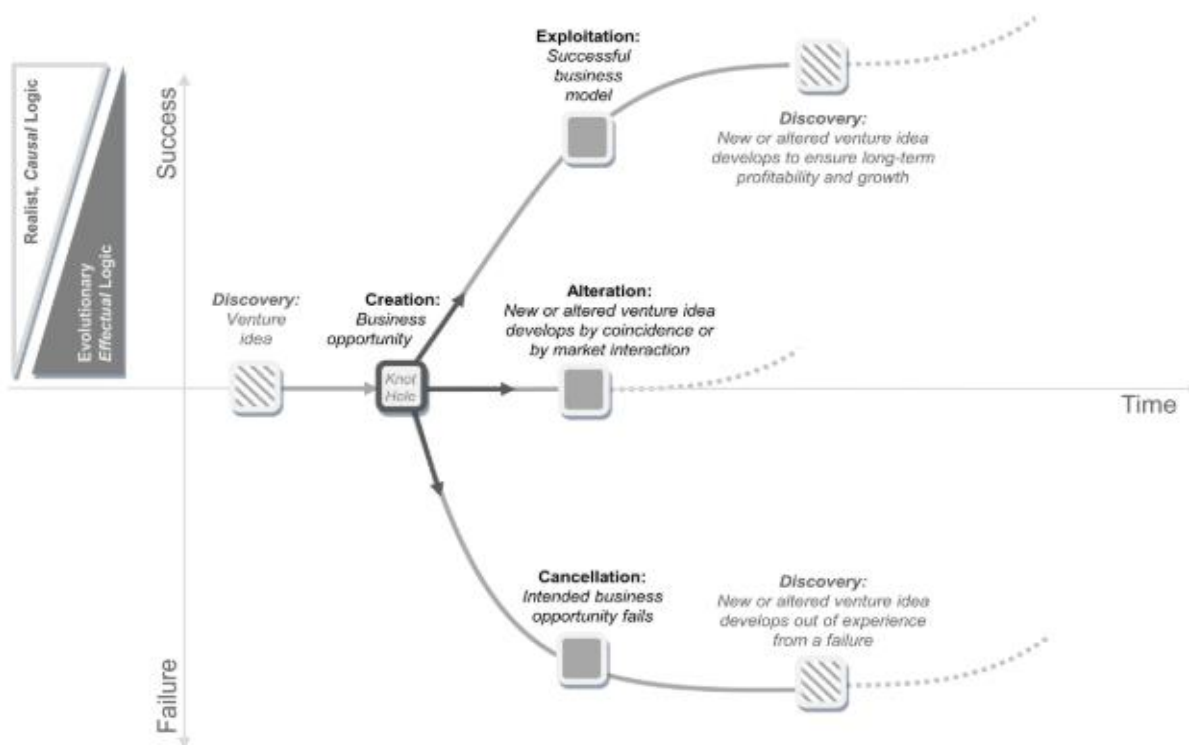
**Figure 1 Gartner Venture Creation Process (Gartner, 2011)**

According to a study conducted by Kirkley (2018), there are a number of factors that are considered important for new venture creations. The founders of the start-up should possess the necessary business acumen for their applicable industries and should have a solid understanding of their industry or market. When establishing the new venture, the first step is to identify a market-related need. The idea is then identified and thereafter the venture planning commences which includes exploring the idea itself further, identifying the target



market or customer base, investigating the market gap, assessing the scalability and market attractiveness, as well as estimating the costs associated with the start-up.

Becker, Brem and Knyphausen-Aufseß (2015) developed a conceptual framework (**Figure 2**) that focuses on the success and failure of new business ventures. The conceptual framework suggested that venture creation begins with idea formation and selection. A business plan is then created to ensure that the venture can reach its main objectives and goals. The market selection step is regarded as an important step in the venture creation process where three scenarios are possible. The first scenario is exploitation where an opportunity is explored and can be demonstrated through a business model. The second scenario is alteration where, in the process of enhancing a business idea and engaging in the market, new business ideas arise. The final scenario is cancellation where a business idea or opportunity does not materialise. These scenarios could also happen concurrently. Thereafter, the creation process commences. Once the strategy has been defined for the venture, the entrepreneur's inherent skill in advertising the product or service in the market, along with the consumers' acceptance of the product or service determines the success or downfall of the new venture creation.



**Figure 2 Venture Creation (Becker et al., 2015)**

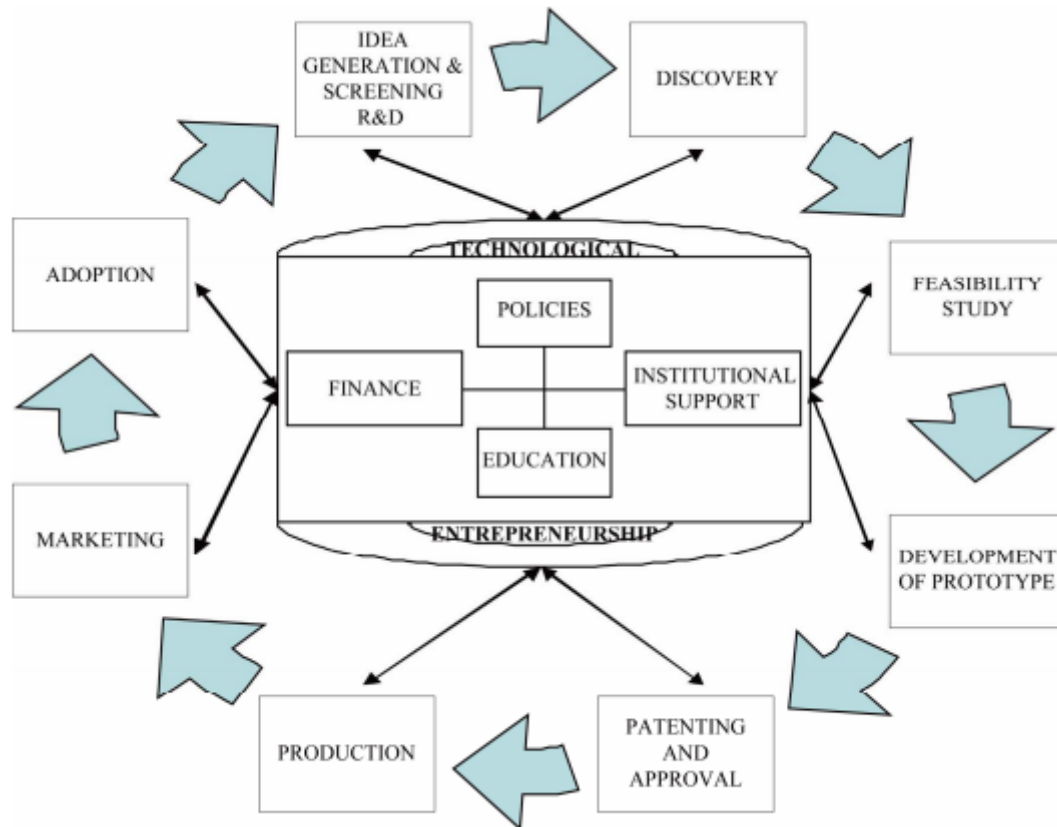
According to the conceptual framework, exploiting a business opportunity is crucial when establishing a new venture creation. Becker *et al.* (2015: 165) propose that the entrepreneurial team or the entrepreneurs themselves need to discover a gap within the market and alter the venture idea towards a promising business opportunity. The feedback from the market, the founder's ability to network and form reliable relationships, their ability to face competition within the industry, as well as institutional support are important factors in the exploitation, alteration and cancellation of the business opportunities identified. Furthermore, failed ventures can be a source of business opportunities and can be used to assess the feasibility of specific business ideas and ventures. The authors have suggested that an exercise needs to be performed to verify the legitimacy of the framework and further research on entrepreneurial failures and responses to failures needs to be performed.

Choi and Gray (2008) enhanced an existing entrepreneurial process framework (**Figure 3**) that focuses on the development of new sustainable ventures. The procedure was split into five steps commencing with identifying an opportunity and ending with a business that has been harvested. The intention of the preliminary framework was to allow sustainable entrepreneurs to use it as a guide when establishing their businesses. The authors utilised this framework to assess the entrepreneurs' background, motivation for initiating the venture and generating the business idea in the first step. Thereafter, they looked into how each entrepreneur acquired financing and assembled teams. The third step focused on the marketing, branding and sales along with enhancing the quality of their brand. Innovation was also considered an important element in this step. The fourth step focused on managing the growth and sustainability of the venture which includes managing the culture, managing the operations and controlling the finances. The final step is giving back to the community through programmes and by utilising existing strategies to expand the venture.



**Figure 3 Venture Development Process (Entrepreneurial process) (Choi & Gray, 2008)**

In comparison, Siyanbola *et al.* (2011) developed a technology entrepreneurship development framework (**Figure 4**) detailing how new ventures are created using technology innovation. The framework specifically focused on technology entrepreneurship in Nigeria. According to the authors, technology entrepreneurship creates an environment that fosters innovation. Furthermore, such entrepreneurship is driven by adequate financial institutional support and policies (Siyanbola *et al.*, 2011: 16). The framework developed commences with idea generation and screening. A feasibility study is then conducted to assess the feasibility of the idea in the market. A feasible idea is then translated into a prototype. The invention can then be patented to ensure that the invention can only be exploited by the venture that is creating it for a specified period of time. The voluntary licence or the compulsory licence option can be used in this case. The final two steps are to produce and market the product as well as assess the adoption of the invention in the market. This framework is the most suitable framework for this research as fintech falls under technology entrepreneurship. Furthermore, it highlights all the elements required for new venture creations utilising technology. The literature has highlighted the importance of creating policies that support this type of entrepreneurship. Furthermore, more needs to be done in terms of entrepreneurship training.



**Figure 4 Technology Entrepreneurship Development Framework (Siyanbola *et al.*, 2011)**

In contrast, Le Dinh, Vu and Ayayi (2018) developed a framework (**Figure 5**) that focuses on the digital entrepreneurship process called the PDEP-LL (Promoting Digital Entrepreneurship Processes through Living Labs) which was derived from the principles of Living Labs. The purpose of the framework is to guide start-ups and entrepreneurs through the digital entrepreneurship process. Living labs “act as an intermediate for innovative co-operation” (Bakici, Almirall & Wareham, 2013 as cited in Le Dinh *et al.*, 2018: 8). The initial step of the framework comprises selecting the most feasible idea that can be executed. Scanning tools are utilised to evaluate the business idea with customers. The second step, called “start-up”, involves the business initiation activities performed. The Living Lab would assist the start-up in performing business initiation activities such as

- compiling a business plan
- testing the product and/or service
- improving it through the feedback provided
- seeking additional funding opportunities and potential partnerships
- attracting investors such as banks, venture capitalists and other financial investors, and

- acquiring assistance from legal entities to assist with trademark registration as well as intellectual property rights.

The third and final step in the process involves introducing the product or service to the market for consumption. The start-ups then monitor their finances, namely sales and revenue, along with consumer adoption. This requires all start-ups to have basic business management skills (Le Dinh *et al.*, 2018). The Living labs provides support to the start-ups during this process. The PDEP-LL architecture consists of the knowledge and information layer, data services layer and business services layer which all support the steps in the digital entrepreneurship roadmap (Le Dinh *et al.*, 2018: 12). The authors have stated that the framework is theoretical and has not been applied empirically. Owing to the direct alignment of fintech to digital entrepreneurship, this framework is suitable for the objective of this research as it provides a guideline that fintech entrepreneurs can also use to establish their start-ups in the new digital era. However, it does not specify other possible steps required to establish fintech start-ups such as patenting, prototyping and adoption. In comparison, Lukosiute, Jensen and Tanev (2019) assessed the impact of incubators and accelerators on start-ups. The authors found that the workshops, courses and lectures provided were time consuming and not useful. Seed money or investment was also not being guaranteed within these programmes. Furthermore, Lukosiute *et al.* (2019) felt that incubators and accelerators were not healthy for early-stage start-ups as the business practices within incubators and accelerators often had a negative impact on start-ups.

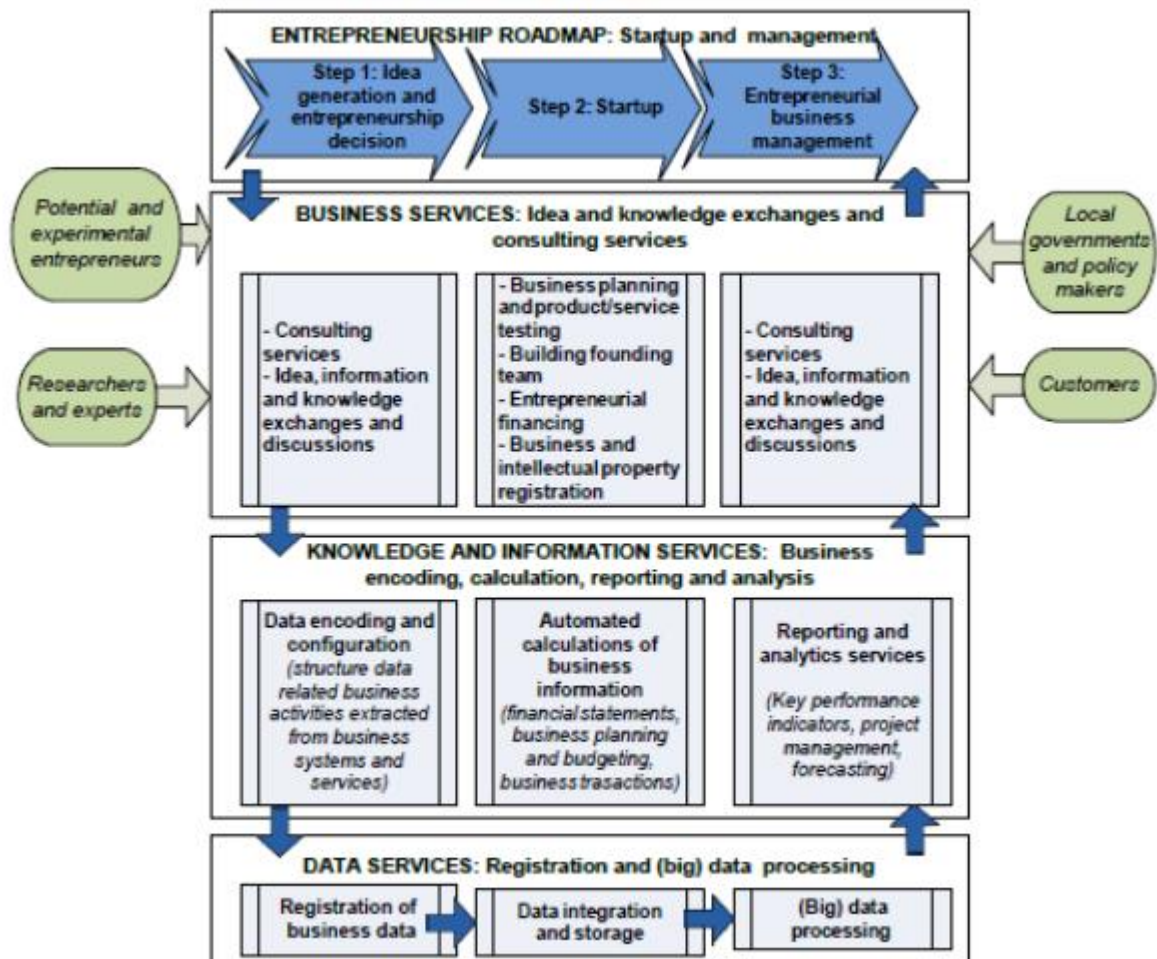


Figure 5 Living Labs Entrepreneurial Process (Le Dinh et al., 2018)

Table 2 contains a summary of all the **venture creation steps** in various literature:

Table 2 Venture Creation Steps

Authors	Venture Creation Steps
Kirkley (2018)	<ul style="list-style-type: none"> <li>Identify a market-related need.</li> <li>Identify idea</li> <li>Explore the idea itself further</li> <li>Identify the target market or customer base</li> <li>Investigate the market gap</li> <li>Assess the scalability and market attractiveness</li> <li>Estimate the costs associated with the start-up</li> </ul>
Gartner (2011)	<ul style="list-style-type: none"> <li>Locate the business opportunity</li> <li>Gather resources</li> <li>Market products and services</li> </ul>

	<ul style="list-style-type: none"> <li>• Construct the organisation</li> <li>• Respond to the state and society</li> </ul>
Becker <i>et al.</i> (2015)	<ul style="list-style-type: none"> <li>• Create and select idea</li> <li>• Explore business opportunity</li> <li>• Create business plan</li> <li>• Select market</li> <li>• Create a venture strategy</li> <li>• Commence venture creation process</li> <li>• Advertise the product or service</li> <li>• Assess customer adoption</li> </ul>
Choi & Gray (2008)	<ul style="list-style-type: none"> <li>• Recognise the opportunity</li> <li>• Assemble resources</li> <li>• Launch the venture</li> <li>• Manage the growth opportunities</li> <li>• Contribute to society by giving back</li> </ul>
Siyambola <i>et al.</i> (2011)	<ul style="list-style-type: none"> <li>• Generate and screen idea</li> <li>• Conduct a feasibility study</li> <li>• Build a prototype</li> <li>• Patent the invention</li> <li>• Produce the product</li> <li>• Market the product</li> <li>• Assess customer adoption</li> </ul>
Le Dinh, <i>et al.</i> (2018)	<ul style="list-style-type: none"> <li>• Compile a business plan</li> <li>• Test the product and/or service</li> <li>• Improve it through the feedback provided</li> <li>• Seek additional funding opportunities and potential partnerships</li> <li>• Attract investors such as banks, venture capitalists and other financial investors</li> <li>• Acquire assistance from legal entities to assist with trademark registration as well as intellectual property rights.</li> </ul>

## 2.4 FINTECH

### 2.4.1 Overview of Fintech

According to Arner, Barberis and Buckley (2015), financial technology, most popularly known as fintech, refers to financial solutions that are enabled by technology. It is seen as a combination of financial services and information technology. This definition coincides with Buckley and Webster (2016: 4-5), who describe fintech as “the delivery of financial products and services via the marriage of technological platforms and innovative business models”. Lu (2017: 273) describes fintech as the use of internet technology and invention in financial service activities. In contrast to these definitions, Gulamhuseinwala *et al.* (2015) describe the term fintech as “firms that combine technology and innovation in order to unsettle the banking industry”. The definitions above give an indication of the lack of consistency within the literature regarding the definition of fintech. Schueffel (2018) attempted to bridge this gap by assessing the intricacy of fintech and attempted to refine a definition that was drawn from multiple scholarly articles referencing the term “fintech” for a period of 40 years. Based on the findings, it was noted that a single definition of fintech does not exist and there are definitional problems in the literature. Furthermore, Schueffel (2018: 15) suggested that the definition of fintech is a financial services industry that uses technology to improve financial activities. For the purposes of this study, this definition will be applied.

Fintech has been around for decades and has been evolving over time. Arner *et al.* (2015) explored the evolution of fintech and highlighted its regulatory implications. The fintech evolution was broken down into three eras, namely, Fintech 1.0 (1866–1967), Fintech 2.0 (1967–2008) and Fintech 3.0 (2008 – present). The first fintech era was a heavily manual-based era for the financial services industry, followed by a digitalised era where incumbent banks were dominating the market and, finally, an era whereby new fintech start-ups were established that offered financial products and services directly to the consumer and the business market for consumption (Arner *et al.*, 2015). According to Lee and Shin (2018), developments in technology have enabled fintech start-ups to produce specialised and tailored financial products and services that compete with those produced by traditional banks. Jagtiani and John (2018) also suggested that some of the banking tasks have now moved from traditional banks to fintech-based shadow banks which indicates that the market share of incumbent banks in the financial services industry has shrunk quite significantly. To indicate how rapidly fintech is taking over the market share, it was noted that in 2017, “the value of the global Fintech market was 3.6 trillion USD and has also been forecasted to



reach 8.3 trillion USD by 2022” (Rizvi, Naqvi & Tanveer, 2018: 152). Fintech is currently transforming and modernising the financial industry using advanced financial technologies. According to Azarenkova, Shkodina, Samorodov, Babenko and Onischchenko (2018), the main trait that sets fintech apart is its ability to be innovative with financial products and service offerings, such as introducing

- new payment systems
- new financial derivatives and
- innovative banking systems that utilise new technology such as blockchain, cryptocurrencies, quantum computing, internet of things, cloud technologies and artificial intelligence to name a few.

These have all been designed to promote financial inclusion and change the financial landscape.

#### **2.4.2 Fintech Start-ups**

Gimpel *et al.* (2018: 247) define fintech start-ups as recently formed enterprises that provide financial services based on financial technology. These start-ups provide consumers with new innovative products and services that allow consumers to generate payments, oversee their investments, obtain insurance and increase consumer debt and equity financing (Gulamhuseinwala *et al.*, 2015a). A start-up can also be classified as a small firm that aims to perform business activities linked to technology or innovation (Rizvi *et al.*, 2018). According to Alt, Beck and Smits (2018), there has been a considerable increase in new start-ups which promises to transform the financial services industry entirely. The authors also suggest that start-ups are the beginning of the end for incumbent banks. In contrast to this, Soulé (2016) indicates that fintech start-ups do not have the power to replace incumbent banks in their entirety; however, they will shape the future landscape of the financial services industry. Incumbent banks have to focus on innovation and the implementation of their innovations on a grander scale in order to compete with the newly established start-ups. In addition, fintech start-ups are not off the hook as they also need to address the challenge of not expanding and upholding their innovation standards as they grow over time (Alt *et al.*, 2018).

Several scholars have looked at fintech start-ups/firms from many other perspectives. Gimpel *et al.* (2018) evaluated the non-functional characteristics of fintech start-ups and developed a taxonomy of these characteristics. The authors utilised a cluster analysis to

group each archetype and characteristic. The authors noted that the taxonomy should be revised in the future as the business ecosystem is constantly changing. They further suggested that future research could explore fintech start-up configuration of services. It was also noted that the literature only looked at consumer-oriented start-ups and did not shed light on business-to-business start-ups. Soriano (2018) indicated how fintech start-ups contribute to financial inclusion, noting that the issue of financial inclusion was an issue that would take a while to resolve; however, based on the author's results, fintech start-ups have the potential to resolve these issues through their digital technology. This view is consistent with several authors who assessed fintech and financial inclusion within the context of fintech lending (Kuo Chuen & Teo, 2015; Jagtiani & Lemieux, 2018). Furthermore, more research needs to be conducted on how fintech start-ups can drive higher numbers of financial inclusion and performance.

### **2.4.3 Fintech: Competition or Collaboration Opportunity for Traditional Banks?**

The topic of fintech cooperation with traditional banks has been explored extensively. In a study conducted by Schulte and Liu (2018), the authors discussed how fintech ventures that utilise the internet of things (IoT), augmented/artificial intelligence (AI) and quantum computing can threaten traditional banks. The authors believe that "new asset classes" and "technologies" will shift the way in which humans perform current business processes (Schulte & Liu, 2018: 41). Quantum computing allows billions of transactions in a data set to be processed or assessed at a single point in time and could increase computer speeds exponentially (Schulte & Liu, 2018). Fintechs that apply this could potentially process transactions faster than current incumbent banks that do not have access to this technology. According to Georgakopoulos and Jayaraman (2016: 1041), IoT is the next development in technology; this uses technological devices such as sensors and cameras. These are normally developed by different service providers for different purposes. The authors believe that IoT can help alleviate some of the issues associated with the internet by using information that was not available before. In the world of IoT, fintech forms part of the overall IoT lifecycle and is used as the funding leg of the sensor revolution. The data generated from the sensors in IoT can improve efficiencies and reduce the cost of human capital, thus allowing companies to be more profitable (Schulte & Liu, 2018). Financial institutions do not utilise the information produced from sensors and are currently missing out on some valuable insights that some fintech companies have access to. AI mimics human interactions and thoughts. Combined with the huge dataset provided by IoT sensors, it can learn more

rapidly about humans through this data than a traditional computer, as AI operates more accurately in the presence of more data. This poses a threat to banks as machine learning and robotics process automation (part of AI) can identify patterns using data and improve processes faster than the human resources employed to perform these tasks in banks (Schulte & Liu, 2018).

In comparison, Temelkov (2018) assessed whether the Fintech startups were an opportunity or threat to the current financial institutions. According to this author's findings, fintech can be both a threat and an opportunity for banks, depending on the strategic moves they make. The increase in fintech ventures has resulted in a decreased customer base for banks which has decreased their profit margins. As a result, a lot more companies are partnering with fintech start-ups. For example, the South African Bank, FNB, has partnered with a South African fintech start-up to create a platform for informal traders to interact with consumer goods firms (Bloomberg, 2018: 1). Owing to the flexibility of the technology utilised by fintechs, fintech start-ups provide more flexible and customer-centric products than banks. Furthermore, the danger lies in the growth potential of fintech start-ups in the long term and not so much the short term, as fintechs face their own challenges in the financial market, for example regulation (Temelkov, 2018).

A positive outlook on fintech's impact on traditional banks was illustrated by Li *et al.* (2017), who evaluated the impact of fintech start-ups on the share price of traditional banks. These authors used the panel data regression method to examine share price data over six years. Based on their observations, fintech has no significant impact on the returns of banks and the share price often increases when more fintech deals are made and additional funding is provided to these fintech start-ups. The authors did, however, note that the size of the fintech start-ups may have skewed the results, as they may have been too small to have a significant impact on incumbent banks. Furthermore, as stated by the authors, the "substitute and complementary effects could also potentially offset each other" (Li *et al.*, 2017: 11).

Iman (2019) assessed the readiness of a regional Indonesian bank to compete against fintech start-ups. Based on the author's assessment, it was noted that fintech start-ups can pose a potential threat to traditional banks and the threat is diverse in nature. However, it can also be a great opportunity for incumbent banks. Fintech start-ups are increasing the

competition in the financial market and, as a result, this is increasing innovation in the industry. It was further noted that incumbent banks should consider exploiting the opportunity to collaborate with fintech start-ups. These results are aligned to those of Temelkov (2018).

Furthermore, the regulatory regime has a significant influence on incumbent banks' ability to compete. As regulation favours fintech start-ups, incumbent banks will struggle to stay in business (Iman, 2018). In comparison, Coetzee (2018), who assessed the implications of fintech for the South African banking industry, specifically the retail banking space, noted that (a) all staff and regulators need to upskill themselves with technology skills, (b) physical branches will no longer be required as technology advances, (c) new competitors, specifically fintech start-ups, will enter the financial market with digital products and services, (d) a remotely based distribution strategy will be utilised, and (e) regulators will have to find ways in which to control and regulate fintech disruptors. Coetzee's (2018) study focuses on fintech in South Africa but does not place any emphasis on the entrepreneurial process for fintech companies and focuses more on their implications for banks.

Several other authors have assessed banks and fintech start-ups from a collaboration point of view. Hung and Luo (2016) utilised co-opetition theory to investigate a Taiwanese bank's willingness to collaborate with fintech start-ups. The results indicated that the banking industry was not ready for fintech. The banks and the fintech firms were also not willing to cooperate and their relationship was often complicated. Furthermore, it was noted that fintech disruptors were unlikely to emerge in Taiwan due to the complicated regulations and policies that determine the development of fintech. The authors suggest that more longitudinal research that focuses on fintech collaboration and competition with banks is required. Drasch, Schweizer and Urbach (2018) created a bank and fintech cooperation taxonomy that was broken down into thirteen dimensions. Based on the authors' results, it was noted that the taxonomy would enable future researchers to understand the financial sector more holistically. It could also be used as the foundation of future research that focuses on the dependencies between the various dimensions and characteristics highlighted in the taxonomy.

#### **2.4.4 Fintech: Third World Countries**

The emergence of fintech companies in developing countries is important as they provide services that are accessible to all and also provide the infrastructure required to promote financial inclusion (Amalia, 2016). In Indonesia, fintech has been more prominent in recent years. Indonesia is regarded as a digitally savvy country with over 132 million active internet users and well over 120 million mobile phone users (Iman, 2018: 299). Fifteen billion dollars' worth of transactions were performed through fintech ventures in 2017 alone (Iman, 2018: 299, Putri *et al.*, 2019: 349). Most of the transactions were derived from payments, lending and investment fintech ventures. The conception of the Association of Fintech in Indonesia (AFI) in 2015 contributed to this surge and it has been able to gain an estimated 30% of all Indonesian fintech users since its inception (Putri *et al.*, 2019: 348). Examples of fintech start-ups in Indonesia are "Halo Money" and "Modalku" which collaborate with incumbents to provide first class financial services to consumers (Amalia, 2016: 346).

In China, fintech ventures have been attracting the attention of investors worldwide. For example, one of the world's largest fundraising initiatives, closed by the Ant Financial Services Group, brought in an estimated four billion dollars. Fintech partnerships in China have also expanded, with one of the recent joint ventures being ZhongAn established in 2013. The partnership is between e-commerce giant Alibaba, TenCent and PingAn. From its inception, ZhongAn has been able to sell over three billion policies and has become the most prominent online insurance company in China (Pollari, 2016). In addition, ZhongAn has managed to gain approximately 400 million customers in two years without the involvement of agents (Schulte & Liu, 2018: 41). Another fintech venture partnership is the payments venture, Alipay, which has a partnership with Taobao, which is the eBay equivalent in China (Rizvi *et al.*, 2018).

Pakistan has also been labelled as an emerging market for fintech. The country has the sixth highest population in the world, of which 85% relies on cash-based transactions, leading to the financial exclusion of the majority of the population and an increased the need for alternative financing (Rizvi *et al.*, 2018: 153). The excessive costs associated with traditional financial institution infrastructure acted as a barrier for financial inclusion, as banks could only be built in the more developed areas of Pakistan (Rizvi *et al.*, 2018). Fortunately, financial services access increased from 12% in 2008 to 23% in 2015 as a result of the introduction of fintech mobile money services (Ashta, 2018: 237). However, much like any

other developing country, Pakistan is faced with its own challenges, namely, data privacy and security issues, intellectual property, talent scarcity and attraction, as well as an unstable regulatory environment (Rizvi *et al.*, 2018: 166).

African countries are also taking the lead in terms of fintech formation, adoption and expansion. In Kenya, the universally known fintech success story is that of M-Pesa which is a money transfer fintech company. M-Pesa was formed in 2007 by Safaricom to allow Kenyans to use their mobile phones to perform their day-to-day business and to perform transfer services without the exorbitant fees charged by traditional financial services (Nafukho & Muyia, 2010). Several academics have highlighted M-Pesa's success story and focused on the factors that contributed to its success (Nafukho & Muyia, 2010; Soutter, Ferguson & Neubert, 2019), the regulatory impact of M-Pesa (Anderson, 2009), as well as the reasons for its high adoption rate in Kenya (Omgie, Zo, Rho & Ciganek, 2017). However, the authors have not focused on how the formation of M-Pesa has contributed to fintech success in developing or emerging markets. In South Africa, the number of consumers adopting fintech is 82% (EY FinTech Global Network, 2019). Recently, the Commonwealth Bank of Australia acquired TYME, which is a South African fintech start-up (Schulte & Liu, 2018). A number of scholars have explored fintech in developing countries (Buckley & Webster, 2016; Koffi, 2016; Alexander *et al.*, 2017; Zalan & Toufaily, 2017; Coetzee, 2018; Didenko, 2018; Temelkov & Samonikov, 2018) but none have focused on the fintech start-up requirements process in an African context.

#### **2.4.5 Fintech Regulation**

With the shift in the financial landscape due to the accelerated growth in fintech innovation, firms are confronted with new risks and, in turn, regulators are forced to address these risks as they may have an impact on the financial stability of the economy (Jagtiani & John, 2018). To address the main risks associated with the digital financial ecosystem, such as cybersecurity risks and third-party vendor risks, new tools are being introduced and utilised (Jagtiani & John, 2018). According to Alt *et al.* (2018), regulatory technology tools intend to automate standard processes and assist in the decision-making process by making suggestions for difficult decisions. Furthermore, with the business models that arise from the introduction of fintech innovation, regulatory tasks are expected to be outsourced, which may result in an increase in digitalisation and networking in the value chains of the financial industry. The misuse of customer data has become a concern among both regulators and consumers. Hence, regulators are paying close attention to disruptive fintech innovations to

ensure that consumer data is not being misused. The fintech rules set by regulators have to provide consumer protection, maintain financial stability and provide enough rewards for fintech innovations (Jagtiani & John, 2018). Global regulators are also trying not to stifle innovation by over- or under-regulating the market. At the moment, existing traditional financial institutions have strong regulations that they have to comply with, which may not be able to accommodate the intricacies of disruptive technologies introduced by fintech companies. With that being said, fintech ventures are uncertain regarding the laws and regulations that they need to adhere to (Rizvi *et al.*, 2018).

According to Arner *et al.* (2015), regulators are trying to stay well informed about fintech innovations and they monitor the potential risks that come with the developments and innovations in the financial services industry. Several authors have also noted that regulators have to critically evaluate their decisions to intervene or to let the fintech evolution run its course before intervening (Arner *et al.*, 2015; Azarenkova *et al.*, 2018). Regulators and market participants struggle to balance the benefits and risks associated with the fintech evolution. The difficulty that comes with this balancing act is more prevalent in developing economies, such as Asia, where fintech role players are emerging at a rapid pace and are applying technologies to deliver financial services and products. To address this, a partnership between the fintech role players, regulators and traditional financial services providers would be required in order to determine how the industry's risk profile will be affected, either negatively or positively, by the new innovations (Anagnostopoulos, 2018). Some countries have attempted to address the regulation issue around fintech. For example, Bank Indonesia has released the Bank Indonesia Regulation No. 16/8/PBI/2014 concerning Amendments to Bank Indonesia Regulation No. 11/12/PBI/2009 to address cryptocurrencies (Iman, 2018: 300).

Regulatory sandboxes have also been introduced as a solution to the regulatory complexities associated with fintech. Regulatory sandboxes are testing environments created for fintech start-ups for the purpose of testing fintech products without being implicated by the regulator for non-compliance (Bromberg, Godwin & Ramsay, 2017; Zetzsche, Buckley, Barberis & Arner, 2018). Fintech start-ups also have to ensure that they have the correct safeguards in place to protect the market from the potential risks that could be introduced with their products (Fan, 2018). Countries such as Canada, United Kingdom, Malaysia, Hong Kong, Singapore, Netherlands, Japan and Switzerland have all started

implementing regulatory sandboxes since 2016 (Zetzsche *et al.*, 2018). Zetzsche *et al.* (2018) state that all regulatory sandboxes have stipulated entry criteria. For example, the entry criteria normally stipulate that the entrant must introduce an innovative financial solution and must support the financial services industry. Secondly, the regulators assess whether the product introduced is covered by existing regulation or requires a sandbox, and lastly, regulators ensure that the entrants have undergone a thorough risk assessment, evaluated the existing laws and regulations associated with their products and the industry as a whole, and have started developing their products or services. Regulatory sandboxes include licence exemptions that allow fintech companies to test their products as long as specific conditions are met. They are often managed through business incubators and innovation hubs (Bromberg *et al.*, 2017). Fan (2018) has also noted that the sandbox does not remove all the systematic risks associated with innovation and fintech disruption, however, the sandbox does provide a safe environment for fintech experiments to fail without having a significant impact on the financial stability of the economy and the customers.

#### **2.4.6 Fintech Business Models and Taxonomies**

A business model describes the ways in which a firm produces, distributes and demonstrates value. This value could be economic, cultural, social, political or any other variation (Lacasse *et al.*, 2016: 3). According to Oshodin, Molla, Karanasios and Ong (2019), the development of the business model is regarded as a need for fintech start-ups. The development of the business model also has a high dependence on entrepreneurial alertness and a viable business idea. Business models are important features in economies that encompass customer choice, transaction costs, competition and diversity between customers and suppliers. Business models are normally dictated by innovation in technology which creates an opportunity for new ideas, products and services to be introduced to the market, which may satisfy the needs of unhappy customers (Teece, 2010). Chesbrough (2010) suggests that the business model indicates the value proposition created by the technology offering; identifies the target market and revenue generation model; defines the value chain process; provides estimates on the cost structure and profitability potential; illustrates the firm's position in the value network; and articulates the competitive strategy that will be used by the firm to maintain a competitive advantage over their competitors. Several scholars have explored fintech business models over the past decade.



Lee and Shin (2018) categorised six fintech business models. The authors broke down these business models according to their value propositions, a description of how they work and the fintech start-ups using each business model. In contrast, Schmidt, Drews and Schirmer (2018a) analysed 195 fintech start-up business models to determine the role of data within these business models. Based on their analysis, they were able to present six data-driven fintech business models. These data-driven business models were, namely, data processing, information processing, data aggregation, data analytics, data distribution and data value chain. Schmidt *et al.* (2018b), in addition to the data-driven fintech models, also developed the collaborative business models for fintechs and banks. These collaborative models consisted of “Private Plugin Service model, Multiple Private Plugin Service model, Public Backend Service model, Whitelabel Add-on Service model, Private Platform Provider model, Public API Banking Provider model and Adaptive Service model” (Schmidt *et al.*, 2018b: 6). **Table 3** below provides a summarised description of each business type.

**Table 3 Summary of Fintech Business Model Types**

References	Fintech Business Models	Description
Lee and Shin (2018)	<ul style="list-style-type: none"> <li>a. Payment model</li> <li>b. Wealth model</li> <li>c. Crowdfunding model</li> <li>d. Lending model</li> <li>e. Capital market model</li> <li>f. Insurance services model</li> </ul>	<ul style="list-style-type: none"> <li>a. Fintech start-ups using this model provide payment services as value. This model is used by start-ups in the consumer and retail market as well as the corporate payment market.</li> <li>b. Provide financial advice to consumers.</li> <li>c. Empower people to invest in businesses and ideas that could benefit the wider consumer market.</li> <li>d. Allow businesses and individuals to lend among each other at lower interest rates.</li> <li>e. Focus on foreign currency transactions, trading, and risk management to name a few.</li> <li>f. Provide a platform for insurers and consumers to engage more directly with up-to-date algorithms that do not discriminate.</li> </ul>

Schmidt <i>et al.</i> (2018a)	<ul style="list-style-type: none"> <li>a. Data processing model</li> <li>b. Information processing model</li> <li>c. Data aggregation model</li> <li>d. Data analytics model</li> <li>e. Data distribution model</li> <li>f. Data value chain model</li> </ul>	<ul style="list-style-type: none"> <li>a. Fintech start-ups using this model provide the data in itself as value to their consumers. This model is used by start-ups in in the peer-to-peer and payment markets.</li> <li>b. Deliver value by establishing access to different data sources and customer-provided data, then the data is administered in order to provide the customers with information. Used by Fintech start-ups in the crowdfunding, real estate, factoring and donation market.</li> <li>c. Provide value as combined data to its customers, usually an aggregated set of data that comes with visual elements and tools. Used by fintechs that work in the accounting, finance management and order/cash market.</li> <li>d. Process and analyse data from the data provided by the customer, making recommendations to the customer regarding their financial situation. Used by fintech companies in the savings, insurance and identification market.</li> <li>e. Process and distribute customer data, focusing on the data distribution process as a key task. Used mainly by fintechs in the cryptocurrency, API banking and banking space.</li> <li>f. Provide value along the complete data value chain. Used mainly by fintech start-ups involved in lending.</li> </ul>
Schmidt <i>et al.</i> (2018b)	<ul style="list-style-type: none"> <li>a. Private plugin service model</li> <li>b. Multiple private plugin service model</li> <li>c. Public backend service model</li> <li>d. Whitelabel add-on service model</li> <li>e. Private platform provider model</li> <li>f. Public API banking provider</li> <li>g. Adaptive service provider model</li> </ul>	<ul style="list-style-type: none"> <li>a. Fintech start-ups using this model only work with one bank to provide a specific service that will enhance the bank's value proposition. Fintechs that deliver services to a single bank provide the bank with an opportunity to innovate their business processes, products and services. High reliance is placed on data from a single bank.</li> <li>b. Work with multiple banks. The value proposition of the fintech is added to that of the banks and an algorithm is often involved in service delivery. High reliance is placed on the data from the multiple banks.</li> <li>c. Provide services to external partners exclusive of banks and other fintech start-ups. These start-ups develop a product that uses "OCR (optical character recognition), semantic analysis of documents, pre-processing of photos, real-time processing and integration possibilities" (Schmidt <i>et al.</i>, 2018b).</li> <li>d. Develop their own products and add the services of external parties as an additional service to their product offering. Both brands are also visible to the customer as standalone brands, even though they are collaborating.</li> <li>e. In terms of this model Fintech start-ups utilise the services of external parties and provide a platform on which these services can be rendered, e.g. Amazon Pay.</li> <li>f. Utilise application programming interface technology and a network of banks and fintechs to deliver services. The aim is to integrate systems seamlessly.</li> <li>g. Provide services in conjunction with a single bank to a specific target audience at lower prices. This is usually used to promote financial inclusion.</li> </ul>

Schmidt *et al.* (2018a) highlight that more in-depth analysis would need to be performed regarding the reasons behind bank and fintech collaboration. They also recommend exploring the technical element of fintech and bank collaboration, including an integration layer. Schmidt *et al.* (2018b) emphasise that the business model types were derived from a small subset of fintechs and therefore recommended an extension of the sample when further research is conducted. Furthermore, the authors recommended exploring the current models of collaboration between fintech companies and banks in the financial system landscape. No recommendations or gaps were highlighted by Lee and Shin (2018).

#### **2.4.7 Fintech Challenges**

According to Nakashima (2018), fintech is something that is likely to alter the way in which finance operates. It is a technology that can contribute to the financial landscape and produce innovative financial services. However, fintech start-ups with innovative services and products that could drastically transform the current financial landscape are often met with a cold reception. The market is only ready to welcome products and services that improve or adhere to the interests of the existing business of traditional financial institutions. In addition, utilising fintech or IoT technologies to enhance current functionality will not disrupt the market in terms of innovation if it does not go beyond the visualisation of data. Jagtiani and John (2018) assessed the impact of fintech on consumers and the regulatory responses. It was noted that the number of job losses could potentially increase with the introduction of advanced technology such as machine learning. Advances in technology will also force employees to acquire novel skills. The gap that would need to be explored based on the authors' observation would be to assess the impact of expanding credit accessibility through fintech platforms and to assess whether the expansion would lead to customers being over-leveraged.

Data security and consumer trust are also major concerns or challenges that come with fintech. Stewart and Jürjens (2018) assessed fintech innovation adoption in Germany using the technology acceptance model (TAM). Three issues were highlighted as being significant in the adoption of fintech in Germany; namely, "poor user interface designs, data security issues and low consumer trust" (Stewart & Jürjens, 2018: 122). There also seems to be a direct relationship between consumer trust and data security issues. These authors recommend focusing on other factors using the unified theory of acceptance and use of technology (UTAUT) model for future work. In comparison, Ryu (2018) used the theory of

reasoned action (TRA) framework to assess consumers' willingness to continue to utilise fintech in Korea. Legal, security, operational and financial risks were all highlighted as being significant risks affecting consumers' willingness to use fintech. Quantitative analysis of the findings of this study would need to be conducted to further enhance or validate the findings. Other studies looking at the adoption of fintech have mainly discussed the reasons behind consumer adoption, looking at the reasons from a quantitative perspective. The TAM has often been applied to assess these factors (Chuang, Liu & Kao, 2016; Hu, Ding, Li & Chen, 2019).

Lee and Shin (2018) highlight the technical and managerial challenges faced by entrepreneurs in the fintech sector. These challenges are linked to investment issues, security and privacy issues, customer retention and management issues, regulatory issues, integration issues and risk management and compliance issues. The increased number of fintech products in the market has made it difficult to choose which products are worth investing in, thus leading to an investment management challenge for not only external investors but for banks themselves. There is often a large supply of fintech products which gives customers a plethora of options to choose from, frequently leading to customer management challenges, as customer retention becomes more difficult if the customers' needs are not met by the fintech product and/or service (Lee & Shin, 2018).

Regulation, as mentioned before, is also a significant challenge. Depending on the financial service being provided, fintech start-ups have to adhere to financial regulatory requirements that often hinder the innovation process. The new technologies introduced by fintech start-ups are often difficult to integrate with legacy systems, resulting in a lack of collaboration and partnerships between banks and fintech start-ups because the business processes and systems in banks are mismatched with the new technology and business processes introduced by the start-ups. With the introduction of fintech, security and privacy issues often arise as fintech products and services are often data driven, often leading to a breach of data if not managed appropriately by start-ups. Furthermore, standard risks may arise from the new financial technology, hence risk management also becomes a challenge (Lee & Shin, 2018).

#### **2.4.8 Fintech Frameworks**

Gai, Qiu and Sun (2018) developed and proposed a data-driven fintech framework (DF2), as shown in **Figure 6**. Based on a detailed survey, they found that fintech is mainly related

to data. According to the framework, “efficiency”, “accuracy”, “energy” as well as “security and privacy” are driven by data usage (Gai *et al.*, 2018: 270). The data in fintech is either used to provide financial data to consumers or as a tool to assist financial service institutions to enhance their current business models by enhancing their current service offerings or creating new ones altogether. The techniques driven by data often assist financial service institutions with market trend predictions, which often give rise to problems. When identified, these problems lead to fintech product ideas that must consider deployment platforms such as cloud computing or mobile computing. The efficiency domain in the framework focuses on how efficiently the data has been processed, for example artificial intelligence. The accuracy domain focuses on the output of the data that has been processed, while the energy domain may be regarded as energy-saving techniques to ensure “green finance”. Finally, the security and privacy domain focuses on protecting consumer financial data and using the data to protect the system (Gai *et al.*, 2018: 270). The authors propose a number of recommendations to enhance the data-driven fintech framework in the future, namely:

- designing optimisation algorithms in order to speed up the efficiency of big data processing
- the development of fintech hardware to handle big data processing
- sharpening data algorithms to improve accuracy
- recommending energy-centric algorithms, and
- strengthening the protection of data throughout the security lifecycle.

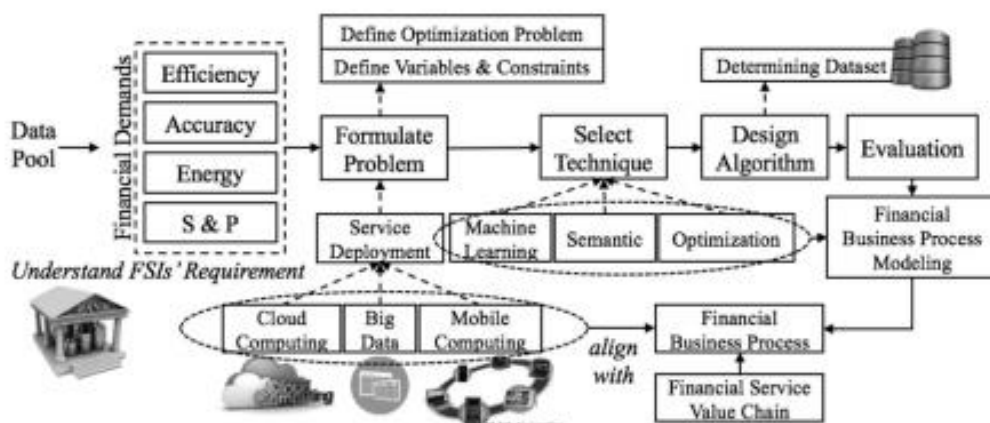


Figure 6 DF2 Fintech Framework (Gai *et al.*, 2018)

The DF2 framework provides sufficient detail on the way in which fintech is derived; however, it does not provide guidance on how to sustain a fintech start-up, therefore additional information would need to be considered. In addition, the framework is mainly

technical and functionally focused and does not take into consideration the non-functional characteristics required to run a fintech start-up.

Zavolokina *et al.* (2016) developed a conceptual framework for fintech, as shown in **Figure 7**. Based on the authors' findings, it was noted that fintech is made up of three components namely, inputs, mechanisms and outputs. Firstly, the inputs consist of "technology, organisation and money flow" (Zavolokina *et al.*, 2016: 9). Secondly, the mechanisms are to "create, improve or change financial organisations; use technology in finance; create competition and disrupt the market" (Zavolokina *et al.*, 2016: 9). Thirdly, the general outputs are often the creation of new business services, products and/or services as well as business model changes/improvements. The outputs of the conceptual framework are further mentioned by Gimpel *et al.* (2018: 247); however, the authors did not apply the full conceptual framework in their assessment of the fintech taxonomy. Riasanow, Flötgen, Setzke, Böhm and Krcmar (2018 cited in Zavolokina *et al.*, 2016) discuss the mechanisms required to produce fintech outputs as well as the outputs themselves, but did not highlight the significance of the inputs; hence, they also did not apply the full conceptual framework to assess the generic ecosystem and innovation patterns within the digital financial industry.

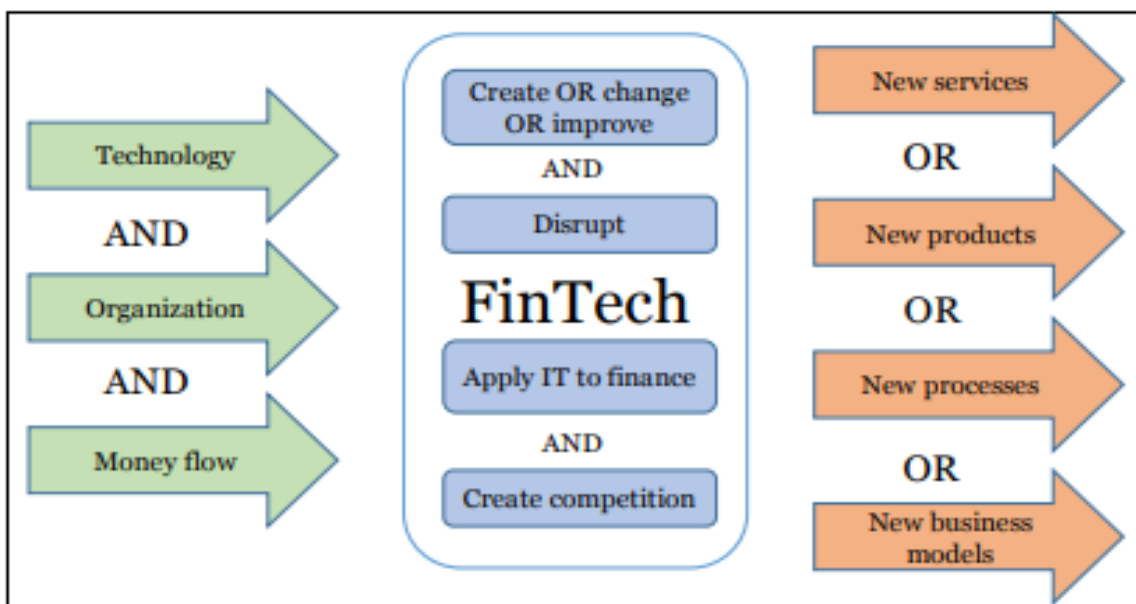


Figure 7 Conceptual Framework Fintech (Zavolokina *et al.*, 2016)

## 2.5 PROPOSED CONCEPTUAL FRAMEWORK

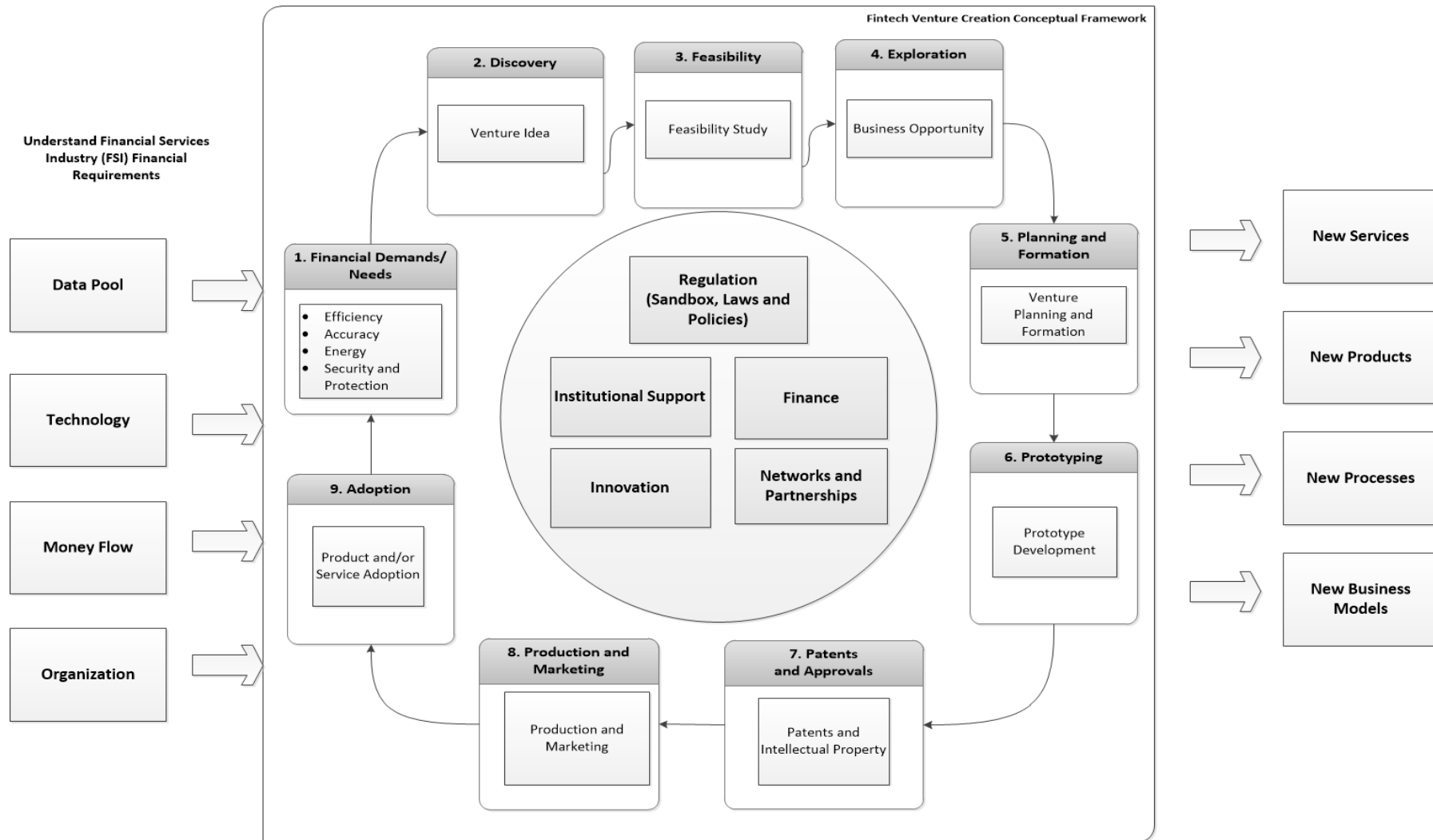


Figure 8 Proposed Fintech Conceptual Framework

The variables of the venture creation frameworks and existing fintech frameworks, along with the supporting literature, were used as the foundation for the creation of the conceptual framework. Based on the assessment of the literature, the researcher proposes the ***Fintech venture creation conceptual framework (Figure 8)*** as the foundation of this research. This framework is an extension of the framework developed by Siyanbola *et al.* (2011) which was adjusted to incorporate additional elements required for financial technology start-ups based on the information extracted from past and current literature on venture creation, technology entrepreneurship and financial technology. The researcher identified these to be a gap in the framework. Below is an explanation of each construct included in the framework.

### 2.5.1 Inputs

The inputs of the conceptual framework were derived from Zavolokina *et al.*'s (2016) fintech conceptual framework. According to the authors, money flow, technology and organisation are combined inputs that feed into the fintech process in order to create, change or improve current financial processes and procedures. Fintech can also “disrupt the financial market, create competition or apply IT to finance” (Zavolokina *et al.*, 2016: 9).

### 2.5.2 Financial Demands/Needs

The ***financial demands*** construct in the framework were extracted from Gai *et al.*'s (2018) data-driven fintech framework (DF2) which highlights the common financial demands which can then be translated into fintech products or services. These are based on information extracted from the data pool. The financial demands normally consist of

- **efficiency** – focuses on the demand for efficient data processing, e.g. artificial intelligence
- **accuracy** – focuses on the demand for accurate information and the accurate output of data being processed
- **energy** – focuses on the demand for energy-saving techniques to ensure “green finance”, and
- **security and privacy** – focus on the demand to protect consumer financial data and utilising the data to protect the system.

An understanding of the financial demands and needs of the market assists in understanding the products and services required in the market. This can provide the entrepreneur with adequate context regarding the financial market.



### 2.5.3 Discovery

The **discovery** construct highlights the importance of discovering or identifying a new venture idea. According to Becker *et al.* (2015), the entrepreneurial team, or the entrepreneurs themselves, need to discover a gap in the market and alter the venture idea towards a promising business opportunity. These business opportunities could develop from a former failed business venture idea, by coincidence, or through market interaction and existing venture ideas. Several scholars have also highlighted this as being a significant step forward in the new venture creation process (Caruana *et al.*, 1998; Choi & Gray, 2008, Siyanbola *et al.*, 2011; Becker *et al.*, 2015; Le Dinh *et al.*, 2018).

### 2.5.4 Feasibility Study

The **feasibility study** construct was derived from the technology entrepreneurship development framework developed by Siyanbola *et al.* (2011). According to these authors, a feasibility study is an assessment of the viability of a potential project or idea from a technical, commercial and economic perspective. Furthermore, a feasibility study

- helps with resource identification, selection and acquisition
- assists in investment decision making
- assists in structuring the breakdown of tasks
- assists with the management of scope creep
- assists in securing the relevant licences and governmental support
- can be utilised for audits
- enables collaboration and sponsorships, and
- assists with the development of an implementation plan and work plan.

### 2.5.5 Exploration

The **exploration** construct indicates the importance of exploring a business idea and translating it into a business opportunity. This step can only commence once the feasibility of the idea has been explored thoroughly. As mentioned before by Becker *et al.* (2015), such an idea can be altered to become a business opportunity. This has been validated by several other authors (Caruana *et al.*, 1998; Choi & Gray, 2008; Song *et al.*, 2008; Gartner, 2011; Siyanbola *et al.*, 2011; Venkataraman, 2014).

### 2.5.6 Planning and Formation

The **planning and formation** construct was derived from the venture planning tasks discussed by Kirkley (2018), who indicates some of the important planning tasks. Venture planning tasks consist of

- exploring the idea itself further
- identifying the target market or customer base
- investigating the market gap
- assessing the scalability and market attractiveness, and
- estimating the costs associated with the start-up.

An important element that was not mentioned was the significance of compiling the business plan as part of venture planning. The business plan is required to ensure that the venture is planned well to avoid venture failure (Becker *et al.*, 2015; Le Dinh *et al.*, 2018). Hence, the researcher incorporated it as an important step in new venture planning.

### 2.5.7 Prototyping

The **prototyping** construct was derived from the technology entrepreneurship development framework developed by Siyanbola *et al.* (2011). According to Siyanbola *et al.* (2011: 17), prototyping is pivotal to driving innovation in entrepreneurship that involves technology. During this phase, the idea is translated into a useable product or process, thereafter its feasibility is analysed. Gai *et al.* (2018) outlined the workflow tasks associated with the creation of a fintech product or service. The workflow tasks consist of

- problem formulation
- deployment model selection, e.g. cloud, mobile computing and/or big data
- technique selection, e.g. machine learning, semantic and/or optimisation
- algorithm design
- evaluation
- financial services modelling
- financial services value chain, and
- financial services business processes.

An additional step, the **business model selection** step, is required, as the correct business model will guide the type of fintech product or service formulated. As stated by Chesbrough (2010), the business model indicates the value proposition created by the technology offering; identifies the target market and revenue generation model; defines the value chain process; provides estimates on the cost structure and profitability potential; illustrates the

firm's position in the value network; and articulates the competitive strategy that will be used by the firm to maintain a competitive advantage over its competitors. The fintech business models, as illustrated by Lee and Shin (2018), can be used as the fintech business models in the framework that will be formulated in this study.

### **2.5.8 Patents and Approvals**

The **patents and approvals** construct was derived from the technology entrepreneurship development framework developed by Siyanbola *et al.* (2011). This is not a compulsory construct; if the entrepreneur who discovers the idea wants to prevent other entrepreneurs from using the idea or the product produced by the idea, he or she may opt to obtain licences that prevent others from using the idea or product commercially; however, it does not have a significant impact on the venture success (Shah & Smith, 2010; Siyanbola *et al.*, 2011).

### **2.5.9 Production and Marketing**

According to Siyanbola *et al.* (2011), when all the steps preceding this step have been completed, a full value chain production and marketing process has been followed. This step is also mentioned by Gartner (2011), Kirkley (2018) and Becker *et al.* (2015).

### **2.5.9 Adoption**

The **adoption** construct was derived from the technology entrepreneurship development framework developed by Siyanbola *et al.* (2011). According to these authors, once the product has been introduced to the market, the competition plays a role in the product's survival. Authors have explored fintech adoption in various studies and have highlighted the significance of particular risks. These risks include legal, security and operational risks (Lee & Shin, 2018; Ryu, 2018) which hinder adoption, as well as substandard user interfaces, data security issues and low levels of trust from the consumers (Stewart & Jürjens, 2018). Hence, the researcher needs to assess adoption to ensure that the risks are not realised.

### **2.5.10 Outputs**

The general outputs that are produced by the fintech venture creation process are new products, new services, new business models and new processes (Zavolokina *et al.*, 2016; Gimpel *et al.*, 2018; Riasanow *et al.*, 2018).

### 2.5.11 Regulation, Innovation, Institutional Support, Finance, Networks and Partnerships

There are particular elements that can lead to the success or failure of a new venture, irrespective of whether it is a fintech venture or not. The importance of considering regulation has been noted as a factor that could lead to the failure or success of any new venture (Siyانبola *et al.*, 2011; Arner *et al.*, 2015; Bromberg *et al.*, 2017; Alt *et al.*, 2018; Fan, 2018; Jagtiani & John, 2018; Rizvi, *et al.*, 2018). Hence, the researcher has included it as a construct in the fintech conceptual framework. Central to the framework is the construct of innovation, which has been highlighted by several scholars as being a contributor to start-up performance (Zahra, 1996; Groenewegen & Langen, 2012; Bocken, 2015). In addition, finance and/or financial services, as stated in the definition of fintech itself by several authors (Arner *et al.*, 2015; Gulamhuseinwala *et al.*, 2015; Lu, 2017; Schueffel, 2018), is at the core of all fintech ventures. Without finance, there is no financial technology, aka fintech. Hence, the researcher has incorporated this in the conceptual framework. Further, networks and partnerships have been suggested as an element to encourage collaboration between incumbent banks and new fintech start-ups, therefore it was included in the framework to highlight its significance (Littunen, 2000; Bocken, 2015; Santisteban & Mauricio, 2017). Institutional support, for example support from government, is also important for the success of new fintech ventures (Siyانبola *et al.*, 2011).

**Table 4** contains a summary of the **fintech venture creation conceptual framework** constructs:

**Table 4 Construct Summary**

<b>Conceptual Framework Constructs</b>	<b>Cited by</b>
Inputs (technology, money flow and organisation)	Zavolokina <i>et al.</i> (2016)
Financial demands (efficiency, accuracy, energy, security and protection)	Gai <i>et al.</i> (2018)
Discovery (venture Idea)	Caruana <i>et al.</i> (1998); Le Dinh <i>et al.</i> (2018); Choi & Gray (2008), Siyanbola <i>et al.</i> (2011); Becker <i>et al.</i> (2015)
Feasibility (feasibility study)	Siyانبola <i>et al.</i> (2011)

Exploration (business opportunity)	Becker <i>et al.</i> (2015); Choi & Gray (2008); Caruana <i>et al.</i> (1998); Song <i>et al.</i> (2008); Venkataraman (2014); Siyanbola <i>et al.</i> (2011)
Venture planning tasks (idea exploration, business planning*, target market identification, scalability assessment, market gap analysis, cost estimation, market attractiveness)	<u>Venture planning tasks</u> Kirkley (2018) <u>Business plan</u> Le Dinh <i>et al.</i> (2018); Becke <i>et al.</i> (2015)
Prototyping	Siyanbola <i>et al.</i> (2011); Gai <i>et al.</i> (2018)
Patents and Approvals	Shah & Smith (2010); Siyanbola <i>et al.</i> (2011)
Production and Marketing	Siyanbola <i>et al.</i> (2011); Gartner (2011); Kirkley (2018) & Becker <i>et al.</i> (2015)
Adoption	Siyanbola <i>et al.</i> (2011); Rye (2018); Lee & Shin (2018)
Outputs (new processes, products, business models and services)	Zavolokina <i>et al.</i> (2016)
Regulation (sandbox, laws and policies)	Arner <i>et al.</i> (2015); Alt <i>et al.</i> (2018); Jagtiani & John (2018); Rizvi <i>et al.</i> (2018); Bromberg <i>et al.</i> (2017); Fan (2018); Siyanbola <i>et al.</i> (2011)
Innovation	Bocken (2015); Zahra (1996); Groenewegen & Langen (2012).
Finance	Arner <i>et al.</i> (2015); Lu (2017); Schueffel (2018); Gulamhuseinwala <i>et al.</i> (2015)
Networks and partnerships	Bocken (2015); Littunen (2000); Santisteban & Mauricio (2017)

## 2.6 CONCLUSION

Fintech research is still in its infancy and little information is available regarding fintech start-ups and fintech creation. In this chapter, the researcher attempted to explore the information currently available on fintech and new venture creations. Furthermore, the researcher assessed technology entrepreneurship to get a basic understanding of this entrepreneurship type and its correlation to fintech. The critical success factors of start-ups and the factors that contribute to start-up failure were explored. Existing frameworks and literature were used as the building blocks for the proposed fintech conceptual framework. The conceptual

framework was compiled to incorporate all the important elements to establish and sustain a fintech start-up.

### **3 METHODOLOGY**

#### **3.1 INTRODUCTION**

This chapter on the research methodology outlines the research design on which this study was based. A research design is employed by the researcher to address the research questions and objectives of the study. A justification for the research methods used is provided in order to demonstrate the appropriateness of the methods based on the research topic at hand. To clearly illustrate the methodology used, this study applied the research onion developed by Saunders, Lewis, Thornhill and Bristow (2015). By following the onion approach, this chapter is divided into six subsections, namely, the research philosophy, research approach, methodological approach, research design/strategy, data collection, and data analysis. The research philosophy will now be discussed.

#### **3.2 RESEARCH PHILOSOPHY**

An interpretivist paradigm is “conceptualized as having a relativist ontology with a subjectivist epistemology and is aligned with postmodern thought” (Levers, 2013: 3). Antwi and Kasim (2015) suggest that an interpretivist paradigm seeks to comprehend the world and society through the eyes of the individuals who live in it and their experiences. This paradigm applies methodologies that focus less on measurement and more on meaning through interviews, focus groups and observations – methods which are often subjective. Researchers with an interpretive philosophy assume that reality is perceived through “social constructions such as language, consciousness and shared meanings” (Myers & Avison, 2002: 244). The key idea of interpretivism is to work within the biased meanings that might exist in a social environment (Goldkhul, 2012). The focus is on recognising the existence of the biased meanings, comprehending the meanings, and restructuring the meanings without misrepresenting them in order to use them in developing a theory (Goldkhul, 2012). Interpretivists believe that social actors’ and individuals’ interpretations of reality shape reality. Furthermore, people’s backgrounds and experiences shape the construction of reality through social environments and engagements. Hence, interpretivists do not believe in a single truth like their postpositivist counterparts. Interpretivists also prefer to engage in dialogue with their subject matter in social settings. Interpretivist data stems from the qualitative data gathered which is used to attain more insights and descriptions of social constructs. Furthermore, interpretivists prefer studies that uncover the true meaning of social phenomena (Wahyuni, 2012; Polenis, 2015). As Packard (2017: 536) asserts, interpretivists

believe that “knowledge can be derived from exogenous and endogenous sources”. Interpretivist approaches place emphasis on the intentions of a human being as one of the main drivers of behaviour. Some causal factors also influence human behaviour. Packard (2017) argues further that interpretivism is a suitable paradigm for research that explores entrepreneurship.

According to Orlikowski and Baroudi (1990), interpretivist researchers aim to understand how individuals in society come up with their own realities and attach meanings to them. Furthermore, the interpretivist researcher aims to assess how these meanings influence the actions and behaviours of individuals. These meanings demonstrate the individual’s state of mind and can be linked to his or her behaviour. The concept of reality is proclaimed to be a social product and is incapable of being understood without the social actors that make up reality. Walsham (1995: 77) agrees with Orlikowski and Baroudi’s (1990) interpretation of interpretivist research and asserts that “interpretive methods of research begin from the position that our knowledge of reality, including the domain of human action, is a social construction by human actors”. The interpretivist paradigm applies to this study as the researcher was attempting to understand the fintech start-ups established by a specific group of individuals (technology entrepreneurs). The information derived from this specific group of individuals (technology entrepreneurs) could also be assessed or used as a guideline by another group of individuals (inexperienced technology entrepreneurs).

### **3.3 RESEARCH APPROACH**

There are two standard approaches to reasoning, namely, inductive reasoning and deductive reasoning. Both approaches assist in the attainment of knowledge that is currently not in existence. Inductive reasoning is most commonly used when developing a new theory from a dataset (Hyde, 2000; Fook, 2002). This reasoning approach commences with the observation of specific occurrences or subject matter; then generalisations are established regarding the phenomenon at hand. On the other hand, deductive reasoning is used to test theory that has already been developed (Hyde, 2000; Fook, 2002). Existing theory is assessed against specific instances to see whether it is applicable in those instances. Furthermore, deductive reasoning often involves the use of a pre-existing framework. In comparison, Birley and Ali (1999) suggest that a deductive approach is used as the basis for hypothesis development, informing the decisions made regarding the variables and



constructs, as well as the measures that researchers can use. With this type of approach, the researcher creates a theoretical framework and then proceeds to test it.

Gregory and Muntermann (2011) state that the main trait of deductive theorising is that deductive reasoning is used to develop theory while inductive reasoning is used to elaborate on theory. Furthermore, deductive theorising begins with abduction, then deduction follows thereafter. Induction, deduction and abduction are all important factors in deductive theorising. Deduction along with theoretical grounding are regarded as critical when developing theory. Inductive theorising commences with abduction and then induction follows thereafter. The difference between inductive and deductive theorising is that the former combines induction and empirical grounding when constructing theory. Furthermore, abduction is the process of guessing the conclusion based on most of the information provided, despite not having all the information on the phenomenon. When research is developed using existing theory, such as reading academic literature, and the research question aims to test the theory, a deductive approach is used (Mark, Lewis & Thornhill, 2010). Hence, for the purposes of this research paper which focuses on fintech start-ups and the development of a conceptual framework using existing academic literature, a deductive approach was used.

### **3.4 METHODOLOGICAL APPROACH**

Qualitative research involves the elicitation and utilisation of qualitative data that is derived from interviews, documentation and observations in order to gain an understanding of social phenomena (Myers & Avison, 2002; Kaplan & Maxwell, 2005). Antwi and Kasim (2015) view qualitative research as a research approach that is applied to elaborate on what is seen. This can also sometimes be used to formulate new theories and hypotheses. Furthermore, it has been highlighted that qualitative research is useful for uncovering information on a topic or phenomenon that has not been explored thoroughly, or when one would like to learn more about the topic or phenomenon. The advantage of using this type of research method is that it helps the researcher understand the different experiences and perspectives of people. It is also a great method for uncovering human choices and behaviour (Antwi & Kasim, 2015). Conboy, Fitzgerald and Mathiassen (2012) highlighted some of the motivations and challenges in qualitative research in the field of Information Systems. They noted that scholars have questioned the relevance of qualitative research in contributing to

theory. Novice qualitative researchers are also unaware of the importance of generalisation in their respective research studies. These authors suggest that more needs to be done to investigate the data analysis methods used in qualitative research and how the data analysis is conducted. Kaplan and Maxwell (2005: 30) suggest that the main aim of qualitative research is to comprehend the problems that exist by examining the views and actions of the individuals experiencing the problems. In addition, the authors suggest that this is possible in natural settings. The main data utilised in qualitative research is words or narratives as opposed to the numbers used in quantitative research. Accordingly, for the purposes of the study at hand, a qualitative methodological approach was deemed appropriate because the study was attempting to extract information directly from fintech start-up founders and engage with them on their experiences, challenges and the processes they have had to follow to establish and sustain a successful fintech start-up in South Africa.

### **3.5 RESEARCH DESIGN/STRATEGY**

The main research question that the study aims to address is as follows:

***RQ1:** How do technology entrepreneurs establish and sustain successful fintech start-ups in South Africa?*

To address the research question stated above, the research design chosen for the purpose of this study was a survey-based research design. According to Hofstee (2013), with a survey-based research design, you are attempting to elicit information from a small group of individuals who are seen to possess the information required, who are willing to provide the information required and who are representatives of a larger group. Surveys can come in the form of unstructured in-depth interviews or structured questionnaires. Gable (1994) states that a survey-based design is used to uncover relationships that are common across organisations or individuals and can provide insights into the subject matter of interest. This is achieved by studying a specific group of organisations or individuals. The downfall of this type of research approach is that it retrieves “point-in-time” data and may not provide insights on the actual meaning of the data. Julien (2008) suggests that a survey research design is a combination of methodologies that is used to elicit data from people, firms and subject matter in a systemic way.

The main methods used include online and physical questionnaires as well as interviews, observations and focus groups. As mentioned by Ponto (2015), this research design provides flexibility as it allows the researcher to use different methods to find participants. It also allows the researcher to collect data using several research instruments. This research design type can use qualitative research methods (e.g. using open-ended questionnaires) or quantitative research methods (e.g. questionnaires with ratings attached to each question) or a mixed methods strategy. There is often a misconception that the survey method is limited to quantitative research; however, according to Julien (2008), it can be used in mixed methods, quantitative and qualitative studies. The data that is received using survey methods often comes in the form of text or narratives taken from the responses given in interviews or the comments in questionnaires. The research design type suitable for this study is thus a survey, as the researcher was attempting to retrieve information from fintech start-up founders on the factors that relate to the establishment and sustainment of fintech start-ups. The researcher also attempted to assess the commonalities between the different fintech start-ups which contribute to the development of the fintech conceptual framework.

### **3.6 DATA COLLECTION**

For the purpose of addressing the research objectives, the researcher collected data using semi-structured interviews. The researcher aimed to use this data collection method because they wanted to derive concepts from the data collected that could later be used to develop the conceptual framework.

#### **3.6.1 Data Collection Instruments**

Based on the data collection method, the data collection instrument that was used to address the objectives stated was semi-structured interviews.

##### **3.6.1.1 Semi-structured interviews**

Gill, Stewart, Treasure and Chadwick (2008) highlighted three categories of interviews, namely:

- structured interviews
- semi-structured interviews, and
- unstructured interviews.

Structured interviews are conducted by using a list of predetermined questions; hence, follow-up questions cannot be asked to get more information out of the participants or to elaborate on a specific point. In contrast, the unstructured interview is a free-flowing interview that begins with a basic question and continues based on the response given to the initial interview question asked. According to Gill, Stewart, Treasure and Chadwick (2008), this type of interview is not advisable if you are pressed for time. On the other hand, semi-structured interviews are based on a predetermined list of questions that give direction to the interview and provide the interviewer with the flexibility to follow up on specific items. In comparison, Clifford, French and Valentine (2010) suggest that a semi-structured interview is a dialogue where the interviewer tries to extract information from another individual by asking a set of questions. A list of predetermined questions is compiled by the interviewer prior to the interview, however, the interviewee is able to raise additional issues that they feel are relevant to the topic. In this way, additional insights can be obtained from the interviewee. This method is flexible in that it can be used in conjunction with other data collection methods, and an informal tone is used.

Qu and Dumay (2011) noted that the semi-structured interview comprises pre-set questioning that is directed using specific themes. The semi-structured interview allows the researcher to draw intricate responses from the interviewee. By utilising this form of data collection method, the researcher will be able to guide the interview process and ensure that the interview is focused on the research topic and any additional matters that the researcher would like to tackle. The interview guide developed for the purpose of guiding the interview process can be highly scripted or relatively loose (Qu & Dumay, 2011). Often in a semi-structured interview, a script is drawn up that is incomplete, and the researcher has to improvise at some point despite preparing prior to the interview (Myers & Newman, 2007). Clifford *et al.* (2010) highlighted the following steps required for preparing and conducting semi-structured interviews:

- Familiarise yourself with the topic at hand. This will allow the researcher to identify questions that can be used in the interviews.
- Formulate a semi-structured interview question schedule. Ask easy questions at the beginning of the interview then proceed to ask the more difficult questions towards the end of the interview.
- Make sure to select your participants appropriately in order to meet the objectives of the research.

- Choose an appropriate venue to conduct the interview.
- Record and transcribe the interview.
- Make sure that the interview is confidential and that the participants' identities remain anonymous.
- Protect the data collected from the interviews.

In comparison, Gill *et al.* (2008) give the following interview steps:

- Compile an interview schedule.
- Inform respondents of the interview intention and purpose well in advance.
- Provide ethical assurance to the respondents regarding confidentiality and anonymity.
- Conduct the interview in a place where the respondents will not be distracted easily.
- Establish rapport with the interviewees.
- Familiarise yourself with the interview schedule.
- Listen attentively during the interview.
- Use encouraging body language and cues, for example nodding, smiling etc.
- Thank the participants for their participation.
- Record and then transcribe the interview.
- Make field notes for each interview.

Both of the approaches stated above were relevant but, for the purposes of this study, the researcher utilised the steps highlighted by Gill *et al.* (2008) as follows:

- Compiled an interview schedule (**Appendix 1**)
- Informed respondents of the interview intention and purpose well in advance via email and LinkedIn InMail.
- Provided ethical assurance to the respondents regarding confidentiality and anonymity by providing them with consent forms to sign.  
Conducted the interview in a place where the respondents would not be easily distracted (see **Appendix 1** – Semi-structured interview questions).
- Established rapport with the interviewees.
- Familiarised myself with the interview schedule two hours before the interview.
- Listened attentively during the interview.
- Used encouraging body language and cues, for example nodding, smiling etc.

- Thanked the participants for their participation.
- Recorded and then transcribed the interview.
- Made field notes during each interview on a notepad.

In conclusion, the semi-structured interview was deemed suitable because it aimed to extract as much in-depth information and data from the founders of fintech start-ups about their challenges and start-up requirements. This data collection method was also flexible and was able to unlock concealed aspects of human and organisational behaviour (Myers & Newman, 2007).

### **3.7 INTERVIEW STRUCTURE**

Semi-structured interviews were conducted face to face, using WhatsApp calls, over hangouts (now called Google meet) and Skype owing to constraints on the availability of the founders. The most convenient means of conducting the interviews had to be chosen to accommodate the founders' busy schedules. The interviews were conducted from November 2019 (after ethical approval was received) to January 2020. An information leaflet was distributed to all the potential fintech founders via LinkedIn and email. A search with the keywords "**Fintech + Founder + South Africa**" was used to find fintech founders in SA on LinkedIn. The leaflet was sent to 37 fintech founders, however, only 13 agreed to participate. Subsequently, four pulled out at the last minute, thus nine interviews were conducted in the end.

### **3.8 PARTICIPANTS**

#### **3.8.1 Target population**

The target population of the research were the founders of fintech start-ups in South Africa and a fintech specialist who assisted in establishing several start-ups throughout South Africa. The participants had to be involved in operating start-ups in order to ensure that the researcher derived accurate information on fintech start-ups in South Africa. The researcher also targeted fintech founders in the fintech hub of South Africa (in Stellenbosch and Cape Town) as well as fintech founders in Johannesburg. Most of the founders resided in these cities because of the fintech communities and the opportunities provided in these cities. This made it easier to conduct the interviews. The researcher also verified the founders' legitimacy by checking their websites and articles posted regarding their start-ups, along

with awards and funding received. The participant pool was limited to those who are in the financial technology sphere in South Africa.

### **3.8.2 Ethical Considerations**

Emails and LinkedIn mails containing requests for interview were sent by the researcher to prospective participants after obtaining ethical approval from the University of Pretoria Ethics Committee in October 2019. The participants were sent an information leaflet with details regarding the research study and the procedure that would be followed. Those who accepted were sent a consent form to sign. Written consent was requested from participants prior to being interviewed. All participants who agreed to be interviewed gave their consent via email.

## **3.9 DATA ANALYSIS**

### **3.9.1 Thematic Analysis**

In the data analysis phase, the researcher performed a thematic analysis. Thematic analysis involves methodically finding, arranging and presenting information regarding the meanings (themes) identified across a set of data (Braun & Clarke, 2012). This type of analysis allowed the researcher to derive shared meanings from the data and was also used to identify commonalities. Vaismoradi, Jones, Turunen and Snelgrove (2016) and Braun and Clarke (2012) documented the steps and phases required to develop themes and perform a thematic analysis. Braun and Clarke (2012) apply a six-phase approach to thematic analysis as follows:

- **Phase 1: Acquaint yourself with the data.** This phase consists of reading and re-evaluating all your data from your various data sources, for example interview transcripts, videos, audio etc.
- **Phase 2: Developing the first set of codes.** The codes developed classify a feature or a feature of the data that may be able to answer the research question posed. These are regarded as the building blocks of the data analysis. The code can be either descriptive or semantic.
- **Phase 3: Identify the themes.** This phase involves translating codes into themes. The coded data is reviewed to determine the relationships or similarities between the codes. This is used to illustrate and describe the meaningful patterns in the data. The themes are then broken down into subthemes.

- **Phase 4: Reviewing identified themes.** This process is used to verify the quality of the themes identified in the previous step. The themes are compared and assessed against the existing collated data set.
- **Phase 5: Defining and naming themes.** All themes have to be unique and a clear explanation is required for each theme. The themes should be able to address the research question, should not overlap with other themes and should have a single focus.
- **Phase 6: Produce the report.** All the themes are combined and contextualised with the intention of telling a story.

Vaismoradi *et al.* (2016) applied a similar approach, however, the phases were also further broken down into various steps, namely:

- **Phase 1: Initialisation**
  - Read transcripts and identify the meaningful items.
  - Code and identify concepts in the participants response.
  - Document the notes.
- **Phase 2: Construction**
  - Classify codes into a common code based on similarity or generalisation.
  - Compare the codes against the data set to identify themes.
  - Label codes into groups of similar themes.
  - Produce codes by referencing your own understanding of concepts and experiences.
  - Describe and define the way in which the themes were identified and developed.
- II. **Phase 3: Rectification**
  - Get a different group of people to review and assess your developed themes.
  - Align themes to existing literature.
  - Assess the relationships between the different themes.
- III. **Phase 4: Finalisation**
  - Develop the story line.

Both approaches were mapped to develop the step-by-step process that was utilised in this research study and the following steps were followed in order to perform the thematic analysis. The researcher:



- collected data using semi-structured interviews, transcribed the interviews in Microsoft Word and then became familiar with the data by reading and re-evaluating all the data acquired from the data sources: for example, the interview transcripts, audio etc.
- uploaded the transcripts to Atlas.ti and initial codes were developed based on the participants' responses
- documented the notes based on similarity
- classified the codes into a common code based on similarity or generalisation
- compared the codes to the data set to identify themes
- labelled the codes into groups of similar themes
- produced codes by referencing participants' own understanding of concepts and experiences
- described and defined how the themes were identified and developed
- reviewed the codes with two stakeholders in the fintech field
- aligned and compared the themes to existing literature
- highlighted the relationship between the themes
- documented the themes in Chapter 5 and how they answered the research question.

### **3.9.2 CONCLUSION**

This chapter gave an overview of the rationale for the research strategy chosen, as well as discussing the research paradigm, sampling method, sampling population, sampling size, data collection method and instruments, and data analysis tools and techniques. In summary, the research strategy will be a survey based on semi-structured interviews as the main source of data accompanied by review of secondary sources derived from historical data included in the literature review. A conceptual framework will be developed based on the data obtained.

## 4 ANALYSIS OF FINDINGS

### 4.1 INTRODUCTION

The chapter will focus on the participants' background information. Furthermore, the narratives of findings derived from the thematic analysis of the data will be highlighted. This study will then provide a more in-depth analysis of the findings against the backdrop of the existing literature discussed in Chapter 2. These findings will be used to answer the research questions presented in the final chapter. The research findings outline some of the important factors to be considered when establishing a fintech start-up in South Africa.

### 4.2 DESCRIPTION OF PARTICIPANTS

The majority of the interviews took place face to face, over WhatsApp calls, hangouts meet and Skype. The interviews were set up in accordance with the participants' availability and took between 20 minutes and 1 hour 30 minutes depending on the conversation. Nine interviews were conducted for this research study. The participants in this study consisted of experienced fintech founders and a fintech specialist who has helped to establish various fintech start-ups across Africa. The participants' experience ranged from one to eleven years. A brief overview of each participant is presented in **Table 5**. For the purposes of identification and to ensure anonymity each participant has been given a participant name and number.

**Table 5 List of Participants**

Participants	Role	Fintech Business Model Type	Location	Years of Experience in Fintech
Participant 1	Founder + CEO	Insurance	Johannesburg	Five
Participant 2	Founder + Managing Director	Payments and banking	Johannesburg	One
Participant 3	Fintech Specialist + Head of Expansion	Payments	Johannesburg and Cape Town	Five
Participant 4	Co-founder	Insurance	Johannesburg	Two
Participant 5	Founder + CEO	Banking	Johannesburg	Five
Participant 6	Founder + CEO	Savings and Investments	Cape Town	Two

Participant 7	Founder + CEO	Payments	Johannesburg	Eleven
Participant 8	Co-founder + COO	Payments	Johannesburg	Two
Participant 9	Founder +Director	Banking	Johannesburg	Three

The following section summarises the background of each participant:

### **Participant 1**

CEO and founder of a privately owned multinational fintech start-up based in Johannesburg, South Africa. The individual has over five years' worth of experience in the fintech space and was nominated as one of Forbes Africa's 30 under 30 in the technology category and Destiny Man Power of 40. The individual has a strong computer science background and is a developer. The company owned by this individual specialises in insurance-based fintech products and is currently a member of several fintech accelerators in South Africa.

### **Participant 2**

Managing director and founder of a privately owned fintech start-up based in Johannesburg, South Africa. The individual started off in the banking sphere in South Africa and has over seven years of experience in that space. The participant then transitioned to the cybersecurity space in 2017 and established a fintech start-up in 2019. The participant has just over a year's experience in fintech. The company supplies fintech products to tier 1 (banks) and tier 3 (microfinance) companies.

### **Participant 3**

Currently the head of expansion at a privately owned fintech start-up based in Cape Town and Johannesburg, South Africa. The individual has over ten years of experience of which five years has been in the fintech space. The individual has immense experience in over twenty African markets (including South Africa) and has assisted with the establishment of start-ups across all these markets.

### **Participant 4**

Co-founder of a privately owned fintech start-up based in Johannesburg, South Africa. The individual has over seven years' experience in risk management and is an actuarial scientist by profession. The individual has been a fintech entrepreneur for the past two years and specialises in insurance. The individual has previously won the Sanlam Safety Ideas Challenge.

### **Participant 5**

Sole founder and CEO of a privately owned fintech start-up based in Johannesburg, South Africa. The individual is a serial entrepreneur and has been an entrepreneur for the past ten years. The entrepreneur's passion lies in edutech and fintech. The participant has over five years' of fintech experience and has a strong computer science background.

### **Participant 6**

The individual previously worked in the investments and savings space and has over eight years of overall experience of which almost three years has been in the fintech space. Currently, the participant is the founder and CEO of a fintech start-up based in Cape Town, South Africa, which specialises in investments and savings fintech products. The participant is also a member of several accelerator programmes.

### **Participant 7**

The individual is a veteran of the fintech space and has had a fintech start-up for over eleven years based in Johannesburg, South Africa. Previously, the participant worked in the banking sphere as an IT architect then transitioned into entrepreneurship. The individual is currently the CEO and founder of a fintech start-up based in Johannesburg. With experience in both the Zimbabwean and South African markets, this individual has a good understanding of both markets.

### **Participant 8**

Currently the COO and co-founder of a fintech start-up based in Johannesburg, South Africa. The individual has over two years' experience in fintech and is an MBA graduate. The company currently builds fintech to extend the frontier of financial services in South Africa.

### **Participant 9**

Originally an entrepreneur from France, this co-founder and director of a fintech start-up in Johannesburg, South Africa has over ten years of experience overall, over three years of which are in the fintech space. The start-up has been voted as one of the top 10 start-ups in Africa. The company provides financial technology bots to banks in and around South Africa.

### 4.3 FINDINGS AND ANALYSIS

This section outlines the results of the semi-structured interviews conducted in this research study. The section presents an analysis of the participants' verbal responses during the interviews that were conducted. The information collected is presented in a narrative format that includes a description and an analysis of data. The purpose of the interviews was to gain more insight into the factors that make fintech start-ups successful in South Africa and the various barriers to entry. Topics discussed during the interviews are presented in **Table 6** and will be discussed in detail in the next section.

**Table 6 Interview Schedule**

Topic	Sub - topic	Key Interview Questions
<b>1. Introduction+ venture idea</b>	How they came up with the idea for the fintech start-up	1. Please provide a brief introduction on who you are and what type of Fintech start-up you are currently running? 2. Where did your idea to establish a fintech start-up stem from? Did the idea come from an existing venture, a former failed business opportunity or by coincidence?
<b>2. Successful and failed fintech start-ups</b>	Critical success factors (CSFs), characteristics, failed fintech start-ups, set up requirements	3. What are the standard requirements to create a fintech start-up in South Africa? What is required to ensure the sustainability of the fintech start-up? 4. Have you started a fintech start-up before? What led to its failure? 5. What are the fintech barriers in South Africa?
<b>3. Fintech prototype and product formulation process</b>	Fintech product/service formulation	6. What is the general process for formulating a fintech product or service? E.g. business plan, funding, customer proposition, MVP, business model, service deployment platforms etc.
<b>4. Financing</b>	Capital	7. Who has an important role to play in financing a fintech start-up? <ul style="list-style-type: none"> <li>• Role of venture capital</li> <li>• Role of incumbent banks</li> <li>• Role of government</li> <li>• Role of the private sector.</li> </ul>
<b>5. Investor support, start-up gaps and needs</b>	Mentorship	8. How important are mentorship and incubators for fintech start-ups?
<b>7. Patents</b>	Patents	9. Did you at any point patent your idea/product/service? Is this required for all fintech start-ups?
<b>8. Networks and partnerships</b>	Networks and partnerships	10. How important are networks and partnerships with existing financial institutions in fintech start-up success?
<b>9. Adoption</b>	Consumer adoption	11. How did you measure consumer adoption for your product/service?
<b>10. Future</b>	Recommendations	12. What recommendation would you provide to the government or private sector to better assist and support fintech start-ups in South Africa?

### 4.3.1 TOPICS DISCUSSED DURING QUALITATIVE INTERVIEWS

#### 1. Please provide a brief introduction on who you are and what type of fintech start-up you are currently running?

Based on the interviews conducted, it was noted that the participants were involved in running fintech start-ups that cater to different customer segments. For example, some of the participants catered to female merchants while others catered to insurance companies and traditional banks. Of the nine participants, three specialise in payment financial technology, one specialises in both payment financial technology and banking financial technology, two specialise in banking financial technology only, two specialise in insurance financial technology and one specialises in savings and investments financial technology. The responses regarding the profile of each participant were noted in section 4.2.

#### 2. Where did your idea to establish a fintech stem from? Did it come from an existing venture, a former failed business opportunity or by coincidence?

The participants in this study seeded their ideas from their professional careers, the shared economy, events happening in the news and social media, customer frustrations, revenue opportunities, and in some cases, by coincidence. At the core of it all, the participants highlighted that their fintech start-ups would not exist without the discovery of a viable business venture idea. The participants stated that the idea often had to cater to a niche market that had not been infiltrated by the existing traditional financial institutions. The idea had to be innovative enough to disrupt the market in order to gain momentum in the South African market. The current dominance of the traditional financial institutions often made it difficult to sell fintech products and services, therefore the ideas that were formulated at the beginning of the start-up were tested and researched in the market before being explored further to prevent unnecessary monetary losses. Some participants stated:

***Participant 1:** "It was just inspired by the shared economy and the fact that I just wanted to do something in insurance because everyone was disrupting every other sector at the time."*

**Participant 6:** "... it really was seeded from my professional career."

**Participant 8:** "I think it was more of a revenue opportunity search."

**Participant 9:** "It came from a gap within the market and frustration from customers, and we felt that the customers could get much better service."

When assessing the importance of discovering a new venture idea against the existing literature, the researcher noted that the discovery of a viable venture idea was highlighted several times by different authors as an important factor in establishing a successful start-up (Caruana *et al.*, 1998; Choi & Gray, 2008; Siyanbola *et al.*, 2011; Becker *et al.*, 2015; Le Dinh *et al.*, 2018). What was interesting to note was that Becker *et al.* (2015: 165) suggest that the entrepreneurial team or entrepreneurs themselves need to discover a gap within the market and alter the venture idea so that it becomes a promising business opportunity. Feedback from the market, the founders' ability to network and form reliable relationships, their ability to face competition in the industry and obtain institutional support are all factors in the exploitation, alteration and cancellation of business opportunities identified. The importance of getting feedback from the market on the business ideas discovered, as highlighted in the study by Becker *et al.* (2015: 165), is similar to what the researcher uncovered about the business ideas that were seeded by the participants in this study.

**3. What are the standard requirements to create a fintech start-up in South Africa? What is required to ensure the sustainability of the fintech start-up?**

**a) Financial Capital**

The participants unanimously mentioned financial capital and funding as one of the core requirements for any fintech start-up in South Africa. Financial capital for fintech start-ups was seen to be both an important factor for establishing a fintech start-up in South Africa and a barrier. Owing to the oligopolistic nature of the South African financial industry ecosystem, the participants often had to have a strong backer or deep pockets to compete with existing financial players. The participants also needed to possess



patient capital because the time to market in South Africa was long. One participant stated:

**Participant 1:** *"Capital is the most important because you play in an oligopolistic sector. So, you have a few players in insurance, a few big players in banking and a few big players in investments. So, you need to have a strong pocket or a strong backer to be able to push. Regulation relies also on capital, for example, if you want to start an insurance fintech start-up, you need to have R50 million that is just sitting that won't be touched to be able to get a licence for an insurance company and if you want to get into banking, you need R250 million as your reserve funds."*

Furthermore, it was noted that most of the participants either bootstrapped or self-funded their ventures, received capital from corporate competitions or programmes such as accelerators and incubators, as well as equity and cash investments from investors such as venture capitalists and angel investors, and family and friends.

## **b) Adherence to Regulation**

Another important requirement that was highlighted by most of the participants was regulation. The participants stated that non-adherence would often lead to the failure of a start-up especially because the financial services industry in South Africa was seen to be heavily regulated. All technology start-ups playing in the financial services sector needed to adhere to specific laws and regulations. According to the participants, the laws that the participants generally had to adhere to consisted of the data privacy laws such as the Protection of Personal Information (POPI) Act and the Financial Intelligence Centre Act (FICA). Depending on the type of fintech the participants were setting up, they had to adhere to, for example, Independent Communications Authority of South Africa (ICASA), Black Economic Empowerment (BEE), Payment Association of South Africa (PASA), Financial Sector Conduct Authority (FSCA) and National Credit Act (NCA) regulations. The regulations that apply depend heavily on the type of fintech business model that the participants have chosen. This finding has also been highlighted by Lee and Shin (2018), who emphasise that the regulations that need to be adhered to are dependent on the type of fintech services that both traditional financial institutions

and fintech start-ups provide. The participants also mentioned that the level of importance of regulation also depends on how far up the value chain the fintech start-up wants to go. A few participants stated the following regarding adherence to regulation:

**Participant 2:** *“So, data laws so POPI Act, FICA laws so they are all in relation to data storage. So that is important for us. And well we integrate into the telecoms, so the ICASA regulations would be important as well but all are those again... we are a B2B fintech, the FSP (financial service provider) that we are servicing from that point of view is responsible of ensuring that they comply.”*

**Participant 8:** *“I think it depends on the kind of business model that you are going after. If you want to hold the relationship with the customer and some instances have a store of value, then essentially you need to be regulated and you need to go to certain regulators for approval but if you are offering predominantly business services solutions where there is no store of value, then you deal with singular customers, then it is easier.”*

In comparison, Lee and Shin (2018) state that fintech start-ups need to consider the impact of the regulatory changes on their longevity and to assess the means to deal with these changes. Adherence to regulation is seen to be important, as adherence to laws, regulations and policies can have a positive impact on the emergence of fintech start-ups (Haddad & Hornuf, 2019). Fintech start-ups must therefore adhere to regulation, as their survival depends heavily on it in South Africa.

### **c) Skilled Human Resources**

Several of the participants highlighted the significance of having the right people with the right skills, knowledge, experience and expertise in order to execute on the participants' business ideas. The level of skill that the participants' teams possess have to be higher than the norm as the teams are forced to constantly upskill themselves in various advanced technologies and are forced to think creatively and innovatively. However, local resources are expensive to hire, and some of the participants often had to use third-party resources in other countries, such as India and China, as their hourly

rate was often a third of the rate for local resources in South Africa. In addition, employees of fintech start-ups also have to possess an entrepreneurial mindset and be able to participate in constantly improving the products and services provided by the start-up. The participants stated the following on this:

**Participant 2:** *“The skillset – you must have a natural competitive advantage from a skillset point of view because your ability to get the right talent and the right resources is important.”*

**Participant 3:** *“So, I think the access to the right resources to make this happen is quite important because in a very regulated space, your time to market is going to be very long.”*

**Participant 9:** *“Recruiting the right team or recruiting the right people to manage your product.”*

Hence, the appropriate skillset and skilled resources would enable fintech start-ups to progress in the financial services space and would enable fintech growth. The observation of the importance of the right human capital has been found in existing literature and is aligned to the finding presented by Haddad and Hornuf (2019), who state that the availability of a labour force has a positive impact on the development of fintech start-ups. Although human capital was seen to have no significant impact on start-up success in some studies (Lasch *et al.*, 2007; Stuetzer *et al.*, 2012), in others it seemed to have a significant bearing on start-up success (Hormiga & Batista-Canino, 2010).

#### **d) Business Development Tasks**

The majority of the participants emphasised the importance of possessing business acumen and completing specific business-related tasks in order to survive as a fintech start-up in South Africa. Business tasks such as registering a business with the Companies and Intellectual Property Commission (CIPC), creating a value proposition, adhering to existing laws and regulations linked to SMEs as well as tax, opening a bank account, marketing, sales and distribution, and setting competitive pricing models were mentioned by the participants. Participants stated in this regard:

**Participant 5:** “So, one, CIPC has an online system so to register a business is R100 to R125. Obviously from a compliance perspective, you’ve got your accounting. Your pre-revenue doesn’t matter but you still need to do your audited financials so there is an accountant fee which is not too expensive but then again, when you are pre-revenue, it is a couple of thousand rands that you need to keep it alive and compliant with regards to annual returns and those type of things. Okay, one of the major costs, is your bank account especially for a start-up that is new to the business, that is pre-revenue. That is your biggest obstacle in terms of funding that you are going to need because every month, the bank fees are high.”

**Participant 2:** “... first things first, you obviously have to get the business registered, there is a company in Cape Town called SM Tax that does all our digital accounting, up until recently now the government has launched a business portal and CIPC has also launched their own portal, which is more user friendly where you can go in there and register the company yourself and get your BEE and tax sorted but I hate doing that part so I would rather pay a few hundred bucks to a digital company to resolve all of that on my behalf and they email me.”

**Participant 4:** “Then the other thing which is important is that you have to have distribution. I think a lot of entrepreneurs don’t think through distribution ... distribution really hard. South Africa’s corporate environment is especially concentrated so there is not a lot of places that you can go. So, it is important for you to bed that down and for an insurance tech start-up, those two are very, very important.”

This has been found to be true in previous studies such as Oshodin *et al.* (2019), where the development of the business model was regarded as a need for fintech start-ups. However, it did not highlight the importance of business development within the business model, hence business development is highlighted as an important consideration for fintech start-up development in this study.

#### e) **Problem-solving Abilities**

Some participants highlighted the importance of fintech start-ups being able to solve existing social and economic problems linked to financial services provision. Without this ability, fintech start-ups would develop products and services that do not cater for the needs of those who have not been served by the existing traditional financial services institutions and the adoption of these products would not be high. A good understanding of the problem that needs to be resolved puts fintech start-ups in good standing in the market and gives them a competitive edge. Kirkley (2018) mentioned the significance of identifying a market-related need in their study and this indicates how important problem-solving is in ensuring that the correct market-related need is identified and dissected when establishing a start-up. One participant stated:

***Participant 2:** Problem-solving. The ability to ascertain what the problem is that you are trying to resolve and devising the appropriate approach to tackling that problem because there are consistent problems that are identified and a lot of people have failed at solving them even with the best technology available because the business case or business model just doesn't make sense. The business case has proven not to be popular. So, the talent and the business case. You need to have a real problem and your approach to the problem really has to be solid, but you would need to have the talent pool to actually execute on it and that is critical.*

#### f) **Innovation**

Some participants highlighted that fintech start-ups often have to be innovative in everything that they are involved in. What sets them apart from traditional financial service providers is their ability to solve problems in ways that have not been done before. Once innovative measures are used by fintech start-ups, they are able to disrupt the market and take ownership of a portion of the market share. As mentioned in the existing literature, fintech start-ups provide consumers with new innovative products and services that allow consumers to generate payments, oversee their investments, attain insurance and increase consumer debt and equity financing (Gulamhuseinwala *et al.*, 2015a). A start-up can also be classified as a small firm that aims to perform business

activities linked to technology or innovation (Rizvi *et al.*, 2018). Iman (2019) has also noted that fintech start-ups are increasing the competition in the financial market and, as a result, there is growing innovation in the industry. Hence, innovation and disruption of the market are key characteristics of fintech start-ups.

#### **g) Good Reputation and Good Brand Value**

The importance of having a good reputation and branding was highlighted as a key characteristic for fintech start-ups by two of the participants in this study. As the South African market is spoilt for choice and there are few gaps in the financial services space, a start-up's reputation is important to its success. Consumers often struggle to adopt fintech products for various reasons; these include cyber security concerns and personal data leaks. This has also been highlighted by Stewart and Jürjens (2018: 122) who state that elements such as "poor user interface designs, data security issues and low consumer trust" have led to a decreased level of adoption. There also seems to be a direct relationship between consumer trust and data security issues. Legal, security, operational and financial risks have also been highlighted as concerns in existing literature (Ryu, 2018). Hence, the reputation of a start-up often supersedes many of the other characteristics.

#### **h) Varied Skills**

The participants mentioned various skills that would be required by a start-up. Some of the participants highlighted that having financial skills was valuable although it was a skill that could be outsourced. Outsourcing or hiring the right individuals who are experts in accounting, actuary and so forth put the fintech start-up in a better position in the long term. Kuzmina-Merlino and Saksonova (2018) and Roodt (2005: 27) also highlight financial skills as being required for fintech entrepreneurs and teams. According to the participants, financial skills were often expensive to come by in the South African market.

Another skill mentioned by the participants was soft skills. Soft skills were noted as a requirement to perform basic business networking and sales. As people have to be managed, the appropriate soft skills are required to ensure that the resources required to execute fintech start-up business ideas work in a conducive work environment. As stated by the participants of this study, as fintech entrepreneurs they have to have

perseverance and be resilient, as this type of start-up does not have the capacity to generate income in the short term. This finding coincides with the findings in the existing literature which highlight the importance of interpersonal and social skills (Mamabolo *et al.*, 2017) as well as soft skills (Kuzmina-Merlino & Saksonova, 2018).

Based on the discussions with the participants, it was noted that the core skill required for all entrepreneurs was entrepreneurial skills. The entrepreneurs highlighted the significance of being able to transform a business idea into something feasible using various entrepreneurial skills, such as innovation and creativity, while possessing qualities such as bravery and willingness to go against the norm. It must also be noted that this type of skill also appears to contain elements of some of the other skills that were mentioned previously by the participants, such as business management skills and soft skills. Most of the entrepreneurs developed their entrepreneurial skills by trial and error. The more time they spent trying to develop their businesses, the more skilled they became in this area. Much like the existing literature, Ladzani and Van Vuuren (2003) highlighted entrepreneurial and business skills as significant for entrepreneurial performance training. Kuzmina-Merlino and Saksonova (2018) evaluated the skills, knowledge and competencies required by entrepreneurs in the fintech sector in Latvia, finding that fintech entrepreneurs need to be entrepreneurial, adaptable to change, open and willing to learn, have a strong network, possess leadership abilities and have a good understanding of the industry that they are operating in. Hence, entrepreneurial skills among fintech start-up entrepreneurs and employees are key to the performance of such start-ups.

The participants highlighted the importance of IT skills in their organisations and the importance of having a founder with a good technology background which enables them to tackle IT-related issues. The possession of such skills also helps reduce the overhead costs related to building fintech platforms which is often the highest cost apart from regulation costs. Kuzmina-Merlino and Saksonova (2018) also found that fintech entrepreneurs require banking or finance knowledge and information technology knowledge, so our finding is consistent with what is currently available in the literature. The participants also mentioned business management skills as crucial in the processes and procedures of establishing and sustaining their start-ups. Similar to other existing SMEs and corporations, start-ups can only function adequately if they are managed well

from a business perspective. Without this ability or skill, the business may not have longevity as it would be managed poorly. This is why it was mentioned that the participants needed to have some level of understanding in terms of business and how the business market operates. This finding is consistent with a study conducted Mamabolo *et al.* (2017) regarding the skills required by entrepreneurs in South Africa.

Based on the existing literature, it should be noted that the skills required for entrepreneurship and innovation are valued subjectively based on society, politics and the current state of the economy. Skill is also dependent on an individual's social class or status and can be valued on that basis (Chell, 2013). The study by Mamabolo *et al.* (2017), to investigate the skills required by South African entrepreneurs, found business management skills, technical skills, entrepreneurial skills, personal skills, behavioural and motivational skills, and social and interpersonal skills to be significant skills for entrepreneurs in South Africa (Mamabolo *et al.*, 2017: 4). However, what the researcher found to be significantly different was that fintech start-ups required information technology and financial skills in addition to some of the skills stated by Mamabolo *et al.* (2017).

Several other studies such as Ladzani and Van Vuuren (2003) highlighted entrepreneurial and business skills as significant for entrepreneurial performance. According to the authors, entrepreneurial skills comprise the ability of the user to be (1) creative, (2) innovative, (3) risk tolerant, (4) able to seek opportunities, (5) a visionary, as well as (6) to seek guidance from successful entrepreneurs. The business skills required are management, financial, marketing, human resources, operational and business plan compilation skills (Ladzani & Van Vuuren, 2003). This finding is consistent with that of this study. In comparison, Oakey (2003) listed accounting, marketing, fundraising, personnel and strategy as the business management skills required by technical entrepreneurs during the formation of high technology firms. In our study, the researcher found that strategy was not highlighted; however, the researcher believes that with further research this may appear. Kuzmina-Merlino and Saksonova (2018) also found that fintech entrepreneurs require banking or financial knowledge and information technology knowledge. This is consistent with our findings on the skills required. Furthermore, the entrepreneurs need to possess the following skills:

- soft skills



- entrepreneurial skills
- information technology skills
- mathematical skills
- technical skills, and
- financial skills.

The only skills that were not highlighted in our study were mathematical skills and technical skills. However, this may be due to the infancy of fintech in South Africa and the fact that such skills are scarce.

#### **4. Have you started a fintech start-up before? What led to its failure?**

During the interviews, it was noted that only one out of the nine participants had established a fintech prior to their current fintech start-up. All the other participants had previously either established a separate line of business or had been in corporate and were running a fintech start-up for the first time. This would make sense considering the infancy of the fintech industry in South Africa. One participant mentioned that the individual had resigned from their job without sufficient capital which led to multiple problems. Furthermore, the participant was not aware that sufficient patient capital ( long term capital) would be required for an extended period while establishing the start-up. The participant advised that entrepreneurs should rather do the work to get to the point where the business can run successfully on its own before committing to it on a full-time basis.

#### **5. What are the fintech barriers in South Africa?**

In order to further enhance the researcher's understanding of what is required to establish a successful fintech start-up in South Africa, a question was asked regarding the fintech barriers in South Africa. The following responses were received:

##### **a) Regulatory Barriers**

Regulation was stated as a barrier for fintech start-ups by all the participants. Government policies and regulations were regarded as being an impediment rather than a contributor to fintech start-up success. One participant described regulation as "*the bane of a fintech start up's existence*" (Participant 2). According to some of the participants, South Africa has a highly oligopolistic financial industry and the government

does not quite understand how to regulate financial technology; hence, government relies heavily on the current industry players in the ecosystem to provide guidance on best practices. However, this comes at a price, as the industry players are more concerned with their "pockets" and profit margins. Furthermore, some of the participants mentioned that the industry players provided input on best practices, laws and regulation to keep new entrants from entering the market and to maintain the current status quo. The laws and regulations have also been designed to protect industries as opposed to encouraging innovation and start-up development. Two participants stated the following:

**Participant 3:** *"It is hard to say. I mean, none of these laws have been built to encourage start-ups. They are built to protect industries and not to encourage them so I wouldn't say that the laws have had a positive impact but I also wouldn't say that it has had a negative impact but because of the regulatory environment, a lot of things are challenging that shouldn't be. That is maybe how I would word it."*

**Participant 2:** *"That is a very good one. I want to touch on that. Yoh. Regulation is the bane of our existence. So when you look at the payments that are regulated by PASA, you will quickly realise why it is that the country is like this and why we have an oligopolistic business sector because people get in a room and build regulation, they build rules to maintain the status quo for those who are in the industry at the time although you are not at the table."*

From a policy and tax perspective, it was noted by the participants that these are not beneficial for fintech start-ups. For example, bringing in third-party resources from other countries is difficult from a visa perspective. The tax on small businesses was also highlighted as being equivalent to that levied of big corporations. One participant stated:

**Participant 5:** *"The South African policies are not friendly towards start-ups. Both from a human capital perspective and tax perspective. From a policy perspective, it is not really friendly, in terms of being able to bring in like ... resources in other countries like India from a visa perspective is difficult and then the tax on small businesses is the*

*same as the big businesses. So, company tax is 28% or something like that so whether you are a big bank or a manufacturing company, a small company is liable for the same tax. So, a lot of the times, as a start-up, you are kind of developing your business or technology especially in the fintech space, there is always technology in the backend of it which I haven't yet done."*

From a regulation perspective, it was also mentioned that South Africa has one of the best regulations in the world in terms of banking and financial systems; however, a fintech start-up is limited in terms of the types of services that they can offer to the public, and a start-up cannot survive without thinking about the ecosystem in which it operates. The incumbents were also highlighted to be dominant and influential in terms of the laws and regulations that get passed. The challenge with regulation is that without the right people and the right funding, the start-up might not take off because the time to market for fintech start-ups in South Africa is long. Most of the fintech start-ups have also been forced to either partner with existing incumbents in order to get their products in the market or request incumbents to sponsor or underwrite their products. One participant mentioned:

***Participant 4:*** *"On the insurance side, it is quite a lot. The one is regulation, so it's not easy to get over the regulatory hurdles that is why it is generally very advisable to partner with an insurance company who have already cleared and they also have to have the willingness to support what you trying to do so regulation is a big one."*

On the other hand, the participants also noted that regulation was required in order to manage potential fraudsters and chance-takers from entering the financial market. One participant mentioned the following:

***Participant 4:*** *"Yeah but it is also a double-edged sword, it also enables it in a sense. So like, you have people who want to try what insurers are doing, I mean it is crazy, no one is going to buy insurance from you so having good regulation and people knowing that their claims get paid and the company is doing the right thing means that new companies can come up because people can trust that they are*

*doing the right thing whereas if you had a wild west type of scenario, it would even be worse."*

The participants felt that the policies should be made friendlier towards fintech start-ups and the tax threshold should be amended to accommodate smaller businesses. Furthermore, they would find value in regulatory sandboxes where they could experiment and test their products in the market. When the researcher assessed this finding against the literature on the challenges faced by entrepreneurs in the fintech sector, it was found that Lee and Shin (2018) highlight regulation issues and compliance issues as challenges to the fintech sector. Fan (2018) notes that the sandbox did not remove all the systematic risks associated with innovation and fintech disruption, but it did provide a safe environment for fintech experiments to fail without having a significant impact on the financial stability of the economy and the customers. This is in line with what the participants in this study propose.

Haddad and Hornuf (2019) found that administrative requirements, high bureaucratic costs and tax compliance often hinder the activities of entrepreneurs which is in line with what has been highlighted by the participants in this study. It is also in line with the findings of Nakashima's (2018) study that the market is only ready to welcome products and services that improve or adhere to the interests of the existing business of traditional financial institutions. Furthermore, the results of this study suggest that regulatory requirements have a negative impact on innovation. This is also highlighted by a study conducted by Lee and Shin (2018) who found that fintech start-ups must adhere to financial regulatory requirements that often hinder the innovation process.

## **b) Capital Barriers**

The participants in the current study unanimously highlighted capital as a barrier of entry to the fintech sector. The participants mentioned that the organisations in South Africa that are providing funding are normally averse to risk. They felt that the people providing funding were, in most cases, individuals who had never started or worked with a start-up which ultimately created its own set of problems. Getting funding internationally often required less paperwork than in South Africa. Although incubation and acceleration programmes are available to provide the participants with funding, the funding was often absorbed by office space costs, training costs and mentorship costs. Very little of the funding went to the entrepreneurs and their team. The poor allocation of funding was highlighted as a significant

problem with corporate and incubation funding. The participants often found themselves moving from one incubation programme to the next, instead of focusing on building a credible business. The incubation programmes were also seen to be used to suss out the competition and new technology in the market. Owing to the oligopolistic nature of South Africa, the participants often needed to have a strong pocket and a strong backer in order to survive as a fintech start-up. In addition, regulation is also highly dependent on capital and these go hand in hand. Some international investors were encouraging some of the participants to build their start-ups outside the country before funding them due to political concerns. The participants stated the following in this regard:

**Participant 4:** “... and obviously another barrier is capital, so raising capital is not easy in South Africa, there is not a lot of venture capital especially for early stage stuff like incubation and all of that. There are programmes that you can get in and get free office space but in terms of people putting money behind the team to develop the product, it is very rare. In insurance especially uhm so yah. Raising money is a big one.”

**Participant 7:** “South African banks and investors are risk averse. Investing in fintechs is too risky so raising funds for projects and having access to working capital is sometimes a barrier.”

When assessing this finding against the literature, it was noted that this is not only true in fintech start-ups but is also true for start-ups and SMEs in general. Bocken (2015) notes that the key factors responsible for start-up failure is short-term investment thinking, an incumbent industry that is difficult to compete with, and a lack of credible investors with investment knowledge. Lee and Shin (2018) highlighted the fact that entrepreneurs face technical and managerial challenges in the fintech sector. The increased number of fintech products in the market make it difficult to choose which products are worth investing in, thus leading to an investment management challenge for not only external investors but also for banks. Hence, getting access to funding is difficult as investors are finding it difficult to invest in fintech products, thus resulting in a lack of capital that entrepreneurs have access to. This finding is consistent with the findings in the literature.

### **c) Costly and Scarce Skilled Resources**

The participants mentioned that local resources are expensive and often preferred to use third-party resources in other countries. However, regulations prohibit them or make it more expensive for these third-party resources to work in the country due to the stringent visa processes. The strict regulations around using foreign workers in the country may be due to the current high unemployment rate in South Africa. The government is trying to encourage South African companies to hire and work with South African citizens to try and reduce the unemployment rates. The participant's preferred to hire and work with resources in countries outside South Africa as the foreign workers were viewed to be more skilled and cheaper to acquire. Account management of local resources was also seen to be a problem as they were sometimes seen to be unprofessional. Therefore, it often felt like a complete waste of time, resources and money. Participants stated the following regarding resources:

***Participant 5:** "Yah. So, when you look at the South African market, it is so difficult to get a hold of the skills and resources that can develop platforms."*

***Participant 7:** "There are also limited skills within the country and the skills are very expensive to acquire. There are also many more players coming into the industry so we need skilled minds that can contribute."*

The existing literature explored by the researcher made no mention of the cost of scarce skilled resources being a contributor to the failure of fintech start-ups. For example, Lasch *et al.* (2007) found that human capital had no significant impact on start-up success. In addition, Hormiga and Batista-Canino (2010) highlighted that human capital had a significant bearing on a start-up's success. However, in this study, costly and scarce skilled resources were highlighted as a minor contributor to the failure of fintech start-ups.

### **d) Disingenuous Incubators and Accelerators**

Incubators and accelerators were seen to be helpful, but their motives were questioned by the participants. The incubators and accelerators were seen to be forming for the purposes of compliance and appeared to be fragmented and lacking coordination. Participants regarded the training provided by these programmes to be futile, highlighting that these training programmes were often on subjects that they could learn on YouTube. The participants mentioned that they were "marketing 101" and "accounting 101" courses. Furthermore, the funding provided by these programmes was absorbed by other costs such as office space, marketing and training. Hence, the participants had little access to the funding awarded by the incubators and accelerators. These programmes were also seen to be a means for corporates to assess their competition. Participants stated:

**Participant 2:** *"Incubators (sighs), we are overflooded with incubators and accelerator programmes that are too generic and not area focused. So, I think we could really go a long way by getting rid of all the unnecessary accelerator programmes because what we ultimately see is that there is a lot of incubator hopping and the same characters are moving from this incubator to that incubator. R5000 here and R6000 there ... Then there is no coordination between them, so they are all doing the same thing, and no one knows what the other person is doing and who the attendance of everyone are. So unstructured, disorganized. Two key words are fragmented and uncoordinated"*

**Participant 5:** *"I think their motive is one to be questioned because everyone has an incubator or accelerator. Why? We have had some sobering chats where somebody quite senior who was a mentor was saying that they have no interest in your success. They are literally just looking out for who is a threat to their business. I have seen it first hand, where I have spoken to one of the banks about our fintech venture, and he sat back and he said, 'Wow, this is amazing but it's not going to go further than this level of management and this was an executive.' He said you C-Level, those guys said, 'No, sorry, it is going to cannibalize their business'."*

Another study also found this to be true. Lukosiute *et al.* (2019) found that the workshops, courses and lectures provided were time consuming and not useful, and the

programmes did not guarantee seed money or investment. Furthermore, Lukosiute *et al.* (2019) felt that incubators and accelerators were not healthy for early-stage start-ups, as the business practices in incubators and accelerators often had a negative impact on start-ups.

#### **e) Poor Partnerships and Networks**

Partnerships with corporations were seen by the participants to be quite toxic for fintech start-ups in SA. The corporations were seen to be more interested in growing their businesses instead of growing smaller fintech start-ups and therefore would use fintech start-ups for their main idea, milk it for its full value and then leave fintech entrepreneurs out in the cold once they had met their objectives. Therefore, most of the participants were hesitant to partner with corporations using their main ideas. Participants highlighted the following regarding this:

**Participant 1:** *"The networks and partnerships are usually toxic but they can carry you through if your plan is to implement something else at a later stage ... so you can milk them for their brand value, milk them for their experience and expertise. You can learn a lot from them during the partnerships or relationship, but it shouldn't be with your main idea because existing players look out for themselves. So what they are interested in is not growing you but growing their businesses and their book value and all those things so they will use you and if it's with your main idea, they eventually will probably just squash it once they done milking it then you will be left out in the cold so it's better to just ... it's good to work with them but knowing that you will implement something different at a later stage. It's about knowing the competition"*

**Participant 8:** *"I do not think so because you are trying to marry two cultures that sit in two extreme ends. You know traditional players have got uh ... you need people at that stage who have an entrepreneurial mindset and are not traditional in thinking, in order for your idea to be progressed."*

The existing literature explored regards partnerships to be both a deterrent and an opportunity for existing financial institutions (Temelkov, 2018). According to Temelkov's



(2018) findings, fintechs can be both a threat and an opportunity for banks depending on the strategic moves they make. The increase in fintech ventures has resulted in a decreased customer base for banks which has decreased their profit margins. As a result, many more companies are partnering with fintech start-ups. A positive outlook for fintech's impact on traditional banks is illustrated by Li *et al.* (2017), who evaluated the impact of fintech start-ups on the share price of traditional banks. Based on their observations, fintech had no significant impact on the returns of banks and the share price often increased when more fintech deals were made and additional funding was provided to these fintech start-ups. The authors did, however, note that the size of the fintech start-ups may have skewed the results as they may have been too small to have a significant impact on incumbent banks. Furthermore, as stated by the authors, the "substitute and complementary effects could also potentially offset each other" (Li *et al.*, 2017: 11). Hence, partnerships and networks between financial institutions could be positive but it depends on the relationships formed and the intentions of the parties that are collaborating.

#### **f) High Costs**

One point that was also emphasised as a barrier by the participants is the high costs involved in running a fintech start-up and the acquisition costs linked to hiring the right resources. Data costs were also highlighted as a significant barrier as most of the participants' fintech platforms required data in order to operate. These costs therefore often inhibited people's access to digital platforms. The costs related to locally developed platforms were highlighted as being significantly high, hence the founders struggled to afford local resources. The following was stated by the participants:

**Participant 2:** "... and also developing stuff locally is expensive so in most of those instances, you then look into India based developers, you know, to develop whatever systems you require because the rate per hour is much, much cheaper than what you would get in SA. In as much as you want to support local developers, it is much too expensive."

**Participant 4:** "Another, I would say is (I am just trying to think back to our journey) is quite a heavy cost in terms of data, that is a pretty big one because you are dealing with people's financial information

*and people's personal information. Another big thing is IT costs are, if you are going to do third party tech stuff, are huge."*

As stated in the existing literature, costs tend to hinder entrepreneurial activities. As suggested by Haddad and Hornuf (2019), the administrative requirements, high bureaucratic costs and tax compliance often hinder the activities of entrepreneurs. This finding aligns with what has been highlighted by the entrepreneurs in this study.

#### **g) Literacy Levels**

A point that was highlighted by the participants that could be overlooked as a barrier was literacy levels. The literacy levels of the majority of South Africans was noted to be relatively high; however, the demographic normally targeted by the participants had relatively low literacy levels. A few of the founders mentioned this as a significant barrier and, due to the lack of finances that this demographic has access to, the participants' target market often had an attachment to cash. The following was explained by the participants:

**Participant 2:** *"... and then literacy levels ... literacy levels of your general consumers. So, your citizens or resident consumers in SA ... you can come up with the most brilliant, brilliant, brilliant solutions ... just works brilliantly but if it can't be consumed by Gogo Dlamini in Khayaletsha somewhere, it is meaningless. As a result of a lack of literacy, they have to be comfortable to try it out and people are not. The resistance is a symptom of something much bigger. It is the actual literacy and the 'know-how' to actually do it."*

**Participant 1:** *"... and it takes a long time in a market where you still need to educate the customers about. Uhm even you with your technology platform, in order to get to these numbers would take you a very long time which means that you would need to start educating people yourself about it until you are able to show those numbers so there is a lot of educating that you would need to do to get there so it's a very bad market."*

The existing literature explored has not highlighted this as a significant barrier or challenge for fintech start-ups, and therefore is a potential new discovery in relation to

what has been found in existing literature. This is probably because South Africa is a developing country with lots of room to grow and improve. The education system also requires some improvement specifically in primary schools and high schools.

**6. What is the general process for formulating a fintech product or service? For example a business plan, funding, customer proposition, MVP, business model, service deployment platforms etc.**

When the participants in this study developed their products to meet the social and economic needs of the financially excluded, they spent a lot of time attempting to understand both the needs of their customers and the problem; performing market feasibility assessments; conducting product to market fit tests, and attaining feedback from customers. In this way, the products and services that they delivered would be adopted more easily by the customers as they were specifically designed for them. The intrinsic value derived from these products lies solely in the value it has for the customers and the participants emphasised the importance of involving the consumers in the development of fintech platforms. Several participants stated:

***Participant 9:** "Okay so we performed a market study for about five months. We realised that there was an opportunity so we built an MVP, that would be put together and tested it. Then we started looking for customers and investors and managed to secure funding from them quickly after that, and then from this we managed to sign our first client. We then did a use case or case study and then started growing from that point."*

***Participant 2:** "On the technology side, again we utilised the sprint methodology, get into the room on day 1, identify the problems, develop a solution (you know the whole process) then day 5 you are testing, getting the prototype ready."*

***Participant 4:** "Alright, so we decided to follow the design thinking method."*

The participants also emphasised the importance of a working prototype when attaining funding for the fintech start-up and when garnering support from customers. Two participants stated:

**Participant 1:** *“No, I just started. Because I am a developer uhm I won’t say by profession but by trade, so ... I just started. I just developed it ... I just developed a prototype and that’s how I started. I didn’t do much research before seeing if the technology is possible. That’s the starting point for most fintech start up founders, you start with the idea to see if it is possible then you go through the formal planning process after you have proven that it’s possible to actually have that kind of platform.”*

**Participant 8:** *“So what we actually did was, when the strategic decision was taken, we started with a business model where we detailed what it was that we wanted to achieve, what products we were going to come up with, how we were going to position it in the market, assess competition and we did some financial projections on the back of that then we went through the process of building the prototype and the foundation for the prototype. We took the existing services that were being offered by the traditional suppliers and then we built the best in breed, and then we obviously had to go through the central bank for approval.”*

Existing literature has highlighted the significance of a prototype when developing technology-based products (Siyanbola *et al.*, 2011; Gai *et al.*, 2018), therefore prototyping can be highlighted as an important element of fintech product development. According to Siyanbola *et al.* (2011: 17), prototyping is pivotal for driving innovation in entrepreneurship involving technology. All the participants in this study highlighted that they spent a significant amount of time interviewing customers, doing product to market research to ensure that their products were catering to their customers’ needs, as well as assessing whether the product was one that the customers would be happy to purchase. The process followed by participants in developing fintech products and services resembled that of a design thinking process. The participants may not have

followed the steps in that order, as all of them followed the steps in different ways, but the principles were aligned.

A few participants mentioned lean methodology, the customer development process and agile methodology, but when explaining their processes, they appeared to correlate more closely with design thinking than any other methodology. However, it should be highlighted that all fintech start-ups follow their own unique processes which cannot necessarily be generalised, as the processes used to establish a fintech start-up are very hands-on, non-linear and practical. Nevertheless, all methodologies are customer-centric with the customers' needs being at the centre of their product and service development. When assessing the existing literature, Siyanbola *et al.* (2011) and Gai *et al.* (2018) highlighted the processes involved in the development of technology-based products. However, they did not articulate the importance of involving the consumer in the development of these products. Hence, this study highlights the importance of involving consumers in the development of fintech products and services.

## **7. Who has an important role to play in financing a fintech start-up?**

### **a) Role of venture capital**

Venture capitalists in South Africa were seen by the participants to be similar to traditional banks that have funded profitable fintech start-ups with traction and a steady stream of revenue in the past. It was also noted that it was often difficult to access this type of capital. The strict criteria in place for funding from venture capitalists in South Africa made it difficult for the participants to approach them for funding, hence most of the participants preferred to approach them only when they were profitable and had a viable value proposition. This finding is important as it could possibly explain the importance of readily available venture capital for establishing fintech start-ups in South Africa. This finding correlates to that of Haddad and Hornuf (2019), who found that countries with mature economies and readily available venture capital witnessed more fintech start-up formation.

### **b) Role of incumbent banks**

With regard to funding, participants did not place as much emphasis on the importance of incumbent banks. The banks often run accelerators and incubators which enable the participants to utilise the banks' office space and office equipment and receive mentorship.

However, the majority of the funding received from the bank accelerators and incubators did not go directly to developing their businesses from a product and service perspective, going mainly to marketing, training, office space, equipment and mentorship.

### **c) Role of government**

The participants highlighted that government funding often took the form of SME funding; however, the red tape and paperwork that the participants had to go through was mentioned as being time consuming. The funding was also geared more towards hardware technology and there was currently no fintech-specific government funding programme in place to assist fintech start-ups with funding. There was no expectation on the part of the participants for government to become involved in funding; however, they did require more financial support in terms of reduced tax thresholds and improved government policies.

### **d) Role of the private sector**

In terms of private sector funding, the participants mentioned that funding often came from some of the existing companies such as Microsoft and Rand Merchant Banks (RMB) internal incubator and accelerator programmes. The participants felt that the private sector incubators and accelerators were able to assist them with the initial stumbling blocks at the beginning of their start-up formation. The programmes also exposed entrepreneurs to the right network of people. Incubators and accelerators also relieved start-ups of costs pressures linked to office space, marketing and office equipment. The amazing mentors that came with these programmes also made these programmes more valuable to entrepreneurs.

### **e) Role of angel investors**

The role of the angel investor was also mentioned by all the participants despite it not being asked during the interviews. Most of the participants found angel investors to be most crucial in the early stages of a fintech start-up because of their ability to fund fintech start-ups from the ideation phase. Angel investors' criteria for funding were also seen to be less stringent than those of others such as venture capitalists and banks. This is crucial, as most fintech start-ups have long lead times to get the company up and running as well as to get customers on board. Unfortunately, South Africa does not seem to have a strong angel investor network and this network is not easily accessible to the fintech community. The participants stated the following regarding angel investors:

**Participant 3:** *"I think that at that stage, the only thing that really matters are angel investors. You are not going to get help from the government, you are not going to get help from corporates, and you won't get help from VCs. The only possible route you have is the angels at the beginning because these are the guys with the risk profile that would invest in something that is just an idea or the product is at the very early stages."*

**Participant 8:** *"... well angel investors are more lenient so you would want to go through that, but you would need to do that through a funding series. So, you need to have your series funding and not borrow more than what is necessary. Angel funders will give you that ..."*

Alternative means of attaining capital mentioned by the participants included crowd sourcing, bootstrapping (self-funding), private equity, international funding and financial capital from family and friends. These options were often the most used owing to a lack of access to funding and capital in South Africa.

It was consequently noted that the finding relating to the importance of capital is in line with existing literature on start-ups in the ICT sector which indicates that new capital contributes positively to start-up growth rates (Lasch *et al.*, 2007). This is also aligned to the findings presented by Song *et al.* (2008) and Santisteban and Mauricio (2017) who highlight the importance of financial capital as a factor for new venture success. Hence, financial capital is one of the key variables to consider when establishing and sustaining a fintech start-up.

#### **8. How important are mentorship and incubators for fintech start-ups? What guidance is required at each stage of the fintech progress?**

The participants emphasised the importance of mentorship for all fintech start-ups, describing it variously as "very important", "critical" or "key". The participants saw mentorship as a critical factor that had to be considered when establishing and sustaining a fintech start-up because they believed that mentors understood the industry, created opportunities for them and connected them to the right individuals. The participants also felt that they needed mentors because they were people who could guide them through the business and discuss

start-up related matters. Mentors were also seen to be very important for fintech start-ups from an accountability perspective; mentors were able to hold the participants accountable for the tasks they needed to complete and often had a low tolerance for excuses. The participants stated the following on this theme:

**Participant 3:** *"I think that mentorship is key especially because a lot of financial services industries are complicated right? You are not going into industries that are simple and straightforward. You are entering industries that are complex and regulated, and compliance is important and all of these things so getting access to people that understand this space and can guide you through is super super, super important."*

**Participant 4:** *"Mentorship, I think is very important. So, getting help to talk to the right people because one, they have the relationships, they have the abilities to open doors and all of that. That's very important. So, in terms of just guiding you, how best to get through some of the challenges you face, I think is very important."*

Mentors were also seen to be important because the financial services industry is complicated, and the participants were going into an industry that was not simple nor straightforward but rather complex and highly regulated. Furthermore, several of the participants entering the fintech space did not necessarily have the experience and therefore needed the guidance. So, getting access to people who understood this space and could guide the participants through it was seen to be significant. Mentors also knew how best to get the participants through some of the challenges they faced.

Incubators and accelerators were mentioned by the participants as key elements for fintech start-ups at the beginning because the incubators and accelerators were able to get the participants over the initial stumbling blocks. These incubators and accelerators also exposed the participants to the right network of people and relieved start-ups of the cost pressures linked to office space, marketing and office equipment. The amazing mentors who came with these programmes also made these programmes more valuable for participants. Two participants stated the following:



**Participant 4:** *"Incubators for me, help to an extent, so as far as incubation needs by giving you good committed mentors who are interested, that's one and secondly, in terms of helping you save on some of the costs or having a place to say 'this is your office', having a printer and having those costs covered. It is very useful. Sometimes from a mentorship perspective and removing the cost pressures for a while, it is very good."*

**Participant 6:** *"At the very early stages, the real players in that ecosystem are incubators and accelerators so people that can help you get out of the stumbling blocks and if they can come with funding or grant funding, that is fantastic and very helpful, and those are the people who are going to teach you all of this lovely theory stuff that you talking about. They will teach you lean and agile and all of those nice stuff. That's all they do but basically what they do is get you out of the stumbling blocks and with a good accelerator, what they also do is introduce you to an appropriate network."*

When comparing this finding to the existing literature, the researcher found that it coincided with Le Dinh *et al.*'s (2018) concept of a living lab which "acts as an intermediate for innovative co-operation" (Bakici, Almirall & Wareham, 2013 as cited in Le Dinh *et al.*, 2018: 8). A living lab would assist the start-up in performing business initiation activities such as

- compiling a business plan
- testing the product and/or service
- improving it through the feedback provided
- seeking additional funding opportunities and potential partnerships
- attracting investors such as banks, venture capitalists and other financial investors; and obtaining assistance from legal entities to assist with trademark registration as well as intellectual property rights.

Lukosiute *et al.* (2019) found that the workshops, courses and lectures provided were time consuming and not useful. Seed money or investment was also not guaranteed in these programmes. Furthermore, Lukosiute *et al.* (2019) felt that incubators and accelerators were

not healthy for early-stage start-ups as the business practices in incubators and accelerators often had a negative impact on start-ups.

**9. Did you at any point patent your idea/product/service? Is this required for all fintech start-ups?**

None of the participants who were interviewed had patented their processes or products. The vast majority had found that patents were useless and therefore saw no value in patenting processes or products. The participants also mentioned that it was difficult to patent anything in South Africa and the timeframe for patent protection was limited. Furthermore, a slight adjustment to a product that had already been patented would render the patent null and void. The participants stated that the legal process of registering a patent and that related to patent infringement involved much red tape and was arduous. A few of the participants also feared patent trolls. One participant explained that patent trolls, which are either individuals or companies, would create patents with no other intention but to launch patent infringement cases. The intention is for the patent trolls to profit from the patent. The participants preferred to trademark their brand in order to receive royalties. Trademarks provided the participants with exclusive rights to use specific name(s) for their brands and prevented others from using them. They also allowed them to use the brand name to secure capital and loans, as well as to register their businesses in foreign countries, as they provide credibility and assurance of a brand's legitimacy. The participants explained:

***Participant 3:** "I do not believe in patents in the tech start-up world, there are other industries where it makes more sense but not in the tech space."*

***Participant 4:** "So, we have a new product, uhm we wanted to patent it, definitely. So, we spoke to a lawyer and they said that in South Africa, it is very difficult to patent an insurance product because what people can do is make a minor adjustment and then your protection doesn't apply anymore. Lawyers try to sway people from trying to patent insurance products but it's very important in my mind because when you invent something new, you need to be able to capture value off that and if we had the patent (I was actually talking to the other founder about it), our model could be so different because you could*

*just get a licence fee or a rebate then we wouldn't have to go through any of the other stuff."*

**Participant 8:** *"I would prefer trademarks. Patents are difficult to prove and to support."*

Hence, trademarks were seen to be more relevant for fintech start-ups than patents as patents which were difficult to obtain and maintain in South Africa. This finding is in line with existing literature explored as Siyanbola *et al.* (2011) found that patents were an optional requirement for technology start-ups.

#### **10. How important are networks and partnerships with existing financial institutions for fintech start-up success?**

Partnerships and networks were regarded as crucial by some participants and as detrimental by others. On the one hand, partnerships with corporations were seen to be quite toxic for fintech start-ups in South Africa as corporations were seen to be more interested in growing their businesses instead of growing smaller fintech start-ups and therefore would use these start-ups for their main idea, milk it for its full value and then leave the participants out in the cold once when they had met their objectives. Therefore, some of the participants chose not to partner with corporations. On the other hand, partnerships with corporations were seen to be crucial especially for fintech start-ups in the insurance, banking and payments space, as start-ups in these spaces often require the sponsorship or underwriting of a credible and well-known corporate with a good reputation. Depending on the type of fintech start-up business model and the goal of the fintech start-up, they needed to partner with corporations in order to get licences for their businesses. Partnerships were also vital because corporations were able to cover the basic overhead costs of fintech start-ups so they could focus on developing their ventures; this was stated as being quite helpful. Participants regarded South Africa as a network- and relationship-driven environment. The survival of a fintech start-up was seen to be dependent on relationships and partnerships with existing financial institutions, but at the same time was seen to be used by traditional financial institutions to assess the competition. The partnerships and networks also helped create opportunities. Much like Santisteban and Mauricio (2017: 10-11), collaborations and strategic partnerships are regarded as important for start-up success. The participants stated:

**Participant 1:** *"The networks and partnerships are usually toxic but they can carry you through if your plan is to implement something else at a later stage ... so you can milk them for their brand value, milk them for their experience and expertise ... you can learn a lot from them during the partnerships or relationship but it shouldn't be with your main idea because existing players look out for themselves."*

**Participant 9:** *"Okay so for me, it has been critical. South Africa's, and other markets, but South Africa in particular, economy is very network and relationship driven. You need to know people in order to have access to someone to discuss your product or service. You also need to partner up with people that can help you to access those networks if you want to start signing big deals and so on. You should also be able to have networks where you can discuss the solution and how you sell the solution."*

Hence, mentorship, partnerships and networks were seen to be beneficial for fintech start-up success in South Africa, but only when fintech start-up participants were moving in the right circles and partnering with the right corporations. This is aligned to the Giones and Miralles (2015: 39) who found that entrepreneurs used factors such as the marketplace, technological items and social capital signalling to reduce uncertainty and to succeed in the execution of the technology entrepreneurship procedure. This also correlates with Littunen (2000: 68) who uncovered the effect of networks and the local environmental traits on firm survival and found that the survival of new firms had a high dependence on internal networks as opposed to external networks. According to the authors, internal networks enhance innovation, efficiency and competitive advantage. In addition, the firm's market environment has an impact on its growth opportunities and its survival.

#### **11. How did you measure consumer adoption of your product/service?**

Most of the participants measured the success of consumer adoption of their products and services using quantitative adoption measures while a few used qualitative adoption measures. Adoption was stated by the participants as something that was not easy to measure as consumer inertia exists. Consumers are often slow to adopt new and innovative

products owing to the risks associated with these products, including personal data leaks and interface designs that are difficult to manoeuvre. The process from product trial to product adoption is often lengthy in South Africa. Furthermore, the timing of the launch of these products in South Africa is important and factors such as a lack of access to mobile phones and the internet, as well as the exorbitant data costs charged by existing telecommunications companies in South Africa, play a role in product to market readiness. An element of collusion exists amongst these telecommunications companies which often leads to high data costs. All these factors had a huge influence on the adoption of the participants' fintech products and services in South Africa. Furthermore, to determine whether to continue with the fintech business venture, the participants had to continuously measure adoption despite the difficulty involved in measuring it. The participants stated:

**Participant 2:** *“So, number of transactions conducted on our platform. There is a clear distinction between database and active database. Active consumer base. Repeat loans vs once off loans. So that is it. Numbers do not lie.”*

**Participant 3:** *“For our product, so we have our own estimates of how many SMEs are in the market that are not served by us yet and we track against that. How many SMEs we serve and how many SMEs we still need to serve.”*

**Participant 6:** *“So, it is literally by the number of customers. So, mine is about how many people we have been able to recruit and how many people have been able to stay with us, so the normal kind of growth and retention numbers are our current gage.”*

Similar studies that have focused on the adoption of fintech mainly discuss the reasons behind consumer adoption from a quantitative perspective. The technology acceptance model (TAM) is often applied to assess these factors (Chuang *et al.*, 2016; Hu *et al.*, 2019). For example, Stewart and Jürjens (2018) used it to assess fintech innovation adoption in Germany. The highlighted three issues that they felt to be significant in the adoption of fintech in Germany, namely, “poor user interface designs, data security issues and low consumer trust” (Stewart & Jürjens, 2018: 122). There also appears to be a direct

relationship between consumer trust and data security issues. Ryu (2018), for example, used the theory of reasoned action (TRA) framework to assess consumers' willingness to continuously utilise fintech in Korea. Legal, security, operational and financial risks were all highlighted as being significant risks affecting consumers' willingness to use fintech. However, in this study, the researcher focused only on the importance of consumer adoption of products and services for fintech start-ups. These were subsequently found to be significantly important but the reasons behind it would need to be explored further.

The interview question responses were summarised into themes as indicated in **Chapter 3**. The thematic analysis schedule example is included under **Appendix 3**.

### **4.3.2 FINDINGS FROM THE QUALITATIVE INTERVIEWS**

The findings suggest that the constituents of a typical framework focusing on fintech start-ups in South Africa would include the following components: discovery of venture ideas; customer-centric fintech platform development; financial capital; human capital; social capital; adherence to regulation; incubators and accelerators; business development; consumer adoption; and trademarks. Although some of these findings are consistent with previous literature on start-ups (Song *et al.*, 2008; Kirkley, 2018), they illustrate some additional insights regarding the factors that related to the fintech start-up establishment and sustainment process. The research also indicates the importance of developing fintech platforms based on customer feedback and business development tasks, which is consistent with the information derived from Oshodin *et al.* (2019).

Our initial fintech conceptual framework (**Figure 8**) derived from the existing literature highlighted the importance of:

- identifying the financial need or demand in the market
- generating an idea,
- conducting a feasibility study
- exploring the business opportunity from the idea
- planning the formation of the start-up
- prototype development
- patenting and approval
- production and marketing

- and adoption.

In the extended Fintech venture creation framework (**Figure 9**), we added the concepts below to the framework, as they had more significance in the South African context.

These concepts were:

- human capital - which consists of having the right resources and skillset to execute on business ideas
- social capital - which focuses on the relationships formed through mentorship, networks and partnerships
- customer-centric platform development - which consists of developing prototypes through customer feedback and continuous testing
- trademarks - which are used to protect the brand name of the start-up
- business development - which consists of the business tasks required to ensure growth and expansion of the startup, and
- incubators and accelerators - which are programmes that help fintechs over stumbling blocks and accelerate their growth.
- financial capital - not just finance, as the capital in itself is of importance as a startup cannot start or run efficiently without it.

Furthermore, in this research, patents were not regarded as significant whereas trademarks were regarded as more significant in the South African context. This is the reason why Patents was removed from **Figure 9** and replaced with trademarks. The planning and formation were also removed. The participants in this research study did not see the significance of planning their ventures as they mentioned that they spent more time “doing” as opposed to “planning”. The outputs from **Figure 8** remain significant as the basis of starting a Fintech startup is to address a need in the market specifically focusing on introducing new services, new products, new processes and new business models based on the needs of those who have not been served by the current financial institutions in South Africa. Furthermore, the inputs from **figure 8** remain significant as data, technology, money flow and organisation requirements are vital for the successful establishment of Fintech startups. Hence, based on the findings, the researcher proposes the Extended fintech venture creation conceptual framework (**Figure 9**) to demonstrate the factors that are necessary to create and sustain a fintech start-up in South Africa.

# EXTENDED FINTECH VENTURE CREATION CONCEPTUAL FRAMEWORK

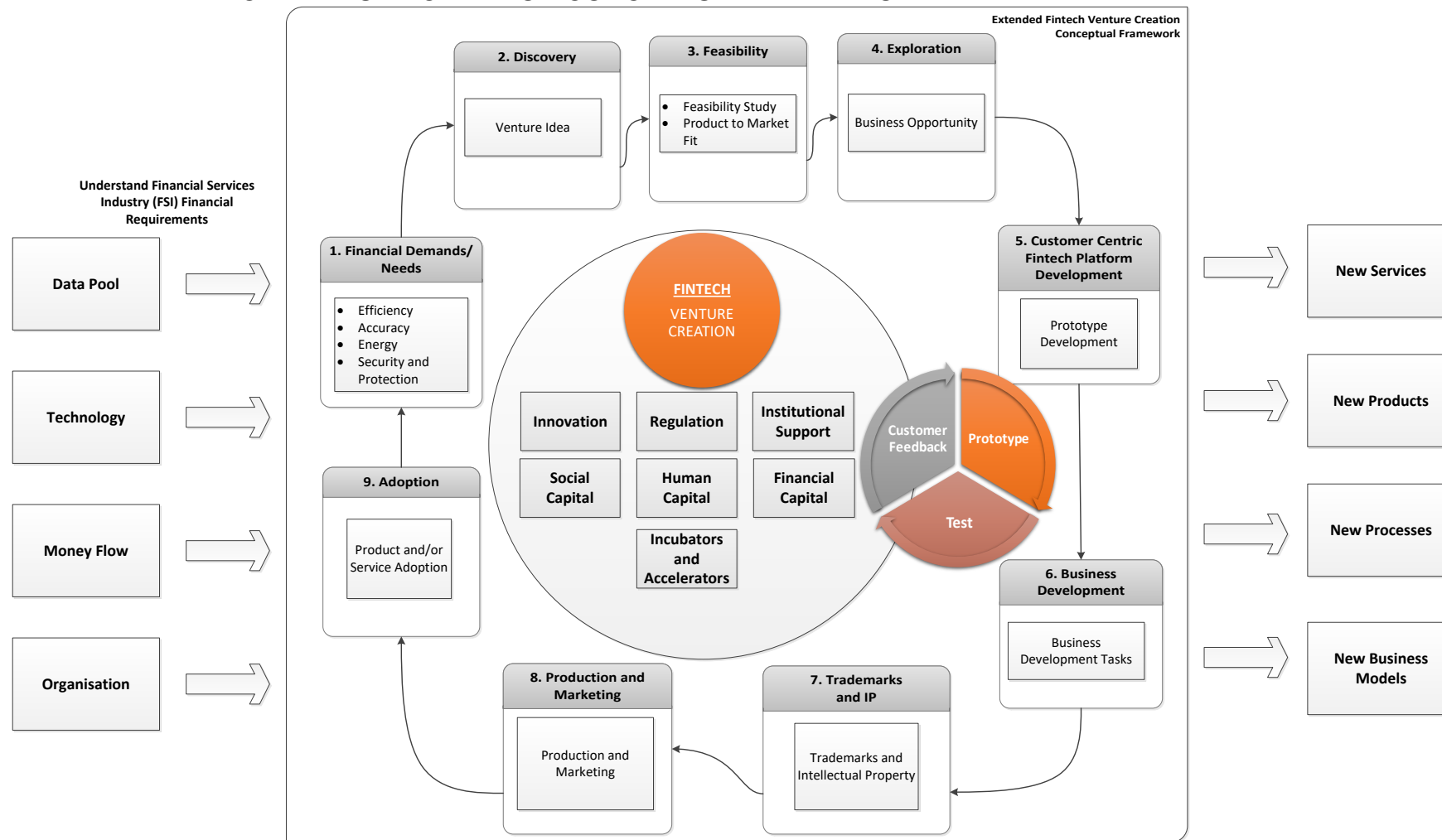


FIGURE 9 EXTENDED FINTECH VENTURE CREATION CONCEPTUAL FRAMEWORK



## 4.5 CONCLUSION

In Chapter 4, the researcher outlined the findings obtained from the research interviews conducted and provided some of the insights attained in the in-depth qualitative research interviews. This information was compared to existing literature to assess whether the findings coincided with what has been stated previously on start-up establishment and sustainment. Based on the findings presented, the researcher could conclude that the discovery of a venture idea is crucial in establishing a fintech start-up. Other factors such as financial capital, adherence to regulation, skilled human resources, business development tasks, problem-solving abilities, innovation, a good reputation and brand value, as well as varied skills such as entrepreneurial skills, IT skills and financial skills, all play a pivotal role in the success of a fintech start-up. The underlying issues that prohibit fintech start-ups from starting consist of capital barriers, stringent regulatory barriers, high costs, for example data costs, disingenuous incubators and accelerators, costly skilled resources and the lack thereof, and the literacy levels that prevail in fintech companies' target market are also important factors.

In the next chapter, the researcher will outline the themes derived from the information received from the study participants. A summary of the study, summarised results pertaining to the sub-research questions and the main research question, concluding remarks and the limitations of the study, as well as recommendations that the South African government can utilise to further support Fintech startups in South Africa will be discussed in the next chapter. Furthermore, recommendations for future research and researcher contributions will be discussed in the next chapter.

## **5 SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 INTRODUCTION**

The objective of this study was to develop a conceptual framework that could be used as a guideline by technology entrepreneurs in order to establish and sustain fintech start-ups in South Africa. It was hoped that the proposed conceptual framework would act as a guide to and help promote entrepreneurship and allow for sustainability. In order to develop this conceptual framework, the researcher reviewed existing literature to derive some of the key variables to consider when establishing a fintech start-up. To this end, semi-structured interviews were conducted with fintech founders and a fintech specialist to derive additional information specific to establishing and sustaining fintech start-ups in South Africa. The input obtained was assessed against existing literature.

The objective of this chapter is to provide a summary of the study, summarised results pertaining to the sub-research questions and the main research question, concluding remarks and the limitations of the study, as well as making recommendations that the South African government can utilise to further support Fintech startups in South Africa and summarising the contribution the researcher has made. The chapter will conclude with future research recommendations and a conclusion.

### **5.2 SUMMARY**

Chapter 1 provided the background to the research topic, the purpose of the study, problem statement, research questions and research objectives, as well as the limitations and the assumptions of the research paper. Chapter 2 focused on the current literature relating to the research topic, exploring the literature by dividing it into themes which were used to construct the basic conceptual framework. Chapter 3 focused on the research methodology and the data collection methods used in order to answer the research questions presented in Chapter 1. This chapter also explained how the data was analysed. Chapter 4 discussed the participants' background, analysed the research findings and presented a number of sub-conclusions. Chapter 5 concludes the research paper and includes a summary of the findings, conclusions and contributions and makes suggestions for future research in this field.

### 5.3 SUMMARY OF FINDINGS

The study was guided by the main research question and the sub-research questions:

#### Main question:

1. *How do technology entrepreneurs establish and sustain successful fintech start-ups in South Africa?*

#### Sub-questions (SQ):

1. What are the key success factors required to establish and sustain a fintech start-up? (SQ1)
2. What are the characteristics of a successful start-up? (SQ2)
3. What are the skills required for a fintech start-up? (SQ3)
4. What are the entry barriers that contribute to the failure of fintech start-ups? (SQ4)

The next section represents a summary of the research findings in accordance with the research sub-questions stated in Chapter 1.

#### 5.3.1 SQ1 - What are the key success factors required to establish and sustain a fintech start-up?

The findings pertaining to sub-question 1 are linked to the key success factors required to establish and sustain a fintech start-up. Ten themes emerged for sub-question 1. Under **fintech start-up key success factors**, the main themes that emerged were financial capital; social capital (mentorship, networks and partnerships); adherence to regulation; incubators and accelerators; human capital; discovery of venture ideas; customer-centric fintech platform development; business development; consumer adoption of products and services; and patents and trademarks. These themes were respond to the first sub-question regarding the key factors required to establish and sustain a fintech start-up in South Africa, focusing on start-up establishment and sustainment in South Africa. Below is a summary of the thematic patterns derived from the data.

##### 5.3.1.1 Theme 1a: Financial Capital

According to the results of this study, financial capital plays a major role in establishing and sustaining a fintech start-up in South Africa. Like any other start-up, capital and cash flow is

the bottom line of a fintech start-up and, without it, fintech start-ups are unable to compete with existing financial players such as the banks in the market. Furthermore, some of the key start-up growth milestones cannot be reached without a strong financial backing. Capital providers often do not provide patient capital to start-ups and this is required for start-up survival. Accordingly, start-up survival is heavily dependent on investors. The lack of readily available access to capital has forced most entrepreneurs to resort to alternative avenues to obtain funding, such as bootstrapping or self-funding, capital from corporate competitions or programmes such as accelerators and incubators, equity and cash investments from investors such as venture capitalists and angel investors, and family and friends. Investors, specifically angel investors, are crucial for early stage fintech start-ups as most have long lead times getting the company up and running. Angel investors have the type of risk profile that would allow them to invest in an idea or product in the early stages of fintech start-up. However, there are very few angel investors in South Africa that are known to the fintech community. Venture capitalists are of no use in the early stages of a start-up as they often have strict criteria in place for venture capital funding applications. Hence, entrepreneurs only approach venture capitalists when their revenue has exceeded a specific threshold. Regardless, financial capital is critical to ensure the success of fintech start-ups and new venture performance.

#### **5.3.1.2 Theme 2a: Social Capital (Mentorship, Networks and Partnerships)**

The results of the current study suggest that mentorship, networks and partnerships (which have been grouped under social capital) are important factors to consider for fintech start-ups. Mentorship enables fintech founders to have access to new networks of people and opportunities that they previously would not have had access to. Mentorship also enables the founders to unpack some of the challenges that they are faced with which often helps reduce the amount of time they would have spent trying to find a solution to a problem. Mentors provide advice, support and guidance throughout the entrepreneurship process. Accountability was also mentioned as one of the key reasons behind having a mentor. Mentors are good at holding founders accountable and keeping them on track. The financial services sector is also a complicated industry to infiltrate and mentors who have experience in this industry are seen to be the most valuable, while mentors who do not have a financial interest in the business are seen to be the most helpful.

Partnerships with corporates, banks and insurance companies are seen to be vital, especially for fintech start-ups in the insurance, banking and payments space, as fintech start-ups in these spaces often require the sponsorship from or underwriting by a credible, and well known corporate with a good reputation. Depending on the type and goal of the fintech start-up, entrepreneurs often need to partner with corporations in order to obtain licences for their businesses. Partnerships with corporates, banks and insurance companies are also seen to be beneficial because these organisations can cover the basic overhead costs of fintech start-ups, therefore enabling fintech founders to focus on developing their ventures. South Africa is also a network and relationship driven environment and these partnerships and networks create opportunities for fintech founders. The survival of a fintech start-up is dependent on relationships and partnerships with existing financial institutions but at the same time, it is known that traditional financial institutions use these relationships to assess their competition and the technology in the market in order to ensure that it does not interfere with their profit margins. In this research, the researcher found that it would be beneficial for fintech start-ups to partner or collaborate with existing corporations and financial institutions in the early stages of start-up establishment, as long as their intellectual property is protected. Furthermore, incumbent banks should consider exploiting opportunities to collaborate with fintech start-ups. Hence, partnerships and networks are beneficial to fintech start-ups in South Africa.

### **5.3.1.3 Theme 3a: Adherence to Regulation**

According to the results, fintech-specific laws and regulations have not been designed for fintech start-ups. All fintech start-ups in South Africa must comply with the laws and regulations linked to the specific fintech business models that they choose to go into, for example payments, banking, investments and so forth. This is an important observation as it seems to be a common occurrence globally. Depending on the type of fintech being set up, adherence to ICASA, BEE, PASA, FSCA and NCA regulations are also seen to be of importance. Furthermore, the higher up the value chain the fintech start-ups plan to go, the more significant the regulatory implications and costs. Fintech founders must consider all the regulations linked to their business models as ignorance may lead to start-up failure. The right individuals with the required expertise to deal with these regulatory requirements are seen to be very beneficial for fintech start-up progress in South Africa. What is interesting to note is that regulation has also been highlighted as a barrier to fintech start-ups in South Africa so the very factor that is key to establishing a fintech start-up is also the reason for

most fintech start-up failure. It also poses of the biggest hurdles that start-ups have to overcome.

#### **5.3.1.4 Theme 4a: Incubators and Accelerators**

The results suggest that there is some benefits related to incubators and accelerators, and the groups are seen to be a requirement for fintech start-ups. This is because incubators and accelerators relieve start-ups of some of the cost pressures linked to office space, marketing and office equipment. Incubators and accelerators often come with amazing mentors who provide fintech start-ups with valuable guidance. Furthermore, the funding provided by these incubators and accelerators is often higher than the average and is often equity free funding. However, the motives behind incubators and accelerators are often questioned. The administration and training that entrepreneurs have to go through is also seen to be futile. Hence, they may also be regarded as a barrier for fintech start-ups.

#### **5.3.1.5 Theme 5a: Human Capital**

The results of the study suggest that access to the right human resources and skillsets is required to establish and sustain a fintech start-up in South Africa. This observation is an important one, as the right skills and resources can help with executing fintech business ideas and developing fintech start-ups. Owing to the superior technical and niche skills required to establish a fintech start-up, it is also important for start-up team members to have experience and the right expertise. They also need to possess specific skills which could include accounting skills, actuarial skills, and technological skills. Skilled resources in the country are scarce and, as a result, fintech start-up founders often seek these resources in other countries such as India. In addition, local resources are expensive to procure and therefore fintech founders often prefer to use third-party resources in other countries because labour is cheaper. However, stringent visa procedures prohibit or make it more expensive for third-party resources to work in the country. The weak economic environment and the high unemployment rates in South Africa highlight the significance of this point; South Africa cannot afford to deepen the unemployment rates by allowing too many foreign workers to work in the country as jobs are scarce. Hence, this finding is quite significant. Account management of local resources is also seen as a hindrance, as local resources are often seen to be unprofessional or do not produce the best quality work in line with what is required. The scarce skilled resources that do exist in the country are also averse to joining start-ups as there is little job security. Furthermore, corporations are willing to pay them

considerably more money than start-ups. This also highlights how competition plays a role in acquiring the right skilled resources.

#### **5.3.1.6 Theme 6a: Discovery of Venture Ideas**

The study found that the discovery of venture ideas (“ideation”) phase in the formation of a start-up is important, as the ideas formed often address a specific need or problem. The ideas are seeded in various ways such as from the founder’s professional careers, the shared economy, events happening in the news and social media, customer frustrations, revenue opportunities, and by coincidence. Furthermore, failed ventures can be a source of business opportunities and can be used to assess the feasibility of specific business ideas and ventures. The way the founders in this study were seeded these ideas highlights that this could be a true assertion and should therefore be an important element to consider in the formation of fintech start-ups.

#### **5.3.1.7 Theme 7a: Customer-centric Fintech Platform Development**

After assessing the results of the data, it was noted that the way founders formulate their products and services is important and should be customer centric. The most common process used in the market resembles that of design thinking, where entrepreneurs empathise with the customer or market to find out what their problem or need is, develop a deep understanding of the challenge, clearly articulate the problem that they want to solve either through a business case or problem statement, brainstorm the potential solutions and select and develop a solution that will address the problem. Thereafter, a prototype (or a series of prototypes) is developed to test all or part of the solution. The final step would be to take the product and test it with the consumer or market, to see if they will use the solution presented, and then continuously engage with the consumer or market to improve on the solution. The founders may have not followed the steps in that order, as all of them followed the steps in different ways, but the principles were aligned. Furthermore, it was noted that all fintech start-ups follow their own unique processes which cannot necessarily be generalised as they are very hands-on, non-linear and practical. However, all methodologies are customer-centric where the customers’ needs are at the centre of their products and service development. This is an important finding as the way fintech products are developed plays an important role in forming fintech start-ups.

### **5.3.1.8 Theme 8a: Business Development**

The results of the study suggest that business development is an important element for fintech start-ups in South Africa. It was found in this study that having a foot in the business, focusing on infiltrating new markets and creating commercially viable relationships and partnerships with other organisations, has a positive impact on sustaining fintech start-ups. The importance of having business acumen has been highlighted as a requirement for the survival of start-ups. A basic understanding relating to choosing a viable business model, registering a business with the CIPC, creating a value proposition, adhering to existing laws and regulations linked to SMEs and tax, opening a bank account, marketing and distribution, and setting competitive pricing models contributes to the success of fintech start-ups. To stay relevant in the financial services market, fintech start-ups must spend time creating initiatives and thinking of creative ideas to further advance their businesses. Competition is starting to pick up within the fintech sector and therefore the focus also needs to be on increasing revenues, increasing profits through strategic partnerships and business expansion into markets outside South Africa.

### **5.3.1.9 Theme 9a: Consumer Adoption of Products and Services**

Owing to the nature and the infancy of the South African fintech market, it was noted in this study that the adoption of fintech products and services is key to measuring the success of fintech start-ups, as the adoption of fintech products and services is often not easy or common in South Africa. This is partly due to consumer inertia. The specific target market that fintech start-ups address are also not entirely digital consumers and that results in a lack of adoption of their products and services. Most of the entrepreneurs have key performance indicators (mainly quantitative) for measuring adoption. Product and service adoption is a key indicator of the success of the fintech products and services in South Africa. In some cases, qualitative information is derived to get to the root cause of adoption issues as it is more difficult to get these insights from quantitative measures. Hence, emphasis was placed on the importance of assessing product and service adoption.

### **5.3.1.10 Theme 10a: Patents and Trademarks**

Based on the results of the study, it was further found that patents are not useful or effective in the South African market, and entrepreneurs do not see the value of patenting. It is also often difficult to patent anything in South Africa. The legal process of patent infringement is also arduous to pursue and not worth the time and money of the entrepreneur who is starting



off in business. Moreover, patent protection in South Africa has a limited timeframe. Furthermore, the invention would only be able to be patented if the product has not been sold or revealed to the public before registering the patent and a slight adjustment to a product that has already been patented would render the patent null and void. "Patent trolls" who register patents but never build on their patents, and spend time attacking people who build something like their patents is a prominent fear of entrepreneurs. Hence, preference is given to trademarks which provide the entrepreneurs with exclusive rights to use the specific name(s) of their brands and prevent others from using them. This allows them to use the brand name to secure capital and loans as well as to register their businesses in foreign countries as trademarks provide credibility and assurance of brand legitimacy. Hence, trademarking has been highlighted as an important factor when establishing a fintech start-up.

### **5.3.2 SQ2 - What are the characteristics of a successful start-up?**

Under **fintech start-up characteristics**, three themes were identified. The main themes that emerged were problem-solving, innovation, good reputation and good brand value. The themes in this group answered the second sub-question regarding the characteristics of a successful fintech start-up in South Africa. The purpose of this question was to uncover what set fintech start-ups in South Africa apart from general start-ups. Below is a summary of the thematic patterns derived from the data.

#### **5.3.2.1 Theme 1b: Problem-solving**

The study found that fintech start-ups in South Africa are formed to solve a specific problem or address a specific need. Fintech entrepreneurs and teams must have the inherent analytical ability to solve existing social and economic problems linked to financial services provision. Without this skill, fintech start-ups are unable to derive viable solutions to existing market-related problems and needs. A good understanding of the problem that needs to be addressed gives fintech start-ups good standing in the market and a competitive edge in the market. It also helps them deal with the consumer inertia present in the South African market.

### **5.3.2.2 Theme 2b: Innovative**

The main focal characteristic of a fintech start-up is its ability to disrupt the market with new and innovative solutions; whether they are linked to process innovation, service innovation or product innovation, they must show that they are doing things differently. Fintech start-ups must be innovative in everything they are involved in. What sets them apart from traditional financial service providers is their ability to solve problems in ways that have not been done before. Once fintech start-ups have introduced innovative measures, they are able to disrupt the market and take ownership of a portion of the market share.

### **5.3.2.3 Theme 3b: Good Reputation and Good Brand Value**

Owing to the infancy of fintech, start-ups must prove their credibility, have a good reputation and good brand value. They must also be perceived as trustworthy by South African consumers as consumer inertia exists in the market. The South African market is also spoilt for choice and there are few gaps in the financial services space; hence, a start-up's reputation is important. Consumers often struggle to adopt fintech products for various reasons such as cyber security concerns and personal data leaks. Reputation is linked to consumer adoption of fintech products and services, so once fintech start-ups are able to create a good reputation for themselves, they are able to gain consumers' trust and increase the adoption of their products and services.

## **5.3.3 SQ3 - What are the skills required for a fintech start-up?**

### **5.3.3.1 Theme 1c: Problem-solving Skills**

In terms of skills, the main skill that the researcher identified was problem-solving skills. The employees and entrepreneurs need to possess the inherent analytical ability to solve existing social and economic problems linked to financial services provision. Without this skill, fintech start-ups are unable to derive viable solutions to existing market-related problems and needs. A good understanding of the problem that needs to be resolved puts fintech start-ups in good standing in the market and gives them a competitive edge, therefore problem-solving skills are imperative for fintech start-ups.

### **5.3.3.2 Theme 2c: Financial Skills**

Fintech start-ups require a certain level of understanding and skill in terms of finances, which is key to running a successful fintech start-up. Acquiring or hiring the right individuals who

are experts in accounting, actuarial matters and so forth puts the fintech start-up in a better position in the long term; hence, this is a core skill that fintech start-ups need to possess.

#### **5.3.3.3 Theme 3c: Soft Skills**

In all start-ups, not just fintech start-ups, soft skills are required to perform basic business networking and sales. People also have to be managed, so the appropriate soft skills and interpersonal skills are required to ensure that the human resources required to execute fintech start-up business ideas are satisfied. Fintech entrepreneurs mainly need to have perseverance and resilience as this type of start-up does not generate income in the short term. Hence, soft skills are imperative for the progress and performance of fintech start-ups.

#### **5.3.3.4 Theme 4c: Entrepreneurial Skills**

The other core skill required for all entrepreneurs is entrepreneurial skills. These are needed to transform a business idea into something feasible and involve the use various skills such as innovation and creativity. At the same time, fintech entrepreneurs require qualities such as bravery and a willingness to go against the norm. It should also be noted that entrepreneurial skill appears to have elements of some of the other skills the researcher has mentioned such as business management skills and soft skills. Most entrepreneurs develop their entrepreneurial skills by trial and error; the more time they spend developing their businesses, the more skilled they become in this area. Hence, this has been highlighted as a critical skill.

#### **5.3.3.5 Theme 5c: Information Technology (IT) Skills**

IT skills in fintech start-ups are crucial as platforms cannot be developed without these skills. Fintech start-ups that have a founder with a good technology background can tackle IT-related issues with more conviction and often are faced with fewer technological challenges owing to their understanding and experience of IT. Having IT skills also helps reduce the overhead costs related to building fintech platforms which is often the highest cost apart from regulation costs. Hence, this is a pivotal skill to possess in a technology-based start-up.

#### **5.3.3.6 Theme 6c: Business Management Skills**

Similar to other existing SMEs and corporations, fintech start-ups can only function adequately if they are managed well from a business perspective. Without this ability or skill,

the business may not have longevity as the business would be managed poorly. Therefore, it is important for entrepreneurs to have some level of understanding of business and how the market operates. This was stated to be true by most of the entrepreneurs as they discussed the processes and procedures for establishing and sustaining their start-ups.

#### **5.3.4 SQ4 - What are the entry barriers that contribute to the failure of fintech start-ups?**

Under **barriers and contributors to fintech start-up failure**, the seven main themes that emerged were regulatory barriers, financial capital barriers, costly and scarce skilled resources, disingenuous incubators and accelerators, poor networks and partnerships, high costs and literacy levels. The themes in this group answered the fourth sub-question regarding the barriers to entry for fintech start-ups in South Africa. The purpose of this question was to uncover what hindered fintech-start-ups from progressing and establishing themselves in the market to ensure that preventative elements would be included in the framework developed. Below is a summary of the thematic patterns derived from the data.

##### **5.3.4.1 Theme 1d: Regulatory Barriers**

In this study, it was found that regulatory barriers contribute to fintech start-up failures in South Africa, as government policies, taxes and regulations have not contributed positively to start-up formation. South Africa has a highly oligopolistic financial industry and the government does not quite understand how to regulate financial technology along with other up and coming trends such as machine learning, artificial intelligence and block chain; therefore government relies heavily on the current industry players in the ecosystem to provide guidance on best practices. However, this comes at a price, as the industry players are more concerned with their profit margins. The industry players provide input on best practices, laws and regulations to keep new entrants from entering the market and to maintain the current status quo. The laws and regulations have also been designed to protect industries as opposed to encouraging innovation and start-up development. This is an element that needs to be considered carefully and not overlooked when establishing a fintech start-up in South Africa.

#### **5.3.4.2 Theme 2d: Financial Capital Barriers**

Most fintech start-ups face financial capital challenges. South Africa does not have a strong venture capital and angel investment culture, which makes it difficult to access funding for the long term. Furthermore, South African fintech entrepreneurs find themselves bootstrapping because access to finance is a problem. The organisations in South Africa that are providing funding are normally averse to risk and spend a lot of time scrutinising fintech start-ups. In addition, the individuals or companies providing funding are, in most cases, individuals or companies that have never started or worked with a start-up. They have also not taken start-ups from inception to operation which ultimately creates its own set of problems. Often, there are incubation and acceleration programmes that provide fintech start-ups with funding, but the funding is often absorbed by office space costs, training costs and mentorship costs. Little of the funding goes to the entrepreneur's venture, which has been highlighted as a significant problem with corporate and incubation funding. Fintech founders also find themselves moving from one incubation programme to the next, instead of focusing on building a credible business. As mentioned previously, a lot of the funding provided right now is from incubation and accelerator programmes created by corporates and these programmes can often be seen to be a distraction for the entrepreneur. They are also often used to assess the competition or technology in the market. Government does not get involved and funds from this source are generally geared to funding new technology that is hardware-based. Owing to the oligopolistic nature of South Africa, entrepreneurs need to have big pockets and a strong backer in order to survive as a fintech start-up. Regulation is also highly dependent on capital and the two go hand in hand. Owing to political concerns, international investors are encouraging fintech entrepreneurs to build their start-ups outside the country before funding them, while venture capitalists are seen to be more like banks and often fund fintech start-ups that already have traction, have a steady stream of revenue per annum and are profitable. Therefore, capital would need to be considered even before trying to establish a fintech start-up in South Africa.

#### **5.3.4.3 Theme 3d: Costly and Scarce Skilled Resources**

The study has found that skilled resources are scarce in South Africa and are often expensive to procure. While third-party resources located in other countries are often used to develop fintech products, regulations prohibit them or make it expensive for them to work in the country owing to stringent visa procedures. This may be due to the high unemployment rate in South Africa. Account management of local resources was also seen to be a problem

as local resources are at times seen to be unprofessional and often do not meet deadlines. Therefore, they are often regarded as a complete waste of time, resources and money. As a result, the current skilled resources available in the market would also need to be assessed when establishing a fintech start-up in South Africa.

#### **5.3.4.4 Theme 4d: Disingenuous Incubators and Accelerators**

The results suggest that incubators are helpful, but their motives are questionable. It seems as the current incubators and accelerators have been formed for compliance purposes only. There are many incubators and accelerators in the market, but they lack coordination and are often fragmented. Entrepreneurs in the study mentioned that programmes are basic and most things can be learnt on platforms such as YouTube. The workshops, courses and training provided are also very time-consuming and the focus is not on their primary business. Furthermore, our study has found that entrepreneurs have access to very little of the money awarded by incubators. This is important to note as most fintech start-ups are affiliated to some incubator or accelerator programme at some point. Hence, the motives of incubators and accelerators would also need to be assessed prior to participation when establishing a fintech start-up in South Africa.

#### **5.3.4.5 Theme 5d: Poor Partnerships and Networks**

Partnerships with corporations, banks and insurance companies were seen to be quite toxic for fintech start-ups in South Africa. Corporations were seen to be more interested in growing their businesses instead of growing smaller fintech start-ups, and therefore use fintech start-ups to access their main idea, milk it for its full value and then leave fintech entrepreneurs out in the cold once they have met their objectives. Therefore, most fintech entrepreneurs were hesitant to partner with corporations and allow them to use their main ideas. This issue hinders fintech start-ups from collaborating with banks and prevents them from assisting the demographic that is not served by the traditional financial services companies. Hence, the correct networks and partnerships would need to be formed in order to ensure the success of a fintech start-up in South Africa.

#### **5.3.4.6 Theme 6d: High Costs**

One point that has been highlighted to be a barrier to fintech start-up is the high costs involved in running such a start-up and the hiring costs linked to hiring the right resources. Data costs were also highlighted as a significant barrier as most fintech platforms require data in order to operate, thus inhibiting people's access to digital platforms. The costs linked

to locally developed platforms were highlighted as being significantly high, hence the founders struggled to afford local resources. Accordingly, this is an important element to consider when establishing a fintech start-up in South Africa.

#### **5.3.4.7 Theme 7d: Literacy Levels**

A point that was highlighted, and which could be overlooked as a barrier, was literacy levels. The literacy levels of the majority of South Africans is relatively high, however, the demographic that fintech start-ups normally target has low literacy levels. A few of the founders highlighted this as a significant barrier and as a result of the lack of finances that this demographic has access to, they often have an attachment to cash. Hence, the level of literacy related to digital platforms plays a role in the success of a fintech start-up.

### **5.4 MAIN RESEARCH QUESTION: *HOW DO TECHNOLOGY ENTREPRENEURS ESTABLISH AND SUSTAIN FINTECH START-UPS IN SOUTH AFRICA?***

#### **EXTENDED FINTECH VENTURE CREATION CONCEPTUAL FRAMEWORK**

In summary, Figure 9 in section 4.3.2 introduced the extended fintech venture creation conceptual framework, which includes the concepts that answer the main research question. The findings of the study suggest that the constituents of a typical framework focusing on fintech start-ups in South Africa include:

1. Discovery of venture ideas
2. Customer-centric fintech platform development
3. Financial capital
4. Human capital, social capital
5. Adherence to regulation
6. Incubators and accelerators
7. Business development
8. Consumer Adoption
9. Trademarks

Our initial fintech conceptual framework (**Chapter 2**) derived from existing literature mentioned the importance of idea generation, feasibility studies, prototyping, patenting and approval, production and marketing, and adoption. However, our study found that human

capital, social capital, customer-centric platform development, trademarks, financial capital, business development and incubators and accelerators were also important for the creation and sustainability of Fintech start-ups in South Africa. Our research also found patents to be insignificant.

Hence, based on the findings, the researcher proposed the **Extended fintech venture creation conceptual framework (Figure 9)**, as illustrated in **Chapter 4**, to demonstrate the factors that are necessary to create and sustain a fintech start up in South Africa.

## **5.5 SUMMARY OF CONTRIBUTIONS**

The main aim of this study was to address the gap in the fintech entrepreneurship literature, as identified by the researcher, regarding how fintech start-ups are formed and sustained in South Africa, and to develop a conceptual framework that could be used as a guideline by technology entrepreneurs to establish and sustain fintech start-ups in the country. The researcher accomplished this by exploring the existing literature on fintech, venture creation and start-ups and conducting interviews with fintech founders and a fintech specialist in South Africa who had been involved in the process of establishing and sustaining a fintech start-up.

In terms of the practical contributions, the first practical contribution of the present research is the empirical data on the factors and variables required to establish a fintech start-up in South Africa. This is important as the closest comparable study in an African context was conducted by Siyanbola *et al.* (2011) in Nigeria which focused more on technology start-ups as opposed to financial technology start-ups. By highlighting the important factors and variables required to establish and sustain a fintech start-up in South Africa, the researcher was able to

- develop a conceptual framework that technology entrepreneurs could use as a guideline
- provide inputs so that policymakers could use the information to develop better policies and laws surrounding fintech, and
- assist trainers and consultants to design tools and actions that may further educate existing fintech and technology entrepreneurs in South Africa.

The second practical contribution is the empirical data on the factors and barriers that lead to the failure of fintech start-ups in South Africa. The findings suggest that specific barriers



prohibit or hamper fintech start-up formation in South Africa. These findings will enable entrepreneurship research experts to uncover some of the underlying root causes of fintech start-up failures in South Africa and will enable technology entrepreneurs to avoid some of the pitfalls stated in this research. This will also enable government to put measures in place to further support and assist fintech start-ups.

The third practical contribution is the empirical data pertaining to the skills required for fintech start-ups in South Africa. Technology entrepreneurs might find it useful to see what skills they would need to develop and/or acquire in order to successfully form and sustain a start-up.

## 5.6 RECOMMENDATIONS

Based on the analysis of literature and key findings of the research interviews, a list of recommendations for the fintech ecosystem is proposed to better assist fintech start-ups in South Africa.

1. **Adjust policies, laws and regulations to accommodate innovative fintech solutions by fintech start-ups:** The South African Reserve Bank (SARB) should consider adjusting the current regulations to accommodate the potential risks and changes caused by the use of up-and-coming technologies, such as artificial intelligence and fintech. They should also consider resolving regulatory fragmentation in order to enable incumbents and new fintech market entrants to operate on a level playing field. Furthermore, when assessing their current regulations, they should consider the positive impact that fintech organisations have on the economy from a financial inclusion and ethical data use perspective. Entrepreneurs in SMEs and fintech start-ups should also be the drivers of SME policies and regulation.
2. **Accessible regulatory sandbox:** The proposed innovation hub to be established by the SARB and the Financial Services Conduct Authority (FSCA) in the first half of 2020 includes a regulatory sandbox. However, such sandboxes are currently in their infancy in South Africa and in this case the sandbox has not yet been established. These bodies should consider launching this sooner as fintech start-ups across the country are pleading to have a sandbox where they are able to experiment and test their products in a controlled regulatory environment without facing major regulatory hurdles.

- 3. Small business corporation (SBC) tax adjustment and tax rebates for fintech start-ups:** The South African Revenue Services (SARS) should consider reducing the current taxes levied on SMEs and fintech start-ups in South Africa. As of February 2020, SBCs do not pay tax on income below R79 000. However, it would be ideal to amend this figure to R150 000 in order to give fintech start-ups and SMEs breathing space and allow them to further invest the income that would have been charged to tax in their businesses. A tax rebate for fintech start-ups should also be considered on condition that they create a specific level of employment and can prove that they have been able to cater to those who have been financially excluded by the current incumbents. By giving tax rebates, government could create an ecosystem conducive for start-ups to thrive.
- 4. Create fintech entrepreneurship programmes with tax incentives:** The SARB should consider creating programmes similar to incubators and seed accelerators but with the added benefit of tax incentives. This would enable the innovation process and would ensure the longevity of fintech start-ups in South Africa. These programmes should not be associated with incumbents so as to ensure that fintech start-up technologies and intellectual property are protected and managed adequately.
- 5. Pooled funds:** One of the biggest challenges for fintech start-ups in South Africa is access to capital/ funding. It is recommended that a pooled fund for fintech start-ups be created in South Africa, thus reducing the chances of fintech start-up entrepreneurs moving from one seed accelerator to another just for funding. This would also ensure that the entrepreneurs focus on developing their business models instead of chasing funding. The pooled funds would also assist in the development of fintech skills and the funding of viable fintech business ideas. Having one department in charge of entrepreneurship/SMEs/economic development would also be beneficial.
- 6. Develop a strong fintech community of players:** South Africans need to have a stronger community of players in the sector and ways of interacting between investors, start-up entrepreneurs, as well as all the existing companies, so that discussions around how they can work better together can be conducted. Cape Town and Stellenbosch seem to have a good start-up community that connects the industries but other cities, such as Johannesburg and Pretoria, do not appear to have this.

## **5.7 LIMITATIONS OF THE RESEARCH STUDY**

Owing to the nature of the research questions and the limited number of fintech start-ups in South Africa, the researcher relied largely on qualitative research methods. While care was taken to validate the results of the research, our results were limited to those provided by the sample. On interpreting the findings, the researcher noted that too few questions on the skills required for fintech start-ups in South Africa had been included in the interview schedule and it is therefore recommended that additional research on this be conducted in future research on this topic. Furthermore, more questions could have been asked about the characteristics of fintech start-ups in South Africa. Increasing the number of fintech founders interviewed in South Africa may also have enhanced the generalisability of our findings; however, due to the limited number of fintech start-up founders in South Africa, this proved to be a problem. Despite attempting to interview more than 15 founders, this was not possible owing to time constraints and the availability of the founders. The coronavirus pandemic also created some issues as many the entrepreneurs were unable to meet with the researcher or were more concerned with saving their businesses as lockdown forced businesses to put their services on hold. The majority of the founders are based in Cape Town and Johannesburg but spent a considerable amount of time traveling locally and internationally for business, so most were unable to participate in the research despite having an interest in it. Furthermore, the researcher was limited in that there were very few prior research papers that addressed this topic. Fintech in South Africa is also a recent phenomenon which could possibly explain the lack of scholarly papers on this topic in South Africa.

## **5.8 FUTURE RESEARCH**

This study revealed some implications for future research. A suggestion for future research is to conduct quantitative research on the topic by testing the conceptual framework in the market to assess its relevance. The hypothesis could assess the correlation of the variables to the success of a fintech start-up in South Africa. A survey would be the recommended instrument in this instance as it could reach a wider group of fintech founders.

The research has also revealed the importance of assessing the relevance and role of incubators and accelerators in the South African market for fintech start-ups, as this may reveal whether incubators and accelerators have been formed for compliance and regulatory

purposes or have been formed with the true intention of advancing fintech start-ups and innovation in the South African financial sector.

Other research directions could consist of comparing the South African fintech market with other innovative fintech African markets such as Kenya, Ghana and Nigeria. Future studies could also assess the adoption of fintech platforms in South Africa by consumers to assess the reasons behind the slow adoption rate of fintech platforms and unpack the reasons behind the resistance to change. A thorough assessment of the skills required to run and sustain a fintech start-up would also need to be explored further as the information provided in this research study was limited in that regard. This would assist South Africans in determining the type of fintech skills required and to ensure that universities around the country amend or adjust their curriculum in line with these skills. Furthermore, a case study focusing on the methodologies or approaches used in fintech start-ups in South Africa would yield some interesting results as this has not been explored in the existing literature. The importance of collaborating with traditional financial institutions for fintech start-ups could also be explored, but from a qualitative perspective.

## **5.9 CONCLUSION**

As indicated by the literature on financial technology, this sector is a growing phenomenon both globally and in South Africa. Great strides need to be made in terms of regulation in order to further assist the formation of fintech start-ups in South Africa. These challenges range from high tax rates to policies, laws and regulations that do not cater for new fintech market entrants. The necessary human resources with the right expertise and knowledge to overcome these hurdles are required for fintech start-ups to progress in the future, however, these resources come at a significant cost. They are also key to the execution of fintech business ideas. Financial technology start-ups in South Africa are enabling innovation in an industry that has a stringent regulatory environment, high bureaucratic costs, incumbent legacy systems, and strong competition from traditional financial institutions. Fintech startups are also founded to address the gap that is caused primarily by a lack of financial assistance to the unserved and the unbanked, but also to the SME market. This gap seems to be caused by the traditional financial institutions' inability to adapt to new technology and innovation required to serve the unbanked.

The fintech start-ups in this study integrate existing technologies such as artificial intelligence, block chain and data science with finance technologies and practices in order to cater for those who have been financially excluded by traditional financial institutions and/or to enhance the efficiency and effectiveness of current financial technologies, processes and procedures within existing businesses. The start-ups are innovating in different areas of finance such as payments, lending, investments and so forth. However, it would appear that these start-ups are unable to survive without the financial backing of good investors (specifically angel investors) that do not have an equity stake in their start-ups. Furthermore, because the time to market is quite lengthy, patient capital is also seen to be an important consideration for fintech start-up survival. Additional support from a financial capital perspective would help drive innovation in the country and the output of new and innovative fintech products could significantly increase with more funding.

The formulation of these ideas is seeded from various avenues; however, the key element derived from how these ideas are seeded is addressing a specific need or problem within the market that has a finance focus. The platform development methodology also plays a significant role as fintech start-ups in South Africa often have to develop their platforms alongside their customers to ensure that these are products that the consumers is willing to invest in. Mentorship is also a key requirement for start-ups as mentors are able to assist fintech start-ups in navigating some of these typical challenges faced by fintech entrepreneurs. They also provide fintech founders with access to a specific network of people that they may have not previously been given access to which is important, as the South African business sector is highly network and relationship driven.

The researcher considers that is important for the government to assist where it can from a regulation perspective and provide more support to fintech start-ups. An adjustment to some of the tax laws to cater for start-ups and SMEs would be a significant development. Incubator and accelerator programmes would also need to be looked at to assess whether they are assisting fintech entrepreneurs or fulfilling a compliance requirement. More needs to be done to educate South African citizens about fintech start-up products and services that are being produced locally, as this may accelerate the adoption of fintech products and services, further encouraging an increasing number of fintech products and services to be created. It would also be beneficial for fintech entrepreneur representatives to become involved in the formulation of laws and regulations surrounding fintech. This would give government and

specifically the SARB, a better understanding of the challenges faced by fintech entrepreneurs in South Africa.

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## APPENDIX 1 – SEMI-INTERVIEW SCHEDULE

Theme	Sub-themes	Key Questions	References
<b>1. Introduction+ Venture Idea</b>	How they came up with the idea for the Fintech start-up	1. Please provide a brief introduction on who you are and what type of Fintech start-up you are currently running? 2. Where did your idea to establish a Fintech start-up stem from? Did the idea come from an existing venture, a former failed business opportunity or by coincidence?	Bocken (2015) Becker, Brem and Knyphausen-AufseB (2015)
<b>2. Successful and Failed Fintech start-ups</b>	CSF, Characteristics Failed Fintech start-ups, set up requirements.	3. What are the standard requirements to create a Fintech start-up in South Africa? What is required to ensure the sustainability of the Fintech start-up? 4. Have you started a Fintech start-up before? What led to its failure? 5. What are the Fintech barriers in South Africa?	Bocken (2015) Song <i>et al.</i> (2008)
<b>3. Fintech prototype and product formulation process</b>	Fintech product/service formulation	6. What is the general process for formulating a Fintech product or service? e.g. business plan, funding, customer proposition, MVP, business model, service deployment platforms etc.	Gai, Qiu and Sun (2018)
<b>4. Financing</b>	Capital	7. Who has an important role to play in financing a Fintech start-up? <ul style="list-style-type: none"> <li>• Role of venture capital</li> <li>• Role of incumbent banks</li> <li>• Role of government</li> <li>• Role of the private sector.</li> </ul>	Bocken (2015)
<b>5. Investor support, start-up gaps and needs</b>	Mentorship	8. How important are mentorship and incubators for Fintech start-ups?	Bocken (2015)
<b>7. Patents</b>	Patents	9. Did you at any point patent your idea/product/service? Is this required for all Fintech start-ups?	Shah and Smith (2010); Siyanbola <i>et al.</i> (2011)
<b>8. Networks and Partnerships</b>	Networks and Partnerships	10. How important are networks and partnerships with existing financial institutions in Fintech start up success?	Bocken (2015); Littunen (2000); Santisteban and Mauricio (2017)
<b>9. Adoption</b>	Consumer adoption	11. How did you measure consumer adoption for your product/service?	Siyanbola <i>et al.</i> (2011); Rye (2018); Lee and Shin (2018)
<b>10. Future</b>	Recommendations	12. What recommendation would you provide to the government or private sector to better assist and support Fintech start-ups in South Africa?	-

## APPENDIX 2 – PARTICIPANT INTRODUCTORY LETTER AND CONSENT FORM

FACULTY OF ECONOMICS AND MANAGEMENT SCIENCES



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA

### PARTICIPANT INTRODUCTORY LETTER

**TITLE OF STUDY:** Fintech start-ups in South Africa: A conceptual framework to guide Technology Entrepreneurs

Dear Prospective Participant,

#### 1. Introduction

We invite you to take part in a research study. This information leaflet will help you to decide if you would like to participate. Before you agree to take part, you should fully understand what is involved. If you have any questions that this leaflet does not fully explain, please do not hesitate to ask the research personnel.

#### 2. Why are we doing the study?

The purpose of this research is to help create a holistic conceptual framework that can be utilised as a guideline by technology entrepreneurs to help establish and sustain their own Fintech start-ups in South Africa. It is challenging to establish these start-ups without sufficient knowledge and experience of the industry as well as sufficient guidelines. A general guideline highlighting how technology entrepreneurs can establish and sustain Fintech start-ups, the regulatory implications of Fintech's and the Fintech business models in an African context is required. Hence, this study aims to address the gap regarding Fintech venture creations in Africa. This will be achieved by assessing current literature on FinTech, technology entrepreneurship and new venture creations supported by secondary data obtained through semi-structured interviews with Fintech Founders in South Africa. We will be conducting this study with 15 Fintech founders in South Africa.

#### 3. What will we ask you to do in this study?

As a participant, you will only be required to answer a series of questions regarding the process of establishing and sustaining a Fintech start up in South Africa. I will set up a formal meeting which should take a maximum of 1 hour. You will be asked to sign a consent form (The information will be handled confidentially). I will then request your permission to record the session using a voice recording device for the purposes of the dissertation. Your information will remain private and confidential. Your identity will also be kept anonymous.

**4. Risk and discomfort involved**

We do not anticipate any risks and discomforts during the interviews as we will just be having a conversation.

**5. Possible benefits of the study**

- Contribute to the Fintech field of knowledge.
- Help encourage entrepreneurship to reduce unemployment statistics.
- Provide meaningful information that can be used by other entrepreneurs.

**6. What are your rights as a participant?**

Your participation in this study is entirely voluntary. You may choose not to answer particular questions. You can refuse to participate or stop at any time during the study without giving any reason. If you decide not to be in this research or if you decide to stop at a later date, there will be no penalty or loss of benefits to which you are entitled. Once you have completed the study you have the right to access your data.

**7. Will you be paid to take part in this research study?**

Please note that you will not be paid to participate in this research study.

**8. Has the study received ethical approval?**

This study has received written approval from Research Ethics Committees of the Faculty of Economic and Management Sciences at the University of Pretoria.

**9. Information and contact person**

If you have any questions or comments about the study, please contact **Katleho Raphoto** using this email address:

[U18313605@tuks.co.za](mailto:U18313605@tuks.co.za)

**10. Confidentiality**

All information that you give will be kept strictly confidential. Research reports, presentations and articles in scientific journals will not include any information that may identify you.

**CONSENT TO PARTICIPATE IN THIS STUDY**

1 Title of Research Project: *A Conceptual Framework for Technology*

*Entrepreneurs: Fintech Start-ups in South Africa*

2 I ..... hereby voluntarily grant my permission for participation in the project as explained to me by

.....

3 The nature, objective, possible safety and health implications have been explained to me and I understand them.

4 I understand my right to choose whether to participate in the project and that the information furnished will be handled confidentially. No penalty or loss of benefit will occur if I do not take part.

5 I understand that I have the right to withdraw from the research at any time without having to explain the reasons.

6 I have had the opportunity to ask questions about the proposed study before signing this consent form.

7 I am aware that I have the right to access my data at any time.

8 Upon signature of this form, you will be provided with a copy.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

Witness: \_\_\_\_\_ Date: \_\_\_\_\_

Researcher: \_\_\_\_\_ Date: \_\_\_\_\_



**APPENDIX 3 – THEMATIC ANALYSIS SCHEDULE EXAMPLE**

Themes	Description	
<b>Fintech Startup Requirements</b>	<i>Factors that enable an individual to establish and sustain a Fintech start up in South Africa.</i>	
Sub-Themes	Interview Verbatim/Quotes	Codes
<b>Financial Capital</b>	<p><b>Participant 2:</b> "Your Angels man. So, your government and development finance institutions have positioned themselves as the go to for start-ups (which is not true). The banks are assumed to be the right institutions from a financing perspective (which is also not true). The government and BFI's are part and parcel altogether, so they will give you seed funding... 10 000 from NYDA, 5 000 from CW to get your company registered, your what..people will often go that way if they are onto something and haven't validated the thing. They use that money to register their companies, their company gets deregistered three months later because there is no activities and it is just a waste of everyone's time. So, your angels, those are the guys who say "here is half a million rand or here is X amount, I like what you guys have built this far. Give us an investment plan. I believe what you guys are capable of doing. You have shown that capability. I am not sure about the idea, but I am backing the individuals and the idea based on previous success. You've got a young guy who knows the market, knows how to play around with the technology and you've got the old guy who has done big deals and gives this thing credibility and that is what I am backing." Once you have validated and there is something there, then the angel says "cool, my threshold has really been achieved here, your next step would be a venture capital backing"</p> <p>"Again both angel investors and venture capital investors, there is a small number of them..uhm I am not sure if you've seen the Aspen report yet? It's called the "Aspen South African Entrepreneurship Ecosystem", I mean every year they issue this report of the South African Entrepreneurship Ecosystem, for examples who are the players, how many angel investors, venture capitalists, banks and at what stage of business do they support you, who are not financial supporters in all the different programmes. So, there are about 350 ecosystem players that get involved at different stages. It is a very key document that talks to entrepreneurs but what is important is that angel investors and venture capitalists are closed knit committees, they are guys who have made their monies, listed companies and sold out or they are being bought out by listed companies. They have made their money, and you know they want to. They want the next best thing, or they want to try something new and you can see the relation between Cape town-based companies and Fintech startups. They have really garnered the support from the local ecosystem of Stellenbosch."</p>	<b>Angel Investors</b>
	<p><b>Participant 3:</b> " I think that at that stage, the only thing that really matters are Angel Investors. You are not going to get help from the government, you are not going to get help from corporates, and you will not get help from VC's. The only possible route you have is the angels at the beginning because these are the guys with the risk profile that would invest in something that is just an idea or the product is at the very early stages."</p>	<b>Angel Investors</b>

	<p><b>Participant 4:</b> " Err so ideally it should be angel investors and government but in South Africa, there isn't a lot of that."</p> <p>"I know guys that have gotten support from angel investors, I just don't know how they got it. I don't think that there is a lot of that type of money to go around to be honest."</p> <p>"The only thing is that we do not have those type of angel investors yet in South Africa but there are different reasons for that but yeah, they are important."</p>	<p><b>Angel Investors</b></p>
	<p><b>Participant 6:</b> "so angel investors in this space are probably more important and I will not discount friends and family, frankly. These are the people who back you emotionally and financially while you go through this crazy thing. I mean, they are fundamental to the ecosystem. Without them, most people are dead in water to be honest"</p>	<p><b>Angel Investors</b></p>
	<p><b>Participant 1:</b> "so most of the work was self-funded on my side. Almost all of it was self-funded. I just had the backing of AlphaCode, but it was not good enough to take it that far. And then, we accessed private..I don't know why you don't have angels..private capital.."</p> <p>"Yeah, because you also have people that have resources..that give money to start ups so afterwards I just accessed money from uhmmm a private individual who was willing to invest so that is how I did it instead of going and using formal venture capitalists."</p> <p>" yeah, angels, especially in South Africa because we have a lot of really wealthy people who are looking for businesses to finance and to give sizeable finance. So, the proper VCs are mostly the angel investors and the actual VCs we have in SA are playing a banks role and the banks mostly give attention to the big businesses. So, yah."</p>	<p><b>Angel Investors</b></p>
	<p><b>Participant 8:</b> " ...well angel investors are more lenient so you would want to go through that, but you would need to do that through a funding series. So, you need to have your series funding and not borrow more than what is necessary. Angel funders will give you that. Once your prototype is successful in the market or whatever success criteria you have set then I think you can start going out through to other funders bearing in mind that your venture capitalists and other funders. Existing funders may not be keen on funding something that is like a "green field". So, they want to fund a company that is already in existence and that has a balance sheet, so if you do not have a balance sheet, it is best to go through to the venture capitalists."</p>	<p><b>Angel Investors</b></p>
	<p><b>Participant 9:</b> " So, we have only interacted with angel investors and venture capitalists so far. And those are our two main sources of capital."</p>	<p><b>Angel Investors, Venture Capitalists</b></p>
	<p><b>Participant 9:</b> "Cashflow is the bottom line of a startup"</p>	<p><b>Cashflow</b></p>
	<p><b>Participant 8:</b> " It was internally funded and now we are at the stage where we want to get external funding where we want to approach different funders across the globe."</p>	<p><b>Self-funding/bootsstrapping</b></p>

	<p><b>Participant 7:</b> " Government facilitates SMD funds. It is also good to have good banking relationships and credit facilities, so you need to identify a partnership with a bank. You can also crowd source and self-fund. Personally, I took the route of self-funding. Later on, I was able to raise capital. Another issue is scaling, you need to make sure that you can scale, and be able to attract investments and raise capital."</p>	<p><b>Self-funding/bootsstrapping</b></p>
	<p><b>Participant 1:</b> "Okay, Capital is the most important because you play in an oligopolistic sector. So, you have a few players in insurance, a few big players in banking and a few big players in investments. So, you need to have a strong pocket or a strong backer to be able to push. Regulation relies also on capital, for example, if you want to start an insurance fintech startup, you need to have R50 million that is just sitting that won't be touched to be able to get a license for an insurance company and if you want to get into banking, you need R250 million as your reserve. You need to have patience because..personally...you need to be a patient person because getting into financial services, you can't just decide you starting a business today and then in the next three months you making money. So you have a long waiting period so, in actual fact, you also need to have patient capital that can sustain you through the compliance processes andI am just talking about it from someone who has already developed something, you need to be able to be sustained through that, once you go through that, the business will be able to survive on its own but you need to have a lot of patient capital and you need to have resilience and perseverance. You need to be able to see the process through at the beginning because starting in Financial services is the hardest. After I had the platform developed, I got into Alphacode (which is RMB/RMI's incubator back in November of 2015). I had completed development in October. I just tried my luck and yah, my co-founder and I tried our luck and got in. so most of the work was self-funded on my side...almost all of it was self-funded. I just had the backing of AlphaCode, but it was not good enough to take it that far. And then, we accessed private...I don't know why you don't have angels...private capital."</p>	<p><b>Financial Capital</b></p>
	<p><b>Participant 6:</b> " Yeah, I know what you mean, if you are talking Company Y, listen funding is overly critical. I think a lot of them require external funding either equity investments or something like that or partnerships."</p>	<p><b>Equity Investments /Funding</b></p>
	<p><b>Participant 4:</b> "So I am seeing that a lot of the funding is coming from the big corporates, up to a stage and yeah, they do a lot of competitions and fancy things. You know, we were funded by a big corporate for a while, and I think that what they did was ideal, they said "okay guys, we will pay you a decent salary, not necessarily what you'd get in the market but it's okay and then you'd develop this thing in six months, if we don't like it, you just stop..and if we like it, we will renew your contract so we will give you some money now to go build this thing". We had 6 months in their offices where we didn't have to worry about rent or whatever, we just worked on getting the product approved by them so we went through all of the things we had to get the product approved uhmmm and then after that then they released some money then we could invest in the technology and once we had that, we could go out to get money from the Company R. At the stage you need to be at to go out and get money from the sort of the traditional markets so in SA, at a much later stage, you need to get money from venture capitalists so that is kind of my experience. So, we raised capital from the insurance company behind the project (product compass) as well as a private equity company called Company L which is owned by Company H. And Company C is also owned by Company H by the way. Uhmm and an external venture capital company called Company F"</p>	<p><b>Equity Investments /Funding</b></p>

	<p><b>Participant 3:</b> "The key thing...especially because you have these long lead times to get the company up and running, there is no way that you are going to survive without investors. They are absolutely crucial."</p>	<p><b>Investors</b></p>
	<p><b>Participant 2:</b> "So financial capital and social capital..just the ability to pick up the phone and phone a CEO of a particular bank or a CTO, just to pose a question or run something past them to say "hey, what do you think about this or that?" You know, it is worth is priceless and if you just do not have that access, it is just very very difficult. It will take you two years to do something or it will take you years to realise a bad decision vs having a 30 minute conversation from someone who has been in the industry for 40 years that is willing to divulge that information and save you years of hard slob."</p>	<p><b>Financial Capital and Social Capital</b></p>

**APPENDIX 4 – ETHICS APPROVAL**



**POSTGRADUATE COMMITTEE**

Faculty of Economic and Management Sciences

11 October 2019

Dr AA Steyn  
Department of Informatics

Dear Doctor Steyn

**TITLE REGISTRATION**

This serves to advise that the title submitted for the research of the candidate indicated below was approved by the Postgraduate Committee:

<b>Student:</b>	<b>K Raphoto</b>
<b>Student number:</b>	18313605
<b>Degree:</b>	MCom (Informatics)
<b>Supervisor/Promoter:</b>	Dr AA Steyn
<b>Co-supervisor/Co-promoter:</b>	-
<b>Approved title:</b>	Fintech start-ups in South Africa: a conceptual framework guide for technology entrepreneurs
<b>Date approved:</b>	11 October 2019

**IMPORTANT:**

Please note that the next step in the research process is to obtain ethics clearance. In terms of the UP Guidelines for Ethical Research (S4083/00), ethics clearance is required before any research may be undertaken.

Sincerely

pp **PROF K BARAC**  
**CHAIR: POSTGRADUATE COMMITTEE**

cc: Prof C de Villiers  
Student Administration