LENDING TECHNOLOGIES AND SMALL, MICRO AND MEDIUM ENTERPRISE BORROWING: EVIDENCE FROM THE EASTERN CAPE PROVINCE OF SOUTH AFRICA

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PROMOTER: PROFESSOR MUNACINGA SIMATELE

18 JANUARY 2019

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In addition, a Consent Form (Appendix C) has been signed by each respondent before completing the questionnaire as proof of consent. The Consent Form was prepared as a separate and independent form which is not connected or linked in any way to a particular completed questionnaire but for the purpose of consent only. The whole study is subject to the research ethics in the Supervisor's Declaration Form (Appendix D)

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ABSTRACT

Small, Micro and Medium Enterprises (SMMEs) play a major role in contributing to the development of most economies globally. However, such small firms often lack external financing due to their information opacity. Besides, the small firm size nature of most SMMEs impairs their ability to access finance as motivated by the market power theory. In order to address the information asymmetry problem associated with such small firms, financial institutions use different forms of lending technologies as the basis upon which lending decisions are made, that is, whether to loan or not and if the decision to lend is taken, how the intrinsic credit risks are taken into consideration. In the evaluation of the credit worthiness of small businesses, the decision to lend or not depends on soft or hard information acquired through use of a particular lending technology.

Many studies in the literature cite access to credit as the main hindrance to SMMEs success. Lending technologies being the conduits transmitting that credit access, the study hypothesises that more emphasis be placed on the relationship between lending technologies and the success of small firms. Success in this case is measured in two ways; the level of SMME credit rationing that small firms endure and the resultant growth of small businesses if they access funding. However, the use of lending technologies as a measure of SMME finance access is missing in academic literature. Specifically, literature on SMMEs in South Africa only narrate the structure of SMMEs and factors affecting SMMEs funding and growth without providing a link on how these eventually influence lending technologies used that determine the lending process. This study therefore traces types of lending technologies used, factors influencing their usage and the subsequent level of credit rationing and growth of small firms. The study uses only formal and registered small firms that are members of the Border-Kei Chamber of Business and Nelson Mandela Bay Business Chamber and listed in their data bases.

The study adopts a mixed methods methodology in a two stage analysis approach. In the first stage, the study identifies types of lending technologies used by funding institutions in the study area and factors lenders take into account in order to extend funding to small

businesses. Based on interview data gathered from eight financial institutions, the types of lending technologies and factors that influence lending decisions are identified using thematic analysis method.

In the second stage, the study then interrogates how lending technologies shape the credit rationing and growth of SMMEs within the Eastern Cape Province in South Africa. A sample of three hundred and twenty one (321) randomly selected SMMEs from Buffalo City and Nelson Mandela Bay metropolitans in the Eastern Cape Province is used. Data collected from SMMEs using questionnaires has been analysed to reveal the extent of credit rationing and firm growth variations among SMMEs based on the main lender and firm characteristics identified in the first stage. Credit rationing is both dichotomous, by the firm being either rationed or not, and categorical, by forms of credit rationing experienced by firms. The analysis therefore uses a combination of binary and multinomial logistic regression to evaluate effects of determinants of lending technologies on credit rationing of firms.

Financial efficiency scores of firms are used as the proxy for growth of firms. The financial efficiency score is preferred because in its derivation several firm activities are incorporated as opposed to using only one growth indicator such as sales volume. The efficiency scores are generated using Data Enveloping Analysis based on selected main activity inputs and outputs of sampled firms. Since efficiency scores of a firm representing growth are a scale dependent variable, a two-way factorial analysis is used to determine the effect of lender and firm characteristics on the firm's growth. Both the main and interaction effects of the lender and firm characteristics are captured in the analysis of both credit rationing and growth of firms.

Results show that four classes of financial institutions financed formal and registered SMMEs. These are commercial banks, government-owned development financial institutions, private-owned development financial institutions and microfinance institutions. In addition, four types of lending technologies have been used to finance SMMEs in which financial institutions consider people, firm and financial information

factors as pillars of financing decisions. Findings indicate extensive discriminatory credit rationing among SMMEs in South Africa and that growth paths followed by firms vary significantly as a result of these characteristics. The study therefore recommends the implementation of a financing framework model that allocates funds to different company structures based on credit rationing risk profiles of enterprises so as to minimize the extent of inequality exhibited in the South African population structures which have historical differences on the basis of enterprise size, ownership structure and race. The study further recommends matching of types of lending technologies with types of lenders in order to minimize overall industry credit rationing level in the SMME sector as a supplementary funding model. However, this may need further research to evaluate its application. This is important given that financial institutions use different lending technologies at the same time and further, not all financing institutions may use all forms of lending technologies. For example, microfinance institutions may not have the capacity to use venture capital lending technologies.

Key words: SMMEs, lenders, lending technologies, credit rationing, growth.

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DEDICATION

To my late brothers Elijah and Aaron and, my family.

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LIST OF ACRONYMS AND ABBREVIATIONS

ABL	Asset Based Lending
ANOVA	Analysis of Variance
BDS	Business Development Services
BEE	The Black Economic Empowerment
BKCB	Border-Kei Chamber of Business
CV	Curriculum Vitae
CGS	Credit Guarantee Schemes
DEA	Data Enveloping Analysis
DFIs	Development Financial Institutions
DSBD	Department of Small Business Development
DTI	Department of Trade and Industry
EC	Eastern Cape Province
ECDC	Eastern Cape Development Corporation
ELDEET	East London Disability Economic Empowerment Trust
EU	European Union
FSL	Financial Statement Lending
GMDRC	Govan Mbeki Development Research Centre
GDP	Gross Domestic Product
IABL	Invisible Asset Based Lending
ICC	International Chamber of Commerce
IDC	Industrial Development Corporation
LRF	Land Reform Facility
MFIs	Microfinance Institutions
NGOs	Non-Government Organisations
NMBBC	Nelson Mandela Bay Business Chamber
NYDA	National Youth Development Agency
PLBISS	Post Loan Business Institutional Strengthening Support
R&D	Research and Development
RFIs	Retail Finance Intermediaries
ROSCAs	Rotating Savings and Credit Associations

RSA	Republic of South Africa
SACCI	South African Chamber of Commerce and Industry
SAMAF	South African Micro Apex Fund
SARB	South Africa Reserve Bank
SARS	South Africa Revenue Services
SBCS	Small Business Credit Scoring
SEDA	Small Enterprise Development Agency
SEFA	Small Enterprise Finance Agency
SFI	Specialised Fund Intermediaries
SMMEs	Small, Micro and Medium Enterprises
SPSS	Statistical Package for Social Sciences
UK	United Kingdom
UREC	University of Fort Hare's Research Ethical Committee
USA	The United States of America
VCL	Venture Capital Lending
VIF	Variance Inflation Factor

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

A lending technology is a composite of all financing requirements that fundamentally influence a lending decision of a lender to a loan applicant (Berger and Udell 2006; Koreen and Lucia 2015). Berger and Udell (2006) identify four key features that underpin a particular type of a lending technology. These include how a borrower's information is searched, underwriting procedures followed by the lender, resulting loan contract structure and the loan monitoring strategies developed thereafter, all based on the information received by the lender. A lending technology therefore is defined as a combination of primary and secondary information sources, screening and underwriting procedures, the resultant loan structure and the ensuring loan monitoring mechanisms developed in respect of each borrower. Based on an outcome of the features of a lending technology used, a lender decides whether or not to advance a loan to a particular borrower irrespective of their size.

Small, micro and medium sized enterprises (SMMEs) play an important role in economic development and employment creation of most countries (Ayyagari, Demirguc-Kunt, and Maksimovic 2011; Nassr and Wehinger 2014). Given the benefits of SMMEs in domestic economies, there has been a considerable body of literature on various dimensions on SMMEs financing. Such dimensions include concerns on credit availability for SMMEs (Korkeamaki, Poyry, and Suo 2014), types of lending technologies (Berger and Udell 2006), use of different lending technologies in different markets (Bonini et al. 2016; Koreen and Lucia 2015; Tronnberg and Hemlin 2014), the dominant use of relationship lending in SMMEs financing (Degryse and Cayseele 2000), financial institutions and their ability to lend to SMMEs (Aysan et al. 2016), and SMMEs access to finance (Moreira 2016).

Notwithstanding the much documented contributions of SMMEs in several economies, challenges of SMMEs financing and access to finance still exist (Makina et al. 2015), thus loans to SMMEs remain very limited globally. Bearing in mind that each loan is primarily

extended based on an outcome of a lending technology used, SMMEs access to finance becomes a function of lending technologies used by financial institutions to screen borrowers (Fredriksson 2012; Wang 2016). The different lending technologies used by financial institutions have differing bearings on acceptance and denial of credit facilities (Berger and Black 2011), therefore, an evaluation of which lending technologies work better for SMMEs becomes a crucial empirical analysis in the assessment of credit access to SMMEs.

1.2 BACKGROUND OF THE STUDY

So far, different types of lending techniques used by financial institutions as well as national financial structures that affect them have been identified (Berger and Udell 2006), although other new ones are introduced as well from time to time. The use of different lending technologies by financial institutions in different markets for SMMEs have also been investigated by Bartoli et al. 2013; Bonini et al. 2016; Cotugno, Monferrà, and Sampagnaro 2013; D'Aurizio, Oliviero, and Romano 2015; Pokorná and Sponer 2016 and Tronnberg and Hemlin 2014. However, notwithstanding this wide coverage of the literature, all these studies fall short of identifying the lending technologies that work better for SMMEs. This is an important element for analysis given that lending technologies are directly linked to performance of small firms. It is important to acknowledge that every lending decision reached by a lender is based on an outcome of a lending technology used, therefore, the level of financial access or credit rationing that arise must be linked to the methods of lending used in the first place. Bearing in mind the interplay of the information asymmetry and market power theories, small enterprises are the most affected in credit markets as a result of their information opaqueness and inability to influence price due to their small size. Both theories underpin lending to small firms.

Small businesses in South Africa are termed Small, Micro and Medium sized Enterprises (SMMEs) and classified into micro, very small, small and medium-sized enterprises based on their number of employees, total value of assets and annual turnover (SEDA 2016). At the third quarter of 2016, there were 2 343 058 SMMEs in South Africa, of which

217 352 (9.3%) were located in the Eastern Cape Province and collectively contributed 60% to employment and 42% to the GDP of the South African economy (SEDA 2016).

SMMEs in South Africa are subjected to discriminatory credit rationing (Mazanai and Fatoki 2012) despite various Business Development Services Providers (BDSs) funded by Government solely to improve credit access for SMMEs in addition to funding from private financial institutions. BDSs used to extend funding to small businesses at national level include, Small Enterprise Finance Agency (SEFA), National Youth Development Agency (NYDA) and Provincial Development Corporations just to mention a few. However, SMMEs access to credit in South Africa still remains limited, inequitable and is also associated with huge location effects despite the launch of Provincial Development Corporations. This means that provinces with high GDP experience higher access compared to ones with low GDP (Makina et al. 2015).

There is an abundant stock of literature on SMMEs financing in South Africa. For example, the extent of limited access to finance for SMMEs has been documented (Abor and Quartey 2010; Arko-achemfuor 2012; Mazanai and Fatoki 2012; Sawers, Pretorius, and Oerlemans 2008; Underhill Corporate Solutions 2011). The literature includes effects of variation in credit access by location effects in different provinces (Makina et al. 2015), the challenges that affect credit access (Agwa-Ejon and Mbohwa 2015; Aigbavboa and Thwala 2014; Chimucheka 2013b; Mutyenyoka and Madzivhandila 2014; SEDA 2016) and the performance of SMMEs (Fatoki 2011; Mutyenyoka and Madzivhandila 2014). While all these are well researched areas in South Africa, just like in other economies, an assessment of how lending technologies used affect credit access and growth of SMMEs remains a grey area in the literature, notwithstanding the fact that all the lending that takes place hinges on lending technologies used.

A number of studies further shows that there is high need for SMMEs funding and that different lending technologies have varied effects on lending decisions. For all these reasons, different banks apply different lending technologies (De la Torre, Martínez Pería, and Schmukler 2010) and that lending varies by bank size (Bartoli et al. 2013), by bank

type (Shen and Shen 2009) and also by bank ownership and origin (Viverita et al. 2015). Given the above summary, a conclusion drawn is that access to finance for SMMEs is largely a function of types of financial institutions and lending technologies adopted to screen borrowers, therefore, the assessment of financial access on the basis of lending technologies have far reaching implications in terms of policy direction. This is a relevant initiative for South Africa to be able to review policies meant to address credit access problems for small businesses and to identify factors impairing such efforts. Unlike in other developing countries, funding by both government and private sector is widely available, but access is inequitable. As a result, there is a problem of funding distribution mechanisms rather than that of funding availability which is common the world over. Putting an emphasis on lending technologies is one way to get an in-depth insight into the SMME lending phenomenon in South Africa, especially given their role in credit access determination.

In this study, a cross sectional firm level survey analysis targeted at both financing institutions that use various lending technologies and SMMEs in need of funding, was adopted to determine lending technologies actually used by financing institutions and how these affect credit access to SMMEs. The study area comprises Buffalo City and Nelson Mandela Bay metropolitans as the two main business hubs in the Eastern Cape Province. Eventually, based on empirical survey data, the study proposes a funding framework for SMMEs that primarily deals with funding inequalities and informs government funding policies intended to grow the SMME sector in South Africa. The Eastern Cape is an interesting case study because of its wholesome characteristics (Table 1) favourable for the investigation of SMMEs in South Africa. The Eastern Cape is the poorest province in the country by GDP per capita and businesses in poor provinces in South Africa are dominated by SMMEs. Notwithstanding high poverty status in the Eastern Cape, it is however the third largest province in population size and second largest in area. Provinces with the largest area in South Africa are all in the Cape area, comprising the Eastern Cape, Western Cape and Northern Cape. The Eastern Cape is the second in the number of SMMEs but is topping in population size and is the poorest province among these three and also in the country. The Eastern Cape Province therefore represent the

South African case very well for the purposes of understanding the financing of SMME because of its population size, the large size of the area and a relatively large number of SMMEs.

TABLE 1: CHARACTERISTICS OF SOUTH AFRICAN PROVINCES

Provincial location	Number of SMMEs	GDP per Capita	Area (km^2)	Population (2011)
Western Cape	256 696	8 694	**129 462**	5,822,734
Eastern Cape	**217 352**	**3 691**	**168 966**	**6,562,053**
Northern Cape	27 868	6 688	**372 889**	1,145,861
Free State	101 496	6 213	76 495	2,745,590
KwaZulu-Natal	**375 698**	**4 767**	94 361	**10,267,300**
North West	115 638	6 677	104 882	3,509,953
Gauteng	809 595	9 681	18 178	**12,272,263**
Mpumalanga	178 204	6 251	104 882	4,039,939
Limpopo	**260 510**	**4 259**	125 754	5 404 868

Source: South Africa statistics

1.3 STATEMENT OF THE PROBLEM

SMMEs are arguably the most and fastest possible conduits of development in many economies based on share of contributions to product market, employment, exports and innovations (Bartoli et al. 2013). Despite numerous studies reporting on access to finance for SMMEs, funding constraint is still a challenge leading to questions on the suitability of lending technologies used by different financial institutions. Lending technologies are very important in credit access because they directly influence a lending decision. Unfortunately this link is missing in the South African context. Several studies on SMMEs in South Africa currently detail the structure of SMMEs and factors affecting SMMEs funding and growth. These studies however fail to provide a link as to how these factors eventually influence lending technologies used in the lending process and how access and growth nexus is influenced as a result.

Different lending technologies are applied by various financial institutions, determining what financial institutions offer in terms of pro-SMMEs lending (Meuleman and De Maeseneire 2012). The diverse lending technologies affect the extent of lending to SMMEs because they directly influence the screening of borrowers (Chrzanowska, Alfaro, and Witkowska 2009; Mullen 2012) meaning that each lending technology uses different

factors in evaluating information asymmetry risks associated with SMMEs leading to a different lending decision (Chen, Guo, and Huang 2009). The differences in lending technologies manifest into different effects on credit access to SMMEs as lending technologies capture information about SMMEs creditworthiness differently.

Different forms of financial institutions (large versus small institutions, foreign-controlled versus domestically-controlled, state-owned versus private-owned, for-profit organisations versus not-for-profit financial institutions) specialise in different lending technologies when dealing with small businesses depending on the nature of their business and strategic motives. While current literature (Bartoli et al. 2013; Berger and Udell 2006; Bonini et al. 2016; Chen et al. 2009; Pokorná and Sponer 2016; Zeneli and Zaho 2014) identifies lending technologies used, it neither distinguishes between lending technologies that work better for SMMEs from those that do not, nor does it identify financial institutions that are better positioned to adopt lending technologies with low credit rationing effects from those resulting in high credit rationing outcomes.

South Africa is blessed with a well-structured SMME financial system. The level of SMME financial and non-financial support by the Government is very commendable. In budget years 2015/16 and 2016/17, through the Department of Small Business Development, Government committed nearly two and a half billion rands in funding of SMMEs programmes in the country (Table 2). The Government further provides direct SMME funding through various finance agencies, in addition to private sector funding. The under expenditure by the Department over the years and across all programmes is an indication that there is adequate funding for SMMEs in South Africa. Nationally, the Government established the National Empowerment Fund (NEF), National Youth Development Agency (NYDA), the Small Enterprise Finance Agency (SEFA) and the Technology Innovation Agency (TIA) specifically to address funding of SMMEs. All these are sound institutions well-funded by the Government to finance SMMEs in addition to private financial institutions funding.

TABLE 2: DEPARTMENT OF SMALL BUSINESS DEVELOPMENT SUPPORT

	2016/17			2015/16		
Programme name	**Final Approval R000**	**Actual Expenditure R'000**	**(Over)/Under expenditure R'000**	**Final Approval R'000**	**Actual Expenditure R'000**	**(Over)/Under expenditure R'000**
Administration	111 025	98 925	12 100	80 857	66 447	14 410
SMMEs and Cooperatives policy and research	22 835	13 848	11 987	12 241	11 692	549
SMMEs and Cooperatives Programme design and support	1 181 579	1 084 267	97 312	1 034 422	1 020 752	13 670
Total	**1 318 439**	**1 197 041**	**121 398**	**1 127 520**	**1 098 891**	**28 629**

Source: Department of Small Business Development Annual Reports

The problem of SMME credit access in South Africa therefore is not about lack of funding, but rather lack of equitable distribution mechanisms among SMMEs of different characteristics. The gap in this knowledge therefore primarily sits in understanding the importance of different lending technologies and their subsequent effect in influencing a lending decision, given the historical dynamics of the SMME sector in the country. In South Africa, this is a serious issue because there are so many different financial institutions that provide credit to SMMEs (SEDA 2016), but the lending technologies used do not necessarily capture the realities of the SMME structural differences in a way that addresses funding access inequalities. The extent to which lending technologies affect credit availability to SMMEs is an area that still needs further investigating particularly where credit access inequality is very high like in South Africa.

The study area comprising Buffalo City and Nelson Mandela Bay metropolitans, the two main business hubs in the Eastern Cape Province, is dominated by SMMEs. This is not surprising since it is characteristic of all poor Provinces in South Africa. The two metropolitans have several financial institutions that deal with several types of SMMEs, but there are no agreed strategies on what lending technologies work for SMMEs, which lending institutions do that better and how these affect access to finance and the growth of small businesses. This study therefore aims to investigate these problems.

1.4 RESEARCH QUESTIONS AND OBJECTIVES

The objective of this study is to investigate the nature of lending technologies (or funding channels as they are functionally known) used amongst SMMEs and evaluate how they are implemented by different lending institutions in the Buffalo City and Nelson Mandela Bay metropolitans in the Eastern Cape Province of South Africa. In order to achieve this broad objective, the study answers the following research questions:

1. What are the different types of lending technologies implemented by different types of financial institutions in the two metropolitans in the Eastern Cape Province of South Africa?
2. Amongst these lending technologies, which ones are used to fund SMMEs in the Eastern Cape Province of South Africa and what factors influence the choice of those lending technologies used?
3. Which of the identified lending technologies are associated with credit rationing amongst SMMEs?
4. How efficient are these lending technologies in growing SMMEs in the Eastern Cape Province of South Africa?
5. Based on the findings, what lending framework would focus on lending technologies that most efficiently grow SMMEs?

In answering the above questions, the study addresses the following specific objectives:

1. To identify the different types of lending technologies lending institutions use to lend to SMMEs in the Eastern Cape Province of South Africa.
2. To determine factors that influence the lending institutions' lending decisions and its effect on lending technology choices for the different SMME clients.
3. To evaluate the relationship between lending technology choices and the impact that has on the credit rationing of small firms.
4. To assess the link between the choice of lending technology used by lenders and the effect that has on growth of small businesses.

5. To develop a funding framework for SMMEs using credit rationing profiles and growth projection of firms based on empirical results with the hope of influencing policy.

1.5 CONTRIBUTIONS OF THE STUDY

The significance of any research should lead either to the creation of new knowledge or advancing the existing knowledge (Holness 2015).Contributions of this study fall into three parts; factors peculiar to South African settings affecting lending to SMMEs not often covered in the literature, the proposed lending framework based on empirical results and the value the methodology adopted brings to the fore.

The study finds that while literature states a number of factors affecting lending to SMMEs, this literature has neither been exhaustive nor clinical on people, firm and financial factors affecting lending to SMMEs. Often, a lot of emphasis is placed only on experience, gender, background and entrepreneurial skills of owners of businesses as main factors affecting lending to SMMEs. The study finds that factors such as personal financial history of owner of business, personal financial discipline, work ethics, quality of owners' curriculum vitae, presence of key man's insurance and succession plan affect lending to SMMEs but these do not necessarily feature in literature. The importance of these additional factors is that the performance of small businesses cannot be separated from the character of owners due to close ties of either an individual or family running the business.

Previous studies repeatedly state firm size, age and years of operation of the business, the sector or activities of the business and the location of the business as traditional factors that help lenders decide when lending to small businesses. This study notes that business compliance effects such as checking validity of general operating licenses, specific sector licenses and lease agreements are additional requirements that ascertain legality of business of applicant but these do not necessarily feature in literature. Similarly, market competitiveness of the business reinforced by market agreements such as off-take and supply agreements are important factors not often mentioned in the literature.

Although financial evaluation of firms is well documented in literature, the objectives of the exercise are often left unexplained. The study finds that lenders conduct financial evaluation in order to make decisions on four critical credit risk exposures. These risk exposures include the need to; ascertain cash potential of the business, forecast financial stability of the business over time, identify credit risks peculiar to applicant firm and assess the possibility of adopting some of the credit risk remedies in order to redress the identified potential credit risks. While literature merely states that lenders do financial assessment of firms, this study concludes that lenders actually undertake specific tasks during the financial evaluation process in order to come up with values which they check against specific standard threshold limits to influence their lending decisions.

The study further finds that the South African SMMEs do not only face the problem of credit rationing but rather of intolerant inequality in access to finance by small businesses. There is a high level of inequality in credit rationing among small firms based on firm size, ownership structure and race. This inequality distorts allocation of funds among firms particularly money already strategically earmarked for SMME support from either government or private lending institutions notwithstanding the fact that there could actually be enough financial support for everyone.

In order to address the above problem, a financing framework has been proposed using credit rationing levels to indicate levels of credit access risks that firms endure based on different firm characteristics; firm size, ownership structure and race. Since the rate of credit rationing for each category represents risk exposure of financial access for that category, firms facing high credit rationing levels should be allocated more funds than those with low credit rationing levels in order to address inequality in access to funding. Based on this analogy, a funding framework that takes into account credit rationing risk factors and firms' characteristics to allocate funds in small businesses in a way that minimises credit access inequalities among firms has been developed. Since firms represent the demand side of lending, the higher the credit risks for a particular firm category the more should be the allocation of funds to that firm group. When funding for

small businesses is allocated this way, problems associated with access to finance inequality on the basis of firm size, ownership structure and race can be totally eliminated. This is possible since funding is based on financial support quotas of each category and funding overlaps among categories that often take place if allocation is not controlled, will not occur.

The study also notes that credit rationing is also linked to types of lending technologies used and types of financial institutions dealing with small businesses. Since the funding of small businesses is linked to lenders' characteristics, credit rationing can be reduced if the credit rationing risk factor of the lenders' characteristics are taken into account in a small business lending framework. The credit rationing levels indicate the level of credit access risk that firms endure based on lenders' characteristics; types of lending technologies and types of lending institutions. However, since lenders' characteristics represent the supply side of lending funds, allocation must be based on the low credit risk levels of each lender attribute. Based on this analogy, another supplementary funding framework to the one discussed above is therefore proposed. This framework takes into account credit rationing risk factors of the lenders' characteristics to allocate funds in small businesses in a way that minimises credit access inequalities among firms. From both the above cases, it is proposed that total funds earmarked for SMME support should be based on proportional category shares deduced from credit risk profiles of categories of firm and lender characteristics. These approaches will eliminate discriminatory credit rationing currently faced by small businesses in South Africa.

The last contribution of the study is on methodological input. The use of mixed methods highlights a number of advantages adding value to the academic discourse. The mixed methods approach enables implementation of both exploratory and explanatory approaches in one study. The qualitative approach adopted in the study means that the actual nature and content of the types of the lending technologies and the factors taken into account in the study area fully reflect the realities of the South African small businesses and financial system. This is critical in that the development of lending technology concepts are not merely adopted from the literature alone but from the realities

of the South African settings. The quantitative analysis that then follows is primarily grounded on what in reality obtains in the country in the first instance and subsequently complemented by literature in order to develop variables and the conceptual framework of the study.

The use of mixed methods is not only relevant in coming up with a multi-stage systematic and dynamic data analysis but also ensures that the variables ultimately used have an empirical foundation. The preliminary understanding of the fundamentals of the local settings means that subsequent quantitative results developed have far more relevant policy implications than of studies lacking that history. In addition to the above contributions, the work from this thesis has so far resulted in two conference papers which are being submitted to journals for publication[1].

1.6 SIGNIFICANCE OF THE STUDY

The world over small businesses face more challenges than ordinarily endured by other businesses and yet they are the backbones of most economies. While challenges associated with lack of managerial skills, capacity and technological knowledge vary across different SMME sectors and countries, lack of finance is certainly the most common challenge amongst all SMMEs irrespective of location. It had been further acknowledged that SMMEs have limited ability to access finance through capital markets than large firms do, leaving out borrowing as the only external source of funding. Borrowing is facilitated through financial intermediating institutions with varying characteristics; which are size, nature of business model and originality among others. For that reason, different types of lending institutions treat the same SMMEs differently. Furthermore, lending institutions use different lending technologies when evaluating different loan applicants. The various lending technologies appraise firms differently leading to different outcomes about whether an applicant is suitable or not based on how

[1]Presented two papers, one at the 2018 Global Development Finance Conference organised by the Africagrowth Institute in Durban, South Africa between 21st and 22nd of November 2018 entitled “SMME financing: the effects of lending technologies on growth of small businesses” and another at the Management, Business, Administration and Legal Initiative (MBALI) organised by the University of Zululand in Umfolosi, South Africa between the 1st and 3rd of August 2018 entitled “SMME financing: the costs and benefits of lending technologies”.

well the lending technology used captures the ideal information about an applicant. Therefore, there is a case as to whether or not the different lending institutions are all effective in providing funding to SMMEs, who are naturally shunned by lending institutions because of their information opacity. Additionally, the lending technologies adopted by these lending institutions also adversely select SMMEs because of the different factors they weigh more in an applicant's screening process.

There is therefore a need to investigate the role played by lending institutions themselves in exacerbating the financing access dilemma faced by SMMEs and whether this effect is also amplified by the types of lending technologies employed by these lending institutions. It is for these reasons that this study is undertaken. The understanding of the interplay between different types of lending institutions and lending technologies used given the different dimensions of SMMEs themselves is an important position to capture given the increasing need to grow this important sector. For South Africa, this is a grey area and given the amount of funding spearheaded in this sector through The Department of Small Business Development in addition to what is channelled through the private financial sector there is need to have this understanding in order to come up with appropriate direct government funding policies and/or regulatory policies of the private financial sector in financial support targeted at the SMME sector.

From an academic point of view, it is important that research output addresses real world problems. It is therefore hoped that through this exercise, a new funding framework of the SMME sector can be developed which will address specifically problems faced by SMMEs in South Africa related to access to funding and thus enhance SMME productivity with possible replication effects in other countries which have the same SMME and economic structures as South Africa. Once a clear position is taken by the Government on how SMMEs are supported based on an institutionalised financing framework for SMMEs, collectively the economy benefits from the envisaged growth and individually the SMME firms themselves benefit as well from a coordinated support and funding structure.

1.7 CONTEXTUALISATION OF MAIN CONCEPTS

In order to clarify important concepts in the Thesis, the following concepts are contextualised; the lending technology, credit rationing and firm growth (Table 3).

TABLE 3: CONTEXTUALISATION OF IMPORTANT CONCEPTS

CONCEPT	THEORETICAL DEFINITION	CONTEXTUALISED THESIS DEFINITION
Lending technology	Berger and Udell (2006): A lending technology is distinguished by a unique combination of the primary source of information, screening and underwriting policies or procedures, structure of the loan contracts, and monitoring and strategies and mechanisms.	In this thesis, a lending technology is defined as a set of factors that lenders take into account in making a financing decision to either accept or decline an SMME application based on collected information about the potential borrower. So, lending technology types differ based on set of related factors applied by the lender on each SMME applicant.
Credit rationing	A discriminating monopolist behaviour of lenders to ration some borrowers if lender is subject to an institutional constraint which requires him to charge the same interest rate to borrowers with different demand curves for credit (jaffee and Modigliani 1969). The excess demand for commercial loans at the ruling commercial loan rate (Azzi and cox 1976)	In this thesis credit rationing is defined in two ways. The first one as a failure to access a loan and secondly as the form of credit rationing experienced by the SMME, taking one of the forms of either an outright rejection, quantity rationing by getting an amount less than applied for and price rationing by getting a loan amount applied for but at interest rate higher than the market rate (interbank rate).
Firm growth	Firm activity level based on market share, assets, profits, physical outputs, employment and sales levels, value-added (Ardishvili et al. 1998; Delmar 1997)	Firm growth was represented a proxy for "*technical efficiency score*" of a firm and derived using DEA where value of loan advances, number of employees and value of assets represent inputs and annual sales and capital investments were outputs of the firm.

1.8 ORGANISATION OF THE THESIS

The Thesis is organised into seven chapters. The second chapter explains the SMMEs financing structure in South Africa. It discusses the organisation of institutional support, regulation and governing of the SMME sector at both national, provincial levels and the funding trends at national level. It further explains the financing and developmental arrangements for the SMME sector at provincial level in the study area both by the private financial sector and government agencies. It finalises by outlining the types of lending technologies used in funding SMMEs classified as traditional and new types.

The third chapter reviews the literature. It first identifies the main theories supporting lending and later explains how these theories affect lending to businesses in general and small businesses in particular. The chapter further discusses how lending technologies are linked to credit rationing of SMMEs, types of financial institutions and growth of firms. A discussion on SMME financing in South Africa is also included. Finally, based on the literature discussed, the chapter ends by developing a conceptual framework for lending to SMMEs. It is that conceptual framework which guides this study in terms of determining key variables included in the analysis and identification of appropriate methods of analysis used.

The fourth chapter is the methodology. The treatment of the population and sample for both financial institutions and SMME firms and how these fit into the research design of the study are explained. This is followed by data gathering methods and methods of data analysis used objective by objective. Since the study uses mixed methods, both the qualitative and quantitative methods used are explained in respect of financial institutions and SMMEs data respectively. The chapter also explains assumptions' tests conducted as well as how both the main and interaction effects are computed and interpreted. The chapter concludes with some research ethical considerations in conformity with the ethical clearance certificate issued by the University of Fort Hare Research Ethics Committee (UREC).

Chapter five presents results based on qualitative data from financial institutions and therefore addresses objectives 1 and 2 of the study. The results relate to types of lending technologies used to fund SMMEs based on the practices pursued by financial institutions themselves and the factors that lenders take into account when lending to small businesses. These results are produced using thematic analysis method. This analysis therefore makes it possible to understand concepts leading to each lending technology. This information is then used latter to design a questionnaire used to collect data from SMMEs in the second phase of the study.

Chapter six also presents results, but on credit rationing and growth of firms; the second stage of the study. The analysis is quantitative and based on data collected from SMMEs in the study area. Credit rationing is measured in two ways, that is, as a binary dependent variable based on the event occurring for each firm and also as a categorical dependent variable based on forms of credit rationing experienced by small firms. The independent variables are lender and firm characteristics derived from the conceptual framework developed and borrowed from the first stage of the study. That is what lenders take into account when lending to small firms. These factors are discussed in chapter three. In both cases, logistic regression is used. The chapter also presents results on growth of firms in which financial efficiency scores are used as a proxy for growth of firms. The financial efficiency scores are used because they represent many of the firm's activities and therefore a better proxy than depending on one growth indicator often adopted in most studies. MANOVA method is used in the analysis in which lender and firm characteristics are used as the independent variables. The last part of the chapter explains how the proposed financing model for funding SMMEs were developed and explains what it intends to address based on empirical results on credit rationing and SMMEs growth.

The last chapter concludes the study. It revisits the results and gives a summary of findings followed by the main conclusions drawn from the study findings. The contributions of the study, policy implications and recommendations for further studies are discussed. The main contributions are on factors affecting SMMEs lending identified in the study that do not necessarily feature in the literature, the proposed SMME lending framework and methodological input of this study.

CHAPTER 2: THE SMME STRUCTURE IN SOUTH AFRICA

2.1 INTRODUCTION

This chapter explains how the regulatory, institutional, economic and financial systems are structured to deal with the unique needs of SMMEs, both from government and the private sector perspectives in South Africa. In a nutshell, the chapter provides a nexus of how these four structures are interlinked to define the SMMEs landscape in South Africa in general and that of the Eastern Cape Province in particular. In addition, the discussion covers the roles played by these institutions in addressing the needs of the SMMEs. Finally, a comparative discussion is provided on how the South African SMME structure differs from that of other selected countries within the Southern African Development Community (SADC), the BRICS countries, the rest of the world and the implications of that.

The SMMEs structure in South Africa falls into four main structural pillars. The first pillar concerns the formal categorisation of SMMEs and the various pieces of legislations that are in place to support that structure. The second pillar outlines government policies and strategic initiatives developed specifically to support the SMMEs sector. The third pillar covers the different institutions that support SMMEs and how the organisations are institutionalised by either the government or private sector associations. The last pillar deals with the financial support structure for SMMEs in each province, although in this case the focus is on the Eastern Cape Province.

2.2 THE STRUCTURE AND REGULATION OF SMMES IN SOUTH AFRICA

The structure, categories and regulations of small businesses in South Africa are defined under the National Small Business Act 102 of 1995. Although now repealed and replaced by the National Small Business Amendment Act 29 of 2004, which differs from the earlier Act in terms of the institutions it establishes and their functionality, the definitions of small enterprises remains the same. The Act categorises small businesses into four classes which are the micro, very small, small and medium enterprises (Table 4). Based on this

definition, small businesses are called Small, Micro and Medium Enterprises (SMMEs) in South Africa.

The categories of SMMEs by sectors, total full-time paid employees, total annual turnover and total gross asset value of enterprises, defines the basis upon which small businesses are classified in South Africa. For simplicity, sectors are collapsed into two broad groups based on number of employees; firms above 100 but with less than 200 employees and those with 100 employees and below (Table 4). The total annual turnover and asset values take the ranges for the sectors of firms in the two employee categories.

TABLE 4: DEFINITION OF SMMEs IN SOUTH AFRICA

Sector according to Standard Industrial Classification	**Category or Class**	**Total full-time paid employees** *Less than:*	**Total annual turnover** Less than:	**Total gross asset value** Less than:
1. < 200 Employees firm Group Mining and quarrying, manufacturing, construction and, electricity, gas and water industries	Medium Small Very Small Micro	200 50 10 5	R31 – 64m R5 – 31m R0.15 – 4m R0.15m	R4 – 10m R1 – 4.5m R0.4 – 1.8m R0.1m
2. < 100 Employees firm Group Agriculture, retail and motor trade and repair, wholesale trade, commercial agents and allied services, catering, accommodation and other trade, transport, storage and communications, finance and business services, community, social and personal services.	Medium Small Very Small Micro	100 50 10 5	R25 – 51m R5 – 25m R0.15 – 5m R0.15m	R2 – 8m R1 – 4m R0.2 – 0.5m R0.1

Source: National Small Business Act, 2004

As a result (Table 4), an all-inclusive definition of an SMME in South Africa regardless of its category is characterised by the following:

1. Less than 200 employees
2. Annual turnover of less than R64 million
3. Capital assets of less than R10 million and, the
4. Direct managerial involvement of owners.

In order to comprehend the South African definition of SMMEs, a comparison to definitions of small businesses from other selected countries, both within and outside the BRICS countries has been made. The definitions are based on either individual countries' regulations or central banks' definitions which are the official definitions used for taxation purposes of these small businesses (Table 5).

TABLE 5: DEFINITION OF SMMES OF SELECTED COUNTRIES

Country	Category	Number of Employees	Annual turnover	Total Asset Value	Loan Amount
South Africa	Medium Small Very Small Micro	<200 <50 <10 <5	R31 – 64m R5 – 30m R0.15 – 4m <R0.15m	R4.5 – 10m R1.8 – 4.5m R0.15 – 1.8m <R0.15m	
Zambia	Medium Small Micro	>30 <30 <10	<K500m <K80m <K20m	<K2Bil <K50m <K10m	
Botswana	Medium Small Micro	<100 <25 <6	P1.5m – P5m P0.06m- P1.5m <P60 000		
India	Medium Small Micro			Rs5crores – Rs10 crores Rs25 lakhs – Rs5 crores <Rs25 lakhs	
Brazil	Medium Small Micro Individual	<19 20-99 100-499	BRL16m-90m BRK2.4m-16m <BRL2.4m		
European Union	Medium Small Micro	<250 <50 <10	≤ €50m ≤ €10m ≤ €2m	≤ €43m ≤ €10m ≤ €2m	
Kenya	Medium Small Micro	50-100 10-50 <10			
Egypt	Big Medium Small	>50 10-50 <10			
Nigeria	Medium Small Micro	>N51m≤N200m >11m≤N50m ≤N10m	≤N500m ≤N100m ≤N20m	>N100m≤N500m >N5m≤N100m ≤N5m	>N100≤N500m >N10m≤N100m ≤N10m

The South African definition of SMME compares well with those of other countries. Notably, countries such as Zambia and European Union member countries use three measures to categorise small businesses as South Africa; namely the number of employees, annual turnover and total asset value. However, in addition to these measures, Nigeria also has another measure that limits borrowing of small firms based

on firm size. While other countries just use one or more of these measures, what is common among the BRICS countries is that small firms are further sub-categorised by sectors. In addition, the South African definition also includes the very small-sized firms, but these do not necessarily feature in other countries even though Brazil includes individual entrepreneurs in its definition. The question to ask therefore is why this is the case.

While SMMEs definitions differ country by country with similarities in some cases, a closer look into the trends of SMMEs in South Africa and the country's history could lead to a better understanding regarding the choice of categories of SMMEs. The following section discusses the trends in the numbers of SMMEs by size, SMME contributions at different levels of the economy as well as a critical discussion around attrition rates between 2015 and 2018 based on first quarter SEDA annual reports (Table 6).

The SEDA quarterly reports provide separate data for the formal and informal SMMEs. Informal SMMEs account for about 67% of the whole SMMEs sector. The definition of SMMEs in South Africa includes the micro and very small firms and thus gratifies the need to fully understand the characteristics and behaviour of these very small firms given that they form the majority of small businesses, hence the disaggregation of the very small firms.

The number of SMMEs on a year to year basis increased by 11.2% for the years 2016-2017 but decreased in periods 2015-2016 and 2017-2018 by 1.0% and 1.4% respectively to settle at 2 443 183 as at the first quarter of 2018 compared to 2 251 821 reported in the first quarter of 2015 (Table 6). While the number of formal SMMEs decreased between 2017 and 2018 (-9.2%), the informal SMMEs reflect an increase in the same period (3.4%). The decrease in the number of formal SMMEs initiated a corresponding 15.9% decrease in the number of jobs provided by the sector. This must be worrying to policy makers given that SMMEs are the backbone of most economies nowadays and therefore any attrition tendencies in the SMMEs output and employment levels is likely to trigger the same patterns in the national economic output and employment levels as well.

The trends in number of SMMEs and attrition rate levels have varying effects depending on sector of SMMEs. In particular, the most negative effects were felt in SMMEs operating in the trade, accommodation and construction sectors where firms reported a decline in their output contribution shares in the last two years (2016-2017 and 2017-2018). However, SMMEs operating in finance, business and community services reported an upsurge in overall output contribution of the SMME business in the same period. Similarly, SMMEs owned by Blacks increased in number over the whole three year period compared to other races. The last point somehow highlights the effectiveness of the BEE policy at national level.

TABLE 6: SOUTH AFRICAN KEY SMMES INDICATORS BETWEEN 2015 AND 2018

KEY SMME INDICATORS	2015Q1	2016Q1	2017Q1	2018Q1	2015-16 Δ	2016-17 Δ	2017-18 Δ
Total number of SMMEs	2 251 821	2 229 549	2 478 877	2 443 163	-1.0%	11.2%	-1.4%
Total number of formal SMMEs	667 433	650 077	725 698	658 719	-2.6%	11.6%	-9.2%
Total number of informal SMMEs	1 497 860	1 484 768	1 658 522	1 714 233	-0.9%	11.7%	3.4%
Number of Jobs provided	9 947 186	10 006 726	10 568 701	8 886 015	0.6%	5.6%	-15.9%
% operating in trade & accommodation	43%	39.8%	39.6%	39.3%	-3.2% pts	-0.1% pts	-0.3% pts
% operating in community services	14%	13.0%	13.0%	15.1%	-1.0% pts	0% pts	2.1% pts
% operating in construction	13%	15.0%	14.8%	13.6%	-2.0% pts	-0.1% pts	-1.2% pts
% operating in finance & business services	12%	12.4%	12.7%	13.3%	-0.4% pts	0.3% pts	0.7% pts
% black owned formal SMMEs	71.3%	71.5%	73.6%	74.9%	0.2% pts	2.1% pts	1.2% pts
% contribution of SMMEs to turnover of all firms	36%	36.8%	41.1%	40.0%	0.8% pts	4.3% pts	-0.9% pts
% contribution to GDP	42%	*	*	*			

*SEDA did not provide data citing that the figures are disputed.

Based on trends analysis, what is worrying is that levels of attrition in number of operating SMMEs, number of jobs provided and contributions of SMMEs to turnover of all firms were highest in most recent years. This therefore calls for a revisit to the current small business policies, particularly those meant to provide both business and financial support to ensure that progress made so far in expanding various SMME sectors is not reversed through these attrition trends.

Currently, both regulation of SMMEs as per the National Small Business Amendment Act 29 of 2004 and the national small business development strategies in South Africa are developed and implemented by the Department of Small Business Development (DSBD, 2017). While the number of employees remains the same in the definition of small businesses, the values on annual turnover and total asset value are revised from time to time by the Department in line with the levels of inflation and industry trends. The current national small business strategy focuses on four strategic areas, with emphasis on the strategies to be pursued and the intended goals on each strategy to be achieved at national level (Table 7). The strategies aim at developing and uplifting SMMEs in previous marginalised and underdeveloped populations and provinces.

TABLE 7: THE NATIONAL SMALL BUSINESS STRATEGIES BY DSBD

No	Strategy	Goals
1	Black business supplier development strategy	To provide a cost-sharing grant offered to black-owned SMMEs to assist them to improve their competitiveness and sustainability and to become part of the mainstream economy and create employment.
2	Co-operative incentive strategy	To provide a 100% grant for registered primary co-operatives so as to improve the viability and competitiveness of co-operative enterprises by lowering their cost of doing business through an incentive that supports Broad-Based Black Economic Empowerment.
3	Shared economic infrastructure facility	To support public sector investment that provide necessary infrastructure to create an enabling environment for SMMEs to crowd in investment, mostly in townships, rural areas and the inner city where there is clear business activity taking place.
4	National informal business upliftment strategy	To address the developmental gap at the lower base of SMME development.

Source: DSBD 2017. Key service offerings by the Department of Small Business Development. Internet: http://www.dsbd.gov.za/. Date Accessed 20th June 2017

The National Small Business Amendment Act 29 of 2004 also mandates respective institutions with responsibilities to formulate and implement specific SMME development initiatives at national level in line with the development agenda of the Department of Small Business Development under which they fall. In order to achieve the above national small business development strategies, support institutions and their roles in relation to SMMEs in South Africa were formed and fall under DSBD. These are discussed below.

2.3 SMME SUPPORT AND GOVERNING INSTITUTIONS IN SOUTH AFRICA

The structures of SMMEs and how they are supported, including the established institutions for that purpose are set out in the National Small Business Act 102 of 1996. That Act was amended into the National Small Business Amendment Act 29 of 2004 which merged the various sectorial and provincial based institutions into national ones. Currently, the Department of Small Business Development spearheads its small business development strategies through its two newly instituted agencies – The Small Enterprise Development Agency and The Small Development Finance Agency.

2.3.1 The Small Enterprise Development Agency

Chapter 3 Section 9 of the National Small Business Amendment Act 29 of 2004 merged the previously independent and sector based SMMEs support agencies into a single agency. The merging of Ntsika Enterprise Promotion Agency (NTSIKA), the National Manufacturing Advice Centre Trust (NAMAC) and the Community Public Private Partnership Programme (CPPP) resulted in the formation of the Small Enterprise Development Agency (SEDA). SEDA now has the sole responsibility of coordinating small business support efforts of the government, private sector and non-governmental organisations at national level (DSBD 2017; DTI 2017; SEDA 2017). SEDA has offices in every Province in order to be able to undertake its national mandate with a local presence. SEDA falls under the Department of Small Business Development and is funded in terms of the Public Finance Act of 1999 (DSBD 2017).

a) Objectives of the Small Enterprise Development Agency

According to the National Small Business Amendment Act 29 of 2004, the Agency has three objectives which are to:

i. design and implement development support programmes for SMMEs;
ii. promote a service delivery network that increases the contribution of small enterprises to the South African economy, and promote economic growth, job creation and equity; and,
iii. generally, strengthen the capacity of:

a) Service providers to support small enterprises; and
b) Small enterprises to compete successfully domestically and internationally.

In order to achieve these objectives, the Agency undertakes the functions discussed in the next sub chapter.

b) Functions of the Small Enterprise Development Agency

Chapter 3 section 10 of the National Small Business Amendment Act 29 of 2004, specifies the functions of SEDA (SEDA 2017) as follows:

1) The Agency must:
   a) implement the policy of the national government for small enterprise development;
   b) design and implement a standard national delivery network that must uniformly apply throughout the Republic of South Africa in respect of small enterprise development, integrating all government-funded small enterprise support agencies across all spheres of government;
   c) design and implement small enterprise development support, programmes in order to:
      i. facilitate the building of sustainable and competitive enterprises;
      ii. facilitate the promotion of entrepreneurship;
      iii. facilitate the creation of an enabling operating environment for small enterprises;
      iv. facilitate access by small enterprises to non-financial resources, capacity-building services, products and services;
      v. facilitate international and national market access for products and services of small enterprises;
      vi. facilitate, develop, co-ordinate and foster partnerships across all spheres of government, the private sector and relevant stakeholders that may assist the Agency to achieve its objectives;
      vii. promote a service delivery network to facilitate access and outreach to development support for small enterprises;

viii. facilitate and co-ordinate research relating to small enterprise support programmes;

ix. provide advice, information, analysis and support in the implementation of a Small Enterprise Development Policy;

x. at the request of the Director-General of the Department of Trade and Industry, investigate, advise on and comment on the effect of existing and proposed legislation on small enterprises and to report to the Director-General thereon;

xi. improve the understanding of the public regarding the contribution of small enterprises to domestic economic growth, job creation and general welfare;

d) Establish provincial structures to ensure the effective implementation of its functions as defined in this section.

2) The Agency may:

a) institute and conduct civil proceedings in all matters relating to its functions;

b) enter into contracts;

c) acquire, hold and dispose of assets;

d) let or hire any plant, machinery, equipment or goods of the Agency not immediately required for the purposes of the Agency;

e) invest money not immediately required for the purposes of the Agency in any manner that is consistent with sound commercial practice; and to

f) do all that is necessary and convenient to be done for or in connection with the performance of its functions.

2.3.2 The Small Enterprise Finance Agency

The Small Enterprise Finance Agency (SEFA) was established by the Department of Small Business Development in 2012 as a result of a merger of the South African Micro Apex Fund (SAMAF), Khula Enterprise Finance and the small business division of the Industrial Development Corporation (IDC). It operates as a development finance institution (DFI) for SMMEs (DSBD 2017). SEFA offers a coordinated national financial

support platform for SMMEs across all sectors and provinces. SEFA provides financial products and services to qualifying SMMEs and co-operatives (Table 8).

TABLE 8: SEFA PRODUCTS AND SERVICES TO SMMEs

Direct lending products	Wholesale lending products
1. Amavulandlela funding scheme 2. Bridging loans 3. Term loans	1. Cooperatives 2. Micro-Finance Intermediaries – MFIs 3. Retail-Financial Intermediaries – RFIs 4. Specialised Funds Intermediaries – SFI 5. Credit Guarantee Schemes – BFS/SFI 6. Land Reform Facility – BFS/SFI/RFI 7. Post Loan Business Institutional Strengthening Support

Source: SEFA (2017), Products and services, Internet: http://www.sefa.org.za/Admin/ProductsServices/ProductListing.aspx?ContentSelection Accessed date: 7 June 2017

SEFA offers three types of direct lending facilities to SMMEs (Table 8). The Amavulandlela funding scheme is exclusively designed to fund entrepreneurs with disabilities and who are often discriminated by other funding channels, bridging loans support working capital needs of SMMEs while term loans provide finance for the acquisition of assets for start-ups, expansions and business acquisitions of SMMEs (SEFA 2017).

In addition to the direct lending facilities stated above, SEFA also offers wholesale lending products to expand outreach to SMMEs channelled through cooperatives, micro-finance intermediaries, and retail-financial intermediaries targeted at different types of SMMEs. The wholesale lending products such as credit guarantee schemes, land reform facilities, and post loan business strengthening support loans are channelled through various approved Business Financial Services Intermediaries throughout the country. While SEFA is a national agency, its presence in all provinces of the country ensures that provincial equity is balanced.

2.3.3 Other Government Institutions supporting SMMEs

In addition to the establishment and activities of SEDA and SEFA discussed above, the Act also provides for the establishment of other institutions in order to either directly or

indirectly support small businesses or also gain support from other Departments. Such institutions include the Centre for Small Business Promotion, Provincial SMMEs Desks, National Empowerment Corporation and the National Youth Development Agency. These other institutions and the work they do in supporting SMMEs (DTI 2017) are summarised below (Table 9) in terms of the services they provide and the specific SMMEs they target.

In addition to the listed institutions, there are also NGOs, donors and private sector organisations (e.g. the programme by the Banking Council of SA) who support SMMEs. The Black Economic Empowerment Commission, a Government initiative of Black owned businesses focusing on the importance of SMME development for broad based Black businesses empowerment.

TABLE 9: OTHER GOVERNMENT INSTITUTIONS SUPPORTING SMMEs

Institution	Services	Target
Centre for Small Business Promotion	This is a Chief directorate in the DTI, responsible for policy and coordination of support programmes for SMMEs. It also mobilises funds and supervises the establishment of new institutions.	All SMMEs
Provincial SMME desks	To provide a one-stop information centre to SMMEs and developing enabling government policy to support SMMEs in each province. Activities of the SMME desks include: • Keeping data bases of SMMEs in the province • Developing SMME orientated procurement and sub-contracting policies for provincial government • Targeted support programmes for HDIs, women, contractors, tourism entrepreneurs, small/micro manufacturers, etc	All SMMEs, but not present in all provinces.
National Empowerment Corporation	Funded by government, it provides funding for black economic empowerment ventures	Large, but also small and medium enterprises.
National Empowerment Fund	Provides business loans across all SMME industries	SMME start-ups, expansions and equity acquisitions.
National Youth Development Agency	Mobilises resources and identify business opportunities for the youth	Youth business start-ups
Provincial Economic Development Agencies	Engages businesses, government agencies and the public to facilitate coordinated development in the province	Support businesses including SMMEs in all provinces

Source: SMME Guide (2017), Government programmes and policies for Small Business Development. Internet: http://www.etu.org.za/toolbox/docs/government/sbd.html, AccessedDate 4 May 2017

2.4 INSTITUTIONS SUPPORTING SMMES IN EASTERN CAPE PROVINCE

In addition to the national institutions with representation in each province, there are other institutions whose activities are provincial based. There are several distinguished institutions that enhance economic growth and development of South Africa through SMMEs support in the Eastern Cape Province. These include the Eastern Cape Development Corporation (ECDC), the Border-Kei Chamber of Business (BKCB) and the Nelson Mandela Bay Business Chamber (NMBBC), East London Disability Economic Empowerment Trust and the Nelson Mandela Bay Development Agency among others. The roles of some of these institutions in facilitating SMME support and development are discussed below.

2.4.1 Eastern Cape Development Corporation

The Eastern Cape Development Corporation (ECDC) provides; support, financial resources, investment and capital opportunities to SMMEs in the province. ECDC achieves these goals through its two functions; namely the financial support and business development support (ECDC 2017). It has offices in the main towns of the Province including East London, Queenstown, Butterworth, King Williams Town, Mthatha and Port Elizabeth (NMBBC 2017b) as a way of expanding its influence in the Province.

a) Financial Support Programmes of ECDC

All SMMEs that either have their headquarters in the Eastern Cape Province or bring major developmental benefits to the Province are financed by ECDC (ECDC 2017). The ECDC understands that historical lack of access to finance is a hindrance to SMMEs success in the Eastern Cape Province and therefore supplement SEFA and private financial institutions in financing small businesses. ECDC financing is affordable to SMMEs because of the following concessionary lending conditions:

- ECDC uses adequate management capacity and business viability as key criteria that substitute collateral policies often demanded by other financial institutions in South Africa.

- Where a 100% collateral is unavailable, a loan may still be granted with assets acquired attached as security provided the applicant demonstrates their total commitment to the deal.

- ECDC interest rates are highly competitive for the four types of financing products offered to SMMEs as at June of the year 2017. Interest rates for some products are even lower than the market prime rate. In addition, no management fees are charged for most products, indicating the developmental motive of the ECDC (Table 10).

TABLE 10: ECDC FINANCIAL SUPPORT PRODUCTS AND COST OF LENDING

Name of loan	**Value**	**Term**	**Interest**	**Structuring fees**	**Management fees**
Termcapital	R500,000 to R20 million	5 to 7 years	From prime – 2% to Prime +3%	1 to 2% structuring fee	Not applicable
Nexus trade	R10,000 to R500,000	1 to 6 months	0%	2.5 to 5% of the loan value	Not applicable
Workflow contractor	R100,000 to R20 million	3 to 36 months	From prime -2 to prime +3%	Structuring fees of 1% of the loan value	2,5% of loan value
Powerplus	R20,000 to R500,000	12 to 36 months	Linked to the prime interested rate	Structuring fees apply	Not applicable

Source: ECDC 2017. Development finance and business support for SMMEs by the Eastern Cape development Corporation. Internet: http://www.ecdc.co.za/products-and-services/business-funding/. Internet: Date accessed 20th June 2017

Through the above different financing options, ECDC offers loans to SMMEs applicants on a highly relationship based lending because of the following evaluation basis:

1. Collateral requirements may be waived upfront with assets acquired through the loan used as security.
2. The applicant must be actively involved in business at all the times, verifiable through ECDC staff visits.
3. The applicant must have a clean credit record.
4. As an entity concerned with sustainable development, ECDC encourages clients to settle the loan amount before the end of the contract term.

Given this flexibility in lending by ECDC to SMMEs, it is believed that ECDC has increased the level of access to finance in the Eastern Cape Province. With this credit additionality, the evaluation of credit access and growth of SMMEs becomes an important subject.

b) Business support programmes of the ECDC

In addition to providing financial support, ECDC runs a number of programmes intended to grow the SMMEs sector in the Eastern Cape Province (ECDC 2017). These include:

- ***ECDC skills development support for SMMEs***

ECDC expects SMMEs owners to display some minimum level of expertise in the area of the proposed business idea, either on a technical or business level. However, in the event that such required skill levels needed to drive the business proposal forward are not possessed by the SMME owner, ECDC provides mentorship training courses necessary to improve the skills appropriate for the business prior to funding.

- ***Quality business services improvement for SMMEs***

ECDC helps SMME businesses perform to their potential by providing:

a) A range of non-financial services which are sector-specific and demand-led.
b) Business linkages and networks that strengthen the SMMEs in their line of business and sector.

- ***The start-up business support for SMMEs***

ECDC engages with start-up businesses to evaluate the extent to which the business plan is feasible. It assists entrepreneurs in developing start-up business plans, facilitating access to services and resources so that the SMME can execute its business plan properly and manage the process of establishing the business well.

- ***The emerging business support for SMMEs***

In the case of an emerging and innovative business, the ECDC diagnoses and evaluates the potential of business. Based on the evaluation of the business plan, ECDC together with the owner of the business, develop and agree on an action plan,

facilitate access to services and resources needed to carry out the growth business plan and manage the work plans throughout the early stages of the business.

- ***The expanding business support for SMMEs***

If the business needs expansion, ECDC explores, with the business owner, different growth strategies including the need for new technology, access to finance or reaching markets in other areas. ECDC then facilitates access to services and resources needed to carry out the expansion plan and manage the work plans.

- ***The underperforming business support for SMMEs***

In cases where SMMEs underperform, the ECDC helps by identifying the causes of the lack of performance. ECDC explores with the business owner different opportunities with potential to improve performance. ECDC then facilitates access to services and resources needed to take up those opportunities and manage the work plans.

- ***Identifying and minimising cost drivers support for SMMEs***

ECDC helps SMMEs by outsourcing SMME support from service providers and may subsidise the service provider's services in order to reach low cost levels for the identified main cost drivers of SMMEs. The plan is implemented based on a set of formula that is guided by:

- Value of the service needed by the SMME
- Turnover of the SMME
- Structure of the SMME
- Number of times ECDC has assisted the SMME
- Financial profile of the SMME.

Given the wide range of ECDC supporting mechanisms for SMMEs, ECDC increases the economic activities of SMMEs in the Eastern Cape Province. An evaluation of the

financing activities and growth driven by ECDC is important in understanding the role of ECDC.

c) Performance of the ECDC

The role of the ECDC is to provide both financial and developmental support to the SMME sector in the Province. During the period between 2015 and 2017, ECDC performed well in terms of delivering on its objectives as well as meeting the yearly set targets (Table 11). A total of 823 SMMEs and 91 cooperatives were funded by ECDC for a total of 420 million rands. This effort resulted in the creation of 11 648 new jobs in the Province. In addition, in line with its SMME development goals, the Corporation trained a total of 1 439 SMME entrepreneurs in critical skills needed in their businesses while 110 SMMEs were included in the incubation programmes to monitor their operations over and above offering them with sector and needs based mentoring services during the whole tenor of their loans and beyond. On average, there was a 1.8% increase in performance over the period on all activities of ECDC.

TABLE 11: ECDC PERFORMANCE BETWEEN 2015 AND 2017

	2014/15	2015/16	2016/17	TOTALS
Number of SMMEs financed	300	260	263	**823**
Number of cooperative financed	17	58	16	**91**
Number of SMMEs non-financial supported	337	292	368	**997**
Amount of development finance disbursed	R160m	$92m	R168m	**R420m**
Number of SMMEs jobs created	3 711	3 728	4 209	**11 648**
Number of entrepreneurs trained in critical skills	326	464	559	**1 349**
Number of SMME in incubation programmes	19	39	52	**110**

Source: ECDC Annual Reports

2.4.2 The Border-Kei Chamber of Business

The Border-Kei Chamber of Business' (BKCOB) was established in 1877. Its mandate is to create an enabling environment for economic activity and a platform for business in the Buffalo City Municipality Metropolitan area, known as the Border-Kei region. Buffalo City Municipality Metropolitan includes the towns of East London, Bhisho and King William's Town. BKCOB is a not-for-profit, a-political, a-religious, membership based organisation with 765 businesses as members, of which over 75% of these fall in the SMME category (BKCOK 2017b). BKCOB, being a member of the national South African Chamber of

Commerce and Industry (SACCI) which is in turn affiliated to the International Chambers of Commerce (ICC), provides a good link for firms with access through the Chamber to powerful decision making bodies that impact the business environment, nationally and internationally on issues such as tax policy, industrial and labour relations and, economic controls. The Chamber also has strong relations with government departments with a presence in Buffalo City Metropolitan. The overall work of BKCOB is streamlined into eight committees, each with specific roles to serve members in particular sector clusters (BKCOK 2017a).

The Infrastructure Committee focuses on a wide range of current infrastructure issues including the development of the surrounding roads, freight, rail, telecommunications as well as public transport in the Border-Kei Region. The chamber provides a link to members, public, government agencies and independent contractors to ensure a progressive and sustainable development of the infrastructure in the region in a coordinated manner. This knowledge is important for small businesses on how their expansion plans can be aligned with the development plan of the regions and the opportunities for small businesses in the expansion projects.

The Manufacturing, Economic Affairs and Trade (MEAT) committee oversees several portfolios, each with a coordination mandate to strengthen economic development in the area for the manufacturing firms and trading firms. The Committee's activities are coordinated to develop the City by liaising with the Department of the Economic Affairs.

The Employment Relations Forum Committee (ERF) serves as the body dealing with all labour relations and human resources management issues as well as focusing on the HIV/AIDS projects. It provides a link between firms and employees in the region and coordinates labour relation issues among different local firms and government agencies in the region.

The Tourism Committee focuses on all travel and hospitality issues within the Border-Kei Region such as social tourism, travel tourism, sport tourism as well as all developments

in the hospitality industry. Its focus is to coordinate tourism activities and develop a calendar that informs members and the public of these tourism activities as well as providing a communication channel of sector specific issues and concerns for local firms involved in accommodation, tourism and travel sectors.

The Education Committee deals with current Issues relating to Education Advisory Boards, stakeholders and all levels of educational providers in the region, in terms of education standards, quality that improves human capital in the region and coordinated educational infrastructure development and planning. A notable example of such collaboration is the East London Collaborative Library constructed by three universities to accommodate their students in different floors of the same building. The contributions for this mega-library were R50 million from UNISA, R30 million from the University of Fort Hare, R20 million from the Walter Sisulu University and R100 million from the Department of Higher Education and Training.

All matters revolving around energy are dealt with by the Energy Committee. These include both the generation of energy by individual power production firms as well as the industrial and manufacturing side of this sector. The Energy Committee coordinates firms in energy business and the energy consuming communities to channel their thoughts and intentions through the committee to reach municipalities, government entities, Provincial and National Government on energy matters affecting their businesses from both the production side and the consumption side.

The operational and marketing activities of the Chamber are handled by the Operations Committee. It takes care of all Chamber social events such as Chamber Breakfasts, the Annual Dinner, Industry Awards dinners, Expos and Networking evenings on behalf of its members among others. It also handles all aspects of communication between Chamber and its members, and between Chamber and the general public, between Chamber and agencies of government departments, and keeps members constantly informed of Chamber activities and current issues from other stakeholders.

Lastly, the Executive Committee oversees activities of all other committees and acts as the Board of the Chamber. It formulates business strategic plans of the Chamber and approves budgets for the different committees of the Chamber. The Executive Committee reviews and monitors the work of the committees against set objectives and targets.

2.4.2 Nelson Mandela Bay Business Chamber

The Nelson Mandela Bay Business Chamber is a not for profit company representative of businesses in Nelson Mandela Bay metropolitan municipality, whose aim is to connect businesses, and to stimulate economic progress in the municipality. Nelson Mandela Bay metropolitan municipality comprises the city of Port Elizabeth, towns of Uitenhage and Despatch and the surrounding rural areas. As at June 2017, the Chamber had a membership of 721 businesses (NMBBC 2017b). The Nelson Mandela Bay Business Chamber has established a structure of six task teams to facilitate the ease of doing business for its members and the community. The task teams are made up of business member volunteers whose roles are to create an environment for business to grow and address inhibiting factors impacting on businesses in the sector cluster of each task team (NMBBC 2017c).

The overall objective of the Water Task Team is to create a secure supply of water at the correct quality and price levels in the region. It therefore coordinates firms and all stakeholders in the water industry development, supply, and maintenance in order to address water problems in the region that have a direct impact on businesses and the welfare of the public.

The overall objective of the Electricity and Energy Task Team is to create energy smart cities in the Municipality. It therefore coordinates firms and all local government agencies in the power generation and power manufacturing accessories industry in order to maintain an adequate power supply to both businesses and the community in the region.

The Roads and Storm Water Task Team addresses concerns regarding the upgrade and maintenance of key infrastructure in the region, in particular feeder roads and storm water facilities in Nelson Mandela Bay Municipality.

The main purpose of the Transport and Logistics Task Team is to improve logistics and transport services necessary to support business and promote investment in the region. The team coordinates the constructions and supply of transport and communication services by addressing needs and communicating intentions and challenges of both suppliers and consumers in the region.

The Metro Collaboration Task Team's purpose is to nurture a strong collaboration between the Nelson Mandela Bay Municipality and the Business Chamber at Executive level and Task Team level. The Metro Collaboration Task Team is a closed group that deals with strategic plans and work plans of the key players before these are assigned to the specific action task teams.

The objective of the SMMEs Task Team is to create an enabling environment for sustainable growth of SMME member companies in priority sectors. The team works to create business linkages between well-established large firms and small businesses and provides financial support for upcoming and existing SMMEs in the region to ensure that created linkages are sustained.

The financing structure for the SMMEs in the Eastern Cape Province, just like other provinces in South Africa, is highly fragmented and supported by both the government and the private sector. A compilation by NMBBC and BKCB of banks, financial institutions and development organisations supporting SMMEs reflects that there is diversity in financial delivery systems offered by these institutions (Table 12).

TABLE 12: BANKS AND DEVELOPMENT AGENCIES FINANCING SMMEs IN EASTERN CAPE PROVINCE

Banks financing SMMEs	**Development agencies financing SMMEs**
ABSA Corporate and Business Banking	East London Disability Economic Empowerment Trust
ABSA SMME Development Centre	Eastern Cape Development Corporation (ECDC)
Bidvest Bank Business Division	Nelson Mandela Bay Development Agency
Bidvest Bank Fleet and Asset Finance	Shandula Black Umbrellas
First National Bank Business	Small Enterprise Finance Agency (SEFA)
Investec Bank Business	Business Partners
Nedbank Business Banking	National Youth Development Agency (NYDA)
SA Home Loans	Various microfinance institutions
Standard Bank Business	
State Bank of India	

Source: Compiled from NMBBC and BKCB company list databases

Institutions funding SMMEs in the Province are commercial banks, private-owned development financial institutions, government-owned development financial institutions and microfinance institutions. These institutions provide finance to different types of SMMEs under varying conditions to satisfy different financial and developmental goals grounded on their different formation mandate. Commercial banks, private-owned development financial institutions and microfinance institutions are conventionally for-profit organisations, therefore given their appetite for profits are very much concerned about quality of assets, profitability and collateral availability of SMMEs they fund. On the other hand, government-owned development financial institutions are pro-development and less concerned about the above issues, but rather evaluate the potential of the business even if the current asset quality, profitability and collateral availability are currently not satisfactory. Given the different goals of these institutions, the screening processes also differ, pointing to the fact that the different financial institutions and development agencies adopt different lending technologies. It is therefore important to understand how these different lending approaches implemented by different lending institutions impact on the growth and credit rationing of SMMEs.

2.5 TYPES OF LENDING TECHNOLOGIES

The menu of concepts used by a financial lending institutions to understand the business of the borrower and eventually make a lending decision defines a particular lending technology used by a financing institution for that particular class of customers. The different lending technologies, empirical evidence on their specific use and the sector settings under which they operate are discussed below. The section ends by critically evaluating lending technologies that are better placed for SMMEs. While Berger and Udell (2006) identify the basic traditional lending technologies used in SMMEs lending, in addition to these, there are now a number of other new lending technologies whose use have been extended to financing SMMEs in the world in general and also specifically here in South Africa.

2.5.1 Traditional SMME lending technologies

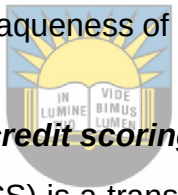
The conventional seminal paper (Berger and Udell 2006) categorises traditional lending technologies into two main branches, namely the various transactions based technologies which use hard data for informational transparent borrowers and the relationship based technology which uses soft data for informational opaque borrowers, mostly SMMEs.

a) Financial statement lending technology

A financial statement lending is a transactions based lending technology where funding decision is arrived at on the strength and quality of the borrower's official financial statements. Two important conditions underpin this lending technology namely that the borrower must have officially audited financial statements and that the financial condition of the borrowing firm must be strong (Bakker, Klapper, and Udell 2004). As such, the lender sees expected future cash flows of the firm as the main source of loan repayment, whilst other additional security may be imbedded to ring fence the loan structure. Given the requirements for both officially audited financial statements and healthy financial conditions of firms mean that this type of transactional lending works better for informational transparent SMMEs only. Literature also has it that the ability to collect financial statements varies across banks, thus restricting the ability of banks to use this

method to fund SMMEs. For example, collection of financial statements from borrowers is high for banks with more concentrated commercial loan portfolios but low from borrowers in industries in which banks have less exposure (Berger, Minnis, and Sutherland 2016). Therefore, bank experience with a class of customers has a bearing on the extent banks use financial statement lending method. This is a disadvantage for SMMEs since the majority of them do not have long bank relationships, particularly new SMMEs.

While financial statement lending technology was widely used to fund SMMEs in Japan (Uchida et al. 2006, 2012), multiple lending technologies were also being used at the same time. The implication of these findings is that financial institutions use different lending technologies based on various sources of information about SMMEs. The use of varying lending technologies limit funding of SMMEs as this increases cost of information gathering, given the information opaqueness of SMMEs.



b) Small business credit scoring lending

Small business credit scoring (SBCS) is a transactions based lending technology based on hard information about both the SMME firm and the owner (Bauer 2009; Berger, Frame, and Miller 2002). The data about owner and SMME firm are captured into a rating model that gives a statistical score for the borrower denoting whether the SMME's borrowing capacity is acceptable or not. This method is common in developed countries due to the presence of credit bureaus that provide market credit data and less common in developing countries where such data do not exist (Caire 2004). In addition, the designing of the scoring model matters as variables included in the credit scoring model defines the robustness of the method (Tsaih et al. 2004).

SBCS lending was first used in USA since the 1990s for SMMEs loans (Berger, Cowan, and Frame 2009), but large small firms benefit more from SBCS lending than small firms in terms of credit availability, cost and risks factors (Berger et al. 2002). Along these observations, online lending has also increased the volumes of lending through SBCS in all sectors including SMMEs (Brainard 2015). However, evidence from Japan shows that

SBCS lending tends to make more losses than other forms of lending (Hasumi and Hirata 2010), thus acknowledging the view (Caire 2004) that usage and performance of SBCS lending varies across countries owing to scope and readily available information from credit bureaus. In theory therefore, the scope of SBCS lending to SMMEs is a function of both the level of economic development of the country and SMMEs sector development. Given the low evolving nature of these two factors in developing countries, the method has less lending functionality for SMMEs.

c) Asset-based lending technology

Asset-based lending (ABL) is a transactions based lending technology which uses the availability of assets as the basis of granting loans (Korn 2008). ABL is a collateral lending concept that depends on the depth of the balance sheet of the borrower (PNC Bank 2015).The use of this method is a challenge for most SMMEs that lack acceptable assets because of their small size and young age. Berger and Udell (2006) derive two categories of ABL; namely those that are tied to short-term assets (e.g. accounts receivables and inventory) and those backed by fixed assets or long-term assets (e.g. equipment, motor vehicle or real estate). This asserts that asset-based lending can be categorised based on type of asset pledged but, even though all these forms of transactions are common in the USA, they had varying degrees of usage between big and small banks (Berger and Black 2011). Largely, ABL is used to finance SMMEs with high debt related agency problems (Constand, Osteryoung, and Nast 1991). Thus it is a good method to deal with high information asymmetry risk firms like SMMEs.

Another form of ABL termed intangible asset based lending (IABL) leveraged on a portfolio of intellectual property of SMMEs (Jarboe and Ellis 2010) also exists. This method is common in the pharmaceutical and biotechnological sectors mostly in European countries where loan repayment are secured by claims against expected royalty fees (PNC Bank 2015). The contract structure of ABL typically specifies an initial loan-to-value ratio that is less than 1 and sets a loan amortization schedule with a maturity less than the lifespan of the asset pledged. This is for credit risk management purposes.

The use of the ABL method depends on the sophistication and efficiency of the legal system of a country (Beck and Demirguc-kunt 2006). In particular, Berger and Udell (2006) noted that the success of ABL financing depends on the commercial law of a country; how it handles the registration of a collateral claim, how collateral priority is defined and how notification of collateral claim is lodged. For example, in the USA, the growth of ABL was attributable to the support of the existing commercial law's Article 9 of the "Secured Transactions Law" providing for the blanket filing of the accounts receivable and inventory, which was also supported by a well-developed electronic asset registration system and further, the law forbids multiple assignment of each asset (Berger and Udell 2006). Similarly, the strength of ABL in the UK was linked to the transparency of the accounting standards used to account for both tangible and intangible assets that can be lodged on a loan contract (Jarboe and Ellis 2010). It therefore follows that sanity laws and accounting standards are a prerequisite for the preference of ABL by financial institutions. In fact (Skadden 2014), the UK volumes of ABL loans grew from $50.89 billion in 2004 to $92.61 billion in 2014 and this was promoted by the ability of firms to lodge even foreign assets within the European Union (EU).

The characteristics of SMMEs, particularly the lack of acceptable collateral assets limit funding by banks using this method. Secondly, the sanity of the laws of a country determines the popularity of ABL since the laws influence the ease of executing claims on collateral assets. Given these prerequisites of ABL and the characteristics of SMMEs, the use of ABL is very limited in developing countries than it is in developed economies owing to the lack of collateral on the part of SMMEs as most SMMEs sectors are neither developed nor organised and the regulation of their economies are often too weak to effectively enforce contracts.

d) Factoring

Factoring involves the purchase of accounts receivable by a lender known as a factor. Factoring involves three activities; the financing of accounts receivable by selling the underlying assets to the lender in which the borrower outsources its credit and collections activities in addition to obtaining financing from the lender. The use of factoring varies

widely across countries (Bakker et al. 2004) based on the legal framework of the country in enforcing contracts, in particular the enforcement of the provisions for the assignment of receivables (Klapper 2008). Legally, the general rules for claims valuations should also apply to factoring claims. Given the provisions of the assignment of receivables within the EU countries, it is possible to recover at least 80% of market value of assets assigned through factoring within 6 months or less (Bakker et al. 2004). However, for SMMEs, the main challenge is not delays in recovering receivables, but getting initial finance to support either their current activities or future expansions. This special funding need for SMMEs cannot be addressed by factoring, as factoring assumes that SMMEs have adequate capital to engage in effective operations but only constrained with working capital shortage resulting from delays in expected receivables.

e) Leasing

Leasing involves the purchase of fixed assets by a lessor (lender) and renting it out for use by the lessee (borrower) and a very common method of financing equipment, motor vehicles, real estate and nowadays even computers in many countries by both banks and other institutions (Westley 2003). Businesses have noted that profits arise from equipment use, not ownership (Bass and Henderson 2000) and leasing has grown as a form of financing SMMEs that cannot afford to buy own assets. Leasing is often preferred to ABL because it is easier to repossess leased assets than either to make a foreclosure on collateralised assets, making financial institutions have a higher debt capacity in lease financing than in ABL (Kraemer-eis and Lang 2012) and it also increases access to SMME due to the multiplier effect of leasing. Leasing reduces the risk of adverse selection problem as a higher quality product can be sold off the lease (Chemmanur and Yan 2000) if the purchase option is not exercised by the lessee. Based on a study sample of 3 000 SMMEs across EU member states (Kraemer-eis and Lang 2012), only 13% of SMMEs used factoring to fund investments in 2010 while 40% of SMMEs used leasing, whereas about one-third of equipment used by USA companies is leased (Chemmanur and Yan 2000), reflecting the popularity of leasing as a financing tool globally.

Given that SMMEs have limitations in using ABL because of lack of acceptable assets that can be used as collateral, leasing becomes a better lending method enabling them to access assets they currently cannot afford with an option to buy them on lease. Leasing, however assumes that SMMEs are of good financial standing upon which funding institutions evaluate SMMEs' ability to honour lease rental obligations. Therefore, given the information opaqueness of most SMMEs, leasing is therefore not guaranteed for all the SMMEs in different levels of operational sizes and ages.

f) Relationship based lending

In relationship based lending, financial institutions depend primarily on soft information gathered through continued business interactions with SMMEs, their owners and the local communities over time (Berger and Udell 2002). The information is acquired largely by loan officers or customer relationship officers (Casey and O'Toole 2014; Comeig et al. 2015; Uchida et al. 2012) through direct contact with firms by observing SMMEs' performance in all aspects of their businesses regularly. The deepening problem in SMMEs funding is the opacity of their information and relationship lending generates more soft information that enhance SMMEs lending augmenting the little SMMEs' hard information available.

One argument on SMME lending technology literature is that bank relationships do not influence cost of lending in the first place, but rather the decision to lend. Early literature indicates that small firms with long bank relationships borrow at lower rates and are unlikely required to pledge collateral compared to other small firms (Berger and Udell 1994). However, that view has been challenged in that the length of bank relationship alone has less effect on the cost of a loan but that the intensity or multidimensionality of the relationship does (Degryse and Van Cayseele 2000). Strong relationships are often beneficial to SMMEs although lending outcomes differ across relationship dimensions (Kysucky and Norden 2013). More often, the dimensions of time, exclusivity, firm-bank distance, and cross-product synergies result in lower loan costs and higher credit volumes. However, lately it is argued that the length of the relationship has small effect

on cost of loans but the rate changes the more the bank provides other financial services, although both factors have effect on credit access (Petersen and Rajan 2015).

On the other hand, high concentration of lenders and length of relationship are positively associated with firm loan default, reducing benefits of SMMEs while distance is negatively associated with loan default (Fiordelisi, Monferrà, and Sampagnaro 2013), thus distance has a negative information flow effect that limits the relationship and affects the assessment potential of a lender based on soft information of SMMEs.

The different effects of the relationships on price and quantity of loans stem from the structure of banks. More often, banks use standard loan price guides, especially for SMMEs. This means that bank staff use soft information to assist them decide only on the amount and on whether to accept or not, rather than the price (Petersen and Rajan 2015) that is prescribed from the standard price guides. Overall, the SMME's credit quality influences the relationship as well. Good borrowers stay with their relationship banks, while bad borrowers switch to arm's length (outside) banks. More so, the soft information may also include an assessment of the future prospects of the SMME based on information obtained from the SMME's suppliers, customers, or neighbouring businesses (Berger and Udell 1998; Degryse and Van Cayseele 2000; Petersen and Rajan 2015). The soft information often remains the preserve of only the particular bank staff who is in direct contact with the SMME and thus may not be easily observed, verified, or transmitted to other staff members, hence the longer the relationship the SMME has with the bank, the more it benefits from that soft information for its borrowing. The agreement in the literature therefore, is that the dimensions of relationships are important in determining to a greater extent the decision by the bank to lend and partly the ability of firms to negotiate loan costs. Given information opaqueness of SMMEs, theory claims that SMMEs are more likely to experience more credit access if a relationship lending technology is used by a bank than when a transactional lending technology is used.

g) Trade credit

Berger and Udell (2006) acknowledge that although trade credit to SMME financing is not a lending technology offered by financial institutions, its relevance in SMME funding triggered the reason to include it as a lending technology. Trade credit represented one third of the debt of US SMMEs as of 1998, which was almost equivalent to that extended by commercial banks at the time (Robb, 2002). Trade credit may also be important especially in economies with weak financial systems (Beck et al. 2007; Fisman and Love 2008) as firms that depend on trade credit in such economies have shown more growth. Trade credit can be classified as either a transactions based or a relationship based lending technology depending on which information is available to the product supplier.

Based on the above literature on different types of lending technologies, two main aspects emerge with respect to SMMEs funding that is, the characteristics of each lending technology and the extent to which each lending technology is used to fund SMMEs. By far, financial statements and leasing lending technologies are applicable to informational transparent firms and are therefore more appropriate in developed economies with well-established SMMEs and sanity laws than in less developed ones where there is high level of informality. Similarly, small business credit scoring lending thrives on availability of hard information about SMMEs and owners' characteristics from established credit bureaus. The absence of these credit bureaus in most developing countries and limitation of SMMEs information where they exist make this form of lending less credible in supporting SMMEs initiatives especially in developing economies. While South Africa boasts of well-established credit bureaus, it has however not been tested as to whether their presence facilitates SMME lending altogether.

The use of asset based lending is also a challenge because most SMMEs do not own acceptable collateral assets owing to their small size and young age. The method therefore becomes more useful for large and old SMMEs only. Factoring and trade credit assumes normal operations of firms hampered only by delays in collections of debtors. This is not the main problem for SMMEs as most SMMEs are constrained by low capacity which is highly associated with limited capital in the first place, therefore, factoring and

trade credit do not address the primary challenges facing SMMEs and are thus less useful in supporting SMMEs initiatives. The literature is however in agreement that relationship lending is suitable for SMMEs. Length of relationship alone however does not lower the cost of loans but the various dimensions of relationship influence lending decisions. These dimensions affect credit access of SMMEs as SMMEs benefit from relationship lending due to high use of soft information addressing the opacity of information inclined to SMMEs.

The literature on types of lending technologies is very important in understanding how SMMEs are served and which lending technologies best serve them. However, none of these past studies considered how different lending technologies are associated with funding of SMMEs and which institutions adopt them better. This study values the role played by lending technologies in influencing lending decision making by various financial institutions when dealing with SMMEs. It is therefore critical to assess how different types of lending technologies associate with varying degrees of credit access in the case of SMMEs.

2.5.2 New SMME lending technologies

In addition to the traditional means of lending technologies explained above, financial institutions and non-banking institutions devised new methods of lending to SMMES. Some of the prominent new approaches are discussed below.

a) Venture capital lending

While venture capital lending has been a long standing form of financing for large firms, extending of this form of lending technology to small businesses is a fairly new concept. In a venture capital lending, the venture capitalist invests funds in new businesses or start-ups and earns returns based on the operation profits of the business in line with their funding contribution into the venture. So, venture capitalists provide a form of non-banking financing. In addition to providing financing to SMMEs, venture capitalists are involved in the strategic planning and decision making of the SMME and assist the funded SMME in

addressing both organisational and managerial problems that may affect the SMME (Abbasi, Wang, and Abbasi 2017).

Funding of SMMEs through venture capital is not common in many developing economies for three reasons. Firstly, the proposed business must be able to generate enough revenues to meet the required rate of return expected by the venture capitalist. It therefore follows that even if the proposed business is potentially viable, as long as the expected viability cannot produce the expected returns from the venture capitalist's stand point, funding becomes constrained. Secondly, having sufficient managerial expertise in a similar business-like is another consideration that venture capitalist value most in order to provide the necessary funding (Ambrose 2012). As a result, venture capitalist may not fund start-ups where they cannot trace the experience of owners.

Another factor limiting the use of venture capital lending is that most SMMEs are not aware of this form of financing. For example, in Kenya at least 90% of existing SMMEs are not aware of venture capital financing. As a result, as little as 2% of SMMEs finance their ventures through capital venture financing compared to 87% who used personal savings, 48% used funds from friends while 57% and 7% were funded by microfinance institutions and banks respectively (Ambrose 2012; Kimutai and Ambrose 2013). In Croatia the success rate of SMMEs in venture capital financing is only 3%, and most are excluded because most SMMEs do not meet the required investment criteria (Simic-Saric 2017).

Notwithstanding the low use of venture capital financing as a source of capital for SMMEs, SMMEs financed via venture capital financing in Kenya grew fast in terms of sales, profits, assets and improvement in management due to close monitoring and involvement by the venture capitalist than those funded by other funding options (Ambrose 2012; Derrien, Kecskes, and Mansi 2016). Similarly in Croatia, SMMEs that successfully get funded by venture capitalists were privately owned, and owners had good qualifications, were young, innovative and reasonable risk-takers (Simic-Saric 2017). It can therefore be concluded that the use of venture capital financing is highly dependent on the strength of

the business proposal which must be supported by good knowledge and managerial taints of owners of ventures.

b) Group lending technology

Traditionally, financial institutions could only lend to SMMEs using lending technologies which assess borrowers on an individual firm's risk basis. However, lenders have devised a new method where multiple borrowers' risks can be diversified through group lending of small businesses. Group lending implies joint liability of borrowers on single or multiple loans. Group lending leads to high loan repayments even where borrowers have no collateral (Ghatak 1999). The effect of joint liability is that borrowers self-select other members into their groups. This self-selection of members into groups means that since members know each other, they purposively only select members into their groups whom they view to have less repayment risk given that any default by one member affects all other members. The joint liability effect therefore reduces the moral hazard of the group members (Bauchet and Morduch 2012; Bauer 2009). In addition, joint liability also increases the probability of accessing funds (Kiragu and Sakwa 2013). Lenders are more willing to finance group borrowers than individual borrowers.

Globally, group lending has been very successful in countries such as Angola, Bangladesh, Bolivia, Burundi and Colombia (Bauchet and Morduch 2012), Eritrea (Hermes, Lensink, and Mehrteab 2005) and South Sudan (Dube and Dube 2016). A study of 102 groups in Eritrea shows that peer monitoring and social ties of the group leaders have a positive relationship with repayment performance of the other group members (Hermes et al. 2005) and more pronounced in rural areas where such ties are very strong. However, it has also been noted that while traditionally these social ties were more pronounced in women in rural areas, such resemblances are now common in urban areas where members identify themselves through social ties such as sharing the same neighbourhood, common work places and careers (Bauchet and Morduch 2012).

Notwithstanding the benefits of group lending, evidence dictates that group lending as a lending technology is not widespread in most countries. For example, in South Sudan

only a few microfinance institutions practice it. For example, only groups of 15 to 30 members accessing funds through the Equity Bank and groups of 5 to 15 members by the Finance South Sudan Limited, while the rest of microfinance institutions in the country did not adopt it (Dube and Dube 2016). However, evidence suggests that even though this method is not very popular amongst most lenders, its use has averted poverty particularly in rural areas where small entrepreneurs lack security. This form of lending technology is a very important mechanism that can be used in place of asset-based lending technology for information opaque firms like SMMEs.

c) Stockvel lending technology

Stockvel lending is a form of a 'Rotating Savings and Credit Associations (ROSCAs) lending with its roots in South Africa. ROSCAs are a combined peer-to-peer banking and peer-to-peer lending member based groups common in most developing countries. By definition,

> ROSCAs are essentially a group of individuals who come together and make regular cyclical contributions to a common fund, which is then given as a lump sum to one member in each cycle. For example, a group of 12 persons may contribute Rs. 100 (US$33) per month for 12 months. The Rs. 1,200 collected each month is given to one member. Thus, a member will lend' money to other members through his regular monthly contributions. After having received the lump sum amount when it is his turn (i.e. borrow' from the group), he then pays back the amount in regular/further monthly contributions. This explains the name rotating savings and credit associations' for such groups (Bouman, 1979: 253).

The total value of funds circulating in Stockvel activities in South Africa was estimated to be around 44 billion rands in 2012 but these funds were largely used in financing household consumption (Arko-achemfuor 2012). While this form of lending only started as individual household banking and lending in high density suburbs for consumption purposes in South Africa, its use has now expanded to cover the financing of small businesses. In particular, micro enterprises in the streets of Johannesburg, irrespective

of their age use these informal sources of finance (Makhubela, Nyapfungwe, and Dhliwayo 2015). Therefore, Stockvel lending has become a key source of finance for SMMEs, particularly for the micro and very small-sized entrepreneurs forming the majority of SMMEs.

d) Business Angels Investors

Business Angels investors are wealthy individuals or groups of individuals who invest money or equity financing in start-up or early-stage small businesses. They provide private equity or second-round funding for growing, profitable small businesses that need money to continue to grow. After family and friends, as well as the small business owner provide the seed money for start-ups, companies then have to turn to either debt or equity financing in order to grow. More often, debt financing is not available due to tight credit markets or the perceived risk of new small businesses, then, investors and private equity financing would be the next logical source of financing, where available business angels provide that financial gap. In recent years, business angels are a major source of financing that helps to fill a gap that lies between the start-up and seed capital stages, that is, typically less than $25,000, and the point at which formal venture capital funds will take an interest normally above $3 million to $5 million (Figure 3).

Business angels invest an average of £10,000 per deal and hold a portfolio of around two to five investments in the UK while average Australian business angels are middle aged males with personal net worth of around $2 million and an annual income of more than $180,000. They invest an average of $200,000 in new business ventures and hold around 10% to 14% of the capital in these ventures (OECD, 2011).

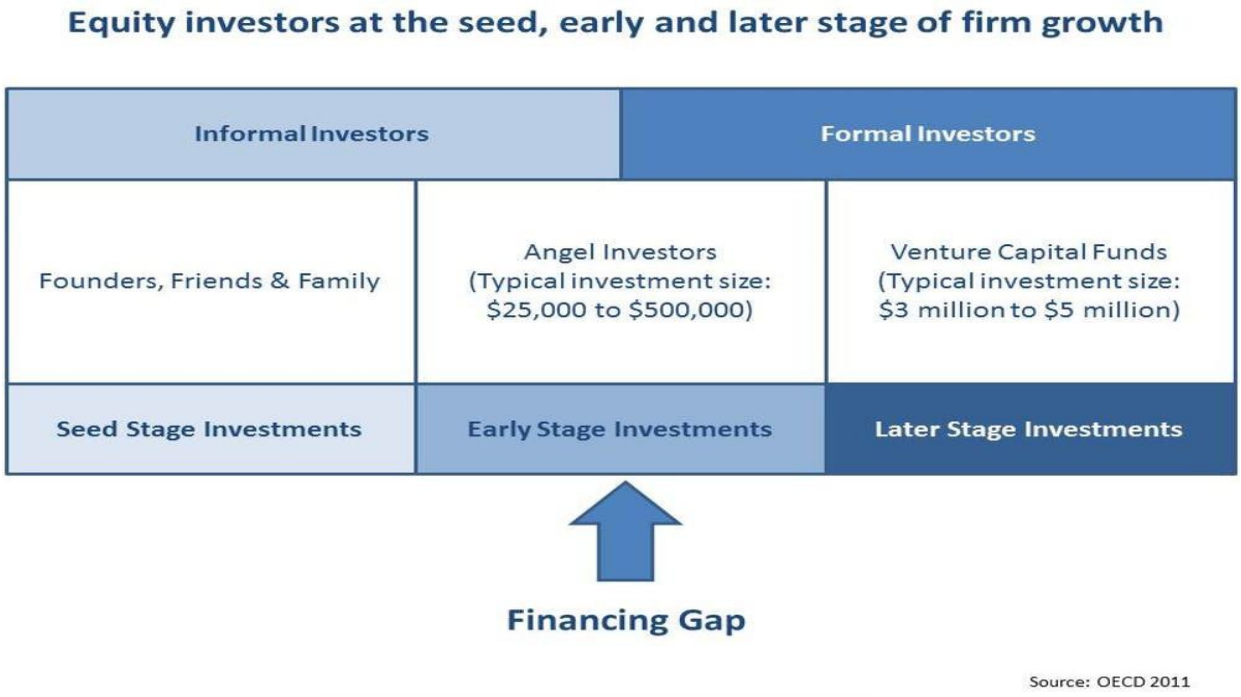


FIGURE 1: FINANCIAL GAP FILLED BY BUSINESS ANGELS IN SMME BUSINESS

It has been reported that some of today's largest world companies such as the Apple Computer, Amazon.com, Blue Rhino, Lifeminders.com, The Body Shop, Ml Laboratories and Matcon were all once funded by business angels during their early stage investments need (Ramadani, 2009). In all these investments, the actual amount of the early stage investment made was not really much, but the business had grown significantly at the time the angel investor exited the firm (Table 13).

TABLE 13: FAMOUS COMPANIES FUNDED BY BUSINESS ANGELS

Company	Angel Investor	Business	Investment	Value at exit
Apple Computer	Unknown	Computer hardware	$91 000	$154 million
Amason.com	Thomas Alberg	On-line bookshop	$100 000	$26 million
Blue Rhino	Andrew Filipowsky	Propanium cylinder replacement	$500 000	$24 million
Lifeminders.com	Frans Kol	Internet email reminder service	$100 000	$3 million
Body Shop	Ian McGlinn	Body care products	£4 000	£42 million
MI Laboratories	Kevin Lich	Kidney medical treatments	£50 000	£71 million
Matcon	Ivan Semeneko	Bulk containers	£15 000	£2.5 million

Source: Amis Venture in Munck and Saublens 2006, p 65

Changes in the global economic conditions also fuelled the use of business angels financing. For example, SMME financing via business angels increased sharply following

a decline in SMME bank lending after the 2008 global financial crisis. In order to increase and facilitate more funding to small businesses through this form of funding, many countries have established angel investor syndicates or networks. These networks facilitate the process of matching entrepreneurs and angel investors' needs, given that the majority of the business angels prefer to remain anonymous (Ciriani and Lebourges, 2016). The South African Business Angel Network (SABAN) was established in 2016 as an effort to bridge the gap between the money donated by family and friends at the base of the funding pyramid and the post-revenue early stages of small businesses. SABAN is part of the African Business Angel Network (ABAN) which is based in Mauritius and works closely with other regional angel syndicates like the European trade association for Business Angel Network (EBAN). Unfortunately in Africa, only a handful of countries have established such business angel networks. Currently these countries include South Africa, Tanzania, Nigeria, Kenya, Uganda, Egypt, Cameroon and Mauritius.

2.6 CHAPTER SUMMARY

The SMMEs structure in South Africa can be categorised into four main structural pillars. The first pillar concerns the formal classification of SMMEs and the various pieces of legislations that are in place to support that structure. The small businesses are classified into micro, very small, small and medium-sized firms. The formation and classification of these small businesses is entrenched in the National Small Business Act of 2004.

The second pillar outlines government policies and strategic initiatives developed specifically to support the SMMEs sector. The Department of Small Business Development sets out national strategic plans for the sector, the goals to be achieved and establishes institutions that offer both business and financial support to the sector.

The third pillar covers the different institutions that support SMMEs and how the organisations are institutionalised by either the government or private sector associations. The Government institutions established by the Department of Small Business Development to support SMMEs are the Small Enterprise Development Agency and Small Enterprise Finance Agency. These institutions' efforts are augmented by other

private institutions including commercial banks, private-owned development institutions and microfinance institutions which all coexist to develop and finance small businesses in South Africa.

The fourth pillar deals with the financial and developmental support structure for SMMEs in the Eastern Cape Province. In addition to institutions that support and finance SMMEs in the Eastern Cape Province either established under the auspices of the Department of Small Business Development or private financial institutions, there are some other institutions in the Eastern Cape Province set up specifically to deal with development issues in the Province including support and finance of small businesses. Such province based institutions include the Eastern Cape Development Corporation, Border-Kei Business Chamber and the Nelson Mandela Bay Chamber of Business. All these institutions, together with other private and national institutions, are integrated into the support and finance of SMME structure guided by the strategies and developmental goals set out by the Department of Small Business Development.

The last pillar explains the types of lending technologies used by lenders when dealing with SMMEs. These are distinguished into the traditional methods and the new methods that have evolved over time. The next chapter reviews the literature on lending technologies and the supporting theories underlying lender behaviour in the presence of SMMEs.

CHAPTER 3: LITERATURE REVIEW

3.1 INTRODUCTION

A lending technology is a charter of all financing requirements that fundamentally influence the lending decision to a particular borrower by a financial institution (Koreen and Lucia 2015). However, lending to SMMEs is limited (Makina et al. 2015; Uchida, Udell, and Yamori 2012) due to information opaqueness of SMMEs (Uchida, Udell, and Yamori 2006; Uchida et al. 2012).

Small businesses typically have no access to capital markets leaving borrowing as the only alternative source of external funding for such firms. Given that each loan is primarily extended based on the outcome of a lending technology used, SMMEs access to finance becomes a function of lending technologies used by financial institutions to screen borrowers (Fredriksson 2012; Wang 2016). The different lending technologies used by financial institutions for varying classes of customers have different bearings on acceptance and denial of credit (Berger and Black 2011). Due to this fact therefore, a critical review of literature on lending technologies used to fund SMMEs and the impact they have on lending is crucial in the assessment of credit access to SMMEs, especially given the information opacity of such firms.

The lending technologies literature has been developed for almost two decades now. Early studies (Berger and Udell 1998, 2006; Cowling and Westhead 2010; Deakins and Hussain 1994; Degryse and Van Cayseele 2000) merely concentrated on the identification and listing of lending technologies used by lending institutions to fund SMMEs. However, the latter to current studies (Allen 2016; Kano et al. 2011; Koreen and Lucia 2015; Korkeamaki et al. 2014; Uchida et al. 2012) have shifted into quantifying the extent each of the lending technologies has been used by financial institutions in extending credit to SMMEs. This shift on the content of literature has resulted in a new dimension in the development of lending technologies literature. In particular, lending technologies used can be linked to the extent of lending to SMMEs on the basis of each

lending channel. Types of lending technologies can also be linked to types of lending institutions and to different markets.

In this chapter, theories of capital structure of a firm and lending are introduced, followed by a discussion on types of lending technologies and the empirical evidence on the nature and scope of using lending technologies to fund SMMEs. The chapter concludes with a review of literature on the use of lending technologies and the link to funding, credit rationing and performance of SMMEs as well as the methods of measuring lending technologies developed this far.

3.2 CAPITAL STRUCTURE THEORIES AND FINANCING OF FIRMS

The founding irrelevance theory of capital structure states firms are financed by debt or equity (Modigliani and Miller 1958). Since then, three other major theories of capital structure emerged. The first is the trade-off theory which assumes that firms trade off the benefits and costs of debt and equity financing to find an optimal capital structure after allowing for market imperfections such as taxes, bankruptcy costs and agency costs. The second is the pecking order theory (Myers and Majluf 1984) which argues that firms follow a financing chain of command to minimize the problem of information asymmetry between the firm's inside-managers and the outside-shareholders. Lastly, is the market timing theory of capital structure states that the current capital structure is the cumulative outcome of past attempts to time the equity market (Baker and Wurgler 2002).

3.2.1 The Modigliani-Miller Irrelevance Capital Structure Theory

The model of business financing began with the Modigliani and Miller (1958) capital structure irrelevance theory. Modigliani and Miller assumed a firm has a particular set of expected cash flows. When the firm chooses a certain proportion of debt and equity to finance its assets, it merely divides up the cash flows among investors. However, this theory assumes investors and firms have equal access to financial markets. Thus, a firm gets any financial leverage required or get rid of any surplus leverage at any time.

The Modigliani and Miller (1958) theory led to both simplicity and controversy on capital structure thinking resulting in two fundamentally different types of capital structure irrelevance propositions. The classic arbitrage-based irrelevance proposition provide settings in which arbitrage by investors keeps the value of the firm independent of its leverage (Stiglitz 1969). The second irrelevance proposition concludes that given a firm's investment policy, the dividend pay-out it chooses to follow affect neither the current price of its shares nor the total return to its shareholders (Miller and Modigliani, 1961). In other words, in perfect markets, neither capital structure choices nor dividend policy decisions matter.

The 1958 paper stimulated further researches aimed at disproving the irrelevance propositions. These researches had shown that the Modigliani-Miller theorem failed under a variety of imperfect conditions. The most commonly used elements include consideration of taxes, transaction costs, bankruptcy costs, agency conflicts, adverse selection, time-varying financial market opportunities, and investor clientele effects. The analysis of the development of this theory started in 1991 (Harris and Raviv 1991). The analysis established that even though the Modigliani-Miller theory failed to provide a realistic description of how firms finance their operations, it however provided reasons why financing matter and how its varied forms need to be understood? Accordingly, the 1958 theory influenced the early development of both the trade-off theory and the pecking order theory that follow below.

3.2.2 The Trade-Off Theory

The term trade-off theory describes a family of related theories in which a firm-owner evaluates the various costs and benefits of alternative financing options to decide on appropriate capital structure. Often it is assumed the firm's decision maker balances marginal costs and marginal benefits of available financing options. The original version of the trade-off theory grew out of the controversy over the Modigliani-Miller theorem. When corporate income tax is added to the original irrelevance theory, it created a benefit for debt from the debt tax shield (Myers and Majluf 1984). Nonetheless, a number of reservations have been raised on the merit of the debt tax shield. A useful review of the

literature on the tax effects exists (Graham 2003 and Rossi 2014). First, tax features vary, so depending on which features of the tax are included, different conclusions regarding the target structure can be reached. Second, the tax merit depends on added structure to arrive at the target structure but different firms add that structure in different ways. Third, bankruptcy costs must be deadweight costs rather than transfers from one applicant to another. Fourth, transaction costs must take a specific form for the analysis to work. For the adjustment to be gradual rather than abrupt, the marginal cost of adjusting must *increase* when the adjustment is larger. As a result, alternative adjustment cost assumptions result in varying implications (Leary and Roberts 2005). In light of these controversies, two theories of the trade-off theory are summarised below.

a) Static trade-off theory

The *static trade-off theory* affirms that firms have optimal capital structures, which they determine by trading off the costs against the benefits of the use of debt and equity. One of the benefits of the use of debt is the advantage of a debt tax shield. One of the disadvantages of debt is the cost of potential financial distress. Already, this leads to a trade-off between the tax benefit and the disadvantage of higher risk of financial distress. But there are more cost and benefits involved with the use of debt and equity.

Another major cost factor consists of agency costs. Agency costs stem from conflicts of interest between the different stakeholders of the firm and because of preceding asymmetric information (Jensen and Meckling 1976). Hence, incorporating agency costs into the static trade-off theory means that a firm determines its capital structure by trading off the tax advantage of debt against the costs of financial distress of too much debt and the agency costs of debt against the agency cost of equity. Many other cost factors have been suggested under the trade-off theory. Therefore, an important prediction of the static trade-off theory is that firms target their capital structures, that is, if the actual leverage ratio deviates from the optimal one, the firm adapts its financing balance in a way that brings the leverage ratio back to the optimal level.

b) The Dynamic Trade-off Theory

The dynamic model recognizes the role of time required for specifying a number of aspects that are usually overlooked in a single-period model. Of particular importance are the effects of expectations and adjustment costs. In a dynamic model, the correct financing decision typically depends on the financing margin that the firm anticipates in the next period. As a result, some firms expect to pay out funds in the next period, while others expect to raise funds using either debt or equity. Either way, a firm undertakes a combination of these actions. Some examples of modern dynamic trade-off theories examine the effects of taxation from a public finance perspective (Stiglitz 1969) and the dynamic models to consider the tax savings versus bankruptcy cost trade-off (Kane, Marcus, and Mcdonald 1985; Leland 1994). Stiglitz's model assumed away uncertainty while the other two assumed uncertainty, taxes, and bankruptcy costs, but no transaction costs. Debt values and optimal leverage are linked to firm risk, taxes, bankruptcy costs, risk-free interest rate, pay-out rates and bond covenants (Leland 1994). Under their assumptions, the option to increase leverage in the future serves to reduce the otherwise optimal level of leverage today (Kane et al. 1985; Leland 1994; Stiglitz 1969). Again, if firms optimally finance only periodically because of transaction costs, then the debt ratios of most firms will deviate from the optimum most of the time. In the model, the firm's leverage responds less to short-run equity fluctuations and more to long-run value changes.

3.2.3 The Pecking Order Theory

Unlike the trade-off theory, the *pecking order theory* does not take an optimal capital structure as a starting point, but instead asserts that firms take a distinct preference for using internal finance (as retained earnings or excess liquid assets) over external finance (Kumar 2014; Trinh et al. 2017). If internal funds are not enough to finance investment opportunities, firms may or may not acquire external financing, and if they do, they will choose among the different external finance sources in such a way as to minimise additional costs of asymmetric information. The latter costs basically reflect the risk premium (Akerlof 1970) that outside investors ask for the risk of failure for the average

firm in the market. The resulting pecking order of financing is as follows: internally generated funds first, followed by respectively low-risk debt financing and share financing.

The outside investors rationally discount the firm's stock price when managers issue equity instead of riskless debt (Myers and Majluf 1984). To avoid this discount, managers avoid equity whenever possible. The Myers and Majluf model predicts that managers follow a pecking order, using up internal funds first, then using up risky debt, and finally resorting to equity. In the absence of investment opportunities, firms retain profits and build up financial slack to avoid demand for external finance in the future (Harris and Raviv 1991).

The pecking order theory regards the market-to-book ratio as a measure of investment opportunities. However, some studies agree that a simultaneous relationship between the market-to-book ratio and capital structure is difficult to reconcile with the static pecking order model (Fama and French 2001; Leland 1994; Myers and Majluf 1984). Empirical evidence supports both the pecking order and the trade-off theory. Empirical tests to see whether the pecking order or the trade-off theory is a better predictor of observed capital structures find support for both theories of capital structure (Fama and French 2001; Kumar 2014; Rossi 2014; Trinh et al. 2017).

3.2.4 The Market timing theory

The *market timing theory* of capital structure argues that firms time their equity issues by issuing new stock when the stock price is perceived to be overvalued, and buy back own shares when there is undervaluation. Subsequently, fluctuations in stock prices affect firms' capital structures and these follow two versions of equity market timing. The first assumes economic agents to be rational. Companies are assumed to issue equity directly after a positive information release which reduces the asymmetry problem between the firm's management and stockholders. The decrease in information asymmetry coincides with an increase in the stock price. In response, firms create their own timing opportunities.

The second theory assumes the economic agents to be irrational (Baker and Wurgler 2002). Due to irrational behaviour there is a time-varying mispricing of the stock of the company. Managers issue equity when they believe its cost is irrationally low and repurchase equity when they believe its cost is irrationally high. In a study by Graham and Harvey (2001), managers admitted to timing the equity market, and most report that the amount by which their stock is undervalued or overvalued was an important factor.

The Modigliani-Miller theory developed literature on the fundamental nature of debt versus equity in a firm's capital structure. In the perfect capital markets world of Modigliani and Miller, the costs of different forms of financing do not individually vary and therefore there is no extra gain from picking among them. The consequence of taxes, differences in information and agency costs, nonetheless clearly shows that financing choice matters. The various theories of capital structure developed after the M-M theory only differ in their interpretation of these factors. Each emphasizes the cost and benefits of alternative financing strategies differently. Accordingly, in the trade-off theory, taxes and bankruptcy account for the corporate use of debt, while in pecking order theory, adverse selection accounts for the corporate use of debt. In the market timing theory, there is no optimal capital structure, so market timing decisions accumulate over time into the capital structure outcome. In theory therefore, the market timing theory appears to have the most explanatory interest than the other two.

This study supports the assumption that SMMEs do not always have access to the market as large firms do and therefore their capital structures do not always mimic that of large firms. Thus the capital structure of small businesses therefore need to be reviewed first. Secondly, since the focus of this study is in understanding the effects of lending technologies on SMMEs, therefore theories which directly affect the borrowing capabilities of firms such as the information asymmetry and market power are also reviewed.

3.2.5 Empirical evidence of the Capital structure of SMMEs

The determinants of capital structure of SMMEs depends largely on firm characteristics (Roshaiza and Azura 2016) and partly on the structures of the economy. It is well acknowledged that an appropriate mix of debt and equity is essential for SMMEs to succeed (Modugu 2013) and that both the perking order theory and trade-off theory often lead to the same outcomes in the financing of SMMEs (Abeywardhana 2017). In SMME financing, long-term funding accounts for nearly two-thirds of total funding compared to short-term funding but small firms mostly use more owned funds than borrowed funds (Kumar 2014), highlighting the significance of the perking order theory in capital structure of SMMEs. Further, financing of SMMEs in Italy was found to be explained by the main capital structure theories; both the perking order theory and the trade-off theory. The results showed that firms initially use the available internal resources followed by use of external bank debt (Rossi 2014).

To a large extent, the capital structure of SMMEs is influenced by firm characteristics and the financial performance of SMMEs is influenced by its capital structure (Kumar 2014). Size, profitability and assets growth of SMME are positively related to its leverage, while risk and age of a firm are negatively related to the level of leverage (Forte, Barros, and Nakamura 2013). Firms fund operations through both internal and external finance but internal funding is larger at first and continuously declines compared to external funding and in the process debt tends to increase compared to equity. This illustrates a state of the perking order theory. Additionally, firms in the same industry tend to retain similar capital structure than firms in other industries. In all these cases, leverage is positively correlated with the extent of managerial equity ownership aimed at lessening the probability of takeovers (Harris and Raviv 1991). Therefore, financial leverage of SMMEs is positively influenced by executives' shareholding and the level of cash compensation. Thus, ownership concentration reduces financial leverage whereas high percentage of tradable shares increases financial leverage. However, institutional investors' shareholding do not influence the level of debt (Rossi 2014). SMMEs with high financial leverage tend to seek more investments, but often choose external financing rather than

internal financing (Trinh et al. 2017), in this case demonstrating the application of the trade-off theory.

While much of the literature gives more emphasis on the characteristics of the firm as the determinants of capital structure of SMMEs, some literature also point out that the structure of the economy also plays a role. For, example, the higher the risk and volatility of the economy, the lower the proportion of debt in the capital structure of SMMEs (Rizov 2001). This is a trade-off theory application on the basis of costs and benefits of the economic variables affecting performance of a firm. Hence, a conclusion can be drawn therefore that both the firm and economic structures equally influence the capital structure of SMMEs and the theories that SMMEs may implement to make choices on capital structure balance. While the review of the capital structure above is important to understand how firms plan the structuring of their sources of funds, the theories that follow explain how the actual access of the external sources of funds are determined.

3.3 LENDING THEORIES AND THEIR COROLLARY CREDIT THEORIES

Financial institution lending to firms is grounded on lending theories upon which lenders design lending technologies to suit specific client credit needs and lender strategies. The conventional seminal paper on lending technologies (Berger and Udell 1998) identifies four fundamental actions often taken by lenders when lending to firms and these have come to be known as the four features of lending technologies (Berger and Udell 2006);

a) Lenders collect information either soft or hard using certain main sources and use it to determine creditworthiness signals from borrowers.
b) Lenders use certain underwriting procedures to deduce interest rate that is adequate to shield both risks and cost of loans.
c) Lenders draw up loan contract agreements based on information obtained and in-house underwriting outcomes and,
d) Lenders employ specific loan monitoring strategies for certain loan agreements based on lending technology adopted.

In order to address all the above four lending technology fundamentals, it is important for each lender to link these features to key theories of lending given the role they play in the loan market. Theories of lending are premised on the behaviour of the loan sellers (banks) and loan buyers (small firm borrowers) and how these parties interact in the credit market. There are two theories on financial market imperfections (Cowling and Westhead 2010) relevant to the financing of small businesses namely; 1) the market power theory and 2) the imperfect information theory.

3.3.1 The Market Power Theory

Market power is defined as the ability of an agent in a market transaction to influence the price (Cowling and Westhead 2010). Market power is the ability to have some control over the price of the good or service offered for sale. The history of the market power theory shows that the theory has its basis from two aspects (Reynolds 2005). These aspects are the demand conditions that a firm faces and the conditions of entry or barriers to entry. If a firm's product or service can be differentiated, consumers demand a firm's product relative to others. Subsequently, a negatively sloped demand function is created which allows the firm to raise its price without adversely affecting demand. In pure competition, firms' outputs are homogeneous. A firm will never try to influence the demand for its product if it neither has an opportunity to differentiate its product nor ability to persuade through advertisements. If a product can be differentiated by altering the characteristics of the good, the firm achieves market power. Advertising can be used to differentiate a product or increase the demand for a product. The crucial factor is that the demand for the firm's output must be negatively sloped: the firm becomes a "price maker" while consumers become "price takers". The extent to which a firm is a price maker, that is, has market power, is partially determined by the price elasticity of demand in the relevant price range. When the seller selects a price, the demand function determines quantity demanded. The conditions of entry or barriers to entry (BTE) are also important determinants of market power. If there are significant BTE, a firm or firms may be able to sustain above normal profits over time because other firms are prevented from entry to capture the above normal profits. Monopoly is the market structure that is usually

associated with the greatest market power. The monopolist produces goods or service with no close substitutes (demand is relatively inelastic) because of barriers to entry.

Small businesses usually have no access to capital markets, meaning borrowing is the only potential source of external funding for such firms. In light of this, the lenders of SMMEs enjoy more market power because small businesses largely lack substitute funding sources. In this context, there is a theoretical assumption that large financial institutions are better placed to influence lending terms offered to small business firms. As a result, the smaller the firm, the more limited is its ability to negotiate better terms of the lending contract with financial institutions, a situation consistent with the theory of perfect market competition. It can therefore be concluded that banks have more market power in small business lending (Skeath et al. 1992).

Consistent with the theory of perfect market competition therefore (Skeath et al. 1992), if the market place for small business loans is competitive, then the equilibrium price P^1 and quantity Q^1 of loans follow a normal equilibrium position (Figure 2).

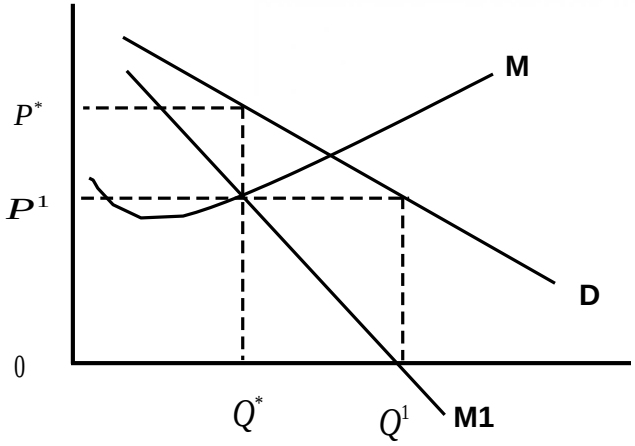


FIGURE 2: FACTORS AFFECTING SMALL BUSINESS LOAN MARKET

Assuming a competitive market, then the equilibrium price P^1 and quantity Q^1 of loans prevail in the market. However, if banks have monopoly over small firms business lending, then the price goes up to price P^* and quantity of loans reduces to Q^* following the market theory. Given that the market place is often not perfect, the real price of loans lies somewhere between the two prices (P^1 and P^*), with quantity of loans Q^* being provided. In a way, for the very small firms that have low or limited access to alternative finance, lenders become pure monopolists over their lending, thus pushing the price up to the upper bounds of the O P^1 O P^* price axis. For the relatively large small firms with more access to alternative funding, the price will be in the regions of the lower bounds of the O P^1 O P^* price axis. Based on this market theory condition, the reduction in market power of lenders results from an increase in market competition as lenders compete with other potential sources of funding as firm size increases correspondingly in association with acute credit rationing and high cost of lending for small firms as firm size decreases. The implications of market power for varying sizes of small firms, given competitive market conditions depend on price elasticity of demand for loans (Figures 3a and 3b).

3a: Demand for loans from very small firms **3b: Demand for loans from larger small firms**

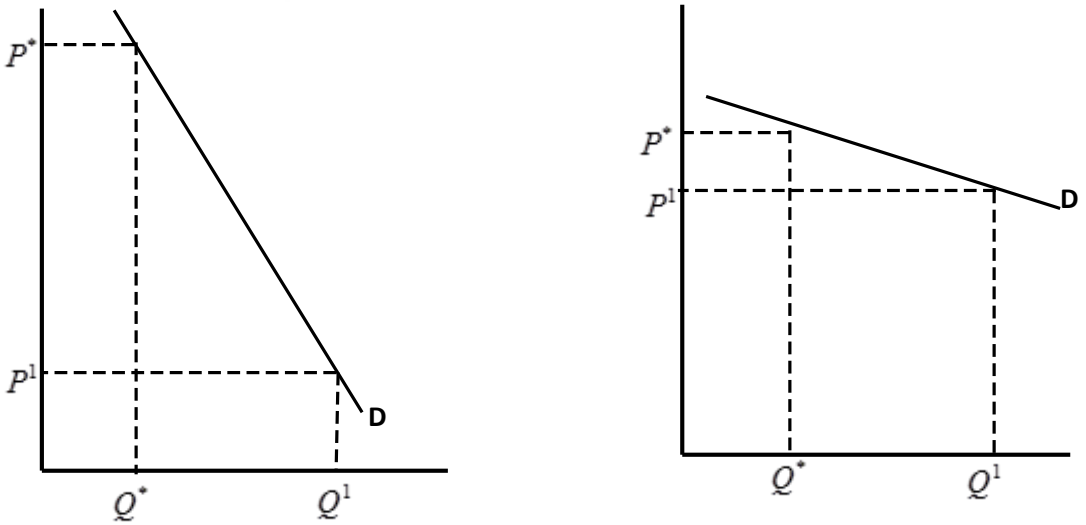


FIGURE 3: DEMAND FOR SMALL LOANS BY FIRM SIZE

The demand for loans from the very small firms is very inelastic (Figure 3a). The absence of alternative funding for these very small firms gives lenders the market power to increase the price without significantly affecting demand. On the other hand, the demand curve for loans from larger small firms is very elastic owing to ability to have alternative funding (Figure 3b). Given the market power theory, it can be concluded that firm size is a very important factor in determining both the credit rationing and cost of lending for small firms based on the firm size effect (Cowling and Westhead 2010).

3.3.2 The Information Asymmetry Theory

The existence of information asymmetry in credit markets implies that the interest rate a lender charges reflects the actual riskiness of the pool of loans assuming information collected using a particular lending technology is accurate. Credit advances to firms by financial institutions are based on the conventional theory of information asymmetry (Stiglitz and Weiss 1981). Information asymmetry arises when there is an uneven balance of information between two contracting parties (Ravi & Hong 2014; Allen 2013). Information asymmetry risk is dealt with by either sorting good borrowers from bad ones, addressing the adverse selection effect or influencing the actions of the borrowers by addressing moral hazard effect (Stiglitz and Weiss 1981). Both effects arise from imperfect information as more information is well known to borrowers but less known by lenders, which then forces a lender to use a variety of screening devices (Allen 2016; Stiglitz and Weiss 1981). The significance of the causal effect of information asymmetry is felt in the cost of lending and credit management choices undertaken by a lender. In other words, both expected and actual losses of loans to firms increase and especially more so the bigger the increase in information asymmetry (Derrien, Kecskes, and Mansi 2012).

A typical class of syndicated loans to firms based on a larger number of bank participants on individual large loans alleviates problems pertaining to information asymmetry for large firms. The apparent informational value obtained from various participating banks has been seen as evidence of alleviating information asymmetry problems for large firms (Korkeamaki et al. 2014). For instance, access to finance for most Chinese firms recently

(between 2010 and 2014) was largely due to access to shared information. Unfortunately, this is something that cannot be easily applied to small firms. Informational asymmetries between lenders and SMMEs, and their consequences on credit access, motivate rigorous screening given information opaqueness of SMMEs. For example, SMMEs lending with information for each loan derived from ex-post loan performance, shows that loans granted after a successful one pledge significantly lower collateral and interest rate than loans following a defaulted one. More so, the interest rate decreases in the second loan for reputable firms and the required pledged collateral is stronger in the second loan after a loan default than after a successful one (Comeig, Fernández-Blanco, and Ramírez 2015). Thus, theoretically, high levels of information asymmetry are associated with an increase in the cost and collateral requirements whilst low levels of information asymmetry lower demand for these requirements.

Another aspect of information asymmetry affecting lending is the nature of information available and how that information varies both in use and methods of gathering. To that end, the importance of financial information and non-financial information used to determine loan terms is consistent with studies suggesting that lenders go through a multi-step process in approving loans (Cassar, Ittner, and Cavalluzzo 2014). The complementarity or substitutability among financial information, soft information, and third-party relationship information all yield to credit scores of borrower's cost of debt (Allen 2016), suggesting that these alternative information sources are additional means for assessing borrower risk and determining interest rates and loan terms. This means that upon receiving loan applications, banks always conduct a standard first-stage credit evaluation based on information provided in application forms and related documents. Depending on the results of the first-stage credit evaluation, banks evaluate the costs and benefits of the second-stage credit evaluation to weigh options that trigger the second stage credit evaluation (Chen et al. 2009). The second-stage credit evaluation involves hiring internal, external evaluators, or independent credit-rating agencies, to enhance the quality of credit decision based on non-financial information. Banks that employ the second-stage loan appraisal effectively often make correct lending/rejecting decisions, thereby mitigating the loss due to either moral hazard or adverse selection. Thus, in

theory, banks are less likely to undertake the second-stage loan appraisal if the borrowers are rated as credible in the first-stage credit evaluation. However, if borrowers are rated as elusive in the first-stage credit evaluation, the need for conducting the second-stage loan appraisal is higher in order to clarify unobserved information asymmetric problems not detected in the first stage.

While the theory of market power is important in setting the price and influencing demand signals for loans, the actual lending contract is premised on the theory of information asymmetry as the pillar of decision making; that is, either to offer a loan to a small firm or not. Given the information asymmetry risk, different types of financial institutions employ various lending technologies to address information asymmetry problems associated with their clients. From the bank's point of view, information asymmetry risk tends to be greater for SMMEs because they neither have adequate institutional history nor publicly disclosed firm-specific information to evaluate their creditworthiness, this being so because of the limitation on the their official recorded information (Butler, Kraft, and Weiss 2007).

The existence of information asymmetry implies that various credit and behavioural valuation techniques have to be used to decide whether or not to grant credit (Mac, Sanchez, & Lucey, 2016; Mullen, 2012). There are two types of decisions to be made (Ravi and Hong 2014); whether a financial institution should grant a new credit, and how to manage existing loans issued based on information provided. These issues imply that each loan contract is associated with a certain type of lending technology being implemented, at least according to the lending technology determination principles (Berger and Udell 2006).

In the presence of information asymmetry, two credit theories have been formulated; intermediated lender-to-borrower based credit theory and the direct per-to-per based credit theory. Under the intermediated lender-to-borrower lending, lending institutions use varying lending technologies based on the 5Cs credit theory (Thomas 2000) to screen borrowers on the theory's five measures, namely the character, capital, capacity, collateral and conditions. The amount of informational asymmetry between lenders and

borrowers motivates rigorous credit screening (Chen et al. 2009; Comeig et al. 2015). In the end, how each lending institution combines the 5Cs to grant credit defines the lending technology used, which in turn has consequences for credit availability for SMMEs given the market power effects.

In a non-intermediated per-to-per lending, credit transactions are concluded directly between lenders and borrowers without the intermediation of a traditional financial institution (Pokorná and Sponer 2016). Investors (lenders) evaluate potential borrowers through rating agencies based information in credit databases and borrowers' publicly available financial statements. Given the absence of publicly available historical information for SMMEs (Derrien et al. 2012), the per-to-per lending approach is inapplicable, leaving the intermediated lender-to-borrower lending as the primary conduit for lending to SMMEs via lending institutions that apply different lending technologies.

3.4 FACTORS INFLUENCING ACCESS TO FINANCE BY SMMES

Access to finance by small businesses is influenced by both internal as well as external factors of the firm in need of funding. These factors are discussed below.

3.4.1 Internal factors affecting access to finance by SMMEs

Internal factors affecting small businesses in accessing funding from lenders can be grouped into three categories, which are firm, financial and entrepreneurial characteristics.

a) Firm characteristics

A number of firm attributes affect its access to finance. Small firms are disadvantaged in obtaining loans from lenders compared to large firms (Chowdhury and Alam 2017; Kung'u 2015). The years the business has been in operation is very important as well because this also links with the opportunity time the firm would have had a relationship with lenders (Haron et al. 2013). Consequently, older firms with longer relationships with lenders are better placed in accessing funding than new firms without long enough relationships with banks. In addition, the industry and the area of business activity of the firm influence how

lenders view that sector in terms of the risks and opportunities in the sector and therefore determines the willingness of lenders to fund or not (Erdogan 2018). Lenders pay attention to the location of the business (Gamage 2013; Makina et al. 2015). Business location determines the sales catchment area and competitiveness of the business in relation to locations of rival businesses. Personal demographic issues such as gender and ethnicity may also influence lending to SMMEs because they shape firm ownership structures depending on how lenders traditionally held relationships with owners based on these demographic divides (Gamage 2013; Kapunda and Mutoko 2017). For example, even in the same location, immigrants from other places find it hard to obtain loans from funders than locals do (Zhao, Wu, and Chen 2006). Thus, even though some of these firm characteristics are non-financial in nature, they however drive business sales and turnover of the business and are therefore highly valued by lenders.

b) Financial characteristics

Financial capacity of the firm is an important aspect of financial evaluation of the firm during the lending process. Lenders evaluate the firm's capacity to repay the loan, as well as willingness to do so. The initial and current levels of capital, current values of assets and ability to absorb on going market interest rates are assessed to meet the minimum requirements of the potential lender (Chowdhury and Alam 2017; Erdogan 2018). The presence of audited financial statements actually enhances the financial analysis of the firm and this is a problem for most SMMEs because not all small businesses go this far.

c) Entrepreneurial characteristics

Lending to SMMEs also depends on the ability of firm owners to manage the business. To pass the test for adequate managerial skills, lenders assess the level of education of owners, managerial competencies as reflected in their ability to present realistic business plans and good impressions about the business during business premises visits (Chowdhury and Alam 2017; Erdogan 2018; Gamage 2013). These attributes need to be supported by the evaluation of the business owners' level of education, years of work experience as well as background they have in specific type of business. With the right education, experience and entrepreneurial skills, owners of the businesses tend to have

a good perception about external funding needs and sources. The perception owners of the business have about access to finance is a fundamental factor that helps the firm regarding the willingness and rigor by the owners in sourcing external sources of finance.

3.4.2 External factors affecting access to finance by SMMEs

In addition to the internal factors of the firm that affect the firms' ability to access funding, there are also external forces at play. The external factors affecting small businesses in accessing funding from lenders can be grouped into three categories. These are, the structure of the financial sector that deal with small businesses and the nature and extent of small business support services provided by either the government or non-governmental organisations in order to support and create awareness of funding opportunities within the economy.

a) The structure of the financial sector

The financial system determines who has access to it or not depending on how it is structured. SMMEs have better access to finance in a bank-based financial system than in a market-based financial system (Memmel, Schmieder, and Stein 2008). This is clearly evident between the USA market, which is highly market-based compared to the European and the Japanese markets that are more bank-based. Mindful of the fact that SMMEs do not meet qualifying requirements to participate in capital market, it means that they are better off in a bank-based system proffering as their main source of external finance.

Financial institutions can also affect access to lending to SMMEs as a result of their ownership or form of entry into the country. Financial institutions that are government-owned tend to offer more access to small businesses than privately-owned institutions and similarly Islamic banks appear to be more appealing to small businesses than conventional financial institutions (Viverita et al. 2015). It has also been noted that institutions that originally enter the country via mergers and acquisitions provide more access to SMMEs than those that enter through Greenfield investments (Aysan et al. 2016; Erdogan 2018).

The behaviour of the financial institutions themselves can also be prohibitive to SMMEs. At the heart of credit rationing of SMMEs is the cost of financing and the demand for credit guarantees or collateral which on average accounts for about 80% of credit rationing that small businesses face (Adair and Fhima 2014; Hoque, Sultana, and Thalil 2016). Unless the financial systems are structured in such a way that favours promotion of SMMEs, their financing is limited. Most economies circumvent this problem by coming up with various initiatives to support the SMME sector such as loan guarantees.

b) SMME support services availability

Governments all over the world have devised various methods and initiatives to promote and develop the SMME sector (Osano and Languitone 2016). These initiatives include both financial and non-financial support mechanisms. Financial support programmes include government grants issued directly to the firms or channelled through intermediated financial institutions. In countries such as South Africa, Japan, US and some European Union member states, either governments or non-government organisations provide loan guarantees for loans earmarked for SMME funding often underwritten by private financial institutions. The provision of such forms of financing create additional credit for these small firms. This means that small firms that were initially unable to access funding from the private funding institutions in their early stages of development are financially assisted through these government financial support programmes until they able to formalise their operations and also become financially sound to meet loan requirements of private financial institutions. Consequently, government financial support programmes provide some form of bridging financing for small businesses until they graduate to independently access private financial institutions financing.

In addition to financial support, non-financial support is provided to SMMEs through upgrading of their operations. Initiatives such as SMME training incubation centres spearheaded by some development financial institutions help to improve the operational standards of many small businesses. Furthermore, efforts by business chambers also

help to create business linkages among SMMEs themselves and between SMMEs and large firms. All these efforts are very important in upgrading the operations of SMMEs to become well established business entities that can independently access financing from private lenders. This is important for SMMEs because such upgrading reduces problems associated with poor debt structure (Kundid and Ercegovac 2013) and also improves information management of SMMEs which is critical in business plans preparation (Kimutai and Ambrose 2013).

c) Level of awareness of funding opportunities

Awareness of funding opportunities available in the market is something that is not always within the knowledge of small firms. The establishment of institutions such as the regional business chambers, angel investor networks and provincial small business information desk centres provide information to SMMEs about new opportunities for funding in the country and within their provinces help SMMEs on how they can access such funding in addition to the traditional bank loan dependence route. SMMEs benefit by getting strategic funding partners who provide both the funding and business management skills. However, the extent to which these institutions exist, are funded and supported by the government and other development agencies determines how SMME get information and assistance about external funding. In the SADC Region for example, only South Africa has established a Network of Business Angel Investors while other countries still do not have. Therefore the extent to which SMMEs access funding depends on the establishment of such supporting institutions that are very critical in informing the SMME sector about financing trends taking place in the market and opportunities they bring.

3.5 EMPIRICAL LITERATURE ON LENDING TECHNOLOGIES

This section discusses the empirical literature on lending technologies. In particular, it deals with the effects of using different lending technologies on SMMEs financing in terms of credit rationing patterns exhibited by different financial institutions, the growth that SMMEs then attain as a result and the state of SMMEs financing in South Africa.

3.5.1 SMMEs lending technologies and funding institutions choices

The lending technologies used by lending institutions are shaped by lender structures in the economy as well as specific strategies of lending institutions. The effects of the lender structure on lending are the resulting developed lending technologies, often reinforced by the theory of market power as well as capturing specific lender strategies. On that basis, firms with several bank relationships tend to have more credit access only in certain economies whilst firms with strong few bank relationships experience more credit access in other economies (Jiangli, Unal, and Yom 2004). This supports the view (Berger and Udell 2002) that the organizational structures of a banking system has a bearing on the scope of the relationships created, and thus determines SMMEs' benefits that follow. This implies that, based on local economic conditions shaping the existing lending institution structures, lenders use different lending technologies that are amenable to those structures and own bank-specific strategies.

The different dimensions of relationships between banks and firms yield benefits to SMME borrowers (Berger and Udell 2002; Fiordelisi et al. 2013; Jiangli et al. 2004; Kysucky and Norden 2013; Petersen and Rajan 2015). However, lender structures and market competition distort these benefits, forcing lending institutions to opt for particular lending technologies in particular markets. For instance, market-based financial systems (e.g. in the US) have more benefits to borrowers than bank-based financial systems (e.g. in Europe and Japan) where many players intensify competition. Lack of development of the financial systems also has a bearing on the application and adoption of lending technologies. For example, relationship lending was preferred as a substitute for equity financing in Germany's R&D-intensive firms which depended more on bank credit due to underdevelopment of equity markets (Memmel et al. 2008). Thus, different banks choose different lending technologies so as to fit in the specific conditions of particular market bank structures.

Empirical literature on lending technologies is also rich on use of the lending technologies in different markets. It has been observed that the use of lending technologies varies significantly in different regions. For example, Hirofumi et al. (2006); Uchida et al. (2012);

and Kano et al. (2011) found that although financial statement lending technology was widely used by financial institutions lending to SMMEs in Japan, multiple lending technologies were also common among institutions. In particular, complementary use with other lending technologies was significant in the market.

On the other hand, while small business credit scoring lending was common in the USA for SMMEs loans (Degryse and Van Cayseele 2000), it had been largely replaced by asset-based lending which thrived mostly on the sanity of the commercial law of the country after 2000 (Koreen and Lucia 2015), much to the introduction of the "Secured Transactions Law", which provided for more security and efficient registration of pledged assets. Mac et al. (2016) observe that another hybrid of asset-based lending leveraged on portfolios of intellectual property was common in the pharmaceutical and biotechnological sectors in European countries where loan repayments were secured by the expected royalty fees (Cusmano 2015). Berger and Black (2011) further categorise fixed assets based lending by the type of asset pledged, namely commercial real estate, residential real estate, motor vehicle loan and equipment loan, and found that in the USA these forms of lending were common but with varying degrees of usage between big and small banks. According to Dalberg (2011), only 13% of SMMEs' used factoring for funding of investments in 2010 while 40% of SMMEs used leasing, putting leasing as a key SMMEs financing tool within the EU countries.

This discussion shows that no one single lending technology is universally used to fund SMMEs as evidenced by adoption of varying lending technologies in different parts of the world. This further asserts that usage of lending technologies is a function of local regulatory environment and how that shapes the structure of the financial system. Therefore, the structure of the financial system can thus influence lending technologies used, on and above the characteristics of the SMMEs themselves.

There is also an extensive body of literature that explains how financial institutions affect credit access to SMMEs based on lending technologies adopted. Lending to SMMEs owing to their opaqueness postulates relationship lending (D'Aurizio et al. 2015; Lehmann

and Neuberger 2001). This conventional theory advocates for a clear link between either bank size or type and lending technologies used. Some studies acknowledge that big and foreign banks lend to large firms through transactions based lending technologies whilst small and local banks lend to SMMEs through relationship based lending technology (Allen 2016; Korkeamaki et al. 2014; Ravi and Hong 2014). However, Berger and Udell (2006) argue that different financial institutions are increasingly using relationship lending technology in addition to different transactions based lending technologies through their specialised divisions. More so, Torre et al. (2010) found that virtually all financial institutions view SMMEs as a strategic sector and are expanding to the sector with varying products irrespective of their size or type.

The literature on SMMEs lending and funding institutions so far zeros in on only two aspects; structures of the economy and bank structures. It is well acknowledged in the literature that different types of lending institutions (by size or type) use different types of lending technologies to fund SMMEs (Kano et al. 2011; Uchida et al. 2012). The usage of these lending technologies vary in different economies due to varying local structural factors such as economic structures, bank strategies and the market power effect, and SMMEs structures (Allen 2016; Korkeamaki et al. 2014; Ravi and Hong 2014). They can also vary due to bank structures backed by either a bank-based or market-based financial system (Memmel et al. 2008). While types of lending technologies used by different funding institutions and their usage in different economies is a well-documented subject, what is however missing is an empirical evaluation of whether or not the different financial institutions that use different lending technologies are all effective in providing SMME financing. This study recognizes the role played by lending technologies in influencing lending decision making by various financial institutions when dealing with SMMEs. It is therefore critical to assess how different types of lending technologies associate with credit access of SMMEs.

3.5.2 Lending technologies and accompanying credit rationing of SMMEs

Credit rationing occurs when demand for credit exceeds supply in the market equilibrium, forcing lenders to either supply less credit than is required, offer credit amount for higher

interest rate or reject credit applications out rightly (Adair and Fhima 2014). SMMEs can neither access financial markets nor capital markets (Berger and Udell 2006) and therefore depend solely on intermediated financing as the main source of external funding. Credit rationing is therefore seen as a form of market failure caused by adverse selection (Helsen and Chmelar 2014). Whenever intermediary financial institutions are used as the main source of financing, intuitively some elements of credit rationing usually exists, and this is worse for SMMEs owing to their information opacity. For example, out of a 200 SMMEs survey in Bangladesh, only 60% obtained bank loans (40% credit rationing) and of those obtaining loans, 48% of them were further credit rationed; 19% credit quantity rationed and 29% interest risk rationed (Hoque et al. 2016).

Credit rationing for SMMEs is stimulated by a number of factors. Lender characteristics such as bank size (Bartoli et al. 2013; Berger and Black 2011; Degryse and Van Cayseele 2000), bank type (Aysan et al. 2016; Viverita et al. 2015) and bank operational structures (Cotugno et al. 2013; Shen et al. 2009) are positively linked to credit rationing of SMMEs in different countries.

By far, large banks mostly lend to large firms using transaction lending technologies based on hard information while small banks have an advantage in lending to small firms using relationship lending technology (Degryse and Van Cayseele 2000). However, advantages of both large and small banks are not uniform across all firm sizes. Thus advantages of large banks do not necessarily increase with firm size whereas for small banks the benefits of relationship advantages increase with size of small firms (Berger and Black 2011). Similarly, small banks with less hierarchical levels lend more to SMMEs compared to large banks (Shen et al. 2009), asserting the view that small banks are associated with less credit rationing of SMMEs compared to large banks.

While bank size is highly correlated with credit rationing of SMMEs, specific bank strategies adopted can reduce this risk for large banks as well. For instance, more decentralized large banks can also have the same advantages as small banks in serving SMMEs provided decentralised branch offices and specialised divisions of these large

banks have high self-loan approval rights (Shen et al. 2009), and that this advantage is neither limited by competition and market power of banks (Canales and Nanda 2012) nor restricted by distance between the bank's branch office and SMMEs which limit transmission of soft information beneficial for SMMEs lending (Cotugno et al. 2013).

Another dimension of bank characteristics associated with SMMEs credit rationing is bank ownership as this is linked to the level of knowledge about the local clients, the knowledge upon which lending is granted. For instance, banks entering a country through Greenfield investment have limited knowledge about local small firms in their early years of entry and subsequently lending less to SMMEs compared to those entering the market through takeovers of local banks, which benefit by inheriting existing knowledge (Viverita et al. 2015). Similarly, Islamic banks are found to lend more to SMMEs than conventional banks in terms of volumes of credit, amount per borrower and share of the loan book (Aysan et al. 2016).The nature of bank characteristics and their effect on credit rationing is also an important subject in the funding of SMMEs. Banks use their unique characteristics to anchor their ability entrenched in those characteristics to adapt to different market needs, and hence rely on unique characteristics to formulate lending technologies that are amenable to their own characteristics. It is for that reason that a clear link between credit rationing or credit allocation and bank characteristics in most credit markets exists. In fact, it has been observed that much of the SMMEs credit rationing is not caused by SMMEs' endogenous factors (i.e. activity levels, SMMEs resources) but by exogenous factors mainly the cost of financing and credit guarantee required by banks, which account for about 80% credit rationing of SMMEs (Adair and Fhima 2014; Hoque et al. 2016).

Credit rationing is also related to SMMEs' credit demand characteristics. Most credit rationings are associated with firms' debt structure, cost of borrowing (Kundid and Ercegovac 2013) and lack of information about creditworthiness of SMMEs (Kimutai and Ambrose 2013). Given this perception about bank lending to SMMEs, some firms credit ration themselves. In most economies, there is a considerable number of self-discouraged SMMEs not applying for bank credit at all due to intuitions that applications will be rejected based on their small size, decreasing turnover and increasing debt to

asset ratios (Mac et al. 2016). Similarly, SMMEs matching with banks using transactional lending technologies are often more credit rationed (Ferri and Murro 2012) and as a result, SMMEs tend to rely on either trade credit or grant finance (Casey and O'Toole 2014). It is therefore paramount that types of lending technologies choices adopted by financial institutions cannot be undermined in the way they directly influence credit rationing of SMMEs.

SMMEs credit rationing is also found to be associated with structures of the economy as well as SMMEs sectors in the economy. Rural SMMEs tend to be more credit rationed compared to urban SMMEs (Luo and Zhou 2016; Makina et al. 2015), while firms in production and agriculture are more credit rationed than similar firms in service and manufacturing industries (Nkuah, Tanyeh, and Kala 2013). However, credit improvement for such firms may only be promoted through state financial guarantees (Luo and Zhou 2016). For example, SMMEs that received R & D subsidy grants have more credit access than firms that did not (Meuleman and De Maeseneire 2012), since subsidies reduce the moral hazard and adverse selection against SMMEs (Trovato and Alfo 2006), meaning that grants and financial guarantees generate additional credit for SMMEs.

Based on literature reviewed, studies on credit rationing of SMMEs appear to fall into three identifiable categories. Firstly, bank characteristics (size, type, ownership, operational structures and strategies etc.) are found to be highly linked to SMMEs credit rationing (Aysan et al. 2016; Bartoli et al. 2013; Berger and Black 2011; Cotugno et al. 2013; Degryse and Van Cayseele 2000; Shen et al. 2009; Viverita et al. 2015). Secondly, SMMEs firm characteristics (age, size, debt structure, credit cost, SMME information availability etc.) are found to be related to some form of SMMEs credit rationing (Casey and O'Toole 2014; Ferri and Murro 2012; Kimutai and Ambrose 2013; Kundid and Ercegovac 2013; Mac et al. 2016). Thirdly, the economic structures of country such as SMMEs sectors (rural or urban based, industry type and level of innovation, government subsidies and credit guarantee support etc.) are also highly linked to credit rationing of SMMEs (Luo and Zhou 2016; Makina et al. 2015; Meuleman and De Maeseneire 2012; Nkuah et al. 2013; Trovato and Alfo 2006).

All of the above three structural categories (bank characteristics, SMMEs characteristics and economic structures) are used to capture key determinants of creditworthiness assessment. They then influence lending technologies adopted by financial institutions to evaluate acceptability of those determinants in SMMEs observed in their businesses. However, none of these past studies considers how lending technologies are associated with credit rationing of SMMEs. This study values the role played by lending technologies in influencing lending decision making by various financial institutions when dealing with SMMEs. It is therefore critical to assess how different types of lending technologies associate with varying degrees of credit rationing in the case of SMMEs.

3.5.3 Lending technologies and SMMEs growth

SMMEs are regarded as the key players in many economies. However, their slow growth is often blamed on lack of finance. Therefore, linking financing and growth of SMMEs becomes an important academic and policy discourse. The literature on the growth of SMMEs so far traces two main issues. These are: how the growth of SMMEs is measured and how SMMEs' growth is influenced by varying growth factors.

On measurements of SMMEs growth, two founding seminal papers (Ardishvili et al. 1998; Delmar 1997) identified almost comparable lists of potential indicators comprising market share, assets, profits, physical outputs, employment and sales levels as conventional firm growth indicators. In addition to these conventional growth determinants, performance of SMMEs is also found to be dependent on the level of funding, managerial skills, government policies, education of owners and supporting infrastructural facilities (Akinruwa, Awolusi, and Ibojo 2013). Some recent papers, prioritise firms' profit, short-term debt, long-term debt, size, age, and industry affiliation as important determinants of SMMEs growth (Chimucheka 2013a; Chimucheka and Rungani 2011; Kachlami and Yazdanfar 2016). Literature also classifies measures of growth into financial measures; for example, turnover, profit per employee, growth in revenue, growth in employees and non-financial measures such as customer satisfaction, referrals by customers, employees' turnover and market share growth (Gin Chong 2008). Given the various arrays of SMMEs growth determinants, the choice of growth determinants is wide and a

matter of the data available or ease of getting the same for each case (Kachlami and Yazdanfar 2016).

Funding efforts spearheaded through governmental development policies to grow economic sectors often focus on large firms, thus constraining financial support for SMMEs. There is, however, a positive relationship between SMMEs outputs and bank credit to SMMEs (Afolabi 2013) and both significantly positively relate to economic growth, especially given the role played by SMMEs nowadays (Bartoli et al. 2013; Shen et al. 2009; Uchida et al. 2012). In particular, the ease of business registration, size, business type and sources of capital are major determinants of SMMEs growth both in levels of income and employment (Bowale and Akinlo 2012). In the US, of the 600 SMMEs surveyed, funding as a share of private credit, grew from 28% to 34% from 2013 to 2015, growing the size of SMMEs in terms of capitalisation from just below 1 billion to over 2 billion in two years (Firovolmand et al 2015). This shows that a 6% percentage points increase in funding resulted in more than 100% percentage points increase in growth of the SMME sector.

The other dimension of SMMEs growth analyses the growth patterns of SMMEs following the presence of particular growth determinants. Thus, the choices of managerial decisions on investment (Popa and Ciobanu 2014) and the available amount of loan credit (Wanambisi and Bwisa 2013) are highly related to profitability of SMMEs, while growth of SMMEs is shaped by the interplay of three types of factors; the individual, organizational and environmental factors (Sarwoko and Frisdiantara 2016). Individual managers determine how organizational factors are coordinated and implementation of all these depends on local environmental characteristics. These factors affect SMMEs growth in different ways. For instance, the organisational factors of age and size can be restrictive factors for growth of young than for old firms, and cash flows and debt are important for young than old firms, while R & D intensity and labour productivity are significant for growth of old than for young firms (Nunes, Goncalves, and Serrasqueiro 2013). Trade credit terms and firms size are also seen as positively related to growth of SMMEs while age is negatively related to growth (Yazdanfar and Öhman 2015), but both are linked to

national economic growth (Afolabi 2013). Similarly, internal finance (profits), short-term debt, and long-term debt resulted in higher growth of SMMEs in Sweden while size, age and industry affiliation showed mixed results (Kachlami and Yazdanfar 2016). In most developing countries, growth of SMMEs is highly linked to endogenous factors like skills and education of entrepreneurs (Afolabi 2013; Chimucheka 2013a) and location factors (Makina et al. 2015).

Based on SMMEs growth literature available, studies on determinants of SMMEs growth fall into three categories. Firstly, studies that analyse individual entrepreneurial characteristics (e.g. education, management skills etc.) and growth relationships (Afolabi 2013; Chimucheka 2013a; Popa and Ciobanu 2014). Secondly are studies on firms characteristics (e.g. age, size, industry affiliation, debt credit, capital, collateral etc.) and SMMEs growth relationships (Akinruwa et al. 2013; Bowale and Akinlo 2012; Kachlami and Yazdanfar 2016; Nunes et al. 2013; Sarwoko and Frisdiantara 2016; Wanambisi and Bwisa 2013; Yazdanfar and Öhman 2015). Lastly, studies on environmental and economic structures (e.g. location factors, level of sector development, economic policies, government loans and guarantee support etc.) and SMMEs growth relationships (Afolabi 2013; Chimucheka and Rungani 2011; Makina et al. 2015; Sarwoko and Frisdiantara 2016). However, while credit availability is often cited as a key constraint of SMMEs growth (Bakker et al. 2004; Berger and Black 2011; Kano et al. 2011; Makina et al. 2015), studies on lending technologies as a determinant of SMMEs growth are lacking in both the developed and developing economies. This study values the importance of lending technologies in influencing lending decision making and thus affecting credit availability to SMMEs which consequently is linked to SMMEs growth. It therefore requires assessing how different types of lending technologies associate with varying degrees of growth in the case of SMMEs, so as to effectively evaluate the role of credit availability on growth of SMMEs.

3.5.4 Lending technologies and SMMEs Financing in South Africa

The greatest challenge facing SMMEs in South Africa and the world over is limited access to finance (Makina et al. 2015). In the case of South Africa, this is to a large extent probed

by lack of adequate financial management functions (Aigbavboa and Thwala 2014), hampering the ability of SMMEs to satisfy bank needs (Agwa-Ejon and Mbohwa 2015) noting that in Gauteng alone bank loans account for less than 5% of SMMEs funding. Lack of resources and skills are cited as key deterrents of growth of SMMEs (Chimucheka 2013a) as measured in terms of assets, productivity, profits, employment and sales changes (Fatoki and Garwe 2010). There is an observed significant positive relationship between resources (e.g. social, human and financial capitals) and growth of SMMEs in South Africa, such that any deficiencies in any of these capitals reduce chances of access to credit and consequently retard growth (Fatoki 2011).

Limited use of the available financial capital is another factor restraining SMMEs financing in South Africa, thus inhibiting growth too. For example, of the ZAR44 billion raised annually through Stockvels (formerly known as ROSCAs), much of this is dominantly used to fund family consumptions and not channelled towards SMMEs funding as is the case in other developing countries such as Ghana, Mexico, Bangladesh and Nigeria (Arko-achemfuor 2012). This form of consumption borrowing in South Africa is wasteful, notwithstanding that most of the individuals involved in consumption borrowing are SMMEs entrepreneurs.

There is also an assertion that SMMEs in Africa are less likely to get a bank loan than in other developing regions of the world. For example, the share of SMMEs lending in Kenya, Nigeria, South Africa and Tanzania only vary between 5% and 20% compared to over 40% in developed economies owing to differences in size and structure of the economies, extent of government borrowing, level of bank competition and state of the financial structures (Berg and Fuchs 2013). These findings suggest that SMMEs funding can also be influenced by factors outside the control of SMMEs themselves; that is, by environmental and economic structures (Luo and Zhou 2016; Makina et al. 2015; Meuleman and De Maeseneire 2012). On average, 56.9% of SMMEs in South Africa receive loans from banks, 1.7% receive loans from government and the rest are not supported, but all these constitute a very small portion of total private credit (Cant, Erdis, and Sephapo 2014).

Only 2% of new SMMEs are able to access finance in South Africa (Fatoki and Garwe 2010; SEDA 2016) and poor presentation of business plans as a result of low educational and managerial skills is a key contributing factor of their failure to access finance (Chimucheka 2013a; Chimucheka and Rungani 2011). SMMEs must prepare their cases for financial assistance by clearly mitigating risks associated with their businesses and this makes their applications acceptable by banks (Matthee and Heymans 2013). The extent to which SMMEs are better positioned to formally and officially present their cases depends on the development of the sector. However, this ability is often hampered by the low level of financial literacy amongst SMMEs in South Africa (Makhubela et al. 2015; Mazanai and Fatoki 2012) limiting their ability to present their cases adequately. This shows that individual entrepreneurial factors are strong in influencing the level of SMMEs financing in South Africa.

Another area discussed in the literature on access to finance in South Africa is the development of the SMME sector itself. This is propounded by the fact that banks in South Africa are inclined to finance SMMEs in their latter stages of development rather than in their start-up stages (SEDA 2016). While bank credit commonly applies to most SMMEs in their latter stages, it has been observed that in general micro enterprises in South Africa use informal sources of finance no matter the period of operation (Makhubela et al. 2015). Due to these challenges, financing, particularly for new SMMEs, tends to be promoted through targeted financial support from either the government or development financial institutions. For example, two years of SMMEs financial support between 2010 and 2012 through two Business Development Services (BDSs) funded by J.P. Morgan Bank have resulted in notable growth in revenues, employment, and customer outreach for most supported SMMEs (Dalberg and J.P Morgan 2013). Therefore, government support is needed to relieve challenges faced by SMMEs (Dalberg 2011; Rogerson 2004).

Contrary to the view that government support programmes promote SMMEs credit access, evidence shows that SMMEs in South Africa depend more on internal private and private funding than public funding (Mpiti and Rambe 2016), questioning the role of government in SMMEs support through various BDSs. While 56.9% of SMMEs are

supported through credit loans, only 1.7% are supported by government facilities (Beck and Cull 2014). In fact, SMMEs still remain victims of credit rationing in South Africa and while BDSs are used to improve on credit availability, their effectiveness in doing so have not yet been tested (Mazanai and Fatoki 2012), and this remains an area for further investigation.

Bank lending is based on information (hard and soft). In South Africa, SMMEs that have more access to information and resources to instil networks with banks exhibit more access to finance and perform better, although their performances vary with different types and extent of networking used (Machirori and Fatoki 2013). Additionally, SMMEs that manage network relationships or business alliances earn business partnership success and this tends to be positively related to their performance (Sawers et al. 2008). In line with the networking factor, SMMEs in remote and rural based provinces (e.g. Limpopo, Eastern Cape and Mpumalanga) have low financial access compared to SMMEs in urban based provinces such as Gauteng and Western Cape (Makina et al. 2015). Although not specifically tested in any previous studies in South Africa, the greater emphasis put on networking, business alliances and proximity between banks and SMMEs as determinants of access to finance, suggests that SMMEs in South Africa largely use a relationship based lending.

Different types of financial institutions offer different forms of financing to SMMEs in South Africa. SMMEs funding options include direct lending by commercial banks (both local and foreign), government development financial institutions and private development financial institutions. In addition, the Department of Trade and Industry (DTI), through its agency (Khula Enterprise Finance), indirectly offers alternative wholesale funding to various retail financial intermediaries (SEDA 2015) for onward lending to different categories of SMMEs.

Based on literature reviewed, studies on SMMEs financing in South Africa fall into two identifiable categories; firstly, challenges related to SMMEs finance access. The factors influencing this have been widely identified in the literature including lack of managerial

and financial literacy to satisfy bank needs (Agwa-Ejon and Mbohwa 2015; Aigbavboa and Thwala 2014), impact of the level of development of the SMME sector, financial structure and location of regions on SMMEs access to finance. The literature also extends to cover how these factors impact on growth of SMMEs. Secondly, the other set of literature discusses the different types of financial institutions that provide funding to SMMEs in South Africa. While access to finance is singled out as the main challenge for SMMEs, none of the past studies looks at how lending technologies are associated with financing of SMMEs. This study values the role played by lending technologies in influencing lending decision making by various financial institutions when dealing with SMMEs. It is therefore paramount to assess how the different types of lending technologies associate with varying degrees of financing access to SMMEs in the case of South Africa. More so, while bank level surveys have been widely used in South Africa to assess the extent of SMMEs financing (Beck and Cull 2014; Tomlinson 2007) and challenges (Abor and Quartey 2010; Mutyenyoka and Madzivhandila 2014), none of these studies extend to assess different lending technologies, delivery channels used and organisational structures conducive for SMMEs funding using both banks and the SMMEs data.

3.6 DEVELOPING SMME LENDING CONCEPTUAL FRAMEWORK

In building the conceptual framework for SMME lending, the study borrows from the information asymmetry information theory (Stiglitz and Weiss 1981), and advances that lending to SMMEs hinges on lending technologies used (Allen 2016; Butler et al. 2007; Mac et al. 2016; Mullen 2012; Ravi and Hong 2014). From that analogy, the study identifies determinants of lending technologies applying to SMMEs and the resultant costs and benefits to the SMMEs. These relationships give a conceptual framework of SMME lending as shown in Figure 4 and the discussion on each of the three components (determinants, costs and benefits) follows.

Key determinants of lending technologies are bank, SMME and economic structures in the economy. The determinants were informed by literature. Lender structures entrenched from types of financial institutions (Kano et al. 2011; Uchida and Udell 2006;

Uchida et al. 2012), lender size and ownership (Allen 2016; Korkeamaki et al. 2014; Ravi and Hong 2014) and lender specific strategies (De la Torre et al. 2010) determine the lender's choices on lending technologies suitable to fund SMMEs. Similarly, lending technologies selected by funders must fit into country-specific economic structures. Economic structures include financial systems that are either market-based or bank-based (Memmel et al. 2008) and the depth of the legal system which supports specific loan contracts (Koreen and Lucia 2015; Mac et al. 2016). The development of SMMEs by size, age, activity levels, sectors and regions where located (Makina et al. 2015) also determine how lenders view and rate them.

Based on this analogy, the study therefore hypothesises that lending technologies used to fund SMMEs are determined by a number of lender, SMMEs and economic structures in a particular country (Figure 4).

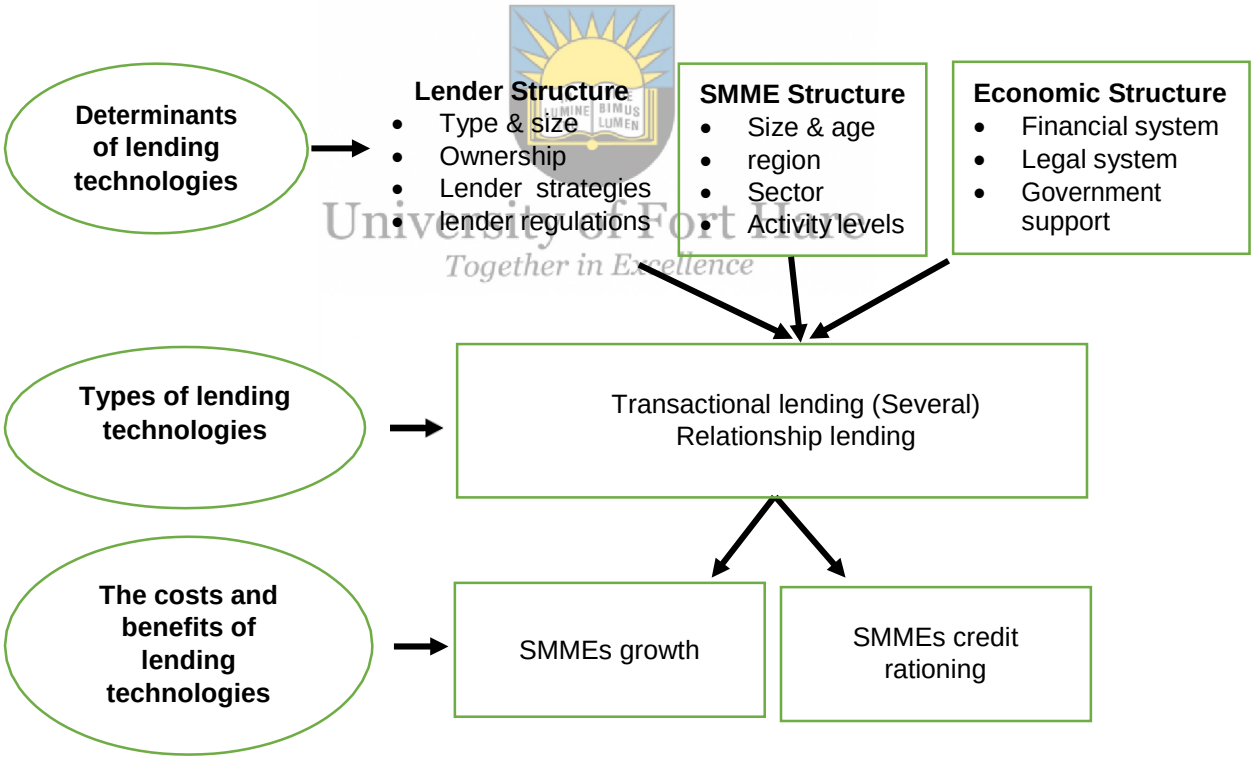
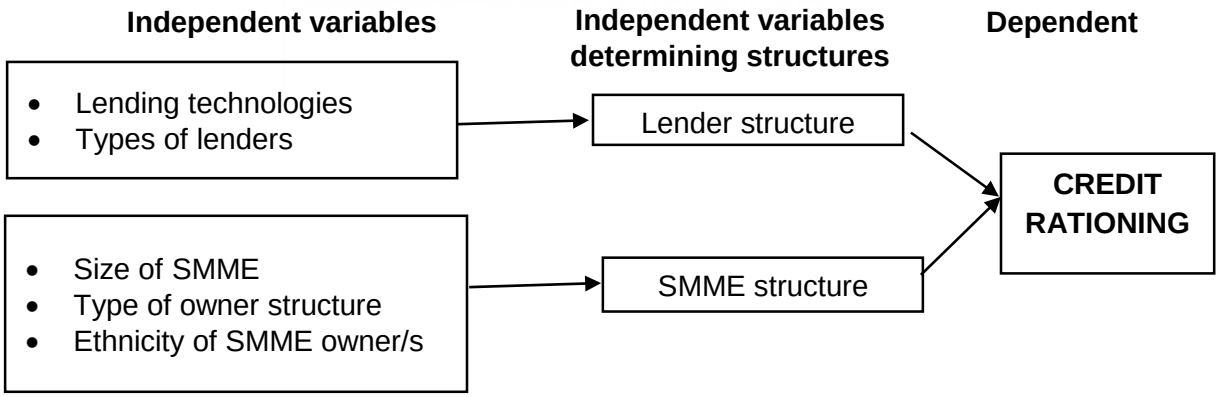


FIGURE 4: CONCEPTUAL FRAMEWORK FOR SMME LENDING

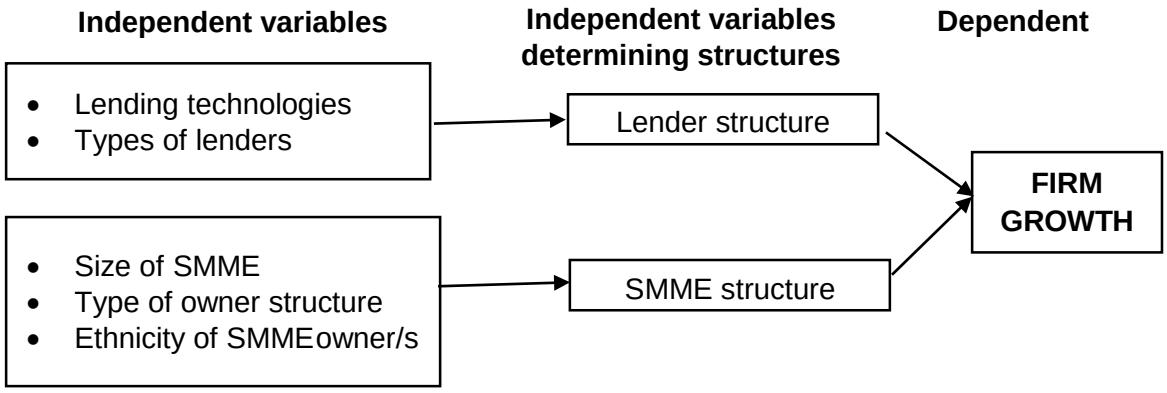
When financial institutions are faced with certain lender, SMME and economic structures, different lending institutions apply different lending technologies to fund SMMEs

(Figure 4). Among different economies, the main economic structural elements are not static and thus influence lending technologies adaptation differently. However, for this study, data has been collected from only one province of the country – the Eastern Cape Province, thus, economic structural variations within one province are very negligible. For example, a small business in one town faces the same government regulatory policy or the same financial system requirements as the other firm in another town in the same Province. For this reason, the effect of lending technologies on credit rationing or growth of firms supposedly comes from lender and firm characteristics only since economic structure is assumed to be constant.

The application of different lending technologies in SMME financing has two significances; the benefits resulting from low credit rationing helping SMMEs to grow and the costs, resulting in high credit rationing of SMMEs and subsequent stagnation or closure of these small businesses. Based on this conceptual framework for SMMEs lending therefore, it is hypothesised that the credit rationing of SMMEs is affected by firm and lender characteristics. The credit rationing phenomenon can be tested empirically as follows;



Also, based on this conceptual framework for SMMEs lending, it is further hypothesised that the growth of SMMEs is affected by firm and lender characteristics. The firm growth phenomenon can be tested empirically as follows;



The lender and SMME structural variables were identified during the investigator's interaction with lender institutions to determine factors that influence lender decisions in SMME lending in the first phase of the study.

3.7 CHAPTER SUMMARY

The conclusion drawn from the literature on lending to SMMEs is currently limited to the types of lending institutions and lending technologies used, and more so highly concentrated in developed countries. However, an evaluation of which institutions and which lending technologies serve SMMEs and grow SMMEs is an area that still remains very grey in the academic literature. Similarly, literature coverage on lending technologies is absent in developing countries, South Africa included. For example, a study of 119 developing countries (Wang 2016) identified access to finance as the hindrance to SMMEs lending based on firm characteristics; namely size, age, growth rate and ownership. Further, empirical literature on lending technologies even in South Africa is also very limited. Most studies covering developing countries including South Africa only analyse the extent of credit access, institutions that deal with SMMEs and challenges faced by SMMEs, hence this study aims to develop that literature covering credit rationing and how firms grow given different types of lending technologies.

The development of the conceptual framework based on literature ensures that all important determinants are taken into account in the analysis. Similarly dividing the study

into two, to identify the types of lending technologies used in South Africa and factors influencing their usage from the financial institutions first, allows the study to pick out only variables relevant to the South African situation. Therefore, the analysis on factors affecting credit rationing and growth of small firms is informed by the realities taking place in South Africa.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 INTRODUCTION

This chapter explains the methodology used. It covers the population, the setting of the study area, how the population was sampled and the various methods used in the analysis together with their assumption requirements. This study uses a cross sectional survey research approach conducted on two sets of populations namely all the financial institutions represented and SMMEs across all sectors in two metropolitan municipalities in the Eastern Cape Province of South Africa. The two metropolitan municipalities are Buffalo City and Nelson Mandela Bay. The data collected from financial institutions is analysed using qualitative technique in order to identify lending technologies used and factors influencing that while quantitative approaches are used on SMME data to capture the characteristics and statistical associations of the lending technologies on credit rationing and its impact on growth of SMMEs. The lending technologies analysed are limited only to those currently practiced by financial institutions in the Province. The analysis on the effects is limited to the identified lending technologies used and their impact on level of credit rationing of SMMEs by various types of financial institutions and on growing the SMMEs.

4.2 THE RESEARCH DESIGN OF THE STUDY

The research is based on a mixed methods design, utilising both qualitative and quantitative approaches. First, a qualitative method is used to identify and describe the fundamentals underpinning lending technologies used and their dimensions. Each lending technology is derived from the concepts that inform it based on what financial institutions actually do when assessing small businesses, thus lending technologies are qualitatively deduced. Qualitative deductions are used mainly to understand the types of lending technologies used to fund small businesses and factors influencing lending decisions of lenders when dealing with small businesses. The factors influencing lending technologies include attributes of the firm that financial institutions cross-examine before lending decisions are made.

Thereafter, the study transforms into a quantitative explanatory design focusing on two aspects. Firstly, it focuses on explaining the link between lending technologies used by different lending institutions and the resulting credit rationing of SMMEs. Credit rationing is measured using data on rationing indicators of SMMEs. Finally, it turns to explaining the link between the lending technologies used and growth (performance) of SMMEs. The growth of firms is measured using data on performance indicators of firms. The data on factors influencing lending decisions of lenders and types of lending technologies used are obtained from financial institutions via interviews while data on measures of SMMEs growth and credit rationing are obtained from SMMEs using questionnaires. The respective qualitative and quantitative analytical tools used are discussed in sections that follow in respect of each of the research question of the study.

4.2.1 Population and sampling

This study uses two key population sets namely SMMEs and financial institutions in Buffalo City and Nelson Mandela Bay metropolitan municipalities in the Eastern Cape Province of South Africa. The two metropolitans were selected because they are the main business hubs in the Province, and as such, the majority of both financial institutions and SMMEs operate from these locations.

In addition, the existence of the Nelson Mandela Bay Business Chamber and Border-Kei Chamber of Business, both of which compile membership details for businesses operating within their jurisdictions, made it easy and possible to identify and physically locate firms in the study areas. The firm details in the membership lists are the names of firms, telephone number, physical location and website. Based on firms' websites, one can understand the business before visiting the firms. The districts covering the two metropolitans for the study are Amathole and Cacudu for Buffalo City and Nelson Mandela Bay metropolitans respectively (Figure 5).

FIGURE 5: THE EASTERN CAPE PROVINCE DISTRICTS STUDY AREA MAP
Source: Google Map of South Africa.

4.2.2 Populations of SMMEs and financial institutions

The firm population comprises SMMEs in all sectors in the databases of companies compiled by both the Nelson Mandela Bay Business Chamber (NMBBC) for list of firms operating in Nelson Mandela Bay Metropolitan Municipality and Border-Kei Chamber of Business (BKCOB) for list of firms in Buffalo City Metropolitan Municipality. As at the 20th of June 2017, NMBBC and BKCOB together had a total of 1 486 firms (721 and 765 respectively) and over 75% of those firms fell under the SMMEs category (BKCOB 2017; NMBBC 2017a). Both Chambers of Business' databases had firm contact details comprising company name, telephone number, email address, website and physical address for each firm. These details made it easy and possible to contact the firms for appointments and to physically locate them during data gathering.

The SMMEs in the study are grouped into six main categories derived from the clusters of related sectors namely firms engaging in construction and engineering, financial

services, manufacturing, professional consultants, retail and warehousing and, service providers (Table 14).

4.2.3 Sampling of SMMEs

The study provides a deeper understanding of the lending technologies used by SMMEs in different sectors currently financially assisted by various financial institutions. The sample size for the SMMEs is derived using Cochran's sample size formula for categorical data (Bartlett, Kotrlik, and Higgins 2001) to suit both the logistic and ANOVA models used in the study to analyse data. The sample size is based on firms' population of 1 486 from the two metropolitans as calculated in Equation (4.1).

$$n_0 = \frac{t^2 * (p)(q)}{d^2} \quad 4.1$$

$$n_0 = \frac{1.96^2 * (0.5)(0.5)}{0.05^2} = 384$$

Where:

t = value of selected alpha level of 0.025 in each tail, which gives 1.96 (the alpha level of 0.05 indicating the level of risk the researcher is willing to take that the true margin of error may exceed the acceptable margin of error).

(p)(q) = estimate of variance of 0.25 (being the maximum possible product of proportions that yield the maximum sample size i.e. based on (0.5)(0.5) proportions.

d= acceptable margin of error for proportions being estimated = 0.05.

Therefore, given the population of 1 486 of the firms, the minimum required returned sample size (n_0) is 384 firms. However, given that this sample size of 384 exceeds 5% of the population (i.e.1 486*0.05 = 74), the Cochran's correction formula (Cochran 1977) must be used to get the final sample size (n_1). The correction formula below results in a minimum required returned sample size of 305 (Equation 4.2).

$$n_1 = \frac{n_0}{\left(1 + \frac{n_0 \quad n}{Population}\right)} \quad 4.2$$

$$n_1 = \frac{384}{\left(1 + \frac{384}{1486}\right)} = 305$$

This sample size of 305 is proportional and is divided between the two metropolitans based on their population sizes, giving 148 and 157 firms for Nelson Mandela Bay and Buffalo City respectively. In each metropolitan, SMMEs are proportionally stratified into sectors based on sector size to allow the apportionment of sample sizes per sector (Table 14). Based on this computation, the sample size of each sector is deduced.

During data gathering, the units of analysis, which are the sample SMME firms, were selected sequentially following the alphabetical list of firms from the Chambers' membership lists until the quota of each sector was reached in each metropolitan. As a result, adjustment of the sample size for possible non response rate was not necessary since each non responding firm was replaced by the next alphabetically placed firm in the sector until the required number was reached.

TABLE 14: POPULATION AND SAMPLES IN NELSON MANDELA BAY & BUFFALO CITY

SECTOR	SUB-SECTOR OF SMME	NMBBC Population	NMBBC Sample	BKCB Population	BKCB sample
Financial institutions	Financial services and insurance	25	5	22	5
	Medical aid, healthcare and services	9	2	14	3
Construction & Engineering	Automation & instrumentation	6	1	9	2
	Automobile (accessories, components, tyres & rubbers)	52	11	48	10
	Air-conditioning, refrigeration & ventilation	3	1	8	2
	Civil & construction engineering	23	5	26	5
Manufacturing	Manufacturing – general products	55	11	60	12
	Oilfields & mining	5	1	3	1
	Textile & allied products and services	10	2	7	1
	Wool, mohair, hide, skins & allied products	16	3	18	4
	Energy	15	3	21	4
Professional Consultants	Advertising, marketing & PR	24	5	9	2
	Accounting	10	2	11	2
	Attorneys	12	2	7	1
	Building & construction services (architects and surveyors)	17	3	23	5
	Business services & consultants	47	10	52	11
	Education & training	36	7	39	8
	Employment agencies & consultants	20	4	22	5
	Estate agents (property developers & mgt)	24	5	22	5
	Media & publishing houses	11	2	8	2
Retail & wholesale	General Agents, retailers and wholesalers	25	5	27	6
	Building & construction supplies	23	5	33	7
	Electrical & electronic equipment & supplies	10	2	18	4
	Furniture & office equipment supplies	4	1	7	1
	Laboratory & medical supplies	1	0	3	1
Service providers	Accommodation, conference venues & restaurants	23	5	26	5
	Catering (food & beverages services/manufacture)	24	5	19	4
	Development & service organisations	30	6	28	6
	Events and exhibition services	13	3	11	2
	Fire & safety products, security services	9	2	16	3
	Freight & logistics, transport and warehousing	61	13	58	12
	International trade services	7	1	5	1
	Sanitation, hygiene & waste management	16	3	21	4
	Sports & recreation	7	1	11	2
	Tourism & travel	21	4	26	5
	TOTAL	**721**	**148**	**765**	**157**

The SMME funding institutions in South Africa are grouped into six groups (SARB 2015), namely; locally controlled banks, foreign controlled banks, government aided Development Financial Institutions (DFIs), NGO aided DFIs, international organizations aided DFIs, and microfinance institutions. There were 15 representatives of these institutions in Buffalo City and Nelson Mandela Bay metropolitan municipalities. Given that these institutions were not many, the whole population formed the sampling frame for financial institutions, being the list of financial institutions in NNBBC and BKCOB databases. These comprise 8 locally controlled banks, 2 foreign controlled banks, 3 government aided DFIs, 2 private aided DFIs and several microfinance institutions (Table 15).

TABLE 15: TYPES OF FUNDING INSTITUTIONS IN EASTERN CAPE

Type of funders	**List of funders**
Locally controlled banks	1. Absa Small Business Enterprise Development Centre 2. Bidvest Bank Fleet & Asset Finance 3. Capitec Bank 4. First National Bank Corporate 5. First Rand Bank Limited 6. Nedbank Business Banking Division 7. SA Home Loans (Pty) Limited 8. Standard Bank Corporate and Investment Banking Division
Foreign controlled banks	1. State Bank of India 2. Investec Bank
Government aided DFI	1. Small Enterprise Finance Agency (SEFA) 2. Eastern Cape Development Corporation (ECDC) 3. National Youth Development Agency (NYDA)
Private aided DFI	1. Business Partners Limited 2. Eastern Cape Disability Economic Development Trust
Microfinance Institutions	1. Many

4.3 DATA COLLECTION

Given the two sets of populations, data collection subsequently follows a two-stage cross sectional survey process. In the first stage, data is collected from financial institutions on types of lending technologies used and the factors lenders take into account to lend to SMMEs. Interviews are used to collect primary data from financial institutions.

Appointments were made in advance through telephone calls and emails with SMMEs relationship managers, regional managers and branch managers of funding institutions in order to seek approval and then arrange times and venues for the interviews. Again, contact details for these financial institutions was available from the Chambers' membership lists.

The emails sent to lenders had an introductory letter and the research ethical clearance certificate issued by the University Research Ethical Committee of the University of Fort Hare (See Appendix B). The data collected via interviews was necessary to summarise SMMEs lending requirements and hence informed concepts of lending technologies used by each funding institution and the factors they take into account to arrive at a lending decision. Data on lending concepts used by funding institutions and the influential lending factors was therefore qualitative in nature. During interviews, financial institutions' representatives were also asked of any additional data collected from clients which they use to support standard requirements contained in the loan application form based on either supplementary documentation or soft information acquired by relationship managers themselves through their contacts with clients. In order to maintain consistency in qualitative data collection, the principal investigator conducted all the interviews.

In the second stage, based on lending technologies and influential lending factors derived from the qualitative data obtained in the first stage, a questionnaire was developed. The questionnaire captures only the lending technologies identified in the first stage to evaluate how the use of these lending technologies and the ensuing factors determining lending decisions. The questionnaire collected data from SMMEs on four main categories aligned to the research questions of the study. These categories include data on firm characteristics (e.g. age, size, sector, etc.), bank-firm relationship characteristics (e.g. length of bank relationship, lender type, and lending technology concepts applicable to SMME etc.), firm growth and credit rationing measures. The relevant firm and bank characteristics used are those important lending decision factors identified during the first stage explained above. All variables for these types of data are quantitative in nature and therefore are quantitatively analysed.

Given the size of the sample of 305 for SMMEs, four research assistants (two in each Metropolitan) were hired. Research assistants had at least a business related honours degree and were/are native speakers of an Eastern Cape Province language. The research assistants collected data from SMMEs firms, while interviews with financial institutions representatives were facilitated by the principal researcher. No matter how well designed the questionnaires are, the quality of survey data depends entirely on skills of enumerators collecting data in terms of competence, professionalism and commitment (WFP 2009). A half day research assistants training was therefore conducted to achieve these goals. The training ensured that enumerators fully understood the objectives of the study, were familiar with the content of the questionnaire and the survey process, as well as the research ethical requirements prescribed by the University Research Ethical Committee (UREC) of the University of Fort Hare, upon which a research ethical clearance certificate was granted for this study. At the end research assistants had to become effective interviewers capable of administering the questionnaire easily, accurately, consistently and naturally.

The training aimed at enlightening research assistants with the research purpose and the whole survey process. This involved taking the research assistant team through the contents of the questionnaire, clearly explaining the relevance of each question and possible alternative avenues of inquiry to get data from prospective SMMEs respondents. The training also covered the roles of the research assistants. These were, while the primary role of research assistants was data collecting from the assigned list of SMMEs in their respective areas, in-house issues to do with professional conduct and dressing, in addition to UREC research ethical requirements were also emphasised. The training concluded with expectations of the research assistants by the principal investigator, that is, an agreement on expected deliverables in terms of daily targets on signing of remuneration contracts. On the first day of data collection, the research assistants were accompanied by the principal researcher as an induction process and thereafter did the rest of the visits independently. During the data collection period, each day normally started with a morning debrief by the principal researcher of the SMMEs characteristics to be visited by each research assistant on the day and ended with a feedback from each

research assistant in the evening on daily accomplishments and challenges faced, and these were shared amongst all research assistants. The feedback was useful in that it enhanced the research assistants' ability to plan properly and be more informed for the upcoming schedules.

4.4 DATA ANALYSIS AND ESTIMATION METHODS

In this study, research questions one and two are addressed through qualitative approaches while the last two research questions are analysed quantitatively. The first stage of the study identifies lending technologies adopted by lenders and the factors they consider. The second stage quantifies the effect of these lending technologies and the important factors on credit rationing and growth of small businesses.

Four aspects are important in data analysis of this study. These aspects are, 1) selection of methods that are appropriate in addressing each research question, 2) identification and placing key variables of the study into operation, 3) discussing the parameters that qualify the application of the chosen methods, that is, by way of conducting the preliminary tests for model assumptions where applicable, and 4) explaining how the methods are applied to answer the planned research questions as well as how the results are interpreted. The specific methods and key variables used are discussed below in two subsections in line with the two stage design approach of the study.

4.4.1 Identifying types of lending technologies and lending factors

The first and second research questions investigate how different types of financial institutions adopt different lending technologies and the factors they consider to arrive at a lending decision. To achieve these objectives, documentation review of financial institutions' lending documents (credit manuals, loan application forms, credit assessment forms etc.) and interviews with relationship managers, branch managers and regional managers of the SMME business divisions of financial institutions were conducted. The interviews capture sets of concepts used by their institutions when assessing creditworthiness and eventually extending credit to SMMEs. The concepts

drawn from documents and interviews inform a menu of different types of lending technologies used by lending institutions and the factors that drive lending decisions. To identify the adoption of lending technologies and factors used by different lending institutions, content analysis method which is a branch of thematic analysis method is used (Jiang et al. 2016). In the qualitative thematic analysis process, triangulation is used to identify concepts around which texts or phrases from the data can be assembled into blocks and patterns (Bengtsson 2016) that inform types of lending technologies used and the factors leading to lending of SMMEs. The process then transforms to a quantitative method of content analysis where facts from the texts or phrases in credit documents and from interviews are presented in the form of frequencies or actual counts of key categories to tell how much of each category is contained in the data. The content analysis method is best in this case because it helps to identify both the lending technologies used as well as the conceptual factors influencing lending decisions of lenders. The findings from this analysis informed what goes into the questionnaire in order to get data from SMMEs. The four steps of content analysis (Bengtsson 2016) used in the study are;

i) Decontextualisation to develop theme nodes

The first step involves going through all credit documents and interview transcriptions to identify the leading concepts coming out of the data, which are presented into short sentences or phrases of ideas called theme nodes.

ii) Recontextualisation of theme nodes into basic themes

This step involves identifying and selecting related theme nodes and group them into basis themes of factors influencing lending and common attributes of specific lending technologies or that resemble the use of a particular lending technology. The selected key attributes are those used by the financial institutions to arrive at a lending decision.

iii) Categorization of basic themes into organising themes

This involves creating blocks and patterns of related basic themes by collating them and forming group themes.

iv) Compilation of main themes

It involves assembling all concepts (organizing themes) and generating the common concept (theme) name for the data. This is the final step used to inform the particular types of lending technologies used by financial institutions and the actual factors lenders look at to arrive at a lending decision. The whole process flow is shown in Figure 6.

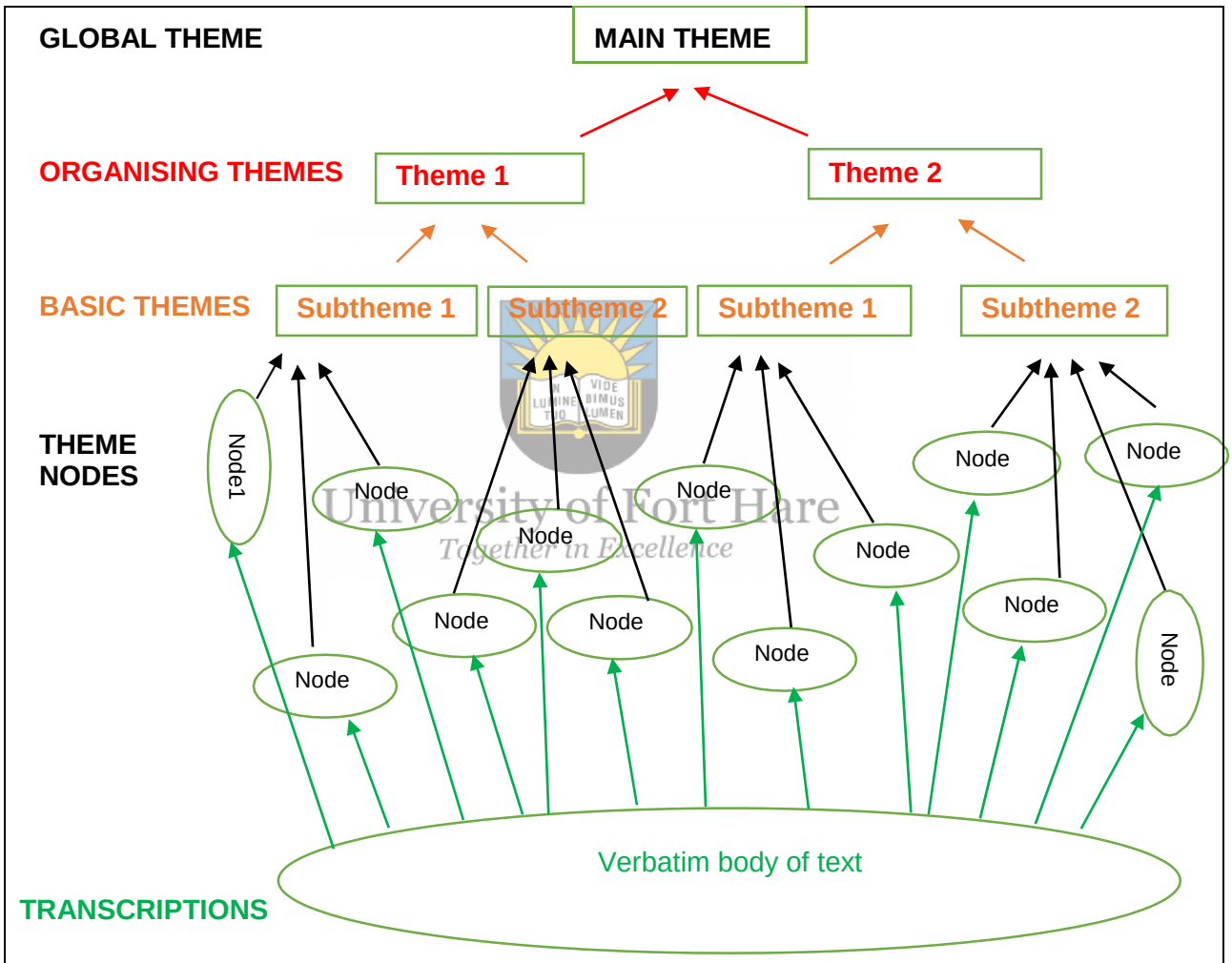


FIGURE 6: THEME DEVELOPMENT TREE

4.4.2 Measuring the effects of lending technologies on credit rationing

The effects of lending technologies on credit rationing with respect to the third research question are addressed using quantitative regression models. It is therefore necessary to first identify and put into operation the important variables of the study as well as testing model assumptions. In this study, credit rationing is a dependent variable represented in two ways; as a dichotomous variable which takes the value of 1 if the SMME has experienced credit rationing of any form and 0 otherwise or as a categorical variable taking the value of 1 if the firm experienced an outright rejection, 2 if there was quantity rationing and the value of 3 if there was price rationing by charging an interest rate higher than the average market interest rate or 0 otherwise.

The independent variables are the lender and firm characteristics that influence credit rationing of firms, that is to decide whether to lend or not. These lender and firm characteristics are deduced from the previous qualitative analysis where factors influencing lending decisions of financial institutions in the Eastern Cape Province were identified. The lender characteristics are types of lending technologies used to fund SMMEs and types of financial institutions lending to SMMEs. The firm characteristics are firm size, type of owner structure and race of owners of businesses. These independent variables were selected because they represent the realities of the South African SMME and lender structures. During the first stage of the study, financial institutions interviewed mentioned that they value firm size as it is linked to firm activities and personal qualities of owners. In addition, the conceptual framework for SMME financing depicted in Figure 4 dictates that only firm and lender characteristics shall apply in this study. In line with that framework, the variables for which data is available and in line with lenders' demands, the choice of these independent variables is valid. Equation 4.3 therefore shows the binary representation while equation 4.4 shows the categorical representation of how credit rationing of firms is influenced by lender and firm characteristics.

$$y^1 = \alpha + \beta_1 X + \beta_2 Z + \varepsilon \quad 4.3$$

$$y^1 = \begin{cases} 1 \ \textit{if} \ \ \textit{firm i was credit rationed} . \\ 0 \ \textit{if} \ \ \textit{firm i was not credit rationed} \end{cases}$$

$$y^2 = \alpha + \beta_1 X + \beta_2 Z + \varepsilon \quad 4.4$$

$$y^2 = \begin{cases} 1 \text{ if } \textit{firm i faced outright credit rejection} \\ 2 \text{ if } \textit{firm i was quantity credit rationed} \\ 3 \text{ if } \textit{firm i was price credit rationed} \\ 0 \text{ if } \textit{firm i was not credit rationed} \end{cases}$$

X includes the lender characteristics including the type of lending institution and technology used to fund firm *i.*

Z are the vectors of control variables based on firm attributes including firm size, type of ownership structure and ethnicity group of owners associated with firm *i*.

ε = is the vector of heteroskedastic - robust standard errors.

The definitions of both the dependent and independent variables are summarised in Table 16 and explained in detail in the following paragraphs.

TABLE 16: DEFINITIONS OF CREDIT RATIONING VARIABLES

Variable	Definition of variables
CR-B	A proxy for CREDIT RATIONING of a firm and is a binary variable. Takes a value of 1 if a firm is credit rationed in any way, denoted 1 and 0 otherwise.
CR-AC	A proxy for "ALTERNATIVE CREDIT RATIONING" measure the types of credit rationing faced by firms. Takes a value of 1 if they faced a straight credit denial, 2 if quantity rationed, 3 if price rationed and 0 if none apply.
LT TYPE	A proxy for "TYPE OF LENDING TECHNOLOGY" used to fund a firm which is a nominal variable with the following values: 1) If financial statement lending was used in decision making to fund a firm. 2) If asset based lending was used in decision making to fund a firm. 3) If venture capital lending was used in decision making to fund a firm. 4) If asset finance lending was used in decision making to fund a firm.
FI TYPE	A proxy for the TYPE OF FINANCIAL INSTITUTION that funded the firm is a nominal variable. Takes values; 1=commercial banks, 2=government development financial institutions, 3 = private development financial institutions or 4 = microfinance institutions.
FIRM SIZE	A proxy for the SIZE OF THE FIRM is a nominal variable. Takes values: 1= micro, 2 = very small, 3 = small or 4 = medium sized firms.
OWNER TYPE	A proxy for the TYPE OF OWNERSHIP STRUCTURE of the SMME is a nominal variable. Takes values: 1 = sole trader-male owned, 2 = sole trader-female owned, 3 = family-owned or 4 = partnership-owned businesses.
ETH GROUP	A proxy for the ETHNIC GROUP of the owner or majority of owners of the firm. Takes values: 1 = Black, 2 = White, 3 = Indians or 4 = Coloureds.

This section explains how the operational definitions of the above key independent variables are measured or extracted from the data. Types of lending technologies were derived from a list of concepts informing all potential lending technologies. These concepts were initially developed from the interviews data of financial institutions on what they require in order to fund SMMEs. SMMEs were latter asked to respond whether these concepts applied or not in their interaction with their lending institutions during the lending process. For instance if an SMME received a loan based on cash flow, profitability or assets value information it provided the lender, that is, items ordinarily captured in a financial statement, then financial statement lending is taken to have been used in funding that SMME. However, if the same SMME alludes that in addition to the above requirements, it was further asked to lodge any other form of an asset as security, then Asset-based lending technology is assumed even if some of the financial statement concepts still apply. Similarly if the SMME also asserts that, in addition to any of the above concepts, the lender retained part ownership of the business as part of the lending deal, then venture capital lending overrides the other previous methods, that is, financial statement lending and asset-based lending technologies. Finally, if all or part of the above apply, but lending was for a specific serialised asset, then asset financing lending technology is assumed to have been used in this particular case. It follows therefore that the types of lending technologies are derived based on an elimination method looking at the dominant lending concepts in the order of requirements from the lender. Financial statement lending technology concepts are taken as the basic lending requirements, with any additional requirements transforming it to either asset based lending, venture capital lending or asset financing lending technologies.

The second independent variable is the type of ownership structure of the SMME. This is a nominal variable derived when the SMME chooses the ownership structure that applies to their business from the given list based on the history of small businesses in this country. The list includes sole trader-male owned, sole trader-female owned, family-owned or partnership-owned businesses. This was straight forward from the responses.

The third independent variable is firm size. This is defined as per the Small Business Act definition of South Africa. SMMEs provided information on the number of employees, annual sales and value of assets for their businesses. Each SMME was then fitted into the respective firm size category, which is either micro, small, very small or medium based on their own figures in line with the Small Business Act firm size classifications.

The last independent variable is the ethnicity of the owners of the SMME. This is a nominal variable derived when the SMME specifies the ethnic group of the owner if individually owned or that of the majority of owners if the firm has multiple owners from the given list based on the history of small businesses in this country. The list includes Blacks, Whites, Indians and the Coloureds. Again, this was straight forward from the responses.

4.4.3 Measuring the effects of lending technologies on growth relationship

This fourth research question investigates how lending technologies used to fund SMMEs are linked to the growth of SMMEs. Growth is measured using financial performance efficiency indicator for each firm. While most studies use sales or profit volumes as the proxy for growth of firms, this study moves away from using a single indicator and adopts the use of financial efficiency scores because it is a product of various activity inputs and outputs of firms and therefore a better proxy of growth than just looking at the sale or profit value only. A good example of the flaws of using a single indicator is when profit levels are used as a proxy of growth. Two firms may have the same levels of profits but it may not mean that they attained the same growth unless one fully understands the expenditure and investment activities of each firm. For example, one firm may have used most of its revenues in capital investment than the other thereby reducing its profit levels but creating more value in the business. This may not be captured if only the final profit value is used to measure growth. Therefore, by bringing in the other activities of the firm such as the amount of borrowed funds, capital investment made and sales volumes achieved, the computing growth level of a firm gives a better informed growth indicator than just picking individual indicators. In this case, both profits and sales values were also included among the outputs of the firms. Data Enveloping Analysis (DEA) is used to

determine financial performance scores of firms, and then factorial analysis is used to measure that link between lending technologies and growth of SMMEs given that the dependent variable, growth of a firm, is a continuous variable. Using DEA, efficiency represents performance of a SMME firm that is obtained by maximising the efficiency of the target SMME firm subject to the efficiency of all other firms being less or equal to 1 (Sherman and Zhu 2006) ranges between 0 (no growth) and 1 (maximum growth) and this is represented in equation 4.5.

$$Max\ h_j = \frac{\sum_r u_r y_{rj}}{\sum_i v_i x_{rj}}$$

$$Subject\ \ to: \frac{\sum_r u_r y_{rj}}{\sum_i v_i x_{rj}} \leq 1 \ \ for\ each\ \ firm, \qquad \text{.....4.5}$$

$$and\ \ u_r, v_i \geq \varepsilon$$

Where:

h_j = efficiency level of the firm *j*

u_r = weight of output r.

y_{rj} = amount of output r (annual in sales in 2016, total value of firm assets as at the end of 2016 and total capital investment in year 2016 of firm *j.*

v_i = weight of input *i*

x_{ij} = amount of input *i(*number of employees by end of 2016, value of loans advanced in 2016 and value of firm's capital stock at end of 2016 for firm *j.*

The *a priori* expectation in this study is that firms that perform better tend to grow more than those that do not. Three inputs and two outputs based on firm activity in the sampled data are used to derive the growth score of the firms in DEA (Table 17).

TABLE 17: DEFINITIONS OF FIRM FINANCIAL PERFORMANCE VARIABLES

Variable Name	Definition of variables for outputs and inputs in the performance of firms
S	A proxy for "ANNUAL SALES" which is the output of the firm as the value of sales are associated with performance (growth) of the firm. Measured as the total annual sales as at the end of the year2016 for each respondent firm.
KI	A proxy for "VALUE OF ANNUAL CAPIATL INVESTMENT" which is another output of a firm as the value of annual capital investments (new assets) are associated with performance (growth) of the firm. It was calculated as the annual amount spent by the firm on new capital investments for the years 2016 for each respondent firm.
EMP	A proxy for "NUMBER OF EMPLOYEES" which is an input of the firm as number of employee needs are associated with more business activity (growth) of the firm and vice versa. It was calculated as the number of employees as at the begging of the year 2016 for each respondent firm.
LOAN	A proxy for "VALUE OF ANNUAL LOAN ADVANCES" which is an input of the firm as more access to loans are associated with performance (growth) of the firm and vice versa. It was calculated as the annual amount of new loan advances for the year2016 for each respondent firm.
ASSET	A proxy for "VALUE OF ASSETS" which is an input of the firm as more assets are associated with business activity (growth) of the firm and vice versa. It was calculated as the total value of the firm's assets as at the end of the year 2016 for each respondent firm.

Source: Deduced by the author based on firm performance measures used in the literature

Since efficiency ranges between 0 (least efficient) and 1 (most efficient), the firms' efficiency level score is a continuous variable. The attributes of growth above were chosen because they are the main common measures of performance of firms in the finance literature (Ardishvili et al. 1998; Chimucheka 2013a; Delmar 1997; Mazanai and Fatoki 2012) and this information was available from the sampled firms. To capture the effects of lender and firm characteristics on growth of firms, a two-way factorial analysis or analysis of variance was conducted. Since the study emphasises the impact of lending technology on growth of firms, the independent variable 'types of lending technologies' used to fund SMMEs is paired with each of the other independent variables alternating at a time to determine their effect on growth of firms. The other independent variables are size of the firm, ethnicity of firm owners, ownership structure of the firm and the type of lender funding the firm. The variables are defined in Table 18. These independent variables were selected because they represent the realities of the South African SMME and lender structures. Secondly, financial institutions interviewed mentioned that they value firm size as it is linked to firm activities and personal qualities of owners. In addition, the conceptual framework for SMME financing depicted in Figure 4 dictates that only firm

and lender characteristics shall apply in this study. In line with that framework, the variables for which data is available and in line with lenders' demands, the choice of these independent variables is valid.

TABLE 18: DEFINITIONS OF FIRM GROWTH VARIABLES

Variable	**Definition of variables**
ES	A proxy for "EFFICIENCY SCORE" of a firm and is a continuous variable ranging from a minimum of 0 and a maximum of 1. Derived using Data Enveloping Analysis where the value of loan advances, number of employees and value of assets represent inputs and total annual sales and value of annual capital investment were outputs.
LT TYPE	A proxy for "TYPE OF LENDING TECHNOLOGY" used to fund a firm which is a nominal variable with the following values: 1) If financial statement lending was used in decision making to fund a firm. 2) If asset based lending was used in decision making to fund a firm. 3) If venture capital lending was used in decision making to fund a firm. 4) If asset finance lending was used in decision making to fund a firm.
FI TYPE	A proxy for the TYPE OF FINANCIAL INSTITUTION that funded the firm is a nominal variable. Takes values; 1) Commercial banks, 2) Government development financial institutions, 3) Private development financial institutions or 4) Microfinance institutions.
FIRM SIZE	A proxy for the SIZE OF THE FIRM is a nominal variable. Takes values: 1) Micro, 2) Very small, 3) Small or 4) Medium sized firms.
OWNER TYPE	A proxy for the TYPE OF OWNERSHIP STRUCTURE of the SMME is a nominal variable. Takes values: 1) Sole trader-male owned, 2) Sole trader-female owned, 3) Family-owned or 4) Partnership-owned businesses.
ETH GROUP	A proxy for the ETHNIC GROUP of the owner or majority of owners of the firm. Takes values: 1) Black, 2) White, 3) Indians or 4) Coloureds.

To capture the effects of lender and firm characteristics on growth of firms, a two-way factorial analysis or analysis of variance is used. This is represented in Equation 4.6.

$$Y_{ij} = \mu + L_i + \beta_j + \gamma_{ij} + \varepsilon_{ijk} \quad \text{.....4.6}$$

For $i = 1, 2a$

$j = 1, 2.... b$

$k = 1, 2 ....r$

Where:

Y_{ij} = is the mean efficiency score level of each SMME.

μ = is the overall mean response

L_i = is the effect due to the i^{th} level of the factor lending technology.

β_j = is the effect due to the j^{th} level of the other factor (firm characteristics or lender characteristics).

γ_{ij} = is the effect due to the interaction of factors lending technology and each of the other firm characteristics or lender characteristics.

4.5 DATA ANALYSIS, ASSUMPTIONS TESTS AND RESULTS INTERPRETATION

In order to apply statistical methods such as logistic regression and factorial analyses, it is important to ensure that all the conditions of the assumptions are satisfied. For that reason, data analysis was conducted in three stages; conducting the diagnosis tests of the model assumptions, measuring the main effects of the lender and firm characteristics on both credit rationing and growth of firms, and measuring the interaction effects of the independent variables. The computer software SPSS version 21 was used.

For empirical results to be trusted, both the data and the model should be tested for goodness of fit. The study uses logistic regression and a two-way factorial analysis. Assumptions of these models were tested. The classification derived from the logistic regression model explained how well the attributes of the variables have been properly classified in the logistic model, and thus is used as the first test in this study. A high level of classification merits the data. In addition, since a logistic regression model was used, some regression assumptions are also tested. That involves use of the Phi and the

Cramer's V coefficients for testing multicollinearity of categorical variables and the goodness-of-fit test for the model formation are tested using the Hosmer & Lemeshow Goodness of Fit Test, -2LL Test and the Omnibus Tests. It must be noted that since the dependent variable is categorical, the test for normality and linearity of the dependent variable are not necessary.

In order to apply a two-way factorial analysis, three statistical assumptions must be met. These are, 1) the dependent variable has no outliers, 2) there is homogeneity of variance within groups and 3) the dependent variable is normally distributed. These tests are conducted using outlier plots for detecting outliers in the data, Shapiro-Wilk test for normality to test for normal distribution of the data and the Levine's test of Equality of Variance to check for the presence of homogeneity of variance.

The effects of firm and lender characteristics on credit rationing are measured using logistic regression while the effects on growth are measured using a two-way factorial analysis. Since credit rationing was measured at two levels, as a binary variable based on the event occurring and as a categorical variable with three levels for the types of credit rationing, four models are developed in the analysis. Models (1) and (3) for binary and categorical variables' main effects only and models (2) and (4) for the binary and categorical variables' main and interaction effects respectively.

A two-way factorial analysis is conducted to interpret growth patterns of firms. The study analyses the main effects to determine whether different types of lending technologies and any other paired factor result in different growth levels of firms. In the study, interaction effects are further computed to test whether the differences in growth levels of firms as a result of the different lending technologies used depend in part on another firm and lender characteristic as well. Therefore, another set of four more models are developed as well. The main and interaction effects for the types of lending technologies paired with type of lender financing the firm are denoted as model (5), when paired with firm size as model (6), when paired with owner's structure type as model (7) and when paired with the owner's race as model (8).

In the above last four models, a two-way factorial analysis determines whether differences in growth exist among firms and the effect size accounting for the differences based on the Partial Eta Square. Thereafter, if group levels of the independent variables show differences in growth of firms, that is, have a significant ANOVA, then Scheffe Post Hoc Test is followed to identify where exactly growth differences among firms are significant and the nature of the differences. This refers to the direction and the amount of the differences in growth. The Scheffe Post Hoc Test is preferred because it does not inflate Type 1 error when sample sizes are not equal across group levels, which is the case in this study. For example if one takes a factor like types of lending technologies, the number of firms financed via different types of lending technologies are not the same across the whole study sample. There are, therefore, no equal sample sizes for the categories of each factor and the Scheffe Post Hoc Test suits this scenario.

The actual extent of relationships that link the credit rationing of firms and growth of firms, and the factors influencing those two outcomes are explained using main and interaction effects of both the logistic regression and a two-way factorial analysis. For the logistic regression analysis, the main and interaction effects of factors influencing credit rationing of firms are interpreted using the size of the odds ratios for the different category levels of influencing factors. For the two-way factorial analysis, the main and interaction effects of the factors influencing the growth of firms are interpreted using the mean differences of the financial efficiency scores of firms for the different category levels of the influencing factors. In both of the analyses, only significant results of the study are presented and interpreted while none significant results are thrown out.

4.6 RESEARCH ETHICAL CONSIDERATIONS

Firstly, an application to the University of Fort Hare's Research Ethical Committee (UREC) was made in order to obtain an ethical research clearance certificate, a standard requirement of the University given that the study uses primary data. This was complied with and an ethical research clearance certificate reference number SIM031SMBE01 was issued on the 1st of June 2017 (Appendix B).

Secondly, it was necessary to ensure that all data collection instruments' content and administration procedures are in conformity with all ethical research requirements with regards to dealing with primary data respondents, in particular for both financial institutions and SMMEs. To that end, respondent firms had a right to consent, thus the researcher explained the purpose of the study and that the study is for academic purpose only. Firms demonstrated their willingness to consent by agreeing to participate in the survey and by signing a separate Consent Form (Appendix C) in line with Supervisor's research ethics declaration (Appendix D). The respondents were also given an option to withdraw from the study at any time during the course of study or refuse to answer part of the questionnaire, where they felt their rights were violated.

In addition, the confidentiality of the respondents was highly recognised and as such, all respondents were given an option to remain anonymous as the study only intends to report responses on the generality of the population and not on particular respondents. The respondents only signed a separate Consent Form that did not link them directly to the questionnaire they had completed. There was no need to seek a letter of introduction from the University to be lodged with the two Business Chambers in metropolitan municipalities of Buffalo City and Nelson Mandela Bay where the study was conducted, namely the Border-Kei Chamber of Business and Nelson Mandela Bay Chamber of Business. This is so simply because the databases that contain the list of firms are publicly available in their websites are already in the public domain and therefore only needed to be acknowledged whenever used and that was done.

4.7 CHAPTER SUMMARY

The study adopts a cross sectional survey research approach in which the focus is on financial institutions and SMMEs in the Buffalo City and Nelson Mandela Bay metropolitan municipalities in the Eastern Cape Province of South Africa. Qualitative data was collected from financial institutions using interviews and documentation while quantitative data was collected from SMMEs using structured questionnaires. Data collected is analysed using thematic analysis for the qualitative data and for the quantitative data,

logistic regression, data enveloping analysis and two-way factorial analysis approaches are used. Diagnosis tests were conducted first to ensure that all the conditions of the assumptions associated with the models used are satisfied before applying them on the surveyed data.

The types of lending technologies used by different financial institutions and factors influencing lending decisions of financial institutions are the first measures of interest in the study. These measures were derived qualitatively from financial institutions. The study further analyses the level of credit rationing of firms, factors leading to that and how these affect the growth of SMMEs. The pivot of the study therefore is underlined in understanding the types of lending technologies used, factors determining their application by financial institutions and how these affect credit rationing and growth of SMMEs in South Africa.

CHAPTER 5: FACTORS INFLUENCING SMME LENDING AND LENDING TECHNOLOGIES

5.1 INTRODUCTION

This chapter identifies factors financial institutions take into account when lending to SMMEs, and the types of lending technologies used by financial institutions. There are four types of financial institutions that fund SMMEs. These are commercial banks, government-owned DFIs, private-owned DFIs and microfinance institutions. There are three factors influencing the funding of SMMEs and these are people, firm and financial information factors. When financial institutions make loan appraisals based on these factors, four types of lending technologies are used in SMMEs funding. The funding channels include; financial statements lending, asset-based lending, venture capital lending and asset finance lending technologies. Eight interviews with senior staff members of financial institutions were conducted to gather data. The interviews were carried out between 27 June 2017 and 30 July 2017 with institutions' representatives located in East London in the Eastern Cape Province. Only the principal investigator conducted all interviews to ensure that the structure of questions and style of inquiry remain uniform throughout the study. Table 19 shows the details of the interviewees.

TABLE 19: FINANCIAL INSTITUTIONS INTERVIEW PARTICIPANTS

Financial Institution Types	**Business Unit**	**Positions held by interviewees**	**Locations**	**Participants' Symbols**
Commercial Banks	Personal & Business Banking	Small Business Enterprise Manager	Sterling, East London	P1
		Branch Manager	Oxford, East London	P2
		Business Unit Head	Vincent, East London	P3
Private sector supported DFI	SMME Business	Regional Manager	Selborne, East London	P4
Government supported DFI	Business lending	SMME Business Manager	Quigney, East London	P5
Microfinance Institutions	Personal and SMME Business	Branch Manager	Malindela, East London	P6
		Branch Manager	Oxford, East London	P7
		Branch Manager	Southernwood, East London	P8

The itemised letters P1, P2, P3 … P8 (Table 19) represent each institution's participant and are later used to identify summary of concepts derived from verbatim transcriptions

related to each participant's response. Financial institutions contacted include three commercial banks, one government-owned DFIs, one private-owned DFIs and three microfinance institution. Only senior staff members at the loan approval level of institutions they represent such as small business managers, branch managers, business unit heads and regional business managers were consulted.

5.2 FACTORS INFLUENCING SMME LENDING IN SOUTH AFRICA

The interview translations capture sets of concepts used by lending institutions when assessing creditworthiness of SMMEs. The concepts drawn from interview translations informed a menu of different types of lending technologies used by lending institutions and the factors that drive lending decisions. To identify lending technologies and factors used by different lending institutions, content analysis method, which is a branch of thematic analysis method is used.

First, the credit documents data and interview transcriptions are used to identify the leading concepts coming out of the data, which are presented into short sentences or phrases of ideas coded into theme nodes. The second step was to identify and select related theme nodes and group them into basis themes of factors influencing lending and common attributes of specific lending technologies or that resemble the use of a particular lending technology. Thirdly, the categorised basic themes were collated into main organising themes to form group themes of factors that are important in lending or to determine the types of lending technologies used. The last step was to come up with the theme name of the factor or the type of lending technology used. Based on this analysis, the following factors and types of lending technologies are identified to be used by lending institutions.

Three main factors influence SMMEs lending in South Africa. The factors are people, firm's specific characteristics and financial information of SMMEs. The details of factor codes and each of the identified factors are explained below.

5.2.1 The People Factors Influencing SMME Lending

Three people factors are identified as influencing SMME lending. Lending institutions value management traits, management competences of those running the business as well as management succession plans of the firms (Table 20).

a) Management traits analysis for SMME lending

Financial institutions are concerned about the people in charge of the business and the background that they have in the business. It is not just about the experience in running any business, but the emphasis is on relevant experience in a specific sector-like business. Specifically, of the eight financial institutions, five indicated they appraise curriculum vitae (CVs) of owners, four agreed they inquire on educational level and three also check for the experience of managers of firms in order to ascertain that they have adequate business background. Financial institutions need assurance that people in management have the capacity to coordinate different business needs using their managerial traits.

TABLE 20: PEOPLE FACTORS LENDERS CONSIDER TO FUND SMMES

Themes nodes	Sub-themes	Organising Themes	Global Theme
Owner general experience Entrepreneurial level of owner Background in the business Owner or manager CV Key man's insurance Owner financial history Personal references	Background Experience Personality Ethical upholding	Management traits	People factors
Ability to manage business. Owner knowledge level of the business. Ability to understand financials. Ability to manage people. Identify staff skills gap	Managing business. Managing people	Management competences	
Relatives and children's roles Labour skill levels &competences Key man's insurance Structure of management team	Change management fear. Top team strength	Succession plan	

An individual's management traits are highly linked to his/her personality. Thus, personality attributes, like financial discipline as expressed by one participant, are a very

important factor. For instance, *"a 'jokey' who fails to manage his personal funds cannot be expected to manage the funds of the business well*" (Interview, P1).

Financial institutions trace the individual managers' personal financial history through Financial Credit Bureau checks to track personal financial behaviour and thus monitor the risk of the likelihood of instilling personal financial indiscipline into the business. In addition to personal financial discipline, other respondents indicated that personal traits such as the upholding of good work ethics and personal behaviour traced through character references also influence their decisions. This is because SMME lending is highly linked to the business owner and thus largely mimics individual personal lending so, the individual owner or manager's personality traits are an important factor in SMME lending.

b) Management competences analysis for SMME lending

Three quarters of financial institutions confirmed that not all managers with good management traits are guaranteed of funding. They must also have good management competences.

Lenders are interested in managers' ability to manage the business and the likelihood to succeed given their background (interview, P3). As one participant said, *"we then look at his ability to manage the business, the ability to understand financial statements, and the ability to control people"* (Interview, P4). As indicated by other respondents, for example, they ask about the level of gross profit of the business to assess how sound the business is managed. If the gross profit figure stated is lower than the industry average, which is an indication of expenses are not well monitored for that firm, which signals poor management competencies. Similarly, if the figure is excessively higher than average, it is good, but such high levels can only be temporary. They cannot be relied upon as the basis for long-term lending. So, there is an assessment of how well placed management is in dealing with business operations' needs, people issues and financial aspects. This is important because small businesses seldom have a wide and specialised management span. The owner or manager is therefore expected to be knowledgeable about all aspects

of the business. As a result, financial institutions must be confident that management of the firm has sufficient capabilities to run the business in which they are in. Failure to demonstrate existence of expected competencies exposes financial institutions into potential loan default and thus has a negative effect on SMME lending.

c) Succession plans analysis for SMME lending

Financial institutions are also keen to know the succession plan of the SMME and how it impacts on business continuity. For that reason, financial institutions evaluate the impact of change management on the business. Three of the eight institutions indicated they assess the involvement of family members in the business, while four institutions stressed they evaluate the strength of the top management team in order to foresee how that whole structure can be affected by any potential change. This is how one participant looked at it; *"we are also interested in the impact of change management and how this is lessened by the involvement of close family members in the business, such as children to ensure continuity of the business when the owner retires or dies"* (Interview, P2).

Some participants indicated that other than family members' involvement, an overall assessment of levels of skills of workers, the presence of key man's insurance, and strength of the management team are important evaluation areas to gauge the prudence of a firm's management succession plan. Therefore, given the desire to establish that funded firms are guaranteed of continuity, a succession plan becomes an important tool to influence decisions in lending to SMMEs. This is pivotal, given that SMMEs are vulnerable to management change owing to their traditional one man or one family ownership structure. What was also established in SMME lending is that the three people factors are not independent of each other. The three factors must all co-exist for funding to SMMEs to be approved. The people factors help financial institutions gauge whether or not there is potential for success from a management of the business point of view. Whenever the evaluation of one of the three factors is not convincing, funding to SMMEs under the circumstances is limited unless that omission is something that can be addressed through loan covenants. Policy interventions that aim at improving lending to

SMMEs must therefore also identify and address limitations related to people factors within the firm.

As far as people factors are concerned, literature is very clear in that experience, gender, background (Chimucheka and Rungani 2011; Gamage 2013; Makina et al. 2015) and entrepreneurial skills of owners of businesses (Chowdhury and Alam 2017; Erdogan 2018) are key elements affecting lending to SMMEs. However, factors such as personal financial history, personal financial discipline, work ethics, quality of owners' CVs, presence of key man's insurance and succession plans evaluations identified in this study do not necessarily feature in the literature on factors affecting lending to SMMEs. These are critical factors in the evaluation of the business given that small businesses' success is highly correlated to the character of owners owing to either individual's or family's close ties with the business.

5.2.2 Firm Specific Characteristics Influencing Lending To SMMEs

Five firm characteristics were identified to influence SMME lending decisions. The attributes are; the firm's sector, business location, age of the business, business compliance issues and market competitiveness of a business (Table 21).

a) Industry type effect on SMME lending

Three of the eight financial institutions indicated they assess the sector of the firm and thereafter the current trends in the sector of a borrower. They trace whether current trends in a sector either predict potential growth, which is associated with high returns or point to more challenges affecting returns negatively. This is particularly so because both potential growth and risks of firms are sector-specific and time bound, hence the need to review the trends regularly. Depending on the business of the SMME in terms of firm size and market breadth, the trends are reviewed either from a global, regional, national or provincial level. One participant held this view:

> *Ok, yes in terms of the firm itself, there are some sectors that we might probably not fund, and am not saying it is something which is a general thing, it is quite*

subjective. I will give you an example, where we might look at a sector and say this sector is actually quite risky, for instance if you look at the Leisure and Hotel Industry, that industry if you look at it, we can look at the occupants rate and number of people going on holiday at a point in time that becomes the risk in terms of paying off the facility. So, we might say we are not quite happy with that kind of stuff, but that does not mean we don't finance that kind of sectors but there are certain sectors which are quite risky at certain times (Interview, P3).

TABLE 21: FIRMS ATTRIBUTES AFFECTING SMME LENDING

Themes nodes	Sub-themes	Themes
Sector of the business of the applicant What is currently happening in the sector? Current challenges in the sector Current levels of returns and potential in the sector Level of technology used requirements in the sector Technology needs of the business	Sector activities Technology levels	Industry effects
Catchment area of location of the business Business ease of access Costs of access compared to rivals' locations	Business access Access costs	Business locational effects
Length of period business has been in operation The current lifecycle stage of the business Cash flow potential at each lifecycle stage Demands of business needs at the particular stage	Length of business Life cycle stage activities	Firm age effects
Proof of a current business license Proof of a current sector registered license Proof of a current district operation license Proof of a current market agreement Proof of a current lease agreement	Operation licenses Market agreements	Business compliance effects
Number of similar businesses in the area Number of different products sold by applicant Number of forward buyers' contracts Number of forward suppliers' contracts Product, price, place & distribution competitiveness	Competition Off-take & supply agreements 4 Ps competitiveness	Market competitiveness effects

The goal of sector analysis is to establish how the prevailing trends affect a firm's returns in future as returns are linked to repayment ability. If a firm's activities are highly correlated to a sector's trends, which provides a great opportunity for firms when sector trends predict growth and vice versa. For this reason, financial institutions place a lot of emphasis on trends in a firms' sector. In addition to sector's business trends, two other respondents mentioned that they also trace trends in technology needs of the sector and

compare them to what the firm has to gauge how competitive the firm is. They use that to ascertain whether a particular firm can survive or not in that sector, hence influencing the lending decision.

b) Business physical location's effect on SMME lending

There is a relationship between business access and business returns (Chimucheka and Rungani 2011; Makina et al. 2015), especially so for SMMEs where sales volumes matter. Lenders are interested in where a business is located and whether the physical location is well situated to provide a good business for the client. One participant had this to say;

> *This is a client whom we have financed several of his shops before. The client wanted to open another shop in Port Elizabeth and we said no to finance that. Do you know why? We went there and looked where he wanted to open the shop, and it was somewhere half way between the township and the city ……. and I said no, I don't think this business will survive here. To this day he still says thanks for saying no (*Interview, P4).

Two institutions indicated that they funded new start-ups for which there are no historical financial statements to rely on, and so physical location of a business becomes very important. It means future returns can only be predicted using cash flow projections based on prospects of the business itself. The cash flow projections must therefore clearly show how they are supported by the physical location of the business. Financial institutions must be able to assess the ease and cost of access by customers in comparison to locations of rival businesses using the physical location of the business.

c) Business age effects on SMME lending

The age of the business is an important factor to test business viability. The age of the business determines the lifecycle stage of a business and each business lifecycle stage has its own specific business potentials or challenges associated with it. Due to this reality, financial institutions align lending products with development of business to match

a firm's capacity to deal with the level and type of debt as it progresses along different lifecycle stages. One of the participants had this to say:

> *Certain businesses have a certain life cycle, and I am thinking about a crasher plant for blasting quarry and I have financed that business before. That machine that you buy has only a certain life cycle because it works hard crashing stones. It can only work for four years and there is nothing left. So, now a guy buys that machine and runs it for three years and then he puts the business in the market. Ok, now you come along and you want to buy that business and you need start-up finance. We know that machine has only a year to go and you have to replace it, but he is selling the business (to you) at full price. So, it is very important to know at what stage the life cycle of the equipment is in or what stage of the life cycle in generally the business is in, so we definitely look at all that, the life cycle of the business* (Interview, P4).

Five of the eight financial institutions agreed that it is important for financial institutions to understand the age of a business and its life cycle stage so that risks inherent to the age and life cycle of a business are properly identified. This also allows the packaging of a correct financing product for the client. What also emerged from further probing related to the above quotation is that, the client was eventually advised about the lifecycle of the equipment in question, the average market price for both a second hand and a new equipment and where such an equipment can be sourced as new. This also means that DFIs offer other non-financial support to clients in addition to funding.

Different types of financial institutions fund firms at different lifecycle stages. For instance, two thirds of commercial banks and two thirds of the microfinance institutions fund predominantly existing firms in growth and rehabilitation stages which they view as more stable and less risky. However, firms in the introduction and decline stages are viewed as risky and less likely to be funded by commercial banks while firms in maturity stage are regarded as naturally stable and often do not need bridging finance (Interviews P1, P2, P6 and P8). One commercial bank participant pointed out that, *"we fund only active*

businesses at least 6 months in operation and the business cycle stage of the firm defines whether we can support the business or not" (Interview, P1). All commercial banks that participated held that they fund only existing business, although their level of participation vary in different stages of business cycle.

Half of the DFIs revealed that in addition to funding existing businesses they also fund start-up businesses, firms in introduction stage as well as those in the decline stage, areas rarely funded by commercial banks. This analysis affirms that the age of a firm has a bearing in influencing both the funding of SMMEs decisions in the first place, and secondly, the types of financial institutions willing to fund the SMMEs at each business life cycle stage.

d) Business compliance effects on SMME lending

Financial institutions fund SMMEs that are legally compliant. All financial institutions indicated that they trace compliance in terms of the legal requirements for a business to legally operate in any jurisdiction verifiable through a general retail license. However, some financial institutions also require sector-specific legal requirements for certain firms that are required by law to meet minimum sector-specific standards. The sector-specific legal requirements include licenses such as the South African Petroleum Industry Association (SAPIA) license for firms in the petroleum and gas industries, liquor licenses for firms in alcohol retail businesses and safety and health license for food outlets and businesses in the accommodation and hospitality industry.

In addition to the general retail license, other participants require some businesses to provide market agreements for certain businesses such as franchise agreements indicating both the franchise quota and franchise zone area. Over and above these legal requirements, for SMMEs without own buildings to operate from, financial institutions also insists on lease agreements for rented premises. All these different forms of licenses must be valid and be regularly renewed throughout the lending tenor.

Financial institutions inquire about these compliance requirements and demand proof of license before any funding can be accorded to ensure firms are fully compliant. This is important for financial institutions to understand how far existing licenses restrict firms' operations and to verify that the current operations are in line with the stipulated license guidelines. As mandated in South Africa just like in many other jurisdictions, financial institutions are also required by law to fund only legal activities.

e) Market business competitiveness effects on SMME lending

Financial institutions evaluate how well placed the firm is in the market place in terms of its level of competitiveness. The financial institutions measure the uniqueness of the business philosophy of the client and the potential of the business being replicated by rival players (Interview, P1), which is a good indicator of the level of market share. Similarly, financial institutions assess the level of product diversity in the business, so that when one line of product is not doing well, the business still survives from other lines of products. Hence, businesses with a variety of products are better suited for SMME lending compared to those with limited product lines. For example, a restaurant that sells pies, variety of soft and juice drinks is viewed as better than the one that specialises on pies only.

Similarly, businesses with existing take-off agreements with customers, just like businesses with suppliers' contracts, are more credit worthy than those without. The idea is to evaluate how the business is positioned in the market. One of the participants stated that:

> *Ok, I have mentioned that we ask for debtors and creditors age analysis. Then we see, how many of your customers are on 30 days, 60 days or 90 days. Now during the due diligence process we randomly select two customers in 30 days, two in 60 days and two in 90 days and would phone them and say how has been your experience with this business? Do they supply the goods on time, do they deliver what they promised, and that is very important. If we can get adequate reports, then red lights can come up. We do the same thing with your suppliers, we select*

at least four people and phone them to find out how you pay your suppliers and that how we view the age analysis to understand how the business is seen in the market and if they have got a bad name in the market I am not going to finance them because I stand the risk of losing money (Interview, P4).

So, what comes out from the four financial institutions is that they review the whole market mix of the business, that is, the variety of products on offer, the price, the physical place and the distribution channels of the business in order to evaluate the competitiveness of the business compared to other players in the market.

Literature is also very robust about factors affecting lending to SMMEs. Firm size (Berger and Black 2011; Chowdhury and Alam 2017; Kung'u 2015), age and years of operation of the business (Haron et al. 2013), the sector and activities of the business (Cant et al. 2014; Erdogan 2018) and the location of the business (Gamage 2013; Makina et al. 2015) are important factors that help lenders decide when lending to small businesses. The contributions of this study notes that business compliance effects such as checking the availability of legal general licenses, specific sector licenses and lease agreements are not specifically identified in the literature as important factors, yet one of the most important factors when lending is to ascertain legality of the business of the applicant. Similarly, market competitiveness test of the applicant traced by the presence of market agreements such as off take and supply agreements are some of the important factors not often mentioned in the literature.

5.2.3 Financial information affecting lending to SMMEs

One factor that all financial institutions look at before lending is the financial position of the firm; either from a historical or expected future cash flows perspective. The study identifies four main ways that provide financial information of a firm. These are; cash flow potential, stability of future cash flows, cash flow risks and the firm's ability to mitigate cash flow risks (Table 22).

a) Cash flow potential assessment for SMME lending

In order to assess the future potential of a firm and hence its ability to pay future obligations. The financial institutions thus rely on financial statements. The financial statements must reflect the business is profitable and has surplus funds to pay off future obligations so, financial institutions assess the level of cash flows generated by a business and the reliability of the sources of cash flows. One participant emphasised the evaluation of reliability of sources of funds as follows:

> *We do incorporate those into the financials, for example the off-take agreements. For example, you might be a farmer supplying --------- (Name removed), so the off-take agreement would say when that farmer gets his produce, the produce will be directly supplied to --------- (Name removed) for so much, so that deal becomes even sweeter for us because we have a guarantee in terms of the income of the farmer* (Interview, P3).

TABLE 22: FINANCIAL INFORMATION INFLUENCING SMME LENDING

Themes nodes	Sub-themes	Themes
Current levels of business profits Ability of the business to repay loans Historical financials of the business Cash flow statements reconciliations Bank account activity reconciliations VAT returns and sales reconciliations	Business activity levels Business activity validation	Cash flow potential
Current capital structure of business Expenditures and income of business Debtors age analysis Creditors age analysis	Asset and capital structure Management accounts	Financial stability
Expected problems in cash flows Current levels of debt outstanding Assets and liabilities mismatch analysis Equity to debt exposure analysis	Risk identification Risk management	Credit risk identification
Firm activities adjustment to lessen risks Availability of security by applicant Ability to offer cash contribution by applicant Loan agreement terms to control firm activities Periodic bank visits	Firm based risk solutions Bank based risk solutions	Credit risk remedies

Financial statements need to be audited. However, that is not always the case with most SMMEs, which forces lenders to conduct their own verification processes of financial statements to ensure correctness of the financial information. Three financial institutions confirmed that they verify financial information through two methods. Firstly, verification is done by checking that the income and expenditures on the cash flow statements are in agreement with a firm's actual business transactions reflected on bank account activity. Secondly, financial institutions verify that cash flow statements are also in agreement with Value Added Tax (VAT) returns submitted to the South African Revenue Services (SARS). One participant summarised the turnover verification process by saying:

> *Ok, if it is an existing business, I want the latest audited financial statements, Ok. There are also a host of things that we ask for, I also want the latest management accounts, because now we are half year through the year, as at February the business can be making money but not so throughout the year, so we also need latest management accounts. Right, I always ask for VAT returns, because how do you verify turnover, we verify turnover by VAT returns. I want copies of the bank statement to make sure that the money that comes through the bank is the same as the information on the financial statements* (Interview, P4).

Financial institutions are interested in assessing the ability of the firm to pay loans by assessing cash flow potential from financial statements. They also validate the authenticity of financial statements information through those two internal verification processes.

b) *Financial stability and cash flow risks affecting SMME lending*

While the first financial statements evaluation conducted above is enough to ascertain the ability of the firm to pay back loans, financial institutions need to ascertain that expected future cash flows are stable over time. It is important to understand how the current capital structure guarantees continuity of the business, and how that structure impacts on cash flows of the firm. In terms of the capital structure, financial institutions

insist firms have favourable gearing ratios before seeking more debt. Hence, the level of equity financing compared to debt financing reflects commitment of the firm's owners in the business as well as the ability of the firm to absorb additional debt. Financial institutions worry over levels of gearing of firms. How much debt already exists and how additional debt affects future cash flow streams of a firm, are some of the things that need to be addressed by evaluating capital structure.

Financial institutions want to know the debtors and creditors of the business and terms they have with the firm. That is, main sources and uses of funds of the firm. A comprehensive business plan with a detailed debtors' and creditors' age analysis showing the amounts and directions of movements of business funds must therefore be presented. In addition, the firms' management accounts must show the itemised expenditures and incomes on a regular basis. One of the participants defined management accounts and its role as:

> *Management accounts, these are financial documents used to manage a business by reflecting on business activities on a daily, weekly or on a monthly basis. That information you find on the management account eventually comes on the end of year financial statements. So, it shows the regular monitoring of the business itself. So, that is one part of the things that we look at before we do business with a client* (Interview, P3).

The creditors' and debtors' analyses are very important in establishing the stability of a firm to manage cash flows over time and hence reduce the likelihood of default in SMME lending. Through management accounts analysis, verification of expenditures and incomes of the businesses enable financial institutions to identify threats of cash flow fluctuations and thus identifying cash flow risks. Financial institutions assess the likelihood of liquidity risks associated with expenditure and income flows, hence the emphasis on age analysis of debtors and creditors as well as the terms firms have with their main debtors and creditors.

c) Cash flow risks remedies influencing SMME lending

Potential cash flow and cash stability analysis processes stated above allow lenders to identify firms' liquidity risks motivating actions that must be taken by lenders to control those risks. Financial institutions may ask firms to perform certain activities to monitor their cash flows regularly such as submitting management accounts to lenders on a monthly basis. Three lenders confirmed that they can ask firms to have off take agreements with major customers and then have direct agreements with those major clients instructing them to pay directly to the lenders. Two lenders agree that they can impose some adjustment on some of the firms' activities through loan agreement terms, such as in some cases where SMME lending may be ring fenced with some form of physical security or owners' cash contributions. The other participant concluded by stating that, *"identified risks must be capable of being mitigated, if not, loans cannot be granted. Risks can be mitigated by adjusting the firm's activities or loan agreement terms"* (Interview, 1).

Literature is very clear in that a financial evaluation of a firm is very critical when making decisions on lending to small businesses (Berger et al. 2009; Chimucheka and Rungani 2011; Chowdhury and Alam 2017; Erdogan 2018). However, literature only goes as far as stating the need for cash flow and assets evaluations without necessarily stating what lenders look for during that process. The study finds that lenders conduct financial evaluation to deal with four credit risk problems. These include the need to ascertain cash potential of the business, to track financial stability of the business over time, to identify credit risks peculiar to the loan applicant and to assess the possibility of adopting some of the credit risk remedies in order to redress the identified potential credit risks. While literature merely states that lenders do financial assessment of firms, this study concludes that lenders actually undertake specific tasks during the financial evaluation process guided by some approved threshold of outcomes to influence their lending decisions.

5.3 LENDING TECHNOLOGIES USED TO FUND SMMEs IN SOUTH AFRICA

Similar to the factors influencing SMME lending in the previous section, interviews of senior officials of financial institutions are used to gather data about lending technologies

used to fund SMMEs. Different forms of lending technologies are used to fund SMME (Berger and Black 2011; Berger and Udell 2006) and the succeeding sections present which lending technologies apply in South Africa and how they are implemented. Four types of lending technologies are identified as mainly used to fund SMMEs in the Eastern Cape Province. These are financial statements lending, asset-based lending, venture capital lending and asset finance lending.

5.3.1 Financial Statements Lending Technology

Interview transcriptions indicate that all financial institutions look at the financial matters of a potential SMME borrower, especially for on-going businesses. To arrive at the financial statement lending decision, they ask for financial statements of the business. In particular, they want to understand the extent to which the business is able to pay back the loan. Therefore, ability to pay and affordability of the loan are the basis of lending from a financial statements loan appraisal (Table 23).

TABLE 23: FINANCIAL STATEMENT LENDING TECHNOLOGY

Themes nodes	Sub-themes	Themes
Ability to pay based on sound financials	Business viability	Financial statement lending technology
Current levels of indebtedness	Business activity levels	
Strength of the business in the market.	Authenticity of figures	
Cash flows of the business		
Profits of the business		
Independent verification of financial figures		
Methods of management of cash flows		

Financial statement lending technology is used when financial institutions base their lending decisions on financial information obtained from financial statements (Berger and Udell 2006). Financial institutions assess the ability of the firm to pay based on profits and sustainability of cash flows of the business. Hence they want to see profits and loss account statements, balance sheets and management accounts (Interviews, P1, P2, P3, and P4). One participant emphasised this point by saying, *"the most fundamental aspect the bank looks at before deciding to lend or not is the business ability to repay. Lending is not primarily based on 'collateral' but rather on 'affordability'"* (Interview, P1).

Financial institutions want to know exactly how much cash flow is generated by the business and how the streams of cash flows are coming in and going out of the business. These movements of funds must be verifiable through income statements and management accounts of the business as well as tallying with the daily bank account transactions. In addition, financial institutions also want to ascertain that figures presented in statements are authentic, make business sense and do not in any way suggest just some plugging in of numbers to satisfy the requirements for submission of financial statements. To that effect, income and expenditure amounts with many rounded off figures must be treated with caution and therefore require further cross checking against the actual source documents. One respondent has this to say, "*If you look at expenses, all expense figures end with zeros; telephone account 3 200 rands, transport 5 200 rands, electricity 4 000 rands, that is impossible and I question the accountant",* (Interview, P4).

When assessing profitability of the business, financial institutions are not only interested in businesses that are profitable from the financial statements presented. They also compare profitability levels and whether they are in line with sector or location profitability trends. Abnormally high levels of profits compared to peers may suggest inflated cash flow levels while very low levels of profits may suggest inherent internal management problems. Therefore, when making financial statement lending technology decisions to SMMEs, financial institutions probe beyond the value of financial information by taking into account other behavioural characteristics of the owners that directly or indirectly affect cash flows of the business as well.

5.3.2 Asset Based Lending Technology for Funding SMME

Asset based lending technology is used when financial institutions demand some form of security to buttress a lending contract (Berger and Black 2011), without which lending cannot go ahead even though the financial position is sound. This practice is also common amongst financial institutions financing SMMEs in South Africa, albeit with different security needs for different types of financial institutions (Table 24).

TABLE 24: ASSET BASED LENDING TECHNOLOGY

Themes nodes	Sub-themes	Themes
Asset value and quality inspection certificate	Status of security asset	Asset based lending technology
Asset tradable in the secondary market	Fixed asset securities	
Fixed property First bond	Current asset securities	
Fixed property second bond		
General special material bond		
Insurance policy surrender value cession		
Fixed investment surrender value cession		
Stock Exchange Shares cession		
Off-take agreements cessions		
Qualifies for BEE Guarantee fund		
Cash inflow cessions		

Financial institutions demand security when borrowers are in certain circumstance, that is, when the amount required is large or stability of the cash flow cannot be guaranteed. In asset based lending, lenders want to establish three attributes about the security. First is that the background of the security must be known. This means that its value and quality must be ascertained through a qualified engineer's inspection certificate, in the case of fixed assets, to ascertain whether it is a fixed asset or current asset and if a secondary market exists for the assigned asset. With respect to short-term loans, financial institutions can accept liquid assets such as cash contributions, cash flow cessions, off take agreement cessions, insurance policy surrender value cessions, fixed investment surrender value cessions and even the Johannesburg Stock Exchange Shares cessions. However, for medium to long-term loans, financial institutions require physical assets that are stable in value such as equipment, first bond on fixed property, second bond on fixed property, general special material bond and the Black Economic Empowerment (BEE) guarantee bond. The BEE guarantee bond was explained by a participant as:

> *For instance, if a client comes, we check his income statements, balance sheet and so forth and he wants to buy a building, which is commercial asset financing. Then we say fine, we say to him, you do not have any security to give us, we take that application through the process, but it gets declined because there is no sufficient security. We then take that decline letter to another division called the Enterprise Development Fund where we give guarantee, especially to Black people, what we call the disadvantaged people, you must be a South African and*

you must be Black in terms of BEE, we are talking of Chinese, Indians, coloureds and Black Africans who were South African citizens before 1994. So, those qualify for what we call Enterprise Development Fund, which is a guarantee that is going to be given to say, --------- (name of bank removed), you can fund this entity but we are going to guarantee 80% of funding. So, we can then go ahead to fund the client's *building purchase price on the strength of that BEE bond* (Interview, P3).

While all these types of assets are used to reinforce lending agreements, their usage vary by the types of financial institutions in South Africa, a finding also echoed in the literature (Uchida et al. 2006). In particular, all commercial banks accept only cash cessions, debtor cessions, fixed assets first bonds, insurance policy surrender value cessions, value of JSE Share cessions and BEE Guarantee bonds in varying levels to secure lending. However, all development financial institutions (DFIs) concede that in addition to the securities accepted by commercial banks (Interview, P4) at times they also accept second bonds on fixed property and general special material bonds. On the other hand, microfinance institutions accept physical assets than liquid assets as security.

A second bond on fixed property used by DFIs entails bonding the same property already bonded by a commercial bank in the first loan. The DFI then issues a second loan to the same SMME firm provided the second loan is fully secured by the difference between outstanding balance of the first loan and the property's true value. DFIs are willing to use a second bond on fixed property provided the bank agrees the DFI registers the second bond behind the first bond already issued by the bank. Similarly, DFIs in South Africa are willing to use a general special material bond, which is a bond on special equipment used by the SMME in its business such as fittings and racks for a supermarket or cooking machinery for a restaurant, something that commercial banks do not do. This approach offers SMME another dimension of asset based lending.

While commercial banks are keen on current assets cessions such as cash flow cessions, all DFIs confirmed they are not interested in these forms of securities. DFIs understand most SMMEs already run bank overdrafts with commercial banks primarily secured by

current assets, and therefore accepting current asset cessions for lending exposes DFIs as commercial banks already hold first claims on the same current assets. As a result, commercial banks access cash inflows from SMMEs to cover bank overdrafts balances first before DFIs meaning that, DFIs are more willing to accept fixed assets and equipment cessions than current assets cessions compared to commercial banks.

Asset lending technology can also be influenced by national regulations and policies (Jarboe and Ellis 2010; Skadden 2014). In this study, the BEE policy facilitates asset based lending to SMMEs in South Africa. The Black-owned South African businesses whose business loans are declined by financial institutions on the basis of lack of security, qualify for the BEE guarantee bonds. The BEE guarantee bonds obtained from an eligible BEE guaranteeing financial institution automatically guarantee the loan, thereby standing as a security for the asset based lending of the SMME firm and thus supporting SMME loan transmission in South Africa.

Two thirds of commercial banks and three quarters of microfinance institutions concurred that SMMEs whose applications do not meet the standard security requirements are turned down and subsequently the client is automatically turned away. However, all the development financial institutions, both government-owned and private-owned admitted that while security is a standard requirement, often the client is usually accommodated in some way; such as opting for a venture capital arrangement or at least referred to another institutions that specifically deals with that particular sector of the client. Thus, unlike commercial banks and microfinance institutions, development financial institutions have a wider choice of options for funding SMMEs and also play referral roles in addition to funding.

5.3.3 Venture Capital Lending Technology

Another form of financing used to fund SMMEs is venture capital financing (Gompers and Lerner 2001). Venture capital financing institutions become part shareholders of the firm and receive a return on capital invested in the firm based on the profits of the business (Table 25).

TABLE 25: VENTURE CAPITAL LENDING TECHNOLOGY

Themes nodes	Sub-themes	Themes
Lender is part-shareholder in business Equity return on unsecured value is arranged on the whole unsecured loan Part ordinary loan backed by security and part unsecured loan lender is part-shareholder	VC structure VC loan types	Venture capital lending technology

Neither all SMMEs in need of funding in South Africa have adequate security, nor do qualify for the BEE guarantee. Thus, financial institutions use venture capital lending to fund potential SMMEs without any form of security. In the case of South Africa, fifty percent of DFIs confirmed they still offer loans to SMMEs that neither qualify for the BEE Guarantee Fund nor have full security.

In a case where a client does not have full security for the loan required, instead of turning the client down the DFI arranges for a normal secured loan structure to finance a portion that is fully secured and then arranges for a venture capital structure for part of financing not secured. For the unsecured part, the DFI acts like a shareholder who had injected capital into the business and is paid an agreed rate of return on turnover with respect to capital invested in the business until the loan is paid. However, this arrangement only works for businesses that are already in operation. One participant explained how they arrange a split venture capital lending as follows:

> *If you want 1 million rand business finance loan, a commercial bank wants 1 million rand collateral upfront. If you come to me asking for 1 million rand loan, I may take maybe 700 000 rand collateral that is available. I am prepared to take a risk for the other 300 000 rands, but you have to pay me for it. So, I will do a loan for prime+2% for 5 years for the secured portion and the unsecured portion of 300 000 rand I will charge you a rate of return on turnover* (Interview, P5).

In light of the fact that SMMEs are of different size and age, venture capital lending is arranged as either a stand-alone venture capital financing structure or a complementary structure to support an ordinary secured loan. One third of government financial

institutions concurred they funded start-up businesses where there were no collateral at all, and the whole loan was arranged as a full venture capital structure. Participants concurred that fundamentals underpinning a venture capital lending structure are that the business proposal of the client must be viable – hence all the three factors influencing lending have to be evaluated, that is, people factors, firm characteristics and financial information.

5.3.4 Asset Finance Lending Technology

Asset financing lending technology is another form of lending technology used to fund SMMEs in South Africa. Asset financing takes three forms, which include hire purchase and leasing agreements, and commercial assets financing. All commercial banks and one third of development financial institutions agree that they fund only commercial movable assets and equipment that are capable of being serially itemised, making this type of lending technology a common practice to both commercial banks and DFIs in South Africa. The assets financed include mainly motor vehicles and other specialised business equipment. Table 26 shows how asset finance lending technology is used by financial institutions to trigger on lending to SMMEs in South Africa.

TABLE 26: ASSET FINANCE LENDING TECHNOLOGY

Themes nodes	Sub-themes	Themes
Specialist equipment report for asset	Equipment status	Asset finance lending technology
Resell value of asset be established	Lending agreements	
Existence of secondary market for the asset	Asset management	
Establish hire purchase finance terms		
Establish lease finance terms		
Agreement on assets' maintenance		
Consumables supply		
Insurance		

When using any form of asset finance lending technology, financial institutions want to establish that the asset or equipment financed is technically sound, if new. If it is a second hand equipment, they require that it still has an adequate matching life span with both the cash flow projections of the business and horizon of the loan sought. As a result, financial institutions demand for the specialist equipment report to ensure that these conditions are

satisfied. In addition, the equipment specialist report must guide financial institutions as to whether the equipment has a secondary local market and its secondary market value is viable. If the above two conditions are not satisfied, asset financing cannot be supported.

Asset financing through a lease financing takes two forms; financing lease where a financial institution finances the equipment and hands it over to the firm and management lease where a financial institution finances the equipment and also manages the portfolio of assets by carrying out maintenance, insurance and accessories supply for the equipment whilst being used by the client.

5.4 CHAPTER SUMMARY

In addition to the emphasis from the literature that experience, gender, background and entrepreneurial skills of owners of businesses affect lending to SMMEs, the study finds that factors such as personal financial history of owner of business, personal financial discipline, work ethics, quality of owners' CVs, presence of key man's insurance and succession plans evaluations affect lending to SMMEs as well. These factors are critically important given that small businesses' success cannot be separated from the character of owners owing to either individual's or family's close ties with the business.

Firm size, age and years of operation of the business, the sector or activities of the business and the location of the business are traditional factors that help lenders decide when lending to small businesses. This study notes that business compliance effects such as checking validity of general operating licenses, specific sector licenses and lease agreements are additional requirements that ascertain the legality of the business of applicant. Similarly, market competitiveness reinforced by market agreements such as off take and supply agreements are some of the important factors not often mentioned in the literature. Even though financial evaluation of firms is well documented in the literature, the objective of this exercise is often left unexplained.

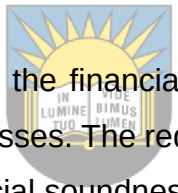
The study also finds that lenders conduct financial evaluation to deal with four critical credit risk exposures. These include the need to ascertain cash potential of the business, to track financial stability of the business over time, to identify credit risks peculiar to the loan applicant and to assess the possibility of adopting some of the credit risk remedies in order to redress the identified potential credit risks. While literature merely states that lenders do financial assessment of firms, this study concludes that lenders actually undertake specific tasks during the financial evaluation process in order to come up with values which they check against specific standard threshold limits to influence their lending decisions.

It is important to know the exact factors considered by financial institution when lending to SMMEs in order to influence policy changes that address factor gaps. In this study, three main factors are identified as the main drivers of financing requirements for SMMEs by financial institutions in South Africa. These are; people, firm specific and financial factors.

Financial institutions track particular people factors of people managing or owning SMMEs. Firstly, they look at management traits, that is, their personalities and the impact of that on business. They are expected to have the right background, adequate education and the right experience in relation to business needs. They also want to verify management competences. The owner or manager must have the capacity to manage other people, the business itself and have a good understanding of management of funds of the business. Since SMMEs are owned by individuals, families or few partners, there must also be a clear management succession plan going forward, therefore, the presence of other family members or a strong top management team ensures that continuity.

Financial institutions are also wary of the firm itself. In particular, the sector the firm is in and sector trends are important. Each firm's performance often mimic its sector's trends, and hence institutions must establish whether current trends predict potential sector growth or not. The physical location of a business also matters. It directly influences the market catchment area of the business in terms of the ease of access and cost of access

compared to other similar businesses. This affects the cash flows of the business. Financial institutions are also concerned about the age of the business; which also determines the life cycle stage of the business. The business life cycle stage determines both opportunities and challenges inherent to each stage. It is therefore an important factor for financial institutions to decide on whether the businesses can be funded and the form of funding that is in tandem with stage needs. Financial institutions are also concerned about the legality of business activities. They check that businesses have the prerequisite licenses, both for general business operation rights and sector-specific compliance requirements. Finally, financial institutions assess the competitiveness of the business, that is, the main suppliers they have and supply agreements with them, the main customers they have and the off-take agreements with them. All these firm characteristics are important to evaluate whether the business is viable or not from the firm's operational stand point.



Lastly, financial institutions look at the financials of the business. This is an important precondition for all on-going businesses. The requirement is that a business must have a sound financial position. The financial soundness of the business is assessed using four measures. Firstly, a business must have good cash flow potential guaranteeing profits and thus ensuring affordability of loans. Secondly, identified cash flows must be stable over time, and hence an evaluation of debtors' and creditors' age analysis as well as the existing supply and off-take agreements is done. Financial risks associated with potential cash flows or stability of cash flows must be identified and mitigated either though proposed adjustments of a firm's activities or bank monitoring loan agreement terms.

Given the factors financial institutions take into account to lend to SMME, four types of lending technologies are used to fund SMMEs in South Africa. Literature affirms that national laws (Jarboe and Ellis 2010) and types of financial institutions (Berger and Black 2011) influence what lending technologies are permissible and ease to be implemented by market players. In the case of South Africa, financial statements lending, asset-based lending, venture capital lending and asset finance lending technologies are used to fund formerly registered SMMEs by different types of financial institutions including commercial

banks, government-owned development financial institutions, private-owned development financial institutions and microfinance institutions. However, the use vary by types of financial institutions, noticeably the difference between types of assets used by commercial banks and developmental financial institutions in asset-based lending. Similarly, dominance of financial statements lending usage by commercial banks and also a dominance of venture capital lending by development financial institutions are highly evident. On the national policy front, the influence of the BEE Guarantee Fund also shapes the extent of asset-based lending technology on black South African owned businesses who largely do not have security to support loan financing from financial institutions and historically, these classes of SMMEs did not have access to lending at all.

What can be drawn from the factors that influence the choice of lending technologies in South Africa is to interrogate options that firms have, given the constraints posed by the behaviour of financial institutions. The first constraint that firms face is that the factors influencing lending; people factors, firm attributes and financial conditions of a firm, are not independent of one another. They must all co-exist in a lending arrangement. Absence of any one of them requires that an identified remedy which is either firm-based or bank-based be set as conditional to a loan agreement. This depends solely on the willingness of financial instructions to assess risk exposures and then apply the necessary remedy recommendations from their credit departments.

Another constraint that SMMEs face in South Africa is that funding may be restrained due to different use of lending technologies by different financial institutions. Commercial banks and microfinance institutions primarily fund businesses using financial statement lending technology in unsecured small-loans lending. For all large loans, these institutions require full security. However, DFIs; be they government-owned or private-owned, sometimes offer lending without security or with partial security via capital venture lending, something that commercial banks and microfinance institutions rarely do. For the above reason, DFIs are able to offer loans to even start-up businesses that do not have any security at all.

The third constraint that SMMEs face regards the different options offered by financial institutions for security. Commercial banks and microfinance institutions insist only on primary securities such as cash cessions and fixed asset first bond in which they have the right to first claim. On the other hand, DFIs accept secondary securities such as fixed asset second bond or general special material bond. This then place DFIs as more accommodative in developing SMMEs than commercial banks and microfinance institutions whose transactions are purely commercial.

The constraint that is faced by SMMEs is the variation in options offered by financial institutions when funding is declined. Often, when the small business does not have adequate security, commercial banks and microfinance institutions turn down the application and the client is also turned away automatically. DFIs provide other non-funding services as well such as referral and coaching rather than just turning down the applicant's request.

CHAPTER 6: CREDIT RATIONING AND GROWTH OF SMMEs

6.1 INTRODUCTION

Financial institutions and firm characteristics influence credit rationing and growth of SMMEs. Financial institution characteristics affecting credit rationing of firms are types of financial institutions and types of lending technologies used to fund firms, while firm characteristics are firm size, ownership structure of the firm and race of the owners of the business. These lender and firm characteristics affecting credit rationing of firms might also affect the growth of firms based on the inherent level of credit rationing firms face as a result of those characteristics.

Credit rationing was measured at two levels using logistic regression. This was done as a dichotomous variable, in which the firm can be rationed or not and alternately as a categorical variable, based on the three forms of credit rationing namely, outright credit rejection, quantity and price rationing. In both cases, the main and interaction effects of lender and firm characteristics were analysed.

Growth of firms was measured using the financial efficiency score deduced using Data Enveloping Analysis (DEA) and growth might be influenced by the same lender and firm characteristics that affect credit rationing. A lending technology used to arrive at a lending decision by a financial institution was paired with each of the lender and firm characteristics, one at a time, to determine the effect on growth. The main and interaction effects of lender and firm characteristics on firm growth were analysed using a two-way factorial analysis. Assumptions of the models were tested in both logistic regression and factorial analyses.

The first sections of the analysis provide descriptive statistics in order to explore data patterns and assess the extent to which these descriptions mirror theoretical expectations. Section 6.2 covers descriptive statistics on nature and scope of the sampled SMMEs, while the patterns of credit rationing and growth of SMMEs' distributions follow

in Sections 6.3 and 6.4 respectively. Sections 6.5 and 6.8 present results on the effects of lender and firm characteristics on credit rationing and growth of firms respectively while section 6.7 presents the proposed funding framework for SMMEs in South Africa. Section 6.8 concludes the chapter with a discussion of results.

6.2 DESCRIPTIVE STATISTICS ON THE SCOPE AND NATURE OF SMMEs

The sample consists of 322 SMMEs selected from the databases of the Border Kei Chamber of Business and Nelson Mandela Bay Business Chamber membership lists. The lists categorize firms into different sectors in both Buffalo City and Nelson Mandela Bay metropolitans. A detailed description of the nature and scope of the sampled SMMEs in terms of the main firm activity characteristics is shown in Table 27. This data set consists of formal and registered SMMEs only and cross-sectional data from these firms for the year 2016 was collected between 28 July 2017 and 30 September 2017.

TABLE 27: DESCRIPTIVE STATISTICS OF SAMPLED SMMEs

SMME attributes	N	Min	Max	Mean	Std. Deviation
Age of firm in years	321	1	57	9.8	8.08
Experience of owner in years	321	2	53	14.8	10.12
Number of employees of SMME	321	2	192	25	37
Total annual sales of SMME	301	76 820	56 077 140	3 118 633	8 233 790
Total value of assets of SMME	287	5 300	49 041 860	1 442 145	4 745 277
Amount of loans to SMME	190	10 000	5 650 000	315 337	708 485
Total annual capital investment	253	2 700	6 491 350	225 685	653 406
Total value of capital investment	233	1 000	9 000 000	370 332	995 243
Creditors days offered to SMME	321	0	90	19	19
Debtors days offered by SMME	319	0	90	17	21
Length of bank relationship in years	316	1	53	7.99	7.17
Bank staff visits per year	123	1	4	1.78	1.43

All monetary values are in the South African Rand

From the total 322 sampled SMMEs, one firm was dropped because its annual sales fell outside the 65 million rand limit specified under the National Small Business Act 29 of 2004 SMME classification, leaving a usable sample of 321. The SMMEs contacted were in operation for at least one year, with an upper bound of 57 years. Some firms were owned and managed by people whose experience stretches for over five decades.

Individual SMMEs in the study recorded maximum annual sales of R56 077 140 with capitalisation less than R50 000 000 rand and annual capital investments averaging R225 000.

Given the differences in age, length of relationships with banks and size of firms, some of the firms were visited by lenders at most four times a year, but those that were still new and very small were barely visited. Nonetheless, with around 40% of sampled SMMEs visited by financial institutions at least once a year, this indicates that lenders value this sector. Of the 321 sampled firms, 190 SMMEs accessed loans during the period under study ranging in amounts between R10 000 and slightly over R5 000 000. It was observed that not all firms depend on formal lender loans alone, some SMMEs also relied on trade credit as a form of financing as most of them have access to trade credit terms up to 90 days, therefore, both financial institutions financing and trade credit financing for SMMEs coexist in South Africa.

6.3 DESCRIPTIVE STATISTICS ON CREDIT RATIONING OF SMMEs

This section starts by giving an operational definition of credit rationing and how credit rationed firms were identified. Credit rationing is the dependent variable represented in two ways; as a dichotomous variable, which takes the value of 1 if the SMME has experienced credit rationing of any form and 0 otherwise or as a categorical variable taking the value of 1 if there was an outright rejection, 2 if there was quantity rationing and the value of 3 if there was price rationing by charging an interest rate higher than the going market interest rate.

The descriptive statistics are based on the first definition but for the full analysis of credit rationing of firms both definitions are used in order to get more insight of the phenomena. The SMME sample of the study is drawn from the different sectors and the descriptive statistics shows the level of credit rationing by sector (Table 28).

TABLE 28: SMME CREDIT RATIONING VARIATIONS

Sector of SMME firm	Not rationed	Rationed	Total
Agriculture, forestry and fishing	43%	57%	100%
Professional services and consulting	54%	46%	100%
Construction and engineering	67%	33%	100%
Manufacturing	65%	35%	100%
Retailing and wholesaling	50%	50%	100%
Service providers	44%	56%	100%
Information technology	63%	37%	100%
Motor industry	50%	50%	100%
Ethnicity of SMME owner			
Black	44%	56%	100%
White	59%	41%	100%
Indian	50%	50%	100%
Coloured	70%	30%	100%
Other	83%	17%	100%
SMME ownership structure type			
Sole trader-male owned	55%	45%	100%
Sole trader-female owned	48%	52%	100%
Family owned	70%	30%	100%
Partnership owned	38%	62%	100%
Size of SMME firm			
Micro firms	55%	45%	100%
Very small firms	38%	62%	100%
Small firms	53%	47%	100%
Medium firms	71%	29%	100%
Type of lending institutions to SMME			
Commercial bank	49%	51%	100%
Government-owned DFIs	59%	41%	100%
Private-owned DFIs	70%	30%	100%
Microfinance institution	79%	21%	100%
Type of lending technology used to fund SMME			
Financial statement lending technology	19%	81%	100%
Asset based lending technology	54%	46%	100%
Venture capital lending technology	79%	21%	100%
Asset finance lending technology	86%	14%	100%
No lending	100%		100%
Total	53%	47%	100%

At a glance, the descriptive statistics show that firms in agriculture, forestry, fishing, and service provision sectors are generally more credit rationed, while the motor industry and, retail and wholesaling businesses, are marginally credit rationed compared to the less credit rationed sectors like firms in business services, construction and manufacturing industries. While in general, firms are not credit rationed (53%) compared to firms that are credit rationed (47%), literature however indicates that about 40% of SMMEs are credit rationed (e.g. Hoque, Sultana, and Thalil 2016). On average, SMMEs credit

rationing in South Africa stands at 41.4% (Cant et al. 2014), which puts the national average credit rationing of SMMEs in fair comparison to other countries.

From this data, SMMEs in the Eastern Cape Province are slightly more credit rationed than the national average, a position affirmed in that firms in poor provinces are prone to more credit rationing than firms from affluent provinces (Makina et al 2015). There is however a variation on the level of credit rationing of firms in different sectors. These variations are not surprising because similar evidence on variation of credit access by sector are also documented in the literature (e.g. Nkuah, Tanyeh, and Kala 2013).

Credit rationing of SMME also varies by ethnic group of the owners (Table 28). Blacks in South Africa are more credit rationed while Indians are marginally credit rationed compared to the White and Coloured populations. The other nationalities that were not specifically classified are also less credit rationed compared to the Black-owned firms. Thus, overall blacks are more credit rationed.

The type of ownership structure of SMMEs results in variation of credit rationing of firms (Table 28). Sole trader-female-owned and partnership businesses are more credit rationed compared to sole trader-male owned and family-owned businesses. Family-owned businesses are least credit rationed while partnerships are the most affected. In general, individually-owned businesses are more credit rationed than multiple-owned businesses. Looking at the outcomes revealed in Table 28, it appears that, notwithstanding the efforts by the Government to correct economic inequalities amongst different population groups in South Africa through policies such as the Black Economic Empowerment (BEE) policy, inequality is still prevalent, particularly in the area of access to finance for small businesses.

Variation in credit rationing by size of the SMME firms also exists (Table 28). Small-sized firms are more credit rationed compared to large-sized SMME businesses. Although the change is not gradual, firms in the very-small firm category are most affected, followed by firms in the small firm and micro categories, while medium-sized firms are largely spared

from credit rationing. Even though this evidence is only descriptive, it is however consistent with the market power theory proposition that credit rationing varies inversely with firm size (Cowling and Westhead 2010).

The different types of financial institutions also exhibit some form of variation in credit rationing of SMMEs (Table 28). Commercial banks are by far the most offenders of credit rationing of SMMEs and this problem eases gradually as one moves down towards government-owned development financial institutions, private-owned development financial institutions to microfinance institutions. Again, this trend has been noted in the literature, particularly that access to finance of SMMEs varies by bank size (Bartoli et al. 2013; Berger and Black 2011; Degryse and Van Cayseele 2000) and bank ownership (Aysan et al. 2016; Viverita et al. 2015).

There are also observed variations of credit rationing of SMMEs by the type of lending technology used in funding a firm (Table 28). Whilst the financial statement lending technology is widely used by commercial banks, it is highly associated with more credit rationing (81%) compared to other types of lending technologies. Asset based lending technology marginally credit rationed SMMEs while venture capital lending technology and asset financing technology are the most accommodative methods of lending to SMMEs.

6.4 DESCRIPTIVE STATISTICS ON GROWTH OF SMMEs

The growth level achieved by firms was assessed in terms of the different lending technologies through which firms accessed funding. The proxy for growth of SMMEs was measured using the financial efficiency score based on the firm's financial inputs and outputs using Data Enveloping Analysis, and ranges from a minimum score of 0 for the least growth firm to 1 for the most growing firm.

The most growing firms were financed using asset-based lending followed by asset financing lending technology (Table 29). Venture capital lending was associated with moderate growth while financial statement lending technology resulted in least growth for

SMMEs. In the table, cross tabulations show how lending technologies impact on growth of firms given the type of financial institution.

While lending technologies used to finance SMME show a combined growth score of firms averaging 0.61, this total growth was a result of varying contributions by the different lender types. Using a combination of different lending technologies, commercial banks grow firms better, followed by microfinance institutions, with private-owned development financial institutions lying next to government-owned development financial institutions which had the lowest growth potential on firms.

TABLE 29: SMME GROWTH VARIATIONS BY LENDING TECHNOLOGY AND LENDER TYPE

Type of lending technology used to fund SMMEs	***Type of lending institutions to SMMEs***	***Mean Efficiency Score***	***Std. Deviation Score***
Financial statement lending technology	Commercial bank	.54	.33
	Government development financial institution	.59	.28
	Private development financial institution	1.0	.
	Microfinance institution	.35	.37
	Total	**.54**	**.33**
Asset based lending technology	Commercial bank	.72	.33
	Government development financial institution	.53	.30
	Private development financial institution	.67	.39
	Microfinance institution	.75	.30
	Total	**.71**	**.33**
Venture capital lending technology	Commercial bank	.72	.30
	Government development financial institution	.33	.15
	Private development financial institution	.58	.40
	Total	**.55**	**.33**
Asset financing lending technology	Commercial bank	.66	.36
	Government development financial institution	.57	.32
	Private development financial institution	.33	.58
	Microfinance institution	1.0	.
	Total	**.63**	**.37**
Total	Commercial bank	.63	.35
	Government development financial institution	.49	.29
	Private development financial institution	.57	.40
	Microfinance institution	.62	.38
	Total	.61	.35

Firms grow differently depending on different forms of lending technologies used but the effects vary given the size of the firm (Table 30). Across different types of lending technologies, firm size affects the growth of SMMEs. Whichever type of lending technology is used, the growth of firms declines as the size of the firm increases. Therefore, given any type of lending technology used, there exists an inverse relationship

between growth prospects of a firm and firm size. This suggests that there must be some interaction effect of the size of the firm on growth outcome of SMMEs given the types of lending technologies used by financial institutions.

TABLE 30: SMME GROWTH VARIATIONS BY LENDING TECHNOLOGY AND FIRM SIZE

Type of lending technology used to fund SMME	***Size of SMME firm***	***Mean Efficiency Score***	***Std. Deviation***
Financial statement lending technology	Micro firms	.54	.28
	Very small firms	.74	.30
	Small firms	.45	.31
	Medium firms	.34	.36
	Total	.54	.33
Asset based lending technology	Micro firms	.82	.27
	Very small firms	.66	.33
	Small firms	.65	.34
	Medium firms	.77	.32
	Total	.71	.33
Venture capital lending technology	Micro firms	.61	.26
	Very small firms	.88	.14
	Small firms	.59	.39
	Medium firms	.30	.14
	Total	.55	.33
Asset financing lending technology	Micro firms	.84	.25
	Very small firms	.67	.46
	Small firms	.59	.36
	Medium firms	.22	.07
	Total	.63	.37
Total	Micro firms	.67	.32
	Very small firms	.69	.34
	Small firms	.55	.35
	Medium firms	.48	.37
	Total	.61	.35

Table 31 presents a variation in growth likelihoods of SMMEs by the types of ownership of businesses given the type of lending technologies used. When firms are financed via financial statement lending and asset finance lending, sole trader-male and sole trader-female owned businesses experience less growth compared to partnership and family-owned businesses. However, when financed using asset based lending and venture capital lending technologies, individually-owned businesses grow better than multiple-owned businesses.

TABLE 31: SMME GROWTH VARIATIONS BY LENDING TECHNOLOGY AND OWNERSHIP STRUCTURE

Type of lending technology used to fund SMME	SMME owner type	Mean Efficiency Score	Std. Deviation
Financial statement lending technology	Sole trader-male owned	.53	.36
	Sole trader-female owned	.52	.30
	Family owned	.67	.26
	Partnership owned	.48	.36
	Total	.54	.33
Asset based lending technology	Sole trader-male owned	.74	.30
	Sole trader-female owned	.62	.32
	Family owned	.84	.29
	Partnership owned	.69	.38
	Total	.71	.33
Venture capital lending technology	Sole trader-male owned	.66	.31
	Sole trader-female owned	.58	.46
	Family owned	.44	.33
	Partnership owned	.37	.14
	Total	.55	.33
Asset financing lending technology	Sole trader-male owned	.57	.39
	Sole trader-female owned	.85	.22
	Family owned	.43	.36
	Partnership owned	1.0	.00
	Total	.63	.37
Total	Sole trader-male owned	.60	.36
	Sole trader-female owned	.62	.33
	Family owned	.66	.34
	Partnership owned	.56	.38
	Total	.61	.35

The growth of SMMEs caused by the different type of lending technologies used to fund the business might be influenced by the forms of ethnicity of the owners of the business (Table 32). Across different types of lending technologies, ethnicity of owners affects the growth of SMMEs in a particular sequence. Whichever type of lending technology is used, the growth of firms is highest for the Blacks, followed by Indians, then Whites while the least growing firms are the Coloured-owned businesses.

TABLE 32: SMME GROWTH VARIATIONS BY LENDING TECHNOLOGY AND RACE

Type of lending technology used to fund SMME	Ethnicity of SMME owner	Mean Efficiency Score	Std. Deviation
Financial statement lending technology	Black	.58	.32
	White	.52	.35
	Indian	.45	.20
	Coloureds	.12	.00
	Total	.54	.33
Asset based lending technology	Black	.78	.29
	White	.63	.34
	Indian	.69	.38
	Coloureds	.53	.39
	Total	.71	.33
Venture capital lending technology	Black	.53	.20
	White	.67	.41
	Coloureds	.10	.04
	Total	.55	.33
Asset financing lending technology	Black	.73	.36
	White	.55	.41
	Indian	.69	.27
	Coloureds	.49	.35
	Total	.63	.37
Total	Black	.67	.33
	White	.58	.37
	Indian	.59	.31
	Coloureds	.37	.33
	Total	.61	.35

The discussion above based on descriptive statistics indicates that the likelihoods of credit rationing and growth of firms are affected by a number of factors. These chance statistics support the view that there are real variations in both credit rationing and growth of SMMEs owing to firm characteristics (firm size, owner type, owner ethnic group, firm sector) and lender characteristics (lender type and type of lending technologies). The sections that follow assess the extent of these variations using logistic regression.

6.5 EFFECTS OF LENDING TECHNOLOGIES ON SMME CREDIT RATIONING

It has already been mentioned that the dependent variable, credit rationing is represented in two ways; as a dichotomous variable, which takes the value of 1 if the SMME has experienced credit rationing of any form and 0 otherwise, or as a categorical variable taking the value of 1 if there was an outright rejection, 2 if there was quantity rationing and the value of 3 if there was price rationing by charging an interest rate higher than the going market interest rate. The independent variables are the lender and firm characteristics that influence credit rationing of firms, that is to decide whether to lend or

not. The lender characteristics are types of lending technologies used to fund SMMEs and types of financial institutions lending to SMMEs. The firm characteristics are firm size, type of owner structure and race of owners of businesses. These independent variables were selected because they represent the realities of the South African SMME and lender structures and they were also identified as factors influencing small business lending in South Africa based on qualitative data in Chapter 5. Equation 6.1 therefore shows the binary representation while equation 6.2 shows the categorical representation.

$$y^1 = \alpha + \beta_1 X + \beta_2 Z + \varepsilon \quad 6.1$$

$$y^1 = \begin{cases} 1 \ if \ \ firm\ i\ was\ credit\ rationed\ . \\ 0 \ if \ \ firm\ i\ was\ not\ credit\ \ rationed \end{cases}$$

$$y^2 = \alpha + \beta_1 X + \beta_2 Z + \varepsilon \quad 6.2$$

$$y^2 = \begin{cases} 1 \ if \ \ firm\ i\ faced\ outright \quad credit\ \ rejection \\ 2 \ if \ \ firm\ i\ was\ quantity\ credit \quad rationed \\ 3 \ if \ \ firm\ i\ was\ price\ credit\ rationed \\ 0 \ if \ \ firm\ i\ was\ not\ credit\ rationed \end{cases}$$

$\boldsymbol{X}$ includes the lender characteristics including the type of lending institution and technology used to fund firm *i.*

$\boldsymbol{Z}$ are the vectors of control variables based on firm attributes including firm size, type of ownership structure and ethnicity group of owners associated with firm *i*.

$\boldsymbol{\varepsilon}$ = is the vector of heteroskedastic - robust standard errors.

Equations 6.1 and 6.2 are estimated using logistic regression. In addition to the variables discussed, the historical realities of South Africa have shown that race plays an important role in many economic activities of the country. Consequently, the impact of certain variables is likely to be magnified or minimised if it nests a given characteristic. Thus, the hypothesis for example that white-owned businesses has less likely to be credit rationed because they have a much longer history with the lending institutions than black-owned businesses. Similarly, ownership of small businesses have been dominated by males and less by females until recently. This therefore also leads to the hypothesis that sole trader-male-owned businesses are less likely to be credit rationed than sole trader-female owned businesses. To capture such effects, as results show, blacks or females are likely

to be credit rationed than other race groups or other owner types respectively, interaction variables are used to capture these effects as part of the analysis.

6.5.1 Test for model fit and logistics regression assumptions

Since logistic regression was used, the main assumptions must be tested first. These include, the Phi and the Cramer's V coefficients for multicollinearity and the goodness-of-fit test for the model formation.

In order to test multicollinearity of categorical independent, two methods were preferred. These are the Phi-coefficient and the Cramer's V coefficient. The Phi-coefficient is used when dealing with two independent variables with only two category levels whereas the Cramer's V coefficient can be used for two or more independent variables with two or more category levels. Therefore, the Cramer's V coefficient is used in this study since there are five independent variables with more than two category levels.

The value of Cramer's V coefficient ranges between 0 and 1, where 0 represents no association between independent variables and 1 represents high correlation. The test was repeated so that each independent variable is paired with each of the other independent variables. The results for the Cramer's V confidents are presented in Table 33.

In all the cases analysed, the values of the Cramer's V coefficient is less than 0.3 and significant, indicating that independent variables are not highly associated. The multicollinearity condition is therefore satisfied. The Chi-square tests are significant in all the cases, which is a requirement for the use of the Cramer's V coefficient that association between independent variables must be established first.

TABLE 33: MULTICOLLINEARITY OF INDEPENDENT VARIABLES TESTS

Ethnicity of SMME owner * SMME owner type		**Value**	**Approx. Sig.**
Nominal by Nominal	Phi	.285	.010
	Cramer's V	.165	.010
N of Valid Cases		321	
Ethnicity of SMME owner * Size of SMME firm			
Nominal by Nominal	Phi	.237	.116
	Cramer's V	.137	.116
N of Valid Cases		321	
Ethnicity of SMME owner * Type of lending institutions			
Nominal by Nominal	Phi	.224	.017
	Cramer's V	.129	.017
N of Valid Cases		321	
Ethnicity of SMME owner * Type of lending technology			
Nominal by Nominal	Phi	.332	.004
	Cramer's V	.166	.004
N of Valid Cases		321	
SMME owner type * Size of SMME firm			
Nominal by Nominal	Phi	.295	.001
	Cramer's V	.170	.001
N of Valid Cases		321	
SMME owner type * Type of lending institutions			
Nominal by Nominal	Phi	.141	.007
	Cramer's V	.081	.007
N of Valid Cases		321	
SMME owner type * Type of lending technology			
Nominal by Nominal	Phi	.227	.018
	Cramer's V	.131	.018
N of Valid Cases		321	
Size of SMME firm * Type of lending institutions			
Nominal by Nominal	Phi	.201	.014
	Cramer's V	.116	.014
N of Valid Cases		321	
Size of SMME firm * Type of lending technology			
Nominal by Nominal	Phi	.328	.001
	Cramer's V	.189	.001
N of Valid Cases		321	
Type of lending institutions * Type of lending technology		.	
Nominal by Nominal	Phi	.439	.000
	Cramer's V	.253	.000
N of Valid Cases		321	

To test the robustness of the model, four testing methods were used (Table 34). Firstly, the negative 2 Log Likelihood Test (-2LL), which measures the amount of the variations not explained by the model, dropped from model (1) to model (2) (301.395 to 269.230), and these values are all significant according to the corresponding three Omnibus Test

Chi - Square tests (x^2 (4, N=322) = 132.124, p<0.005), x^2(7, N=322) = 143.985, p<0.005 and x^2 (17, N=322) = 176.15, p<0.05). This means that model (2) fits the data better than model (1), and therefore model (2) was adopted.

Secondly, the Hosmer and Lemeshow goodness of fit test was used. The Hosmer and Lemeshow Test's null hypothesis is that the model fits the data well and this test is significant since the data fails to reject the null hypothesis in all three models, with p=1, p= 0.735, p= 0.380 respectively of the three models. Thirdly, the Nagelkerke R^2 is improving from 48.1% to 56.2% as one progresses from model (1) to model (2) and again, this puts model (2) as a superior model. The study also checked for the level of overall percentage classification accuracy of the model. The classification accuracy values improve from 72.3% to 79.5% as one moves from model (1) to model (2), again placing model (2) as a better accurately classified model compared to model (1). Given the outcome of the above four diagnostic tests, the final results for determining the extent of credit rationing that is manifested from both financial institutions' and SMMEs' characteristics are discussed based on model (2).

6.5.2 SMME Credit rationing results

The results showing the level of credit rationing of SMMEs based on the lender and SMME characteristics are presented in Tables 34 and 35.The estimation followed a stepwise process to allow for the addition of interaction variables in both of the procedures resulting in four different models. Models (1) and (3) are estimated without interaction variables (main effects) while models (2) and (4) are estimated with interaction variables (interaction effects). All the parameters' estimates presented are well specified, while estimations not statistically significant were dropped. Table 34 shows main and interaction effects of lending technologies, types of financial institutions, ethnicity of owners and size of firms on credit rationing levels of firms. It is important to test the effect of these variables because from the qualitative data attained via interviews with financial institutions, these are the issues that matter when institutions evaluate small businesses and therefore should have a bearing on financial access of small businesses.

TABLE 34: SMME AND LENDER STRUCTURAL EFFECTS ON CREDIT RATIONING OF SMMEs

	Model 1			Model 2		
Variables	**B**	**SE**	**OR**	**B**	**SE**	**OR**
Constant	1.73***	0.27	5.65	2.21***	0.45	9.16
Lending technologies						
Asset based lending	-1.71***	0.33	0.18	-2.05***	0.38	0.13
Venture capital lending	-2.83***	0.57	0.06	-2.90***	0.61	0.06
Asset finance lending	-3.50***	0.55	0.03	-3.83***	0.63	0.02
Financial statement lending (base)						
Types of lending institutions						
Government owned DFIs	-0.71*	0.44	0.49	-0.69*	0.48	0.49
Private owned DFIs	-0.02	0.61	0.92	-0.07	0.65	0.93
Microfinance institutions	-2.08***	0.73	0.98	-1.86*	0.77	0.96
(Base=Commercial banks)						
Ethnicity of SMME owner						
Whites	-0.89**	0.36	0.41	-0.84**	0.33	0.43
Indians	-0.73***	0.77	0.48	-0.63***	0.72	0.53
Coloureds	-0.38*	0.84	0.68	-0.42*	0.81	0.66
(base=Blacks)						
Owner structure of SMME						
Sole trader-female owned	0.59**	0.38	1.80	0.53*	0.40	1.69
Family owned	-1.26**	0.10	0.28	-1.05**	0.08	0.35
Partnership owned	0.81*	0.53	2.24	0.72*	0.46	2.05
(Base=Sole trader-male owned)						
Size of SMME						
Very small	0.97**	0.52	2.64	0.85*	0.48	2.33
Small	-0.18*	0.46	0.83	-0.24	0.41	0.79
Medium	-0.74**	0.58	0.48	-0.80*	0.51	0.45
(Base=Micro firm)						
Asset based lending*whites				-1.19***	0.40	0.91
Asset based lending*Indians				-1.54*	0.84	0.64
Venture capital lending*white				-1.80*	0.96	0.23
Asset financing*Whites				-3.20***	1.12	0.11
Asset finance*Coloureds				-1.20*	1.13	0.41
Asset based*very small firm				-0.85*	0.49	1.28
Asset based*medium firm				-1.10***	0.39	1.00
Venture capital*medium				-1.84***	0.69	0.22
Asset finance*very small				-1.73**	0.70	0.54
Asset finance*Small firm				-1.66*	0.86	0.57
-2LL test	301.395			269.230		
Omnibus Test	x^2=143.985, df=7, p<0.005			x^2=176.15, df=17, p<0.05		
Nagelkerke R^2	48.1%			56.2%		
Hosmer & Lemeshow goodness of fit	P=0.735			P=0.380		
Classification accuracy	72.3%			79.5%		

*** (**) [***] = Significant at 10% (5%) and [1%], Total N=321**

In order to get more insight regarding the credit rationing estimates, models (3) and (4) show credit rationing at three levels (Table 35). Given that credit rationing is measured in two ways, it is also important to understand how credit rationing of firms vary by different forms of credit rationing and the drivers of the observed variation.

TABLE 35: SMME STRUCTURE EFFECTS ON TYPE OF CREDIT RATIONING

MODEL 3	**Direct denial**	**Quantity rationed**	**Price rationed**
Variables	**OR (B)**	**OR (B)**	**OR (B)**
Constant	(-1.75)***	(-0.90)*	(-2.27)***
Owner structure of SMME			
Sole trader-male owned	0.38	0.36	0.95
	(-0.96)**	(-1.02)**	(-0.05)*
Sole trader-female owned	0.38	0.43	0.73
	(-0.96)**	(-0.84)*	(-0.32)
Family-owned	0.15	0.16	0.14
	(-1.87)***	(-1.83)***	(-1.97)*
Partnership-owned (base)			
Size of SMME			
Micro	3.45	2.10	2.11
	(1.70)**	(0.74)	(0.75)
Very small	2.72	3.61	2.79
	(2.76)***	(1.28)**	(1.02)*
Small	2.14	1.18	4.01
	(1.82)***	(0.17)*	(1.29)*
Medium (Base)			
MODEL 4	**Direct denial**	**Quantity rationed**	**Price rationed**
Sole trader male-owned*Very small	4.09	1.21	1.62
	(0.21)**	(0.19)	(0.48)*
Sole trader-male owned*Small	3.35	0.44	0.39
	(1.47)*	(-0.83)*	(-0.95)*
Sole trader-female owned*Micro	3.00	0.69	0.51
	(2.64)*	(-0.37)	(-0.67)***
Sole trader-female-owned*Very small	3.58	1.18	0.97
	(1.52)**	(0.16)**	(-0.28)*
Family-owned*Micro	2.22	0.37	0.81
	(0.79)*	(-0.99)*	(-0.20)
Family-owned*Small	2.31	1.97	1.51
	(0.84)**	(0.68)**	(0.41)*
Family-owned*Medium	1.84	1.66	2.97
	(0.61)*	(0.51)	(1.09)**
Partnership-owned*Micro	3.36	3.67	2.61
	(1.68)*	(1.90)*	(0.98)**
Partnership*Very small	2.94	3.67	2.92
	(1.38)***	(1.90)*	(1.07)*
Partnership-owned*Small	1.14	2.89	3.03
	(2.44)*	(1.36)*	(1.11)**
-2LL test	152.103		
Omnibus Test	x^2=43.729, df=18, p<0.05		
Nagelkerke R^2	14%		
Likelihood ratios test	P= < 0.05		
Classification accuracy	57%		

Base category= Not credit rationed **** (**) [***] = Significant at 10% (5%) and [1%]***

In Table 35, credit rationing at three levels is influenced by the type of ownership and firm size interactions, the only significant paired independent variables in this case. The odds ratios are shown against each independent variable at each of the three levels and the corresponding beta coefficients are presented in parenthesis.

6.5.2.1 Effect of Lender Structures on Credit Rationing of SMMEs

With reference to the types of lending technologies used, financial statements lending is the reference category, with a base odds ratio of one (Table 34). The odds ratio for each of the other types of lending technologies are compared against this reference category. The credit rationing of SMMEs is reduced by 87% when financed using an asset based lending compared to via a financial statements lending (Model 1). Similarly, the credit rationing is reduced by 94% when venture capital lending is used and by 98% when asset finance lending is used compared to using a financial statements lending to fund SMMEs. This places asset based lending, venture capital lending and asset finance lending technologies as better ways of financing SMMEs than using financial statements lending.

The lending technology variable was interacted with race. If lending technologies affect credit rationing, that could be either heightened or reduced depending on the race of the owner. This is particularly important given the historical realities of South Africa. For example, in most cases Whites have had a long relationship with banks than Blacks and naturally one would expect Whites to be less credit rationed than Blacks. The results are shown in Model (2). The results show that amongst Whites themselves, there is a 9% less credit rationing when asset based lending is used, 77% less credit rationing when venture capital lending is used and 89% less credit rationing when asset finance is used than when financial statement lending is used. The same applies when other ethnic groups are considered. For example, 36% less credit rationing is observed amongst the Indians when asset based lending is used and 59% less credit rationing is experienced amongst the Coloureds using Asset financing than when financial statements lending is used. The results indicate that while lending technology affects credit rationing of firms, race enhances the effect of a lending technology used in the case of lending to SMMES. Therefore, a pro-SMME policy must focus on advancing particular types of lending

technologies, in this case, asset based lending, venture capital lending and asset finance lending technologies, as channels for SMME funding but must also capture race in funds allocation to firms.

In the case of types of financial institutions, commercial banks are a reference category. In this case, credit rationing of SMMEs is reduced by 50% when SMMEs are financed by government-owned development financial institutions than when financed by commercial banks. However, credit rationing is reduced by 7% when financed by private-owned development financial institutions. When SMMEs are financed by microfinance institutions, credit rationing is only reduced by 4% compared to those financed by commercial banks. The findings place government-owned development financial institutions as better in terms of averting credit rationing of SMMEs.

6.5.2.2 Effects of SMME firm structures on credit rationing of SMMEs

The firm's characteristics considered are ethnicity of owners, type of ownership by ownership structure and size of the SMME firm. In terms of the ethnicity of owners of SMMEs, the Black ethnicity group is the reference category. These results are also shown in Model (2). Credit rationing of SMMEs is increased by 2.33 times for Black owned SMME firms compared to those that are White-owned. Similarly, credit rationing increases by 1.89 times for firms owned by Blacks compared to those owned by Indian ethnic group persons while credit rationing still increases by 1.52 times for Black owned enterprises when paralleled against Coloured-owned businesses. Even though the results for the last two categories are not significant (p=0.380 and p=0.601 respectively), the overall picture is that there still exists high levels of inequality in access to funding for firms owned by individuals in different ethnic groups in South Africa, particularly against Black small business owners. It appears that, notwithstanding efforts by the Government of the Republic to correct economic inequalities among the different population groups in South Africa through measures such as the Black Economic Empowerment (BEE) policy, inequality still exists and some groups are highly marginalised, particularly in the area of access to finance.

With regards to the type of ownership structure of the SMME, sole trader-male owned SMMEs were selected as the reference category. In this case, the results as shown in Model (2) indicate that sole trader-female owned businesses are 1.69 times more credit rationed compared to sole trader-male owned businesses. Similarly, partnership-owned small businesses are 2.05 times more credit rationed compared to sole trader-male owned businesses. To the contrary, family-owned small businesses are 65% less likely to be credit rationed compared to sole trader-male owned businesses. The partnership-owned and sole trader-female owned businesses are mostly affected by lack of access to credit while family-owned businesses have better access. The reasons for this outcome is that financial institutions view group-owned businesses such as family-owned businesses as having better succession plans firmly rooted from the family bond than partnership-owned or any other form of individually-owned businesses.

To probe the effect of ownership structure on credit rationing of firms, credit rationing was split into three categories; direct loan rejection, quantity rationed and priced rationed firms. These results are shown in Model (3). Sole trader-male owned businesses are 62% less likely to be subjected to a straight denial, 64% less likely to be quantity rationed and 5% less likely to be price rationed compared to partnership-owned businesses. While sole trader-female owned firms are also 62% less likely to be experience straight denial, they are only 57% less likely to be quantity rationed and 27% less likely to face price rationing compared to partnership-owned businesses. However, family-owned businesses are 85% less likely to be denied loan, 84% less likely to be quantity rationed and also 86% less likely to be priced rationed compared to partnership firms. The results further affirm that individually-owned businesses (either sole trader-male owned or sole trader-female owned) suffer more of any form of credit rationing compared to any group-owned businesses (either family or partnership-owned businesses).

Lastly, with respect to firm size, micro-sized firms are the base category. As shown in Model (2), very small-sized firms are 2.33 times more credit rationed compared to micro-sized businesses. However, small-sized businesses are 21% less likely to be credit

rationed compared to micro-sized businesses. Likewise, medium-sized firms are 55% less likely to be credit rationed compared to micro-sized firms.

To get more insight on the effect of firm size, firm size was interacted with types of lending technology. The results are shown in Model (2). The results show that amongst the very small-sized firms; 1.28 times more credit rationing is observed when asset based lending is used than when financial statement lending is used, but there is no significant difference amongst medium-sized firms. However, as firm size increases, credit rationing is reduced when either asset based lending or asset finance is used amongst both the small-sized and medium-sized firms. This means that firms' sizes enhance credit rationing of different types of lending technologies used to fund SMMEs. Therefore, the smaller the firms, the more credit rationed they suffer with reference to the type of lending technology used, which becomes less as firm size increases.

To further understand the effect of firm size on credit rationing of firms, credit rationing was split into its three alternate measures; direct loan denial, quantity rationed and priced rationed firms. These results are shown in Model (3). In this instance, very small-sized firms are 2.72 times likely to be subjected to a straight credit denial, 3.61 times likely to be quantity rationed and 2.79 times price rationed. Micro-sized firms are 3.45 times more likely to experience straight denial, 2.11 times price rationed and 2.10 quantity rationed. As for small firms, they are 2.14 times likely to face straight credit denial, 4.01 times priced rationed and 1.18 times quantity rationed. The results indicate that firm size segregates firms by types of credit rationing. As firm size increases, firms migrate from punitive conditions of crediting rationing to less punitive conditions. In this case, very small firms face more outright credit rejections, but at middle size firms become more price rationed, and only become subjected to quantity rationing as they move from middle size into medium-size.

The firm size variable was also interacted with owner type. The results are shown in Model (4). Family-owned businesses that are micro-sized are 2.22 times likely to face straight credit denial, 63% less quantity rationed and 19% less price rationed. On the

other hand, family-owned businesses that are small-sized are 2.31 times out-rightly denied credit, 1.97 times quantity rationed and 1.51 times price rationed. However, family-owned businesses that are medium sized are only 1.84 times to face straight denial of credit, 1.66 times quantity rationed but 2.97 times price rationed. The results further show that partnership-owned businesses that are micro-sized are 3.36 times straight denied credit, 3.67 times quantity rationed and 2.61 times price rationed while, partnership-owned businesses that are very small-sized are 2.94 times straight denied credit, 3.67 times quantity rationed and 2.92 times price rationed. However, partnership-owned businesses that are medium sized are only 1.14 times straight denied credit, 2.89 times quantity rationed but 3.03 times price rationed. For both family-owned and partnership-owned businesses firm size has a similar effect. In both cases, as firm size increases, firms face less straight outright credit rejections but experience more increases in price rationing with moderate changes in quantity rationing. Therefore, firm-size transforms the type of credit rationing faced by each type of firm ownership structure from severe direct credit denial, to quantity rationing and eventually land in price rationing as firm size increases.

6.6 EFFECTS OF LENDING TECHNOLOGIES ON GROWTH OF SMMES

To analyse the growth of firms, as already stated in the methodology section, growth is defined as a scale dependent variable taking the proxy of a financial efficiency score of the firm with a possible minimum of 0 for totally no growth firms and a possible maximum of 1 for highest growth outcome calculated using DEA. To capture the effects of bank and firm characteristics on growth of firms, a two-way factorial analysis or analysis of variance was conducted. This method was preferred because it allowed the testing of the effect of the types of lending technologies used to fund SMMEs paired with each of the other categorical independent variables alternating one at a time on the growth of firms. The other independent variables are the size of the firm, ethnicity of firm owners, ownership structure of the firm and the type of lender funding the firm.

Two types of analysis were conducted to interpret growth patterns of firms. First, the study analyses main effects to determine whether different types of lending technologies and

the other paired factor result in different growth levels of firms. Secondly, the study looks at the interaction effects to test whether the differences in growth levels of firms as a result of the different lending technologies used depend in part on other factors such as the size of the firm, ethnicity of owners of firm, ownership structure of the firm and the type of lender funding the firm. A two-way Analysis of Variance (ANOVA) or factorial analysis was used to determine where differences in growth of firms exist. The results that show which pairs of independent variables in which ANOVA was positive are shown in Table 31. Thereafter, if the groups of the independent variables have a positive ANOVA, the Scheffe Post Hoc Test was followed to identify where the actual differences are significant and the nature or direction of the differences. The Scheffe Post Hoc Test was preferred because it does not inflate the Type 1 error when sample sizes are not equal across group levels, which is the case in this study. For example, in the sample of 321 firms, the distribution of the number of firms funded was not uniform across the different types of lending technologies, and the same applies to other independent variables. Four different models are presented for determining the level of growth of firms by twinning the type of lending technology used with each of the other four independent variables in each model; namely Model 5 with lender type, Model 6 with size of firm, Model 7 with type of ownership of the business and Model 8 with ethnicity of firm owner.

6.6.1 Tests of ANOVA Assumptions

In order to apply a two-way factorial analysis, three statistical assumptions must be met first. These are, 1) the dependent variable has no outliers, 2) there is homogeneity of variance within groups and 3) the dependent variable is normally distributed. These tests were conducted using Shapiro-Wilk test for normality to test for normal distribution of the data, outlier plots for detecting outliers in the data, and the Levine's test of Equality of Variance to check for the presence of homogeneity of variance.

The Shapiro-Wilk tests for normality with regards to the dependent variable (efficiency growth score of firms) are all insignificant (See Appendix D). The test was repeated in order to establish that the dependent variable is normally distributed for the different combinations of categories of each pair of the two independent variables. The results

failed to satisfy the null hypothesis of the test which states that the dependent variable is not normally distributed. Therefore, the null hypothesis is rejected and one concludes that the dependent variable is normally distributed. This satisfies the first assumption of the ANOVA regression which requires that the dependent variable must be approximately normally distributed to each combination of categories of the two independent variables.

The second assumption that must be satisfied is that the dependent variable does not have significant outliers. This was tested using outlier plots in which efficiency score of firms was the dependent variable and types of lending technologies and firm size categories were independent variables. In both cases, for the different category levels of both of the independent variables, there were no outliers detected on the dependent variable (Appendix E). The last test is the homogeneity of variances tested using the Levine's Test for Equality of Variances which tests the null hypothesis that the error variance of the dependent variable is equal across groups. The results for this are shown in Table 36 for each of the four pairs of the independent variables. From Table 36, there is homogeneity of variances of the dependent variable across groups. This is so because the significance levels are greater than 0.05, which is the set significance level.

TABLE 36: LEVINE'S TEST OF EQUALITY OF VARIANCE

34a: Levine's Test of Equality of Error Variances for lending technology & lender type & interactions

Dependent Variable: Efficiency Score of the SMME

F	df1	df2	Sig.
4.452	17	303	.153

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

34b: Levine's Test of Equality of Error Variances for lending technology & firm size & interactions

Dependent Variable: Efficiency Score of the SMME

F	df1	df2	Sig.
3.836	19	301	.096

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

34c: Levine's Test of Equality of Error Variances for lending technology & owner type & interactions

Dependent Variable: Efficiency Score of the SMME

F	df1	df2	Sig.
3.536	19	301	.236

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

34d: Levine's Test of Equality of Error Variances for lending technology & race & interactions

Dependent Variable: Efficiency Score of the SMME

F	df1	df2	Sig.
4.414	20	300	.193

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

Since all the tests for the assumptions of ANOVA are satisfactory, the analysis of the effects of the independent variables on the dependent variable can be conducted. These results are presented below.

6.6.2 The Effects of Lending Technologies and Lenders on Firm Growth

The type of lending technology used to fund a firm might contribute to the growth of a firm, but that effect might differ depending on the type of the institution advancing loans to firms. A two-way analysis of variance tests the variation of growth of firms as a result of the type of lending technology used and lending institution dealing with the firm. The type of lending technology used to fund a firm on its own was found to have no significant effect on the growth of firms (F (4, 0.172) = 1.486, p = 0.206, η^2 = 0.019) and so was the interaction between the type of lending technology and the type of lending institution F (10, 0.206) = 1.782, p = 0.063, η^2 = 0.056). In contrast, the type of lending institution used to fund a firm on its own had a significant effect on the growth of firms (F (3, 0.404) = 3.498, p = 0.016, η^2 = 0.033), even though its effect size was very low with an approximately 3% partial Eta square (Table 37).

TABLE 37: MAIN AND INTERACTION EFFECTS OF INDEPENDENT VARIABLES

Variable	MS	DF	*F*-Value	*P*-Value	Partial Eta Square (Effect size)
lending technology	0.172	4	1.486	0.206	0.019
lender type	0.404	3	3.498	**0.016**	0.033
lending technology*lender type	0.206	10	1.782	0.063	0.056
lending technology	0.667	4	6.309	**<0.001**	0.077
firm size	1.056	3	9.988	**<0.001**	0.091
Lending technology*firm size	0.283	12	2.673	**0.002**	0.096
lending technology	0.538	4	4.686	**0.001**	0.059
owner type	0.063	3	0.545	0.652	0.005
lending technology*Owner type	0.235	12	2.050	**0.020**	0.076
lending technology	0.468	4	4.119	**0.003**	0.052
owner ethnicity	0.123	4	4.180	**0.003**	0.053
lending technology*owner ethnicity	0.114	12	1.087	0.371	0.042

Level of significance set at P < 0.05, N=321

The results indicate that SMMEs significantly experience more growth when funded by commercial banks (μ = 0.649) and microfinance institutions, but grow less when funded

by government-owned development financial institutions (Model 5 in Table 38). Highest growth of firms (μ = 0.698) is experienced when they are funded by microfinance institutions but experience minimal growth when funded by government financial institutions (Figure 7).

In order to identify where the actual effects of the type of financial institutions lie, Post Hoc tests were conducted and reveal that only commercial banks (*p* = 0.001) and microfinance institutions (*p* = 0.048) significantly recorded high growth relative to government-owned development financial institutions. Even though private-owned development financial institutions appear to perform better than government-owned development financial institutions on the profile plots (Figure 7) that was not statistically significant.

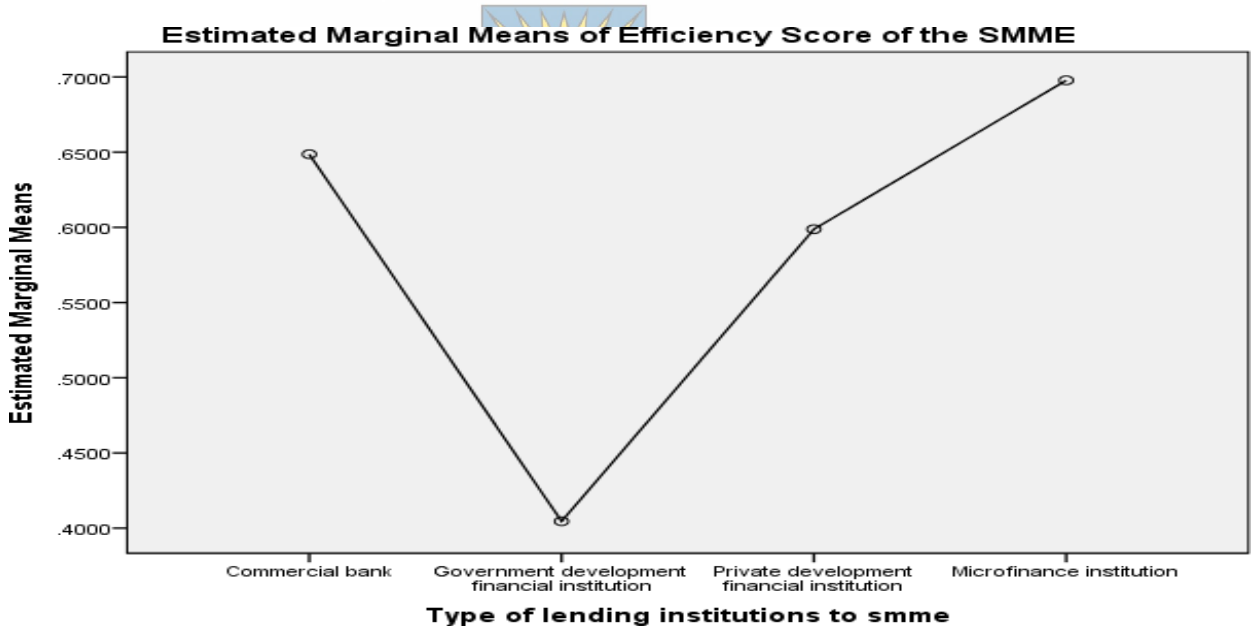


FIGURE 7: GROWTH OF FIRMS BY TYPE OF FINANCIAL INSTITUTIONS

6.6.3 The Effects of Lending Technologies and Firm Size on Firm Growth

The type of lending technology used to fund a firm might also contribute to growth of a firm, but that effect might differ depending on firm size. A two-way analysis of variance

tests the variation in growth means of firms as a result of the type of lending technology used and firm size. The main and interaction effects of lending technologies and firm size are all significant (Table 37), with a combined effect size of approximately 27%. Lending technology used to fund a firm had a significant effect on growth of firms (F (4, 0.667) = 6.309, $p < 0.0001$, η^2 = 0.077). Firm size also had a significant effect on growth of firms (F (3, 1.056) = 9.988, $p < 0.001$, η^2 = 0.091) and so were the interaction effects between them (F (12, 0.283) = 2.673, $p = 0.002$, η^2 = 0.096). The Scheffe Post Hoc Test used identifies where exactly these differences in growth exist.

The main effects for the lending technologies on growth means that differences had two statistically significant cases which explain the differences in growth (Model 6 in Table 38). Asset based lending technology exhibits lower growth for firms when used for financing decision than the financial statement lending but it grows firms better than when an asset financing lending technology is applied. On the other hand, firm size has four statistically significant cases affecting firm growth. Micro-sized firms average higher growth than both small and medium-sized firms. Similarly, very small-sized firms perform better than small-sized firms, while small-sized firms themselves out-perform medium-sized firms.

TABLE 38: EFFECTS OF LENDING TECHNOLOGIES IN GROWTH OF SMMES

MODEL 5: LENDING TECHNOLOGIES AND LENDER TYPE MAIN AND INTERACTION EFFECTS					
1. Type of financial institutions main effects					
	(I) Lending institution	**(J) Lending institution**	**MD(I-J)**	**SE**	***P*-Value**
	Commercial bank	Government-owned DFI	0.244	0.076	0.001
	Government-owned DFI	Microfinance institution	-0.293	0.148	0.048
MODEL 6: LENDING TECHNOLOGIES AND FIRM SIZE MAIN AND INTERACTION EFFECTS					
1. Lending technologies main effects					
	(I) lending technology	**(J)Lending technology**	**MD(I-J)**	**SE**	***P*-Value**
	Financial Statement	Asset based lending	-0.204	0.048	<0.001
	Asset based lending	Asset finance lending	0.142	0.067	0.033
2. Firm size main effects					
	(I) Firm size	**(J) firm size**	**MD(I-J)**	**SE**	***P*-Value**
	Micro firms	Small firms	0.155	0.060	0.010
	Micro firms	Medium firms	0.351	0.071	<0.001
	Very small firms	Small firms	0.143	0.065	0.030
	Small firms	Medium firms	0.196	0.068	0.004
3. Lending technologies*firm size interaction effects					
	(I) Firm size	**(J) firm size**	**MD(I-J)**	**SE**	***P*-Value**
Financial statement lending	Micro firms	very small firms	-0.196	0.083	0.019
	Very small firms	Small firms	0.286	0.083	0.001
	Very small firms	Medium firms	0.395	0.117	0.001
Venture capital lending	Very small firms	Medium firms	0.577	0.199	0.004
	Micro firms	Medium firms	-0.618	0.175	<0.001
Asset finance lending	Very Small firms	Medium firms	0.453	0.190	0.018
	Small firms	Medium firms	0.374	0.169	0.028
MODEL 7: LENDING TECHNOLOGIES AND SMME OWNER TYPE MAIN AND INTERACTION EFFECTS					
1. Lending technologies main effects					
	(I) Lending technology	**(J)Lending technology**	**MD(I-J)**	**SE**	***P*-Value**
	Financial Statement	Asset based lending	-0.169	0.049	0.001
	Asset based lending	Venture capital lending	0.211	0.077	0.006
	Asset based lending	No lending	0.202	0.074	0.007
	Venture capital lending	Asset finance lending	-0.202	0.102	0.048
2. Lending technologies*SMME owner Type interaction effects					
	(I)SMME Owner	**(J) SMME Owner**	**MD(I-J)**	**SE**	***P*-Value**
Asset based lending	Sole-female owned firms	Family-owned firms	-0.216	0.100	0.032
	Sole-male owned firms	Sole-female owned	-0.274	0.138	0.048
Asset finance lending	Sole-female owned firms	Family-owned firms	-0.418	0.165	0.012
	Family-owned firms	Partnership-owned	-0.572	0.268	0.034
MODEL 8: LENDING TECHNOLOGIES AND OWNER ETHNICITY MAIN AND INTERACTION EFFECTS					
1. Lending technologies main effects					
	(I) Lending technology	**(J)Lending technology**	**MD(I-J)**	**SE**	***P*-Value**
	Financial Statement	Asset based lending	-0.222	0.085	0.010
	Financial Statement	Asset finance lending	-0253	0.099	0.011
	Asset based lending	Venture capital lending	0.240	0.104	0.022
	Asset finance lending	Venture capital lending	-0.271	0.116	0.020
2. Ethnicity of owner main effects					
	(I)Firm size	**(J) firm size**	**MD(I-J)**	**SE**	***P*-Value**
	Black	Coloured	0.365	0.092	<0.001
	White	Coloured	0.288	0.092	0.002
	Indian	Coloured	0.308	0.120	0.011

Firm size, however, increases the effect of the type of the lending technology used on growth of firms via the interaction effect. When firms are financed via a financial statements lending technology, micro-sized firms grow less than very-small sized firms, but the very small-sized firms grow better than both small-sized and medium-sized firms. Venture capital lending only favours the very small-sized firms only as these grow better than even medium sized firms. When asset financing lending is used, medium-sized firms perform better than medium-sized firms. While the main effects for firm size affects growth of firms the same direction as it does with the interaction of the type of lending technology used, the magnitude of the change tends to double through an interaction (Model 6 in Table 38).

6.6.4 Effects of Lending Technology and Ownership Type on Firm Growth

The type of lending technology employed to fund a firm might also contribute to growth of a firm, but that effect might vary depending on the ownership structure of the firm. A two-way analysis of variance tests the variation in growth means of firms as a result of the type of lending technology used and ownership structure of firms. The main effects for lending technology used (F (4, 0.538) = 4.686, $p < 0.001$, η^2 = 0.059) and interaction effects for lending technology and firm ownership structure (F (12, 0.235) = 2.050, $p < 0.020$, η^2 = 0.076) were all significant (Table 37), with a combined effect size of 14%. However, the ownership structure of the firm on its own was found to have no effect on growth of firms (F (3, 0.063) = 0.545, $p = 0.652$, η^2 = 0.005) and its effect size is also very negligible (0.5%).

The Scheffe Post Hoc Test was used to establish where exactly the effects exist with regards to the main effects of lending tending technology and interaction effects on growth of firms (Model 7 in Table 38). Asset based lending technology exhibits lower growth for firms than those funded by financial statement lending but it facilitated better growth than those firms financed through venture capital lending or not funded at all. Asset finance lending also exhibits lower growth for firms than venture capital lending.

The ownership structure of the firm magnifies the effect that type of lending technologies used have on growth of firms. When firms are financed via an asset based lending technology, sole trader-female owned businesses grow better than sole trader-male owned businesses but when funded using asset finance lending sole trader-female owned businesses only lag behind family-owned businesses. Again, family-owned businesses are themselves surpassed by partnership-owned businesses. In the absence of any lending, sole trader-female owned businesses grow better than partnership-owned businesses (Model 7 in Table 38).

6.6.5 Effects of Lending Technology and Owner Ethnicity on Firm Growth

The type of lending technology employed to fund a firm might influence the growth of a firm, but that outcome might differ depending on ethnicity of the owners of the firm. A two-way analysis of variance tests the variation in growth means of firms as a result of the type of lending technology used and ethnic group or race of owners of the business. Both the main effects for lending technology used (F (4, 0.468) = 4.119, $p < 0.003$, $\eta^2 = 0.052$) and ethnicity group of owners of the business (F (4, 0.123) = 4.180, $p < 0.003$, $\eta^2 = 0.053$) were significant (Table 37). However, the interaction between them had no effect on growth of firms (F (12, 0.114) = 1.087, $p = 0.371$, $\eta^2 = 0.042$).

The Scheffe Post Hoc test was then used to establish where exactly the main effects exist for both lending tending technology and ethnicity (Model 8 in Table 38). Both asset based lending and asset financing lending technologies exhibited lower growth for firms than those firms funded by financial statement lending. However, while asset based lending grew firms better than the firms funded using venture capital lending, asset finance lending showed less growth prospects for firms compared to venture capital lending. On ethnicity of the owners of the business, only businesses owned by the coloured grew less compared to other races; the black, white and Indians (Model 8 in Table 38).

6.7 DESIGNED FRAMEWORK FOR SMME FINANCING

Given the level of credit rationing experienced by SMMEs and the associated growth patterns, there is need to design a financing framework that addresses the credit inequality in SMME financing. This study therefore proposes two main contributions aimed at addressing credit inequalities and at the same time promoting growth in the sector. These proposals are discussed in the following sections.

6.7.1 Funds allocation based on SMMEs' characteristics

This study develops a financing framework that addresses credit access inequality. One problem facing South African small firms is discriminatory credit rationing. There is a high level of inequality in credit rationing among small firms based on firm size, ownership structure and race. For a long time, the South African government developed policies aimed at addressing credit access inequality. Notwithstanding the enacted BEE policy, this problem still exist.

Inequality distorts allocation of funds among firms from funds strategically earmarked for SMME support from either government or private lending institutions. Since the rate of credit rationing for each firm category represents risk exposure of financial access for that category, firms facing high credit rationing levels should be allocated more funds than those with low credit rationing levels in order to address inequality in accessing funding.

The credit rationing levels indicate the level of credit access risk that firms endure based on three firm characteristics from the descriptive summary statistics (Table 39). The actual credit rationing levels are the frequency percentages of credit rationing of firms for each category in the data while the proportional credit rationing levels is the calculated proportional representation of that frequency as a share of the whole data set. For example, based on firm size, 45% of the micro-sized firms are credit rationed but small-sized firms represent only 24% of all firm size groups. The sum of firm size groups must add up to 100%. The distribution percentages of all categories based on firm size, ownership structure and race are presented in Table 37. Based on this analogy therefore, a funding framework can be developed which takes into account credit rationing risk factors and firms' characteristics to allocate funds in small businesses in a way that

minimises credit access inequalities among firms. Since firms represent the demand side of lending, the higher the credit risks the higher should be the allocation of funds to that firm category.

TABLE 39: FIRM CREDIT RATIONING BY FIRM CHARACTERISTICS

Firm characteristics	Category levels	Actual category credit rationing level	Proportional credit rationing risk level
Firm Size	Micro firms	45%	24%
	Very small firms	62%	34%
	Small firms	47%	26%
	Medium-sized firms	29%	16%
TOTALS		**183%**	**100%**
Ownership Structure	Sole trader-male owned	45%	24%
	Sole trader-female owned	52%	27%
	Family-owned	30%	16%
	Partnership-owned	62%	33%
TOTALS		**189%**	**100%**
Race	Blacks	56%	29%
	Whites	41%	21%
	Indians	50%	26%
	Coloureds	30%	16%
TOTALS		**177%**	**100%**

From Table 39, it is proposed that of the total funds earmarked for SMME support, 24% must be allocated to micro-sized firms, 34% to very small-sized firms, 26% to small-sized firms and 16% to medium sized firms. These distributions are shown in the fund allocation decision tree in Figure 8. In the category of micro-sized firms, firms have different credit rationing levels based on ownership structures; which is 24% for sole trader-male owned businesses, 27% for sole trader-female owned, 16% for family-owned and 33% for the partnership-owned businesses. These different ownership structure categories are further split into different races, which are either owned by Blacks, Whites, Indians or Coloureds.

By multiplying the firm size risk factor by ownership structure risk factor and by race risk factor, the product obtained thus represents the proportion of total funds that must be

allocated to that set of firm characteristics. For example, the micro-sized firms' risk factor is 24%, the risk factor of sole trader-male owned businesses is also 24% and the risk factor of Black owned businesses is 32%. As a result, the proportion of the total funds allocated to male black-owned businesses in the micro-sized category can therefore be computed as follows:

$$Firm\ size\ risk\ \ factor\ X\ \ ownership\ \ structure\ \ risk\ \ factor\ X\ \ race\ risk\ \ factor$$
$$=\ \ proportion\ of\ \ funds\ \ allocation$$

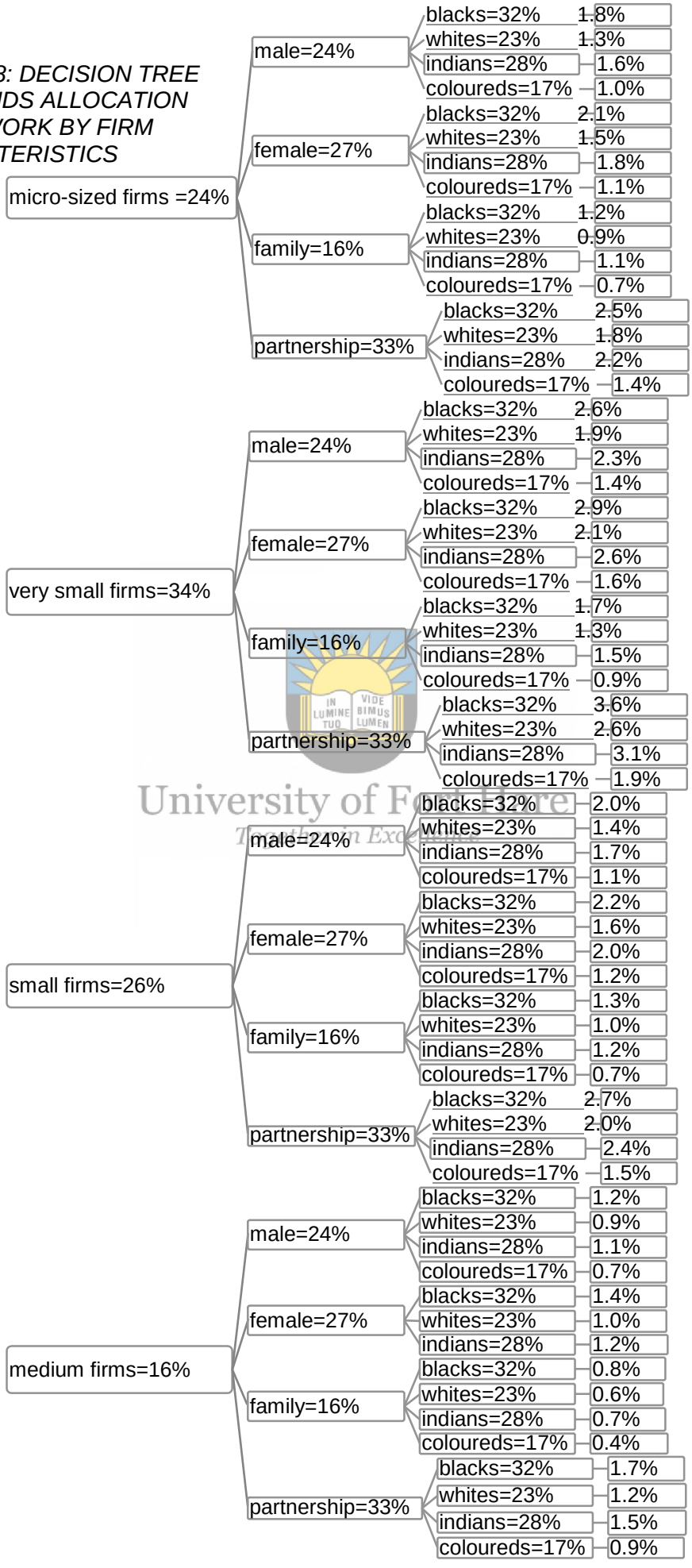
$$= 0.24\ \ X\ 0.24\ \ X\ 0.32\ \ =\ \ 0.018\ \ = 1.8\%$$

This means that 1.8% of the total funds earmarked to support small businesses must be allocated to male Black-owned businesses in the micro-sized small businesses in South Africa. Likewise, 1.3% of funds must be allocated to male White-owned, 1.6% to male Indian-owned and 1.0% to male Coloured-owned businesses. A total of 5.7% of the total SMME funding must therefore be advanced to sole trader-male owned businesses in the micro-sized businesses regardless of their race. If this approach is used, then rationing on the basis of firm-size, ownership structure or race is eliminated. This is very important for policy implementation as this approach allows total funds committed to SMME support either by government or private institutions to be advanced based on important firm characteristics that are associated with the drivers of credit access inequality in South Africa.

Similarly, the allocation for sole trader-female owned businesses must be 2.1% to female Black-owned, 1.5% to female White-owned, 1.8% to female Indian-owned and 1.1% to female Coloured-owned businesses giving a total of 6.5% that must be allocated to sole trader-female owned businesses in the micro-sized firm category irrespective of race. For family-owned businesses, 1.2% to family Black-owned, 0.9% to family White-owned, 1.1% to family Indian-owned and 0.7% to female Coloured-owned businesses giving a total of 3.9% that must be allocated to family-owned businesses in the micro-sized firm category irrespective of race.

Finally, the allocation for partnerships-owned businesses must be; 2.5% to Black-owned partners, 1.8% to White-owned, 2.2% to Indian-owned and 1.4% to Coloured-owned partners giving a total of 7.9% that must be allocated to partnerships-owned businesses in the micro-sized firm category irrespective of race. The rest of the computations for firms in the very small-sized, small-sized and medium-sized classes are shown in Figure 8. When the funding for the small businesses is allocated this way, problems associated with access to finance inequality on the basis of firm size, ownership structure and race can be totally eliminated since funding is based on quotas of each category and overlaps between categories will not occur.

FIGURE 8: DECISION TREE FOR FUNDS ALLOCATION FRAMEWORK BY FIRM CHARACTERISTICS



6.7.2 Funds allocations based on lenders' characteristics

As already alluded to, small businesses are credit rationed but credit rationing is also linked to lenders' characteristics – the supply-side. The main characteristics are types of lending technologies used and types of financial institutions dealing with small businesses. Since the funding of small businesses is linked to lenders' characteristics, credit rationing can be reduced if the credit rationing risk factor of the lenders' characteristics are taken into account in the small business lending framework.

The credit rationing levels indicate the level of credit access risk that firms endure based on two lenders' characteristics from the descriptive summary statistics (Table 40). The actual frequency scores of credit rationing of firms for each category are labelled credit rationing levels while the proportional credit rationing levels is the calculated proportional representation of that frequency as a share of the whole data set. For example, based on the type of lending technology, 81% of firms financed via financial statement lending are credit rationed but firms financed through financial statement represent only 50% credit rationing from the total of all types of lending technologies used (Column 4 of Table 40). The sum of all the proportional credit rationing levels of forms of lending technologies must add up to 100%.

Since lenders' characteristics represent the supply-side of lending, funds allocation must be high for the low credit risk lenders. To obtain that, the share of each category is deduced by computing the inverse of the credit risk level of each category (See column 5 of Table 40). From the category shares, the proportional category shares are computed by taking the percentage value of each share from the total shares (See column 6 of Table 40).

The distribution percentages of all categories based on types of lending technologies and types of lenders are presented in Table 40. Therefore, based on this analogy, a funding framework can be developed which takes into account credit rationing risk factors of the lenders' characteristics to allocate funds to small businesses in a way that minimises

credit access inequalities among firms, complementing the demand-side allocation proposed above.

TABLE 40: CREDIT RATIONING RISK LEVELS BY LENDER CHARACTERISTICS

Lender characteristics	Category levels	Category credit rationing risk level	Proportional credit rationing risk level	Category Shares	Proportional Category Shares
Lender types	Commercial Banks	51%	35%	3	13%
	Government DFIs	41%	29%	4	17%
	Private-DFIs	30%	21%	5	22%
	MFIs	21%	9%	11	48%
TOTALS		**143%**	**100%**	**23**	**100%**
Lending technologies	Financial statement lending	81%	50%	2	8%
	Asset based lending	46%	28%	4	16%
	Venture capital lending	21%	13%	8	32%
	Asset financing lending	14%	9%	11	44%
TOTALS		**162%**	**100%**	**25**	**100%**

It is proposed that of the total funds earmarked for SMME support based on credit risk profile of each category results in proportional category shares (Table 40). For the different types of lenders 13% of funds must be channelled via commercial banks, 17% via Government development financial institutions, 22% via private development financial institutions and 48% via microfinance institutions.

These distributions are shown in the fund allocation decision tree in Figure 9. In the category of commercial banks for example, firms have different credit rationing risk shares based on the type of lending technology used. These are 8% for financial statement lending, 16% for asset based lending, 32% venture capital lending and 44% for asset finance lending technology. Again this makes a lot sense because as can be seen, financial statement lending is associated with the highest level of credit rationing of firms and therefore less funds must be channelled via this method.

At the end, by multiplying the type of lending technology factor share by type of lender factor share, the product obtained represents the proportion of total funds that must be allocated to that set of lenders' characteristics. For example, the commercial banks' share is 13% and financial statement lending share is 8%, therefore, the proportion of the total funds that must be channelled via commercial banks using financial statement lending can be computed as follows:

$$Type\ of\ lenders'\ share\ X\ Type\ of\ lending\ techno\log y\ share$$
$$= share\ of\ lenders'\ characteristics$$

$$= 0.13\ X\ 0.08\ =\ 0.0101\ = 1.0\%$$

This means that 1.0% of the total funds earmarked to support small businesses must be channelled by commercial banks using financial statement lending technology in South Africa. Likewise, 2.1% of funds must be channelled via commercial banks using asset based lending, 4.2% using venture capital lending and 5.7% using asset finance lending. Thus, a total of 13% of the funding must be channelled via commercial banks using a mix of lending technologies. If this approach is used, the overall risk of credit rationing is reduced since the channelling of funds is based on lender's characteristics credit risk shares. Similarly, the channelling of funds via government DFIs must be 1.4%, 2.7%, 5.4% and 7.5% using financial statement, asset based, venture capital and asset finance lending technologies respectively. For private DFIs, this must be 1.8%, 3.5%, 7.0% and 9.7% in the order of lending technologies stated above.

Finally, the channelling of funds by microfinance institutions has the greatest share for small businesses. About 3.8% of the total funds earmarked to support small businesses must be channelled by microfinance institutions using financial statement lending technology while 7.7% of funds must be channelled via microfinance institutions using asset based lending, 15.4% using venture capital lending and 21.1% using asset finance lending. Thus, a total of 48% of the funding must be channelled via microfinance institutions using a mix of lending technologies.

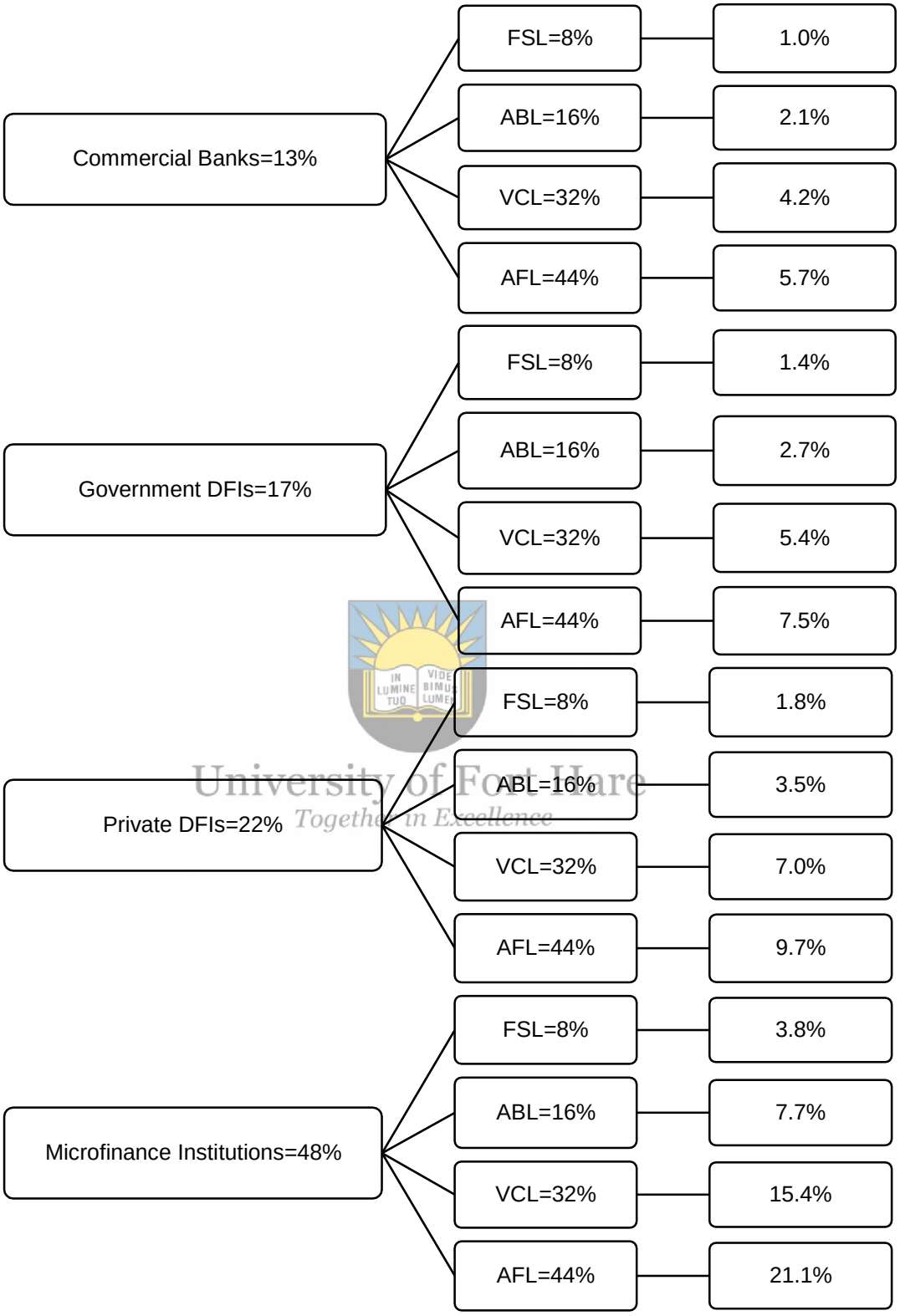


FIGURE 9: SMME FINANCING FRAMEWORK BASED ON LENDER CHARACTERISTICS

Notes: FSL= Financial Statement Lending, ABL = Asset-Based Lending, VCL = Venture Capital Lending, and AFL= Asset Finance Lending.

6.8 DISCUSSION OF RESULTS

The credit rationing of SMMEs varies based on both lender and firm characteristics. The government-owned development financial institutions and microfinance institutions are more effective in reducing credit rationing when used as vehicles for funding SMMEs, followed by private-owned development financial institutions. However, commercial banks are the worst offenders of credit rationing. The results are supported by the qualitative data showing that both private-owned and government-owned development financial institutions offer additional none-financial support to SMMEs through referral and co-ownership debt which reduces credit rationing for such firms. However, commercial banks and microfinance institutions automatically turn away customers that do not qualify for primary loan application, thus increasing the probability of credit rationing for these firms. When financial institutions use asset based lending, venture capital lending and asset finance lending technologies, the outcome is associated with less credit rationing of SMME than usage of financial statements lending technology. This is a reflection of the low risk assumed by financial institutions in secured lending and lender co-ownership financing which gives lenders more monitoring powers than in financial statement lending which is an unsecured lending. To increase overall credit to SMMEs therefore, there is need to for policy measures matching financial institutions and adoption of lending technologies that also complementarily reduce credit rationing risks for SMMEs.

The firm characteristics indicate credit rationing also varies based on ethnicity groups of owners, type of ownership structure of the business and firm size of businesses. Businesses owned by Blacks are more credit rationed compared to those owned by other ethnic groups. The Coloured and Indian-owned businesses are also more credit rationed than White-owned businesses. However, the gap of the level of credit rationing between these other three ethnic groups and that of the Blacks is very wide, making Blacks the most credit rationed group. Descriptive statistics show that most Black-owned businesses are fairly young compared to those owned by other ethnic groups making them not to have a long enough relationship with lenders, and that exacerbates credit rationing for Blacks as lenders use history to trace credit worthiness. Further, interactions between the type of lending technologies and race exacerbates the extent of credit rationing within

groups and therefore, race must be an important determinant in funds allocation, especially where funding to SMMEs largely comes from the national government as is the case in South Africa.

In terms of the ownership structure of the business, small businesses with partnership and sole trader-female owners are the most affected by credit rationing while those either owned by sole trader-males or families are less affected. The results also reveal that credit rationing increases as the size of the business becomes smaller. The realities in the South African history is that for a long time businesses have been in the hands of Whites and Indian families, then later the entrance of the Coloureds and Black sole trader-males and until recently sole trader-female owners. This places the Coloureds and Black businesses to remain fairly new, young and individually owned, a scenario not favoured by the credit rationing results that firms with more credit access have a long history, group-owned such as family businesses and big in size. This even makes it worse for Black sole trader-female business owners who are last in the pecking order of having access to running businesses in South Africa and therefore also the worst in credit rationing. Similarly, interactions between type of ownership structure and firm size show that within each owner structure type, credit rationing shifts from outright rejection, quantity rationing to price rationing as firm size increases.

Having explained the credit rationing of firms, the factors leading to that, the last section explains how credit rationing emanating from the use of different lending technologies affects growth of firms. The type of lending technology used affects growth among firms funded by different types of lenders. Funding through commercial banks and microfinance institutions resulted in more growth of firms than government-owned development financial institutions, while the impact of private-owned development financial institutions on growth of firms was found to be insignificant. These results put into question whether or not development financial institutions are actually fulfilling the mandate granted to them by the Government to improve financial access to small businesses.

The type of lending technology used also affects growth among firms of different sizes. Unsecured lending grew firms better than secured lending but regardless of any types of lending technology used, smaller firms grew more than the bigger when financed through lending. However, firm size amplified the effect of the type of lending used such that growth of firms was higher when funded through unsecured lending compared to secured-lending and that growth was even more heightened the smaller the firm size.

The type of lending technology used also affects growth of firms owned under different ownership structures. Firms tended to grow more when funded by unsecured lending than all other forms of secured lending irrespective of ownership structure of the firm. However, when secured lending was used, female-owned and partnership-owned businesses grew better than both male-owned and family-owned businesses.

Lastly, the type of lending technology used also affects growth of firms owned by different ethnic groups. Firms tended to grow more when funded by unsecured lending than all other forms of secured lending irrespective of the ethnicity of owners of the firm. However Coloured-owned businesses grew less compared to either the Black, Indian or White-owned businesses.

The findings on credit rationing and growth of firms gives quite interesting results. There are opposite outcomes on the results between credit rationing and growth of firms instead of complementary ones. In theory, firms that face more credit rationing are expected to grow less than those that face less credit rationing. However, when one looks at the types of financial institutions, commercial banks and microfinance institutions were found to be associated with more credit rationing of firms than government-owned and private-owned development financial institutions. To the contrary, commercial banks and microfinance institutions grow firms better than both forms of development financial institutions notwithstanding the fact that the first two are worse off in terms of credit rationing of firms than the latter pair.

Similarly, when results for credit rationing are evaluated based on firm size, credit rationing tends to increase the smaller the size of the firm but lessens as firm size increases. However, there are contradicting results on growth of firms where small firms grew better than bigger firms. Further, based on ownership structures, sole trader-female owned and partnership-owned face more credit rationing than sole trader-male owned and family-owned businesses but results are contrary when it comes to growth of firms where sole trader-female owned and partnership-owned businesses grew better than sole trader-male owned and family-owned businesses. The same applied to ethnic groupings where Blacks are the most credit rationed race ahead of Whites, Indians and Coloureds whereas only the Coloureds showed low growth with the rest, including Blacks, signalled growth in the presence of lending. Further studies may be necessary to identify what accounts for these contradicting outcomes between credit rationing and growth of firms rather than a complementary outcome.

Notwithstanding the observed contradicting outcomes above, the variations in both credit rationing and growth of firms in terms of lender and firm characteristics are matters that must be of concern to the Government. An appropriate SMME support policy response needs to be formulated in order to improve credit access to SMMEs, especially given their contributory role in the economy. To do that, types of lending technologies that are associated with less credit rationing should be tied to types of financial institutions that also lessen credit rationing risk in order to accelerate funding to SMMEs. Similarly, firm characteristics such as firm size, type of ownership structure and ethnic groups of owners must be used to identify sector units or classes of SMMEs that are financially marginalised for the purposes of enhancing appropriate fund allocation by both independent funding institutions and the Government based on the computed proportional credit rationing risk weighting for each sector unit. This must be particularly enforced especially in areas where there are Government supported funding initiatives. Based on these results, a SMME lending framework that emphasises on maximising growth and minimises credit rationing of SMMEs is proposed in the following chapter as part of the academic contribution of the study.

CHAPTER 7: FINDINGS, CONCLUSION AND RECOMMENDATIONS

7.1 INTRODUCTION

This last chapter sums up the study and is divided into five parts. The first part summarises the main findings of the study and is subdivided into five sections addressing the five objectives of the study. Firstly, it identifies the types of lending institutions that fund SMMEs in the Eastern Cape Province. Secondly, it explains the types of lending technologies financial institutions use in the Eastern Cape Province when lending to small businesses as well as the factors lenders take into account in order to arrive at a lending decision whether to lend to a small business or not. Thirdly, it explains how SMMEs are credit rationed and the factors leading to that. Fourthly it discusses how all these affect the growth of SMMEs and finally proposes a financing framework that suits SMMEs. The second part of the chapter concludes the study. The third part discusses the contributions of the study in the academic literature. There are three contributions identified. The first is the methodological contribution which the study adopted. Second is the modelling of lending technologies and financial institutions matching that aims at reducing the overall credit rationing risks of firms and enhance their growth. Last is the modelling of funds allocation by firm factors in order to reduce financial access imbalances in the SMME sector that exists in South Africa. The fourth and fifth parts are policy implications and recommendations for further research.

7.2 SUMMARY OF FINDINGS

There are five sets of results in this study, sequentially arranged to address each of the five set objectives. The findings are summarised in the ensuing sections.

7.2.1 Types of lending institutions financing SMMEs in Eastern Cape

There are four types of financial institutions that actively fund formal and registered SMMEs in the Eastern Cape Province. These are commercial banks, government-owned development financial institutions, private-owned development financial institutions and microfinance institutions. In South Africa some of these institutions are also divided into subgroups, for example, commercial banks can be grouped into locally controlled-banks

and foreign-controlled banks. These financial institutions use different lending approaches when dealing with SMMEs based on their strategic mandate founded from their ownership structure and also due to the need to adhere to national economic and specific firm characteristics.

7.2.2 SMME Lending technologies and lenders' decision making factors

The lending institutions mentioned above use four main methods of lending. These are financial statement lending, asset-based lending, venture capital lending and, asset finance lending technologies. The study finds that there is a link between types of lenders and types of lending technologies used. Commercial banks and microfinance institutions dominantly use financial statement lending and asset based lending whereas development financial institutions tend to use venture capital lending and asset finance lending more often than commercial banks and microfinance institutions do in addition to the other methods. Whereas commercial banks and microfinance institutions often turn away customers who do not meet their primary assessment methods, development financial institutions however do offer non-financial support such as training of start-ups and even refer customers to other institutions that offer services in line with the clients' circumstances. The study also finds that microfinance institutions use financial statement lending and asset based lending, just like commercial banks do, but only differ in that they issue small amounts of loans. This finding contradicts literature novelty which suggests that small financial institutions like microfinance institutions strive on relationship lending technology in which credit assessment is based on close and repeated interactions with clients over time. Institutions also differ greatly in how they apply each lending technology. While commercial banks use both current and fixed assets in asset based lending, microfinance institutions prefers only fixed assets as collateral. In addition, development financial institutions prefer fixed assets only as they fear current assets are already pledged as first claims on commercial bank short-term lending. The study further finds that, development financial institutions are the ones that use relationship lending either in the first phase of evaluation or as a way of marketing their products, even though the final lending decisions tend to lean on other lending methods.

There are three main factors influencing lenders' decisions to fund SMMEs, whichever type of lending technology is used. These are people, firm and financial factors. There are factors related to people that own or manage the business. The first people factor is the owner's management traits, which are assessed based not only on the owners' general background but also experience in a related business. Financial institutions look at the owners' curriculum vitae, key man insurance and personal references in order to trace information about the owners' management traits in terms of their background, experience, personality and business ethical values.

The second people factor is management competences of those running the business. Lenders assess the owners' ability to manage both business and labour. Lenders look at the ability of the owners not only in managing the business but also the full knowledge of the level of business they have at any one point. Thus, they need to fully understand business financials and the impact they have on the business. In addition to the ability to manage the business, they must manage people, identify areas where there are skill gaps and how those gaps can be addressed.

The last people factor is the development of a clear succession plan for the business. Two important things in this case are change management and management team strength in the organisation. The presence of family members and children of owners are some of the signs of a clear change management strategy while having key man insurance and management structure are some indications of top management strength. These two aspects present the value the firm places on the succession plan of the business. Critically, the strength of the team and the prudence of succession plans are important areas to note.

The three factors discussed above do not stand in isolation, they must all coexist for funding to be approved. When some of these factors are not in place, financial institutions find it hard to fund SMMEs. Where some of these people factors are lacking, SMMEs support organisations such as SEDA and ECDC, provide skills development support in order to improve the funding space for SMMEs. Development finance institutions and

government agencies also help nurture SMMEs lacking in these factors especially where venture capital lending technology is used and SMME incubation centres are established so that venture capitalists and government agencies' experts take part in the decision making process of the firms' businesses.

In addition to people factors, financial institutions evaluate the status of the firm itself. The first aspect is the firm's industry effects on the performance of the firm. Lenders assess the firm's current sector activities and trends in order to appreciate whether the sector as a whole is doing well and then specifically whether the firm in question matches the industry expected activity levels or not. They also look at the level of technology uptake in the sector and that of the firm itself. All these evaluations help funders to understand the status of the sector and the influence that it has on the performance of the sector. This means information on whether the sector is growing or not and what its potential is in that sector. Further, funders then assess the market competitiveness of the business itself in that sector.

The actual physical location of the business has a bearing on the ability of the business to generate enough revenues to meet debt obligations. Physical location affects accessibility of the business from the potential sales catchment area and the costs of access compared to rival businesses. Thus, the profitability of the business is to a large extent linked to business location. In addition to business location, the age of the business is very important. The age determines the lifecycle stage of the business and the inherent business opportunities or challenges associated with the stage. It is therefore important to understand what lifecycle stage the business is in and the appropriate funding that suits the stage of the business. Financial institutions target businesses in different stages based on their financing strategies. For example, commercial banks and microfinance institutions target mainly already existing but less risky ventures at growth and rehabilitation stages whereas development financial institutions fund start-ups at introduction stage and even firms in the decline stage.

All financial institutions only fund businesses that are legally compliant. Legality can be proved by availing a current general operating license as well as any other industry-specific license as required by law. Licenses and other contracts such as franchise agreements and even lease agreements must be produced as proof of their existence and validity during the whole life of the loan extended to the firm. Lastly, financial institutions review the financial position of the firm. The exercise involves analysing the cash flow potential of the business, the extent to which the cash flows are stable throughout the loan period and the risks that affect both the cash flow potential and its stability over time. The identified risks must be managed either through bank-based monitoring strategies or firm-based mitigating strategies limiting the activities of the firm likely to increase the identified risks. All the three factors, namely people, firm and financial must be scrutinized to the satisfaction of the financial institution before any lending request of the borrower is entertained.

7.2.3 Credit rationing of SMMEs

Four types of lending technologies were used by financial institutions; financial statement lending, asset-based lending, venture capital lending and asset finance lending technologies. Financial statement lending credit rationed small firms more than any of the other three methods. The differences among the other three were very negligible and thus put financial statement lending as the worst method in credit rationing of small firms. When the interaction of race was introduced, the results still show that regardless of the race of the owner of the firm, financial statement lending still credit rationed small firms more than any other form of lending technology used. Financial statement lending method therefore must be used sparingly if credit rationing of small firms is to be contained.

In terms of the types of financial institutions, development financial institutions, be they government-owned or private-owned, result in less credit rationing of firms than either commercial banks or microfinance institutions. It would be interesting to see what the interactions between types of lending technologies and financial institutions show, but these were insignificant and were dropped in the analysis. However, from the descriptive statistics, more commercial banks and microfinance institutions used more of the financial

statements lending method while both types of development financial institutions use more of the asset-based lending and venture capital methods. While the use of financial statement by commercial banks is undisputable, the use of the same by microfinance was unexpected given the wide literature *a priori* that small institutions rely more on relationship lending. Therefore, the assumption that small financial institutions use relationship lending to fund small businesses is not supported in South Africa. Rather, microfinance institutions in South Africa mimic commercial banks' lending that relies more on financial statement lending except that microfinance institutions scale down amounts of loan sizes offered to small businesses. By so doing, they then attract more of the very small firms ordinarily not entertained by large commercial banks.

When race is considered as a factor influencing credit rationing of small firms, Black-owned businesses are more credit rationed compared to other races, whereas the extent of differences in credit rationing among the Whites, Indians and Coloureds is very small. Notwithstanding the Government's efforts to correct the marginalisation of the Black-owned businesses in credit markets through policies such as the BEE, these results show that the level of credit inequality among races in South Africa has not yet fully adjusted to reflect the impact of this policy. More policy measures are therefore needed to fully eradicate inequality in credit access based on race.

The study further evaluates the impact of ownership structure on credit rationing of small firms. Sole trader-female owned businesses were more credit rationed than sole trader-male owned small businesses. Similarly, partnership-owned businesses were more credit rationed than family-owned businesses. However, overall multiple-ownership structures result in less credit rationing than individual-ownership structures. Even when credit rationing was categorised into its three forms; direct credit denial, price rationing and quantity rationing, the baseline characteristics were still exhibited. In that regard, sole trader-male owned and family-owned businesses were subjected to less straight credit denial form of credit rationing than sole trader-female owned and partnership-owned businesses respectively. Similarly multiple-owned businesses are subjected to more

quantity and price rationing while individually-owned businesses are subjected to more direct credit denial form of credit rationing.

Lastly, very small firms are subjected to more credit rationing than small larger firms. Very small firms, experienced more credit rationing when asset-based lending was used than when financial statement lending was used. However, this was insignificant among medium-sized firms. Therefore, the smaller the firm, the more credit rationing they face but that is magnified by the type of lending technology used. Even in terms of the types of credit rationing, the smaller the firm the more it is subjected to harsh forms of credit rationing that transform into soft forms of credit rationing as firm size increases. In reality, very small firms are subjected to more direct credit rationing that transformed into quantity rationing and later into price rationing as firm size increased. The study therefore finds that firm size affects credit rationing of firms, and firm size even determines the form of credit rationing that the firm faces. However, the level of credit rationing determined thereof or the form of credit rationing a small firm is subjected to, is further worsened by type of ownership structure of the firm.

7.2.4 Growth of SMMEs

Lending technology was paired with type of financial institutions in the first ANOVA analysis. Firms grew more when funded by commercial banks and microfinance institutions than when funded by any form of development financial institutions. If these results are merged with previous results on credit rationing, recalling that commercial banks and microfinance institutions use mainly financial statement lending that resulted in high credit rationing. However, while this lending method is not good with regards to credit rationing risks, it is actually better in screening firms as firms that pass the financial statement lending screening test show more growth in their financial performance.

Lending technology is paired with firm size in the second ANOVA analysis. Findings show that firms grow better when financial statement lending was used than any other form of lending technology. Further, smaller firms grew better than bigger firms. However, when

interaction effects were taken into account, smaller firms still grew better than bigger firms but the magnitude of change is magnified by the interaction effects.

Lending technology is also paired with ownership structure of the firm in the third ANOVA analysis. Although asset-based lending is better than venture capital lending in growing firms when used, both are lower than financial statement lending in growing firms. However, the ownership structure of the firm magnifies the effect that lending technology has on growth of firms. Surprisingly, sole trader-female owned and partnership-owned businesses grew better than sole trader-male owned and family-owned businesses respectively. This scenario is exactly the opposite on the same variables for the findings related to the amount of credit rationing.

Finally, lending technology was paired with race of owners in the fourth ANOVA analysis. Again, for lending technologies used, financial statement lending outperformed other forms of lending technologies in growing firms. In terms of race, only the Coloured group grew far less than all other races.

7.2.5 Proposed financing framework for SMMEs

While SMMEs globally face credit access problem, the problem faced by SMMEs in South Africa is discriminatory credit rationing and this stifles their growth. There is a high level of inequality in credit rationing among different categories of small firms based on firm size, ownership structure and race. Therefore, a proposed financing framework for SMME must take into account the amount of credit rationing and growth levels as determinants of allocation of funding to different categories of the SMMEs sector.

Inequality distorts allocation of funds earmarked for SMME support from either government or private lending institutions. Since the rate of credit rationing for each category represents risk exposure of financial access for that category, credit rationing levels were used to generate risk weights for each category in the proposed financing framework for SMMEs. The proposed financing framework advocates that, based on firms' risk weights, firms facing high credit rationing levels must be allocated more funds

than those with low credit rationing levels in order to address inequality in access to funding. This proposal enables the use of a scientific way of allocating funds for each category and reduces imbalances associated with historical tendencies in financial access. For example, if sole trader-females face more credit rationing than sole trader-males, the weights must indicate how much funding must be allocated to female-owned and male-owned small businesses based on credit rationing generated weights. However, since three factors are important, namely firm size, ownership structure and race, a decision tree analysis which captures all these factors is used in the final proposed financing framework for SMMEs.

7.3 CONCLUSION

The study aimed at understanding the types of lending technologies used to fund small businesses, types of lending institutions involved, factors influencing the lenders' financing decisions and how these factors lead to the credit rationing and growth of small firms. The study concludes that four main types of financial institutions, namely commercial banks, government-owned development financial institutions, private-owned development financial institutions and microfinance institutions, fund formally registered small businesses in the Eastern Cape Province of South Africa. These institutions invariably use four common types of lending technologies, which are financial statement lending, asset based lending, venture capital lending and asset finance lending technologies. However, observed tendencies show that commercial banks and microfinance institutions dominantly use financial statement lending technology while development financial institutions also dominantly use venture capital lending in addition to other methods. While literature suggests that small institutions use relationship lending, this study concludes that small lending institutions do not use that in South Africa. Rather, development financial institutions use relationship lending as a way of gathering information and understanding the business of SMME, even though they eventually lend using other methods. Whichever methods is used, financial institutions evaluate small businesses using three main factors. The factors they consider are people factors concerning the attributes of people running or owning small businesses, attributes of individual firms themselves and finally the financial position of each firm, and this inquiry

applies to all firms. While the primary goal of all financial institutions is to create loan assets through lending, the study notes that development financial institutions also offer non-funding support services such as business mentoring and referrals, something that commercial banks and microfinance institutions seldom do.

Financial statement lending technology leads to more credit rationing of firms than any other lending method used. In that case, commercial banks and microfinance institutions, which use financial statement lending more often than DFIs, had more credit rationing outcomes than other lenders. When race was factored in, blacks are more credit rationed than any other race and this inequality problem seems not to have been fully addressed by the recently introduced BEE government policy. Within each race group, female-owned and partnership-owned businesses are more credit rationed than male-owned and family-owned businesses respectively. Generally, individual-owned businesses are more credit rationed than businesses with multiple owners and this is supported by the risk diversification principle. The very small businesses are more credit rationed than bigger small businesses and this is worsened when asset-based lending is used than when financial statement lending is used. Smaller small firms also face more direct credit denial while larger small firms are more quantity and price rationed.

Firms grow better when funded by commercial banks and microfinance institutions than any form of DFIs but the effects are more pronounced on the very small firms than on bigger small firms. In all the cases, the growth effects are magnified by both the ownership structure and race effects. Overall, firms that face more credit rationing regardless of the types of lending technology used, tend to grow better than those that are less credit rationed across all firm sizes, race and ownership structures. It was concluded that whichever lending technology is used, growth is inversely related to firm size and these effects are magnified by the interaction effects of race and ownership types.

Given the level of credit rationing and growth patterns of small businesses in South Africa and the inequality that arise as a result, a framework of financing small businesses was developed, which aims at reducing these inequalities and improving the growth of small

businesses. The framework is based on the understanding that credit rationing is a limitation factor of growth and therefore credit rationing risk must be used to create risk weights for race, firm size and ownership structure. The weights are then used to develop a fund allocation decision tree that ensures that all funds from both government and private lending institutions earmarked for SMME support are allocated to different firm categories in a predetermined manner.

7.4 CONTRIBUTIONS OF THE STUDY

The study makes three contributions.

7.4.1 Funds allocation based on SMMEs' characteristics

The first contribution of this study deals with inequality in access to finance by small businesses. There is a high level of inequality in credit rationing among small firms based on firm size, ownership structure and race. Inequality distorts allocation of funds among firms particularly for those funds already strategically earmarked for SMME support from either government or private lending institutions. Since the rate of credit rationing for each category represents risk exposure of financial access for that category, firms facing high credit rationing levels should be allocated more funds than those with low credit rationing levels in order to address inequality in access to funding.

The credit rationing levels indicate the level of credit access risks that firms endure based on different firm characteristics; firm size, ownership structure and race in this case. Therefore, based on this analogy, a funding framework was developed which takes into account credit rationing risk factors and firms' characteristics to allocate funds in small businesses in a way that minimises credit access inequalities among firms. Since firms represent the demand side of lending, the higher the credit risks for a particular firm category the more should be the allocation of funds to that firm group. When funding for small businesses is allocated this way, problems associated with inequality in access to finance on the basis of firm size, ownership structure and race can be totally eliminated. This is possible since funding is based on funding quotas of each category and funding

overlaps among categories that often takes place if allocation is not controlled, will not occur.

7.4.2 Funds allocations based on lenders' characteristics

As already alluded, small businesses are credit rationed but credit rationing is also linked to lenders' characteristics. The main characteristics are types of lending technologies used and types of financial institutions dealing with small businesses. Since the funding of small businesses is linked to lenders' characteristics, credit rationing can be reduced if the credit rationing risk factor of the lenders' characteristics are taken into account in a small business lending framework.

The credit rationing levels indicate the level of credit access risk that firms endure based on two lenders' characteristics; types of lending technologies and types of lending institutions. However, since lenders' characteristics represent the supply side of lending, funds allocation must be based on the low credit risk levels of each lender attribute. Based on this analogy, a supplementary funding framework to the one above was developed and it takes into account credit rationing risk factors of the lenders' characteristics to allocate funds in small businesses in a way that minimises credit access inequalities among firms. From both the above cases, it is proposed that of the total funds earmarked for SMMEs, support should be based on proportional category shares deduced from credit risk profiles of categories of firm and lender characteristics.

7.4.3 Methodological contribution

The last contribution of the study is on the methodological input. The use of mixed methods has highlighted a number of advantages that add value to the academic discourse. The mixed methods approach enables the implementation of both exploratory and explanatory approaches in one study. The qualitative approach adopted in the study meant that the actual nature and content of the types of the lending technologies and the factors they take into account in the study area are fully understood in line with the realities of the South African small businesses and financial system. This was critical in that the

development of lending technology concepts were not merely adopted from the literature but from the realities of the South African settings. The quantitative analysis that then followed is primarily grounded on what in reality obtains in the country in the first instance and subsequently complemented by literature in order to develop variables and the conceptual framework of the study.

The use of mixed methods is not only relevant in coming up with a multi-stage systematic and dynamic data analysis, but also ensures that the variables ultimately used have an empirical foundation. The preliminary understanding of the fundamentals of the local fabrics means that the subsequent quantitative results so developed from those local fabrics have far more relevant policy implications than of studies lacking that history.

7.5 POLICY IMPLICATIONS

A number of policy implications can be drown from this study. The main policy implication of this study is that it provides an implementation strategy for the BEE policy. While the BEE policy is a very noble policy aimed at addressing inequality in the financing of small businesses in South Africa, this study provides a financing framework that guides how the BEE policy can be implemented in a very logical, scientific and practical manner. So far, this financing framework is lacking at the South African BEE policy implementation level and the development of this framework brings about the debate not only in facilitating an implementation process but also on how the effectiveness of the policy itself can be evaluated in the absence of an agreed formula on funds allocation to different firm categories with different inequality levels. This developed SMME financing framework therefore provides that implementation framework.

7.6 FURTHER STUDIES

The study focuses on SMMEs in one province in South Africa. While the results are quite interesting and insightful on the impact of firm and lenders' characteristics on credit and growth patterns of firms, the study lacks breath in terms of coverage within the country. Therefore, for these results to be directly uplifted and applied in the South African economy, there is need to carry out a countrywide study covering all provinces. That

way, all the factors affecting lending to small businesses cutting across the whole country can be investigated and that will give a better impression of the South African small businesses funding phenomenon. This will also ensure that the sample size is improved, which is good for the application of robust economic models intended to influence policy shifts. This study therefore needs to be replicated on a large scale and doing so requires more funding to support this exercise, particularly from the Department of Small Business Development.

The lenders' characteristics are very important in allocation of funds as identified in the study. The study concludes that small businesses can grow better when funded by certain types of lenders using particular forms of lending technologies. The proposed framework based on lenders' characteristics clearly shows that small businesses benefit more when funded through microfinance institutions in respect of all forms of lending technologies compared to other types of lenders. However, the practical reality is that microfinance institutions cannot handle venture capital and asset (equipment) finance lending. This is so because they mostly deal with very low value loans that are too low to cover the costs of most assets and also do not have the capacity to monitor businesses under venture capital arrangements. However, the study results show that they do better in all these areas. It is therefore necessary to conduct another study that first categorises lenders by lending technologies they actually use in practice, before the second part of the proposed funding framework can be adopted.

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APPENDICES

Appendix A: SMMEs survey questionnaire

QUESTIONNAIRE – ENTERPRISE ACCESS TO FINANCE METHODS SURVEY	
Enterprise Name: (Optional)	
Staff Interviewed: (Optional)	
Interviewer Name:	
Date:	

This information must be read to the respondent before they answer any question

This survey is conducted by the Department of Economics, Faculty of Management and Commerce at the University of Fort Hare in respect of PhD in Economics studies for Edson Mbedzi (student number 201615007). The research has been cleared by the University of Fort Hare's University Research Ethical Committee under ethical clearance certificate reference number SIM031SMBE01, dated 1 June 2017.

The goal of this survey is to gather data and opinions about the lending methods used to finance your business by either your bank or other lenders, types of financial institutions financing your enterprise and how your business has performed between 2016 and 2017. The study targets enterprises operating in the Eastern Cape Province, South Africa in two metropolitans; namely Buffalo City and Nelson Mandela Bay Metropolitan Municipalities. Your enterprise is one of the 310 targeted enterprises in the 197 366 Small Medium and Micro Enterprises located in Eastern Cape that has been chosen to participate in this survey.

The information obtained here will be held in the strictest confidentiality. Neither your name, nor that of your business enterprise will be used in any document based on this survey. Any enterprise has an option to withdraw from the survey at any time during the course of survey or refuse to answer part of the questionnaire. You are asked to sign a separate consent form for filing purposes only by the University as proof that a survey was indeed conducted with your enterprise which will not be linked to the questionnaire you have completed.

This questionnaire should be answered preferably by the person(s) with overall responsibility of the enterprise or with full understanding of both the operational and financial aspects of the enterprise.

(Please answer all questions by filling in the appropriate data)

SECTION A: HISTORY OF YOUR ENTERPRISE

1. How old is your enterprise? (state years since established) ☐

2. In which sector does your enterprise falls into? (Please tick the applicable)

   Agriculture, forestry & fishing ☐

   Business services (accounting, legal, architecture, other business consulting) ☐

   Construction & engineering (including general building & civil engineering) ☐

   Manufacturing (food processing and general) ☐

   Retail and wholesale (hardware, electrical and general suppliers) ☐

   Service providers (transport, logistics, accommodation, hotels, events, others) ☐

   IT (high value ICT sectors and accessories suppliers) ☐

   Other (specify) ……

3. Under which native category the owner(s) of the business enterprise fall(s) into?

   Black ☐ White ☐

   Indian ☐ Coloured ☐

   Other (Please specify) ……

4. Who is (are) the owner(s) of your business enterprise?

   Male-owned ☐ Female-owned ☐

   Family-owned ☐ Partnership-owned ☐

   Other (Please specify) ----------

5. What is the highest level of education for the owner or top manager of the enterprise?

☐ Primary education and below

☐ Secondary education

☐ First degree

☐ Master's degree

☐ PhD

☐ Other (please specify) ----------

6. What is the level of the experience working in the sector of the owner or manager of the enterprise?(please state years) ☐

7. How many employees did your enterprise had either full-time or part-time as at the end of the year 2016 (state number of employees)?

☐

8. What was your enterprise's total annual sales as at the end of the year 2016 (state amount in rand)?

☐

9. What was the value of your enterprise's assets as at the end of the year 2016 (state amount)?

☐

10. What was the total value of loans advanced (values of new loans) to your business enterprise during the year 2016 (state amount)?

☐

11. What was the value of your annual capital investment (value of the enterprise's assets purchased) in the year 2016 (state amount)?

12. What was the total value of your enterprise's capital (amount of money put by the enterprise's owners in the business) as at the end of the year 2016 since its formation (state amount)?

13. After how long do your suppliers allow your enterprise to pay for the goods and services delivered to your enterprise?

0 days (immediately) ☐ after 30 days ☐

after 60 days ☐

Other (Please specify) …….

14. After how long do your clients pay your enterprise for the goods and services delivered to them?

0 days (immediately) ☐ 30 days in advance ☐

60 days in advance ☐

Other (Please specify) …….

SECTION B: FIRM-BANK SPECIFIC INFORMATION

15. State the name of the main bank(s) or institution(s) that mostly funds your enterprise's business or has a relationship with your enterprise.

……

16. List other banks or institutions that also funds your enterprise's business or have a lending relationship with your enterprise.

    a. ……

    b. ……

    c. ……

    d. ……

17. What is the length of your enterprise's relationship with the main bank or institution? (state in years) ☐

18. Does your main funding bank offer other financial services (cash management, custody etc.) to your enterprise in addition to accounts held? Yes ☐ No ☐

19. Does your bank's officers visit your enterprise premises? Yes ☐ No ☐

20. If your answer is "Yes" to question 19 above, how often?

    State average number of visits per year ☐

21. Was your enterprise once denied credit by your main bank or main funding institution?

    Yes ☐ No ☐

22. Was your enterprise once denied credit by any other bank(s) or funding institution(s)?

    Yes ☐ No ☐

23. If your answer to questions 19 or 20 above is a "Yes", what was the **one main common** reason given for the rejection(s) of your application(s)?

☐ Collateral or co-assignees unacceptable

☐ Insufficient profitability of the enterprise

☐ Problems with credit history or credit report

☐ Concerns about levels of debt already existing

☐ Incompleteness of application form

☐ Other objections (please specify) ----------

24. Has your enterprise been offered a loan for a lower amount by a bank or funding institution other than your enterprise had originally applied for?

Yes ☐ No ☐

25. Has your enterprise accepted a loan credit offered at a high interest rate agreed with the bank which is above the prevailing market average interest rate?

Yes ☐ No ☐

26. Does your enterprise's owner or top manager personally knows your bank staff as one of the following levels?

a. Personal friend Yes ☐ No ☐

b. Family friend Yes ☐ No ☐

c. Former college mate Yes ☐ No ☐

d. Neighbourhood member Yes ☐ No ☐

27. Does your bank knows your enterprise's industry (the firm's industry activities)
Yes ☐ No ☐

28. Does your staff have social contact with bank officers (bank officers have frequent contact with the enterprise staff)? Yes ☐ No ☐

SECTION C: YOUR ENTERPRISE'S BORROWING INFORMATION REQUIRED BY THE BANK AND FUNDING INSTITUTIONS

In your view, does your bank or funding institution asks for the following information when granting loans and credit to your enterprise?

29. Ability of your enterprise to repay its debt (e.g., years needed to repay debt based on your enterprise's cash flows). Yes ☐ No ☐

30. Financial strength of your enterprise's balance sheet (value of the enterprise's capital or assets). Yes ☐ No ☐

31. Your enterprise's profitability (current profits, sales). Yes ☐ No ☐

32. Your enterprise's growth (growth in sales, output etc.). Yes ☐ No ☐

33. Your enterprise's ability to support future cash flows (e.g. level of current cash receivables, inventory, business activity etc.). Yes ☐ No ☐

34. The ability of your enterprise to pledge (not personal) real estate collateral to secure the loan.
Yes ☐ No ☐

35. The ability of your enterprise to pledge (not personal) motor vehicle collateral to secure the loan. Yes ☐ No ☐

36. The ability of your enterprise to pledge tangible equipment collateral to secure the loan.
Yes ☐ No ☐

37. The use of personal guarantees provided by the firm's manager or owner to secure the loan.
Yes ☐ No ☐

38. The managerial ability on the part of those running the enterprise's business.
Yes ☐ No ☐

39. The strength of the enterprise in its market (e.g. number of customers, commercial network, market share).
Yes ☐ No ☐

40. The fundamental strength of the enterprise (e.g. ability to innovate).
Yes ☐ No ☐

41. Does your funding institution owns all the shares in your organisations?
Yes ☐ No ☐

42. Does your funding institution owns part of the shares in exchange for capital invested in your firm?
Yes ☐ No ☐

43. Is your funding institution's staff take part in your organisation's strategic and business management planning?
Yes ☐ No ☐

END OF QUESTIONNAIRE SURVEY

Appendix B: Research ethical clearance certificate

University of Fort Hare
Together in Excellence

ETHICAL CLEARANCE CERTIFICATE
REC-270710-028-RA Level 01

Certificate Reference Number:	SIM031SMBE01
Project title:	**The effects of lending technologies and financial institutions in facilitating credit to SMMEs: Evidence from the Eastern Cape Province.**
Nature of Project	PhD in Economics
Principal Researcher:	Edson Mbedzi
Supervisor:	Prof M Simatele
Co-supervisor:	N/A

On behalf of the University of Fort Hare's Research Ethics Committee (UREC) I hereby give ethical approval in respect of the undertakings contained in the above-mentioned project and research instrument(s). Should any other instruments be used, these require separate authorization. The Researcher may therefore commence with the research as from the date of this certificate, using the reference number indicated above.

Please note that the UREC must be informed immediately of

- Any material change in the conditions or undertakings mentioned in the document
- Any material breaches of ethical undertakings or events that impact upon the ethical conduct of the research

The Principal Researcher must report to the UREC in the prescribed format, where applicable, annually, and at the end of the project, in respect of ethical compliance.

Special conditions: Research that includes children as per the official regulations of the act must take the following into account:

Note: The UREC is aware of the provisions of s71 of the National Health Act 61 of 2003 and that matters pertaining to obtaining the Minister's consent are under discussion and remain unresolved. Nonetheless, as was decided at a meeting between the National Health Research Ethics Committee and stakeholders on 6 June 2013, university ethics committees may continue to grant ethical clearance for research involving children without the Minister's consent, provided that the prescripts of the previous rules have been met. This certificate is granted in terms of this agreement.

The UREC retains the right to

- Withdraw or amend this Ethical Clearance Certificate if
  - Any unethical principal or practices are revealed or suspected
  - Relevant information has been withheld or misrepresented
  - Regulatory changes of whatsoever nature so require
  - The conditions contained in the Certificate have not been adhered to
- Request access to any information or data at any time during the course or after completion of the project.
- In addition to the need to comply with the highest level of ethical conduct principle investigators must report back annually as an evaluation and monitoring mechanism on the progress being made by the research. Such a report must be sent to the Dean of Research's office

The Ethics Committee wished you well in your research.

Yours sincerely

Professor Wilson Akpan
Acting Dean of Research

01 June 2017

Appendix C: Respondent Consent Form

University of Fort Hare
Together in Excellence

Ethics Research Confidentiality and Informed Consent Form

Please note:

This form is to be completed by the researcher(s) as well as by the interviewee before the commencement of the research. Copies of the signed form must be filed and kept on record

Our University of Fort Hare through the Department of Economics is asking SMME firms from different sectors and financial institutions' senior representatives/owners to answer some questions, which we hope will benefit your sector and possibly other sectors in the future, as well as financial institutions that extend credit to SMMEs in the Eastern Cape Province, specifically in Buffalo City and Nelson Mandela Bay Municipality Metropolitans.

The University of Fort Hare through the Department of Economics is conducting a research regarding **"***THE EFFECTS OF LENDING TECHNOLOGIES AND FINANCIAL INSTITUTIONS IN FACILITATING SMMES LENDING : EVIDENCE FROM THE EASTERN CAPE PROVINCE*". We are interested in finding out more about the types of lending technologies used by financial institutions in funding SMMEs needs and how these different lending technologies help grow SMMEs on the one side and affect credit rationing of SMMEs on the other. We are carrying out this research to help develop a funding framework that works better in facilitating credit to and growing SMMEs in South Africa, particularly in the Eastern Cape Province.

Please understand that you are not being forced to take part in this study and the choice whether to participate or not is yours alone. However, we would really appreciate it if you do share your thoughts with us. If you choose not take part in answering these questions, you will not be affected in any way. If you agree to participate, you may stop me at any

time and tell me that you don't want to go on with the interview. If you do this there will also be no penalties and you will NOT be prejudiced in ANY way. Confidentiality will be observed professionally.

I will not be recording your name anywhere on the questionnaire and no one will be able to link you to the answers you give. Only the researchers will have access to the unlinked information. The information will remain confidential and there will be no "come-backs" from the answers you give.

The interview will last around 20 to 30 minutes. I will be asking you questions and ask that you are as open and honest as possible in answering these questions. Some questions may be on specific activities or monetary values of the operations of your firm and/or your level of dealing with your main financial institution and therefore may be sensitive in nature. I will be asking some questions that you may not have thought about before, and which also involve thinking about the past or the future activities or performances of your firm or have to refer to specific divisions of your enterprise. We know that you cannot be absolutely certain about the answers to these questions but we ask that you try to think about these questions. When it comes to answering questions there are no right and wrong answers.

If possible, our Department of Economics would like to come back to this area once we have completed our study to inform you and your sector through your Chamber of Business of what the results are and discuss our findings and proposals around the research and what this means for firms in your sector.

INFORMED CONSENT

I hereby agree to participate in research regarding, "The effects of lending technologies and financial institutions in facilitating SMMEs lending: Evidence from the Eastern Cape Province". I understand that I am participating freely and without being forced in any way to do so. I also understand that I can stop this interview at any point should I not want to continue and that this decision will not in any way affect me negatively.

I understand that this is a research project whose purpose is not necessarily to benefit me personally.

I have received the telephone number of a person to contact should I need to speak about any issues which may arise in this interview.

I understand that this consent form will not be linked to the questionnaire, and that my answers will remain confidential.

I understand that if at all possible, feedback will be given to my community on the results of the completed research.

……..

Signature of participant **Date**:……..

I hereby agree to the tape recording of my participation in the study

……..

Signature of participant **Date**:……..

Appendix D: Supervisor's Declaration Form

University of Fort Hare
Together in Excellence

UNIVERSITY RESEARCH ETHICS COMMITTEE

SUPERVISOR'S DECLARATION

The supervisor must sign a declaration for each student project supervised.

A. SUPERVISOR

Surname	SIMATELE					Initials	M.	Title	PROF
Capacity	SUPERVISOR								
Department	ECONOMICS								
Present position	DEPUTY DEAN: RESEARCH AND INTERNATIONALISATION				**E-mail**	msimatele@ufh.ac.za			
Telephone no.	**(w)**	+27 (0) 43 704 7022	Cell	+27 (0) 81 4925990		**Fax**			

B. RESEARCHER

Surname	MBEDZI		Initials	E	**Title**	MR
Department	ECONOMICS					
Telephone no.	**(w)**	+263 9 282842	**Cell**	+263 779 525 205	**E-mail**	edson.mbedzi@nust.ac.zw

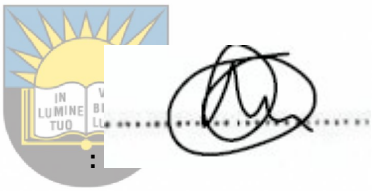
C. PROJECT TITLE (MAXIMUM OF 250 CHARACTERS FOR DATABASE PURPOSES**)**

THE EFFECTS OF LENDING TECHNOLOGIES AND FINANCIAL INSTITUTIONS IN FACILITATING SMMES LENDING : EVIDENCE FROM THE EASTERN CAPE PROVINCE

I, Prof, Munacinga C. Simatele declare that

- **I have read through the submitted version of the research protocol and all supporting documents and am satisfied with their contents. I am satisfied that the scientific content of the research is satisfactory and up to standard for an educational qualification at this level.**
- I am **suitably qualified and experienced** to supervise the above research study.
- **I undertake to fulfill the responsibilities of the supervisor** for this study as set out in the university policy
- I take responsibility for ensuring that the applicant is up to date and complies with the requirements of the law and relevant guidelines relating to security and confidentiality of research subjects and other personal data, in conjunction with supervisors as appropriate.
- I take responsibility for ensuring that the applicant is up to date and complies with all regulatory and monitoring requirements of the UREC
- I agree to supervise the described study in accordance with the relevant, current protocol and **will only change the protocol after approval by the UREC.**
- I agree to ensure the applicant maintains **adequate and accurate records**.
- I take responsibility for ensuring that this study is conducted in accordance with the ethical principles underlying the Declaration of Helsinki as well as South African and ICH GCP Guidelines and the Ethical Guidelines of the Department of Health as well as applicable regulations pertaining to health and other research with supervisors as appropriate.
- I agree that I am conversant with the above **guidelines**.
- I will ensure that the applicant treats every participant **in a dignified manner and with respect**.

Supervisor **: PROFESSOR MUNACINGA SIMATELE**

Signature **:** 

Date **: 20/10/2016**

CONFLICT OF INTEREST DECLARATION (OBLIGATORY)

The researcher is expected to declare to the University Research Ethics Committee (UREC) the presence of any potential or existing conflict of interest that may potentially pose a threat to the scientific integrity and ethical conduct of any research in the University.

The UREC will decide whether such conflicts are sufficient as to warrant consideration of their impact on the ethical conduct of the study.

Disclosure of conflict of interest does not imply that a study will be deemed unethical, as the mere existence of a conflict of interest does not mean that a study cannot be conducted ethically.

However, failure to declare to the UREC a conflict of interest known to the researcher at the outset of the study will be deemed to be unethical conduct.

Researchers are therefore expected to sign *either* of the two declarations below:

a) As the Principal Researcher in this study (EDSON MBEDZI)

I hereby declare that I am **not aware** of any potential conflict of interest which may influence my ethical conduct of this study.

Signature:  Date: **20/10/2016**

b) As the Principal Researcher in this study (name:_____)

I hereby declare that I am **aware** of potential conflicts of interest which should be considered by the UREC:

Signature:_____ Date:_____

Appendix E: Dependent Normality Tests

Financial statement lending & micro firms	Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Efficiency Score of the SMME	.161	38	.075	.930	38	.121

Financial statement lending & Very small firms	Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Efficiency Score of the SMME	.269	26	.190	.815	26	.220

Financial statement lending & Small firms	Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Efficiency Score of the SMME	.178	38	.084	.890	38	.081

Financial statement lending & Medium firms	Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Efficiency Score of the SMME	.225	11	.126	.793	11	.018

Asset based lending & Very small firms	Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Efficiency Score of the SMME	.210	33	.081	.834	33	.092

Asset based lending & Small firms	Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Efficiency Score of the SMME	.187	34	.094	.858	34	.076

Asset based lending & Medium firms	Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Efficiency Score of the SMME	.316	19	.074	.685	19	.063

Venture capital lending & Micro firms	Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Efficiency Score of the SMME	.427	4	.057	.652	4	.063

Asset financing lending & Small firms	Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Efficiency Score of the SMME	.234	14	.116	.778	14	.144

Venture capital lending & Very small firms	Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Efficiency Score of the SMME	.307	4	.	.729	4	.084

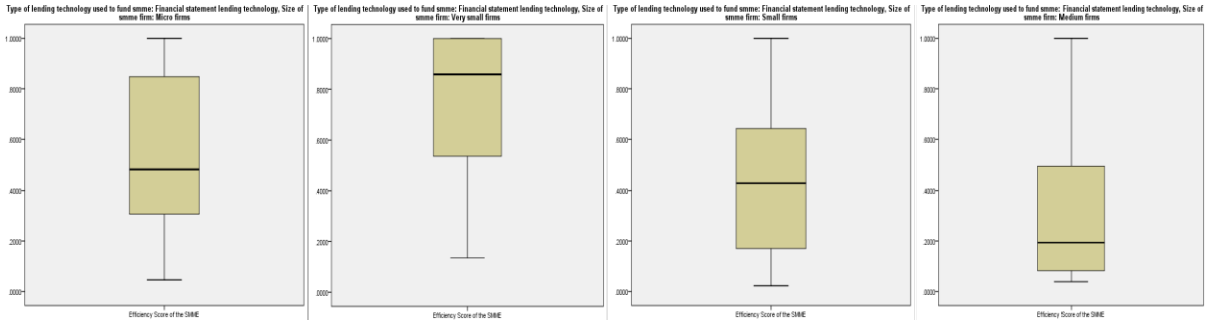
Venture capital lending & Medium firms	Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Efficiency Score of the SMME	.213	8	.200*	.894	8	.256

Asset financing lending & Very small firms	Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Efficiency Score of the SMME	.360	7	.007	.694	7	.003

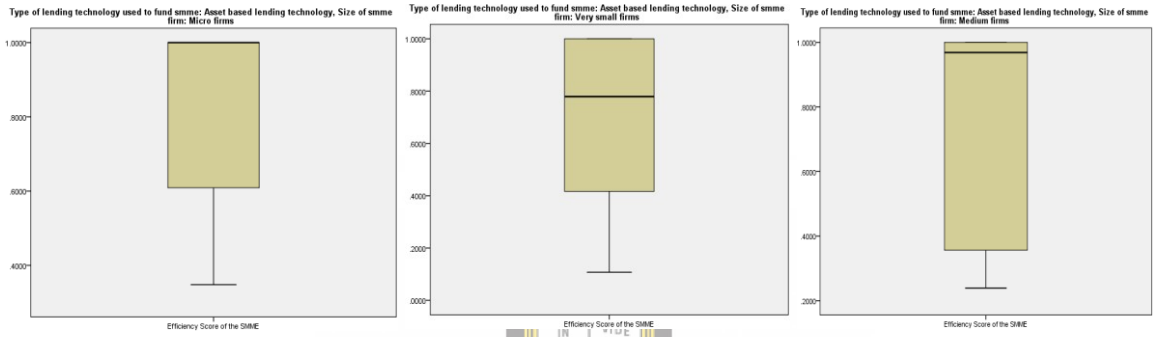
Asset financing lending & Medium firms	Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Efficiency Score of the SMME	.296	12	.006	.548	12	.086

Appendix F: Dependent Variable Outlier Plots Tests

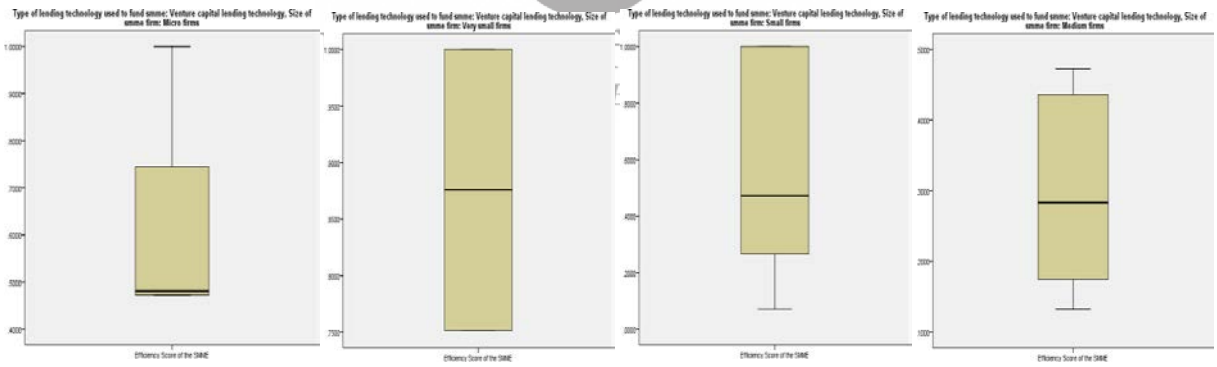
1a. Financial statement lending technology and Size of SMME firm outlier plots



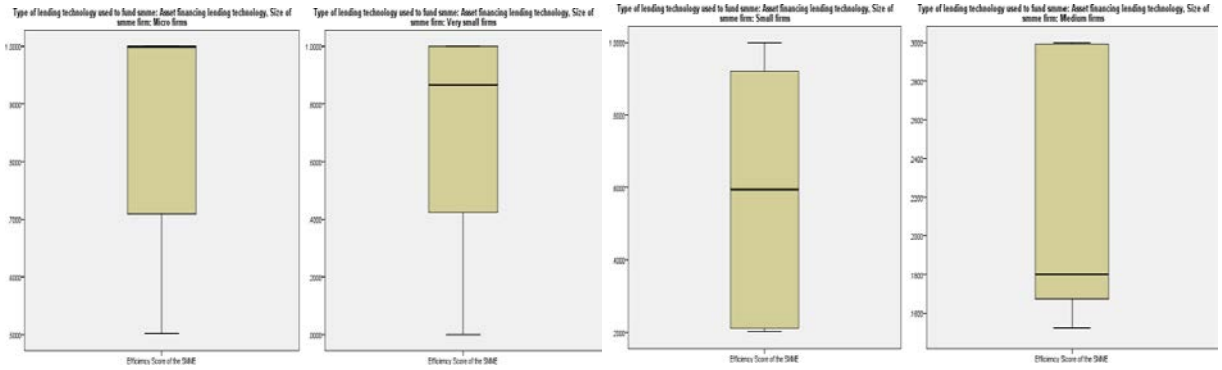
1b. Asset based lending technology and Size of SMME firm outlier plots



1c. Venture capital lending technology and Size of SMME firm outlier plots



1d. Asset financing lending technology and Size of SMME firm outlier plots



Appendix G: Sample Trancriptions from Private-owned DFI

Interview Transcription for Participant number 4 as recorded at Sterling, East London inside participant's office from 10:05am to 10:59 am on 17 July 2017

I = Interviewer
P4 = Participant number 4

I: Thank you allowing me to come, meet you and discuss the way you do business. Like I said in my email request, I want to find out the methods your institution uses to decide whether to lend or not to lend to SMMEs and the factors you take into account to arrive at lending decisions. The research has been cleared by my University as per the ethical clearance certificate I attached on my request email. So, I will ask you a few questions in relation to your lending procedures to small businesses.

P4: Ok, that's is fine.

I: What do you look for about the firm when evaluating a loan request from a SMME firm? Is it fine with you if I can record this discussion?

P4: That is fine.

Recording started.

I: What financial information do you require from SMMEs when assessing their loan applications and what matter most in those financials.

P4: Ok, let me start by saying there are four criteria that -------- (name of institution removed) looks at no matter what type of the business of the client. We place most emphasis on the entrepreneur and the experience the entrepreneur has got. So, if you have been a motor mechanic all your life and you come to me for a loan to start a bakery, there is no way you can get money from me because you have no experience in making bread. So, the experience of the entrepreneur is very important to us. We then look at his ability to manage this business, the ability to understand financial statements, and the ability to control people. Then we look at the business itself, it must be sustainable and viable business, which is the financials I have mentioned just now and the other thing we look at is his own contribution. How much money is he putting towards the deal as well, because if there is no own contribution there is no commitment and if the business does not work out he walks away scot free and he owes me money. So, we insist that there is at least 20% to 30% contribution in cash from his side, ok. The last thing we look at is for that balance of the loan, what kind of collateral is he offering me? Ok, he need to show some form of commitment he is giving me so that if the business doesn't work out I have something to go attach and sell, so those are the four basic criteria we apply in any loan application. If it is a start-up business, I want a business plan. Eeh, in the business plan, I want to see a twelve month projection and he must substantiate his turnover, Ok. He is not going to say I will make 50 000 or 100 000 rand per month, I want to know exactly what his target market is, whose clients are, whose suppliers are, what terms he has got with his suppliers and clients? So I want a comprehensive business plan, with his income and expenditure. We then take that information and put it in our financial model to

make our own projection to either confirm or reject the business. Remember (name of institution removed) is a viability lending organisation. If the business is viable, at the end of the day that is what we are going to use to motivate the deal. Ok, if it is an existing business, I want the latest audited financial statements, Ok. There are also a host of things that we ask for, I also want the latest management accounts, because now we are half year through the year, as at February the business can be making money but not so throughout the year, so we also need latest management accounts. Right, I always ask for VAT returns, because how do you verify turnover, we verify turnover by VAT returns. I want copies of the bank statement to make sure that the money that comes through the bank is the same as the information on the financial statements. I want debtors and creditors age analysis as at the end of last month. Ok, alright, there are other things which depend on in which industry you are in. Right, if you have a restaurant you have to have a liquor license, so I want a copy of the liquor license, if you are in the fuel industry you need the South African Petroleum Industry Association (SAPIA) licence and retail license, need a copy of that SAPIA license and retail license, if it's a franchise, I want copies of the franchise agreement and want to know that he is accredited in the franchise zone and if it is for the premises, I want a lease agreement. So, it doesn't just go back to the business itself, it's the big picture on the business that you have to look. Ok, so that is on the financial viability of the business that we assess.

I: when lending to SMMEs, what information about the firm itself are you worried about and how do assess that information for different clients?

P4: ……, (Name of institution removed) is a private company with shareholders and our shareholders dictate where the money goes. Certain industries are getting firms down at the moment, so anything involving alcohol and cigarettes, we try to stay off. I don't do any primary agriculture, I don't do any vehicle finance, I don't do any residential finance, I purely do business finance. So, that is a directive from our shareholders. Ok, but within that sphere we have specialised funds for women in business, energy fund, educational fund, so we have got a couple of funds in the deals we do. Having said that, a couple of specialised fast food industries are hot now, while the rest of the industry is taking strength because when economic times are bad, I don't go and spend 600 rand on a meal, I stay at home and eat hot dogs for supper. So, you see these restaurants don't make a lot of money nowadays. It's only the upper class restaurants and bars that are making money, but the middle and low class restaurants and bars are not making any money because when economic times are hard, people do not go out and eat. I am feeling the pinch myself, it is tough at the moment, and I hope you are feeling the same heat too. So I stay away from restaurant businesses, they are not making any money.

I: You mentioned that you want to know the owner of the business, what exactly do you want to know about the quality of management for fund you want to fund?

P4: Ok, we look at education and also when people come to the institution (name of institution removed), the institution (name of institution removed) has teamed up with Harvard University, we get entrepreneurs to write a test, it's an informal test, you cannot fail it, put it that way, but it gives us a score of low, medium and high and we know that those people with low score, the tendency to default is much higher than the people with high score because we have two types of entrepreneurs; those who have the ability to pay but don't pay, and then you those

entrepreneurs who are battling so that they can't pay but still make a plan to pay. So the test that we do with Harvard is to separate in what category do those entrepreneurs fall? And the whole reason why we are doing this is to assess in the future, are we going to do any unsecured lending? Ok, this is in the early phases now, and I think this is second year we are doing it, so it's early to tell the results and I hope in the coming years we will be implementing something along those lines.

I: You indicated that require SMMEs to give you security or own contribution. What forms of security do you require SMMEs to provide and under what circumstances do you require SMMEs to provide security?

P4: Ok, that's goes hand in hand with passing. The more risk I take the higher the cost of money, it is as simple as that. We look at the business, yes the business is viable, now what are you giving me as collateral? Ok, if you are giving me no collateral I must charge that much so business becomes unviable. There is a fine balance between at what stage I say yes and at what stage do I say no, because a business can be viable, but without security I am still not going to make the deal, I won't go into unsecured lending. Ok, so the types of things I look at is first bonds of fixed property, that good security and if they don't pay, I am going to take the house, sell the house and get my money back. Something that I will do that banks don't do, is to take a second bond behind the bank. Bank (name of bank removed) has a first bond on a house, the house is worthy 2 million rand but the client only owes 1 million balance with the bank, so there is equity there. So I can take a second bond behind the bank if they allow me to, but we have to write to the bank and say please allow us to register a second bond, it is not as secure as the first bond but we do it. The other thing that banks don't do, is a general special material bond over equipment, but I do it. For example if you are buying a supermarket and the supermarket has all that food allies, racks, fridges and point of sale computers, I will do a general special material bond over all that stuff but it is not a good security either I will give you an example I financed a chips frying machine the other day, 54 000 rand for a chips fryer, 18 months later the business didn't work and we had to sell that chip fryer, we got 8 000 rand for that piece of equipment that I paid 54 000 rand for. So, general special material bond is not good security but we take it in any case. Aah, if you have insurance policies with surrender value, not with life dead cover we take a cession of that surrender value, if you have shares with listed companies on the Johannesburg Stock Exchange, we can take a cession of the value of shares, but as you remember shares fluctuate in value so the security value of personal shares we take is only a cession of 50% of the value of shares. Ok, there are various forms of security, I don't take a cession of debtors because I want to leave something for the bank, and when the business is running, usually will have a bank overdraft secured by cession of debtors, so I don't like cessions of debtors and leave that for banks. So there are a lot of securities and every security is negotiable, but the more security you give me the cheaper and more money is, it is as simple as all that. We do business slightly differently from banks. At the bank, when I worked for …..(Name of bank removed), the first thing I asked for was, where is your deposit? So, if we don't have your deposit, sorry we can't help you. At this institution (name removed) if you don't have a deposit, we can make a plan, we can come in as shareholders. The same thing applies for other business finance with banks, if you want 1 million rand business finance loan, the bank wants 1 million rand collateral. If you come to me asking for 1 million rand loan, I may take maybe 600 000 or 700 000 rand collateral. I am prepared to take a risk for the other 300 000 rand, but you have to pay me for it. So, I will do a loan for prime+1% for 5 years for the secured portion and the unsecured portion of 300 000 rand I will charge you a

rate of return on turnover. So, I will structure the deal differently from the bank and I am prepared to take more risk than banks take, and that why my money is more expensive.

I: You mentioned the issue of own contribution by a firm as a form of security right, may you clarify how you do that?

P4: The 30% contribution is of the total funding required. So, if you are buying the ..... (name removed) franchise which costs 2 million rand, I would say from the institution's (name of institution removed) point of view, but here a conflict comes in again, (name removed), their policy is that 50% of the money should be from the incumbent, so before they approve you to operate as a ------- (name removed), they want to see a 1 million rand cash to put into the business, then you come to our institution for the other 1 million rand. Ok, so the franchise zone dictates how much contribution should be but from our side we say 20 to 30% while the franchise zone requires 50%, so we also have to comply with the conditions of the franchise zone.

I: Ok that fine, you also mentioned that you look at the state of current business operations, what do you look for exactly?

P4: Ok, that is linked to viability. Certain businesses have a certain life cycle, and I am thinking about a crasher plant for blasting quarries and I have financed that business before. That machine that you buy has only a certain life cycle because it hard work crashing stones, it can only work for four years and there is nothing left. So, now a guy buys that machine and runs it for three years and then he puts the business in the market. Ok, now you come along and you want to buy that business. We know that machine has only a year to go and you have to replace it, but he is selling the business at full price. So, it is very important to know at stage is the life cycle is the equipment is in or what stage of the life cycle in generally the business is in, so we definitely look at all that, the life cycle of the business.

I: You mentioned that you want to know the viability of the business, how important are other stakeholders of the business in influencing viability of the businesses?

P4: Ok, I have mentioned that we ask for debtors and creditors age analysis. Then we see, how many of your customers are on 30 days, 60 days or 90 days. Now during the due diligence process we randomly select two customers in 30 days, two in 60 days and two in 90 days and would phone them and say how has been your experience with this business? Do they supply the goods on time, do they deliver what they promised, and that is very important. If we can get adequate reports, then red lights can come up. We do the same thing with your suppliers, we select at least four people and phone them to find out how you pay your suppliers and that how we view the age analysis to understand how the business is seen in the market and if they have got a bad name in the market I am not going to finance them because I stand the risk of losing money.

I: You seem to be interested in the relationship between your client and other stakeholders that you have just discussed, I want to know if your own relationship as a financial institution to your client also matters in offering credit to SMMEs?

P4: Have you been to King Williams's town, or men's braai bar (name removed) in (name removed), it is a chisa nyama but is a fancy chisa nyama place. That client is on loan number five with me, ok. We financed him in Mdantshane, we financed him in King Williams Town, he opened in Queenstown, he opened another in King William's Town again and then he wanted to open another one in Port Elizabeth and we said no to that. Do you know why, we went there and looked where he wanted to open the shop, and it was somewhere half way between the township and the city, and he was somewhere in no man's land and I said no, I don't think this business will survive here. To this day he still says thanks for saying no. So, yes we do have relationship with our customers. If you have a very good record in paying me back, it's easier to get a loan for the second time, third time, and fourth time. Yes, the perception in the market is our Institution (name of institution removed) is expensive because I don't do business with prime monies. My deals are prime + 2 or prime +3 and for that reason my money appears to be expensive money and it's because I don't have other banking things. The bank will give a loan at prime or prime +1, but will say open a cheque account with us, every time you withdraw they charge you, every time bank they charge you, I don't have that. I give a loan and you have to pay me back, so the banks make other money from those other services, which I don't have, that's way I charge a little bit more.

I: what problems do you encounter when financing SMMEs and how do you deal with them?

P4: I will tell you straight away. SMMEs do not have financial statements. The financial statements they have has absolutely nothing to me because if you ask for an income statement, they will give you but if you look at expenses, all expenses end with zero; telephone account 3 200 rand, transport 5 200 rand, that is impossible and question the accountant. That what's SMMEs concerns me about, they don't know what an income statement is, what a balance sheet is and what a GP is? When you ask them what is your gross profit percentage, ok? If I walk into ----- (name removed), or any other restaurant, let me talk about (name removed) and I finance five of them I know. I know the GP percentage should be around 65% and 67% for franchised restaurants and I say where are your financials? I work out the GP percentage and it is sitting at 45%. What can the problem be in this business? It can't be a buying problem because you are buying from the franchise, it can't be a selling price problem because all prices are uniform across the franchise zone, and the prices are set. So it's not a costing thing and pricing thing. So, the only problem can be theft, your staff are stilling from you and that becomes a management issue. That is way in all these restaurants, the business owner has to walk around with a bunch of keys because he has to control his GP. So, that way we insist on income statements on a regular basis, and don't do them once a year, do them monthly so that you are able to monitor your GP.

I: I think you addressed most of my questions and thank you very much for your time.

P4: My pleasure and hope you get something out of this.

I: Thank you.

Appendix H: Turnitin digital reciept report

Digital Receipt

This receipt acknowledges that Turnitin received your paper. Below you will find the receipt information regarding your submission.

The first page of your submissions is displayed below.

Submission author:	Edson Mbedzi
Assignment title:	Chapter 2
Submission title:	Mbedzi
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University of Fort Hare
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LENDING TECHNOLOGIES AND SMALL, MICRO AND MEDIUM ENTERPRISE BORROWING: EVIDENCE FROM THE EASTERN CAPE PROVINCE OF SOUTH AFRICA

EDSON MBEDZI
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PROMOTER: PROFESSOR MUNACINGA SIMATELE

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Appendix I: Certificate for professional language editing

ZIMSEC
For Performance Measurement

Zimbabwe School Examinations Council, 29 J Tongogara Street, Bulawayo

To whom it may concern:

This document certifies that the doctoral thesis whose title appears below has been edited for proper English language, grammar, punctuation, spelling and overall style by Godfree Muyambo, an English Examinations Manager whose qualifications are listed in the footer of this certificate.

Title:

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