THE DRIVERS OF BANK CREDIT FLOW TO AGRO-PROCESSING SMEs IN TANZANIA: THE SUPPLY SIDE PERSPECTIVES

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ABSTRACT

**THE DRIVERS OF BANK CREDIT FLOW TO AGRO-PROCESSING
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Justus Gratian Mwemezi

The study aimed to determine how lending costs, information asymmetry, institutional lending structures, bank credit transparency, and bank financial technology (FinTech) influence the flow of bank credit to Tanzanian agro-processing SMEs. Tanzania promotes agro-processing SMEs to help the country transition from an agricultural to a semi-industrial economy. However, some processing firms are collapsing, while others are not developing as quickly as they should be due to undercapitalization caused by a lack of funding, primarily from banks. By investigating the supply-side perspectives, this study developed a conceptual framework based on financial intermediation theory to better explain the drivers of bank credit flow to agro-processing SMEs. The self-administered questionnaires were collected for statistical analysis utilizing partial least square structural equation modelling in this cross-section quantitative investigation. Three hundred seventy-seven bank branches in five administrative regions in Tanzania were approached by a multistage sampling technique to collect valid responses from lending officers participating in SMEs loans. The empirical findings revealed that information asymmetry and credit risk management significantly negatively influenced bank credit flow compared to lending costs.

FinTech and institutional lending structure had a significant positive impact on bank credit flow. Furthermore, the findings demonstrate that FinTech reduces the negative effects of information asymmetry and credit risk management when used as a moderator, allowing Ap-SMEs to obtain more loans. Interestingly, the findings demonstrate that bank credit transparency mediates the relationship between credit risk management and credit flow to Ap-SMEs. This research adds to the body of knowledge about the bank funding of SMEs. Policymakers and practitioners can use the findings of this study to improve credit transparency and financial technology (FinTech) in lending activities to fulfil the nation's goal of creating a semi-industrial economy through agro-processing SMEs.

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I hereby declare that the thesis based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UTAR or other institutions.

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Date: 3rd March 2023

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LIST OF ABBREVIATIONS

Ap-SMEs	Agro-processing SMEs
AT	Agency Theory
BAFIA	Banking Financial Institutions Act
BOT	Bank of Tanzania
CAMPARI	Character, Ability, Margin, Purpose, Amount, Repayment period and Insurance
FAO	Food and Agriculture Organization
FinTech	Financial Technology
FIT	Financial Intermediation Theory
FSDT	Financial Sector Deepening Trust
FYDP	Five Year Development Plan
IIDS	Integrated Industrial Development Strategy
ISIC	International Standard Industrial Classification
KYC	Know Your Customer
LFT	Loanable Funds Theory
MGDs	Millennium Development Goals
PASS	Private Agricultural Sector Support Fund
PLS	Partial Least Squares
SACCOS	Saving and Credit Cooperative Societies
SEM	Structural Equation Modelling
SIDO	Small Industries Development Organization
SIDP	Sustainable Industrial Development Policy
SMEs	Small and Medium Enterprises

TADB	Tanzania Agricultural Development Bank
TDV	Tanzania Development Vision
URT	United Republic of Tanzania
VAF	Variance Accounted For
VICOBA	Village Community Banking
VIF	Variance Inflation Factor
WB	World Bank

CHAPTER 1

INTRODUCTION

1.1   Introduction

This chapter gives background information on the factors that influence the flow of bank credit to Tanzanian agro-processing SMEs. The research problem, research questions, and objectives are all discussed in this chapter. Finally, it discusses the significance of the research and the thesis' scope and organization.

1.2   Background of the Study

The small and medium enterprises in sub-Saharan Africa, specifically the agro-processing SMEs (Ap-SMEs), form a potential livelihood for many poor people in the region (Daninga, 2020; Fouejieu et al., 2020; Mhazo Mvumi et al., 2012; Nkwabi et al., 2019). Following the economic importance of SMEs worldwide and because small business access to finance has been like the failed kidneys, researchers continue to explore their related aspects. It is argued that small and medium-scale industries, in general, serve as engines of economic and social development of a nation precisely for less developed countries (Mohamed & Mnguu, 2014; Wang et al., 2020). More than 65% of Tanzanians participate in agriculture; therefore, Ap-SMEs' contribution cannot be undermined. They are primary driving forces for job creation, income generation, economic growth, and innovation and significantly stimulate exports and technological progress.

According to World Bank (2018), the Ap-SMEs have a potential contribution to processing agricultural products, and these SMEs act as a pivot point for employment multiplier effects. Similarly, Tanzania has targeted Ap-SMEs to transform the economy from agricultural to semi-industrial (United Republic of Tanzania, 2015). However, for its intended purpose, Ap-SMEs' growth in Tanzania has been slow. The sub-sector has not yet generated adequate employment, income, or significant value of processed products for domestic use and exports. Some Ap-SMEs are collapsing, while others are not increasing as anticipated (Nkwabi et al., 2019; Tisimia, 2014; United Republic of Tanzania, 2015). The critical limitation of the agro-processing sector's underdevelopment is undercapitalization triggered by limited finance access. Most studies conducted in Tanzania have identified huge credit constraints for SMEs (Kombe et al., 2017; Mbowe et al., 2020; Nkwabi et al., 2019; Tisimia, 2014). According to Boushnak, Rageb, Ragab and Sak (2018), it is estimated that 70% of all SMEs in developing countries face financial constraints, a challenge to their existence and enlargement. Therefore, there is a need to look for means to solve the financing gap between banks and SMEs to support the country's efforts to shift into semi-industrialized economies.

In some countries, supplying credit is not only left to banks and other financial institutions. Governments have been extending hands to support selected economic sectors, including SMEs, to access banks' finance easily. For example, in Malaysia, the government established the Development of Financial Institutions

(DFIs) to develop and promote critical sectors, including small and medium enterprises (SMEs). According to Islam (2012), in Malaysia, DFIs offer a comprehensive range of tailor-made products and services to accommodate SMEs' needs appropriately. DFIs act as a complement to the banking institutions and strategically bridge the gaps in credit supply. Generally, the DFIs have significantly contributed to the development and expansion of SMEs around the globe. In Tanzania, the case is different, as banks are left with the role of supplying credit to SMEs, and seldom does the government intervene. However, Tanzania's government has taken steps to help the agribusiness sector overcome its lack of credit by establishing credit guarantees like (1) The Private Agricultural Sector Support Fund (PASS) in 2000, supported by the Danish; (2) The Agro-processors Credit Guarantee Scheme under SIDO (SIDO/SME CG) in 2015; and (3) The Tanzania Agricultural Development Bank (TADB) in 2015. Even though the literature agrees that a credit guarantee system increases the supply of loans, there is still a considerable gap in Ap-SMEs' access to capital from financial institutions (Kandonga, 2020).

Most researchers' main concern has been identifying multiple obstacles facing agro-processing industries but not credit constraints (Tisimia, 2014). Therefore, this research will analyze the existing bank credit gap to Ap-SMEs in Tanzania by looking at the supply side (credit decision-makers). The "conventional wisdom" asserts that SMEs' financial constraints are rooted mainly in supply-side factors (De la Torre et al., 2008; Fouejieu et al., 2020). Similarly, the available studies

show that SMEs face considerable limitations in accessing credit from banks and this challenge relies on finance suppliers (Mori & Richard, 2012; United Republic of Tanzania, 2011, 2015). This research takes the same angle to examine the SMEs' credit gap from the supply perspective. When SMEs have trouble getting financing, it is not always because of their low quality; instead, it is because lenders are conservative and do not trust them when deciding whether or not to give them a loan (Moro & Fink, 2013). Nevertheless, on the demand side, SMEs struggle to obtain finance from microfinance institutions, but the credit suppliers have been victimizing the demand side from the non-transparent procedures and processes they create, which are the hammer for SMEs' credit access.

1.2.1   Definition of SMEs in Tanzania

There is no universally accepted definition of what an SME is. However, according to the SMEs' policy in Tanzania, enterprises are categorized as MSMEs -Micro, Small and Medium Enterprises (United Republic of Tanzania, 2003). See table 1.1

Table 1. 1 Categories of SMEs in Tanzania

Category	Employees	Capital in machinery (TZS)
Micro enterprise	1 – 4	Up to 5 million
Small enterprise	5 – 49	Above 5 to 200 million
Medium enterprise	50 – 99	Above 200 to 800 million
Large enterprise	100 +	Above 800 million

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Source: United Republic of Tanzania (2003)

1.2.2   Definition of Agro-processing SMEs

Agro-processing refers to a subset of manufacturing economic activities applied to all produces from agricultural farming, livestock and forests for their conservation and value addition to make them utilizable as food, feed, fuel, fiber, or resources for industries (Daninga, 2020; Kachru, 2010; Nkwabi et al., 2019; Wilkinson & Rocha, 2009). Swai (2017) states that such industries process agricultural produce into final products.

1.3   Overview of the Banking Sector in Tanzania
1.3.1   History of the Financial Sector

The banking sector is the principal source of finance that acts as the backbone of economic units for their funding. As with the rest of the world, Tanzania needs to have stable financial sectors to enjoy rapid economic growth instead of having a less stable and unorganized financial industry. Banks in Tanzania finance businesses in different economic sectors where the multiplier effect increases the country's GDP (Andrianova et al., 2015). Tanzania's economic and financial sector has undergone unprecedented changes since the government began implementing the Economic Recovery Program in 1984/5. In 1967, following the Arusha Declaration, the government nationalized all private banks. With this

decision, the banking industry faced many challenges, which resulted in stagnant banking development. The challenges included: (1) a banking industry that was performing poorly, with continuous losses and non-performing assets (NPAs) due to lending to financially distressed parastatals and cooperatives, (2) a government's increase in bank subsidies and (3) a non-payment of dividends because the government had invested in banks expecting a return.

In response to the difficulties above, the government established the presidential commission in 1988, which issued recommendations, including adopting the Banking and Financial Institutions Act of 1991. The act aimed to control and standardize the banking industry in the country, among other things. The Act permitted foreign and domestic private banks to enter the market, resulting in significant changes and intense competition in delivering financial services in Tanzania's banking business. As indicated in Table 1.2, by the end of 2018, the banking sector had 53 deposit-taking banks and financial institutions, according to the financial supervision annual report (United Republic of Tanzania, 2019).

Table 1. 2 Categories of Banks and Financial Institutions in Tanzania

Categories of Banking Institutions	2013	2014	2015	2016	2017	2018
Commercial banks	34	34	36	38	38	40
Development financial institutions	-	-	2	2	2	2
Microfinance banks	2	3	3	4	5	5
Community banks	12	12	12	11	11	6
Financial institutions	4	4	3	3	3	0
Total	52	53	56	59	59	53

Source: United Republic of Tanzania, 2019

1.3.2   Bank credit to the private sector

Bank credit to the private sector is defined as the credit extended to the private sector only, including firms and households, excluding lending to the government (World Bank, 2020). Principally, bank credit to the private sector is essential for economic growth and development. According to the World Bank Economic Indicators (WBEI), a country with a relatively well-developed financial system must have an average threshold of 70 per cent of GDP as loans to the private sector. In advanced economies, credit can even exceed 200 per cent of GDP. In Tanzania, it is worse that credit is less than 15 per cent of GDP; as a result, firms and households do not have access to credit for investment and meeting their financial demands (World Bank, 2020). The same World Bank further reports that Tanzania has an average of 9.02% of bank credit to GDP instead of the global threshold of 70% per cent. Tanzania is ranked significantly worse than other sub-Saharan nations having such lowest bank credit to the private sector (see Figure 1.1)

Furthermore, this available little bank credit is not yet stable. According to the World Bank (2022) report, the government of Tanzania continued to pursue an expansionary monetary policy and lending to the private sector grew at a very low rate of 5.6% in October 2021. As shown in Figure 1, bank credit varies yearly as it grows in different directions. For instance, in the same figure 1, the financial reforms in 1991 resulted in negative bank credit growth. The economic reforms were undertaken between 1991 to 1996, which involved allowing foreign banks entrants and privatizing the national banks, dropping the bank credit as the banks were restructuring to cope with the changes (Kimaro, 2018). In this period, bank credit in Tanzania recorded a horrible history. Thus, the bank credit in Tanzania does not give future promise as a source of investment. Interestingly, compared with other countries in East Africa, these countries are far better than Tanzania.

Figure 1. 1 Tanzania - Bank Credit to the Private Sector – Years vs. % GDP
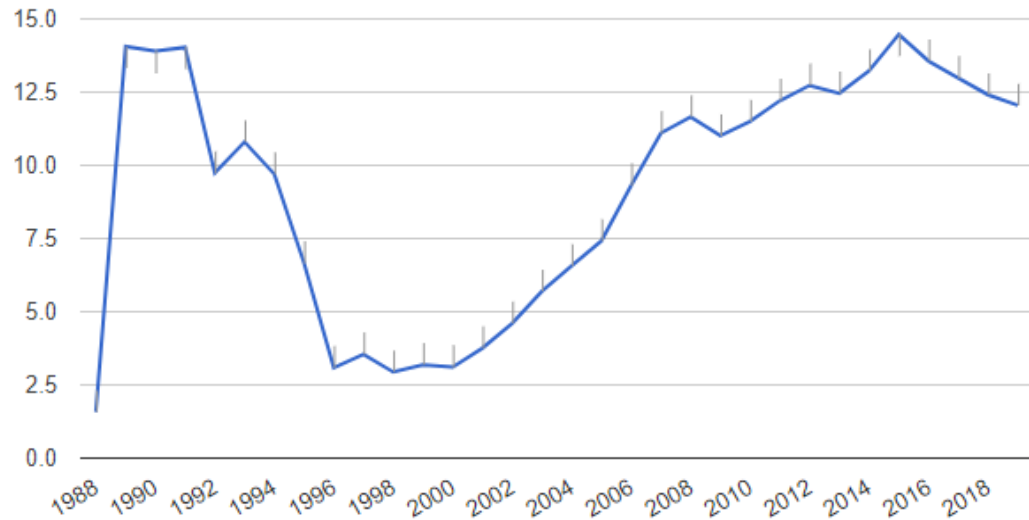
Source: World Bank (2020)

Some studies try to identify the reasons for this substantial credit gap in developing counties like Tanzania (Amidu, 2014; Canales & Nanda, 2012). According to Amidu (2014), the main reason for the low bank credit in Sub-Saharan African nations is the structure of banking markets, which affects credit delivery in a setting where the financial industry is deregulated and banks may operate freely. The same study also identifies a link between bank credit and the financial stability of the banks. Also, the overall findings indicated that regulatory initiatives such as limiting banking activities, establishing tight entry requirements, and enforcing high capital requirements might impact banks' decisions to provide loans. Remaining on the same argument of reforming the financial sector and allowing banks to operate freely, Tanzania has undergone

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several financial sector reforms and banks are acting somehow with greater freedom, yet the bank credit is still low.

1.3.3 The Credit Status of Agro-processing and Other SMEs

According to the Tanzania Chamber of Commerce, Industry, and Agriculture (TCCIA), 2016), approximately 35% of Tanzania's GDP comprises small enterprises and 95% of all firms nationwide. However, the data available to support this assertion is inconclusive and unreliable. According to the World Bank, micro and small businesses dominate Tanzania's SME sector. Micro-enterprises make up most of the economy's medium and large businesses. Approximately 66% of MSMEs are founded as a survival strategy and have an annual turnover of less than US $2,000 (World Bank, 2018).

As explained earlier, the SME sector has recently become a massive agenda in the Tanzanian economy. According to TanzaniaInvest.com (2020), about 70 per cent of all Tanzanian SMEs have no formal credit access. Only 15 per cent of the population has formal access to credit through banks. This low recorded rate is attributed to the available number of SME barriers. Findings show that banks are unwilling to provide loans to SMEs due to SMEs being perceived as too risky (Mbowe et al., 2020; Mori & Richard, 2012; Olomi et al., 2008). Additional limiting constraints include SMEs' lack of financial expertise, ignorance of the numerous products offered by banks, ignorance of how SMEs interact with banks,

and lack of loan collateral. According to the findings above, it is still difficult for new SMEs in Tanzania to obtain financing since banks place onerous co

llateral requirements, high-interest rates, and strict lending terms on these loans. For Ap-SMEs in Tanzania, having access to credit is crucial. Regardless of their importance to the economy, new Ap-SMEs will be created with access to credit, and existing ones will grow their operations. In light of Ap-SMEs' contribution to the nation's economic expansion, banks must prioritize meeting their financial needs rather than ignoring them.

Credit access to SMEs could be a game-changer to Ap-SMEs' growth and economic growth (Gültekin, 2023; Weng et al., 2023). Other issues may be with the laws and procedures now in place to control banks' operations and the banks' behaviour when making decisions. Bhalla and Kaur (2012); and Kakuru, 2008) argue that banks' attitude is one aspect apart from other factors slowing down the lenders to supply credit to the SMEs. Their Study identified the conservative approach of commercial banks towards SMEs as Banks were found reluctant to provide loans to SMEs in India. While focusing on Latin America, Cantú et al. (2020) found that large and well-capitalized banks with low-risk indicators, reliable funding sources and a well-developed business model supply more credit. Another possible reason for low bank credit in Tanzania might be banks' systems to control credit risk. Results demonstrate that industries deemed excessively risky by banks, such as those with weak documentation from borrowers, prevent

banks from determining the creditworthiness of borrowers. and, as a result, the banks will be reluctant to provide loans to SMEs (Mori & Richard, 2012).

The agro-processing industry is the best prospect sector as it is central to industrialization efforts in Tanzania and is already an essential manufacturing industry. The agro-processing sector holds promising future expansion within the manufacturing industry as the country is endowed with the benefits of agricultural resources with fertile land. United Nations Industrial Development Organization (2013) reported that 60% of manufacturing value-added products in Tanzania are from agro-related firms. However, the country's Ap-SME sector is unstable and performs under capacity. According to Tisimia (2014), about 75% of Ap-SMEs in Tanzania function below their targeted ability recording only 15% capacity utilization on average and the rest of the agricultural products are unprocessed. The agro-processing industry is still in its early stages; agro-processing is very low. Through various development plans, Tanzania's agenda targets a significant increase in agro-processing output, with new credit policy interventions towards the agro-processing sectors and other SMEs to increase the global demand for Tanzanian agro-products. Unfortunately, as is common in most sub-Saharan African countries, most Tanzanian crops are sold unprocessed. For instance, Export.gov (2019) provided the following data for the Tanzania Agro-processing sector. Only 4% of Tanzania's 2.75 million fruits and vegetables yearly are processed. Furthermore, just 20% of the nation's cotton and 10% of its cashew nut production is processed. The agro-processing sector has a significant investment

potential to provide heavy equipment for commercial farming, processing fruits and vegetables, and establishing fully integrated textile mills. Thus, the main question remains: Why are the Ap-SMEs in the country unstable and performing under capacity even though investors have vast potential?

In developing countries like Tanzania, where local financing for agricultural expansion is still limited, it is reported that one of the main challenges is the presence of high lending rates constraining credit (Export.gov, 2019). For healthy and positive industrialization of the agro-processing sector, finance is inevitable. According to Nkwabi and Mboya (2019), most Tanzanian Ap-SMEs struggle with financial constraints, technological challenges, and a shortage of raw materials. They suggested increased assistance from the government and financial organizations to help agro-processing businesses obtain financing and adopt the most recent technological advancements. Table 1.3 shows that the agro-related firm's fundamental problem is a lack of capital. Therefore, this study explores bank credit flow drivers to the Ap-SMEs to save the country's economic development.

Table 1. 3 Summary of Challenges for Ap-SMEs in Tanzania

Researcher	Challenges
Export.gov (2019)	Bureaucracy, high-interest rates, lack of financing sources, inadequate technologies, low productivity of farmers
Njiku (2019)	Financial difficulties
Nkwabi et al. (2019)	Financial and technological difficulties
Scholvin et al. (2019)	Limited finances.
Jahari et al. (2017)	Inadequate storage facilities and underutilization of processing capacity
Swai (2017)	Bureaucracy, lack of capital and supply of raw materials, access to the formal markets and markets, low technology and lack of certification
Kragelund et al. (2016)	Inadequate support from the government.
Isinika & Kipene (2016)	Experience, processing skills, lack of high-quality raw materials, low processed products, Energy cost, and education
Nijbroek & Andelman (2016)	Less support from the government.

Source: Compiled from the literature

1.3.4   Importance of Ap-SMEs in Tanzania

Agro-processing small and medium-sized in developing nations generate income and jobs. Many individuals are employed directly in this industry by businesses that process agriculture-related products (Augustino, 2017; Diao et al.,2018). (Augustino, 2017; Diao et al.,2018). Moreover, the demand for agro-processing raw materials provides backward employment linkages. It again provides employment linkages when people deliver processed products to the domestic and

international markets. In addition, Ap-SMEs contribute the highest number of jobs when processing agricultural inputs like grains (Luthfi,2007).

In Tanzania, agro-processing is an inevitable means of increasing employment and improving agricultural productivity as the sector strongly links all industries, from the extraction of raw materials to the tertiary sector. With the TDV 2025, jobs in agro-processing firms and SMEs are expected to contribute to Tanzania's government's effort to reduce unemployment and poverty. However, the potential for employment in this sector is not yet realized (Jahari et al., 2017). Additionally, agro-processing firms cut down post-harvest losses as processed products' shelf-life is higher than the unprocessed ones, mostly food-related agricultural produce. Agriculture is profitable at processing and marketing levels because agro-processed products can easily be stored and transported (Karthick et al., 2013; Tisimia, 2014). Post-harvest control will increase farmers' incomes and rural employment, resulting in foreign exchange earnings for exports and decreased market risks.

Furthermore, the agro-processing sector generates income through revenue collections for people and the government. The profits obtained from it contribute to social-economic development. El-Enbaby et al. (2016) report that while the agricultural sector has proved a limited capacity to reduce poverty in Egypt, the agro-processing sector has demonstrated a potential to reduce poverty, especially in rural areas. Various research, such as FAO (2008) and Okpara & Koumbiadis

(2011), have indicated that Ap-SMEs will likely stimulate rural development income. The argument is that, along with them, investments can be made in health and education services, development of roads, electricity, and water supply, thereby assisting in balancing the rural-urban income disparity.

The Ap-SMEs increase agricultural produce by expanding market opportunities, extending product shelf life, and improving product tastiness. Moreover, the agro-processing sector provides food security as it helps to overcome food seasonality and ensure food supply in different places (Mhazo et al., 2012). Local agro-processing firms' ability to preserve food products ensures a constant food supply and provides people experiencing poverty with cheaper food alternatives without depending on imports, thereby protecting their income. For instance, many food products produced locally in Tanzania are less expensive than imported ones. However, despite the above Ap-SMEs' contributions, Tanzania's agro-industrial sector is still mostly underdeveloped and lacks significant institutional, technical, and financial support (Swai,2017). Therefore, this study focuses on bank credit as evidence shows that this sector's main challenge is a lack of finance.

1.4   Targeting Developing the Ap-SMEs

The Integrated Industrial Development Strategy (IIDS), part of the Tanzania Development Vision 2025 (TDV 2025), is designed to transform the nation from an agricultural economy that depends on the weather and markets to a self-

sufficient semi-industrialized economy. Moreover, the Sustainable Industrial Development Policy (SIDP) 1996 was adopted with the TDV 2025 to carry out the government's objective to disengage the public sector from industrial operations and enable the private sector to take the lead role in driving economic growth. This goal was achieved under the policy by enabling monetary and fiscal incentives. As a result, the industrial sector increased steadily from the 1990s to the 2000s. The IIDS promotes private sector investment in agribusiness and agro-processing sectors by lowering investment risks. It is expected that the manufacturing sector to grow at an average annual growth of 15% per annum. Similarly, the manufacturing sector is likely to contribute to 23 % share of GDP by 2025 from 9.0 % in 2010 (United Republic of Tanzania, 2011). However, the manufacturing sector's contribution to the GDP stood at 9.8% in 2018, so it will likely not reach the set target of 23% by 2025.

1.4.1 The Reasons for IIDS Targeting Agro-Processing Industry

Firstly, a strong agro-processing industry boosts the value of agricultural products, creates jobs, and safeguards the economy against changes in external markets (United Republic of Tanzania, 2011). Although the IIDS cited the agro-processing industry's promotion as an essential policy objective, it is disappointing that efforts to develop this sector have not succeeded. The country continues to export unprocessed agricultural products, and the sector does not generate jobs as expected. Moreover, the agro-processing industry for micro and

small industries requires relatively small capital and low-entry technology (Daninga, 2020; Mbowe et al., 2020). Secondly, to ensure the success of "Kilimo kwanza" (a unique program established to undertake intensive agriculture), the agro-processing sector would have reduced post-harvest losses and ensured markets for farmers.

A strong agro-processing industry also gives farmers a market and the incentive to invest in their best farming practices. Therefore, the IIDS prioritized agro-processing industries such as edible oil, cashew nuts, fruits, milk, and dairy. Thirdly, in Tanzania, where more than 65% of the population is dependent on agriculture, the rise of the agro-processing sector would directly impact reducing poverty (Nkwabi et al., 2019). Fourthly, increasing agricultural yields and supporting the agribusiness and agro-processing sectors to assure food security in a nation and lower food costs for urban inhabitants.

For IIDS to be successful, some tools were proposed for it to be implemented, and bank credit is among them. Considering the importance of credit, the IIDS has appreciated the need for industrial finance. Nevertheless, despite tremendous growth in recent years, financial availability and high-interest rates remain substantial limitations against manufacturing industries and business expansion (Kandonga, 2020). Increasing financial service accessibility is essential for promoting economic growth and reducing poverty. The main problem for agro-related SMEs is financial constraints, like in other SMEs. Therefore, with the

above financial constraints that challenge the agro-processing sector, the IIDS proposed strategies to boost its growth, as discussed in the following section.

1.4.2 The Proposed Financial Programs Under IIDS-2010

Firstly, the policy proposes long-term finance for entrepreneurial expansion. Therefore, the government considered incentivizing banks to undertake longer-term financing. Similarly, the government suggested implementing financial initiatives like partial interest rate subsidies for loans issued to specific investments. There have been unrecognizable efforts, as most lenders decide on the interest rate to charge; thus, the lending rates have remained high (United Republic of Tanzania, 2011). The proposed research model will likely provide a solution for the government in the next chapter. The second proposed program was the establishment of an industrial bank. Several Asian countries have adopted this option and it has become successful. Nevertheless, the government has decided to abandon the option due to the complexity of operations and duplication of functions with other organizations. The government thought it would be more realistic and practical to utilize existing banks and contract them as executing agencies. However, under Five Year Development Plan II 2016/17-2020/21 (FYDP II), the government has successfully established an agricultural bank that provides finance to support agricultural activities.

Thirdly, the policy proposed SME Credit Guarantee Schemes to support SMEs. The scheme was established to support SMEs with non-legal collateral. The Small Industries Development Organization (SIDO) was established as the government's agency for extending credit to SMEs since it is in the closest working position with SMEs and can assess borrowers' credibility and business viability. SIDO has not been so effective in helping Ap-SMEs access credit from banks or extend credit to them (Kandonga, 2020). Fourthly, IIDS supports domestic processing, including expanding financial support to Ap-SMEs. The financing problems of agro-processing firms reveal that post-harvest losses are high due to a lack of suitable collection, storage, processing, packing and preservation systems. The IIDS recommends increasing institutional support for agro-related businesses in research and development, human capital development, and financing to provide processors with low-interest financing. (United Republic of Tanzania, 2011).

With the above-proposed programs under IIDS to achieve the TDV 2025, an existing problem should be tackled from different angles, with insufficient credit being the main one. Measures for credit expansion to Ap-SMEs need to be adapted. This research analyses the driving factors for bank credit growth in the private sector, specifically the Ap-SMEs since Ap-SMEs' instability is attributed to a lack of financial access, as is generally the case with other SMEs. Overall, closing the gap brought on by a lack of loan information (bank credit transparency) and inefficient use of FinTech in lending to AP-SMEs is one of the

most crucial ways to boost the number of loans to AP. As a result, these two aspects will influence the current study.

1.5   Problem Statement

The central problem to be researched by the proposed study is the Tanzanian bank system under-development issue in the form of bad credit market equilibrium to Ap-SMEs and other SMEs. The agro-processing sector has not significantly increased the value of processed products for domestic use and exports. Some processing firms are going out of business, while others are not growing as fast as they should. Among this sector's constraints, the critical one reported is the undercapitalization triggered by banks' limited finance access (supply-side). The researcher identifies three fundamental problems that require investigation as a basis for this study.

The first significant issue identified as a basis for this study is the dominance of high transaction cost, information asymmetry, credit risk management and improper institutional lending structures when banks are intermediating funds. The second major issue for this study is banks' failure to fully utilize the available bank financial technology (FinTech) in supplying loans to SMEs. In Tanzania, financial technology in commercial banks has continually progressed, but its impact has not yet been realized on SMEs' credit supply. Around the globe, it has been proved that adopting bank financial technology (FinTech) in banking is

sought to improve bank performance and increase lending activities. Thus, in this study, FinTech will be examined as one way of moderating the effects of the predicative variables of the FIT.

The study's final significant issue, which limits bankers' efforts to finance SMEs, is the phenomenon of bank credit transparency. The fact that the information gap is considered in one direction from the demand side is one of the shortcomings of the asymmetric information theory. A need for more awareness and information about the available credit services hampers SMEs' chances of obtaining bank financing in Tanzania. Before engaging in loan agreements with banks, SMEs must learn more about rating principles, scoring methods, credit choices, and bank values to better prepare themselves for a positive rating. Unfortunately, banks have not been that transparent; hence, this has remained a core problem for SME financing. In light of this, it is believed that bank credit transparency acting as a mediator between credit risk management and credit flow could improve lending activity.

Limited studies (Kombe et al., 2017; Mashenene, 2015; Mbowe et al., 2020; Nkwabi et al., 2019; Tisimia, 2014) focussing on bank credit drivers for SMEs were carried out, and their results are mixed and inconclusive but inclined to the demand side. Therefore, this study explores bank credit growth prospects for Ap-SMEs by analyzing factors influencing the supply side (credit decision-makers). Consequently, the study's results may reduce the credit gap towards achieving the

government's vision of transforming Tanzania into a semi-industrial economy. The Financial Intermediation Theory (FIT), Asymmetric Information Theory, Loanable Funds Theory, and Agency Theory have all been extensively employed as key theories in studies connected to SME finance to address the issues mentioned earlier. However, the financial intermediation theory (FIT) is ideal when studying the supply side. The theory addresses SMEs' bank credit flow problems, such as transaction costs, information asymmetry, credit risk, and institutional lending structure. Therefore, adding to FIT constructs, this study includes bank financial technology and credit transparency to comprehensively resolve the issues with the research.

1.6 Research questions

The current study is guided by the following questions based on the identified research problem:

i. What are the impacts of lending factors on bank credit flow to Ap-SMEs?

ii. Does credit transparency mediate the effect between credit risk management and bank credit flow to Ap-SMEs?

iii. Can bank financial technology moderate the effect of lending factors on the bank credit flow to Ap-SMEs?

1.7   Objectives of the Study

The primary goal of this research is to investigate the factors that boost the flow of bank credit to Ap-SMEs in Tanzania from the supply side, with a focus on the next objectives:

i. To examine how the lending factors impact the flow of bank credit to ap-SMEs.

ii. To examine the mediation effects of credit transparency between credit risk management and bank credit flow to agro-processing SMEs.

iii. To estimate the moderating effects of FinTech on the lending factors on the bank credit flow to agro-processing SMEs.

1.8   Significance of the Study

1.8.1   Significance to Policymakers and SMEs lenders

SME access to credit, specifically Ap-SMEs, is selected as the research area of this study. There is a rising recognition of the significant challenges that slow down SMEs from playing their successful role in global economies, thus looking for treatment. The SMEs policy of 2003, the Financial Inclusion Framework, 2018 – 2022 and the Integrated Industrial Development Strategy – IIDS (2010) insist on improving the SMEs' access to finance. The earlier policies emphasize that MSMEs' lack of access to finance is mainly due to lenders' strict requirements that influence the credit supply. However, none of the three policies has

effectively specified how to resolve this persisting problem. For that matter, the current study's results will provide policymakers and banking industry professionals a thorough understanding of the essential drivers that could persuade banks to extend loans to SMEs, particularly to agro-related SMEs, in which, so far, no study has specifically examined how to resolve their credit constraints. Therefore, with the variables used, the government may look for a means of treatment.

By focusing on the supply side of a bank's credit (rather than the demand side) and studying the role of bank credit transparency and financial technology when providing credit to SMEs, this study adds to the substantial body of literature. The current study expands the understanding of the drivers of the flow of bank credit to Ap-SMEs by investigating the bank-specific factors influencing banks before making the credit decision. Therefore, as the regulator, the government may develop concrete policies on supplying finance to Ap-SMEs and achieve its development vision for 2025.

1.8.2 Significance to Academics

Generally, the research may provide a broad knowledge of the bank's requirements and how the Ap-SMEs are evaluated, enhancing their performance and improving loan granting. Findings from this study inform researchers on how to accelerate the Ap-SMEs' growth by creating the enabling environment of

availability and affordable credit to create more jobs and productivity improvement. This study intends to develop the basis for improving the Tanzanian credit market disequilibrium and how it may be improved.

Specifically, a strand of studies focused on the drivers of bank credit to SMEs with different theoretical considerations (Boushnak et al., 2018; Canales & Nanda, 2012; Cantú et al., 2020; Distinguin et al., 2016; Mori & Richard, 2012; Moro & Fink, 2013; Yan Shen et al., 2009). Thus, a modification of the FIT by adding the construct of FinTech as a moderator and bank credit transparency as a mediator will be new knowledge in the literature.

1.9   The Structure of the Thesis

This Thesis is structured into six chapters. Chapter One discusses the background of the study, an overview of the banking sector in Tanzania, bank credit status to the private sector in Tanzania, the credit status of Ap-SMEs, and other SMEs in general and the reasons for targeting the Ap-SMEs. It also identifies the study's problem statement, objectives, and significance. Chapter Two presents different theories and studies about the drivers of bank credit flow to Ap-SMEs. Justifications are provided to hold up the choice of FIT as the fundamental theory. It also examines the applicability of research methodologies and data analysis techniques. Finally, the chapter provides the current study's conceptual framework and identifies the hypotheses of the current study.

The research methodology used to evaluate the suggested conceptual model is described in Chapter Three. The research tool's creation steps are discussed, along with determining its validity and reliability. The Fourth chapter summarizes and analyses the primary findings while confirming the hypotheses. The plausible discussion in Chapter five shows why or not the hypotheses were supported. Finally, chapter Six discusses the research aims and the study's theoretical and policy implications, limitations, and future research directions.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter intends to set up the theoretical and empirical aspects of the study. The main purpose is to identify the literature gap(s) and determine how these gaps could be filled. It reviews and critically discusses the appropriate theories of supply of bank credit and adopts the Financial Intermediation Theory (FIT), in which the researcher adds financial technology as the moderator to the existing constructs of the Theory. Additionally, credit transparency is the mediating variable between credit risk management and bank credit flow. The financial intermediation theory seems to be the theory that could solve this study's problems regarding bank credit supply to Ap-SMEs. Furthermore, this chapter describes various empirical studies to understand the context in which this study is conducted. Based on empirical studies, the chapter highlights what is currently known, what is unclear, and some unanswered issues on bank credit flow to general and agro-related SMEs.

2.2 Overview of the Sources of Finance for SMEs

Generally, from the Perking order theory, firms' capital structure is prioritized initially depending on internal capital sources. On the other hand, internal resources are frequently insufficient to fund innovation or expansion, forcing the firms to seek outside funding. In Tanzania, for example, banks are supposed to be

the main source of finance for SMEs, but due to bankers' perceived riskiness, SMEs opt for other means of financing. SMEs may seek loans in tailored microfinance programs like Saving and Credit Cooperative Societies (SACCOS), Village Community Banking (VICOBA), lease and contract non-financial companies and other microfinance institutions (e.g., Mbowe, Shirima &Kimolo, 2020; Mori & Richard, 2012) and from other informal money lenders (e.g. Fulgence & Mori, 2009; Mulume Bonnke et al., 2022; Olomi et al., 2008). However, despite other financing options in Tanzania, the study of Mbowe et al. (2020) reports that the banks have remained the main source of finance.

One of the requirements for an individual or SME to access a loan from the above institutions is to make savings before borrowing money from these financial programs. They help low-income earners obtain the capital to establish and run businesses. As the business expands, they are forced to access external funding sources, including debt from commercial banks (Vos et al., 2007). According to Cressy and Olofsson (1997), external financing comes under two types (equity and debt). Finding SMEs operating on external equity finance is sporadic because most are not listed, as with large firms. In Tanzania, no SME is operating on external equity finance. Therefore, this study's focus is to explore how SMEs face challenges accessing debt finance from banks by looking at the supply side.

2.2.1 Debt Finance

Since internal finance is limited for most starting and growing SMEs, small businesses prefer debt as their financing option. Gitman et al. (2015) expressed debt as any financing funds with contractual obligations in which the firm is exposed to interest and tax payments on a fixed life, and the party issuing the debt will claim payments based on cash flows during business operations and even recover funds in periods of bankruptcy. Whether the firm earns profit, the debt will be serviced through principal and interest payments. When internal finances are scarce, businesses finance their capital using external debt rather than equity to keep ownership (Winborg & Landström, 2001). Thus, most SMEs are optimistically willing to finance their operations using banks' debt funding because it is a more straightforward, practical, and reachable source than equity funds, which involve many technical issues. Additionally, unlike equity capital, bank funding has no impact on the ownership or management of Businesses (Mutezo, 2015). For instance, according to Berger and Udell (2006), for SMEs in the US, 50% of their capital structure is from external debt.

2.2.2 Bank Finance

The principal source of private financing is loans from commercial banks and trade credit. According to a large body of research (Boushnak et al., 2018; Mutezo, 2015; Yan Shen et al., 2009; Woldie et al., 2012), in both developed and developing nations, banks are the main source of credit financing for SMEs., but

generally, SMEs have difficulties accessing loans from them. Traditional forms of bank credit are bank overdraft, factoring, supplier's credit, Term loan, leasing, hire purchase and hybrid financial products. Typically, banks have a network of branches in different places. In Tanzania, for instance, banks have opened branches nationwide, covering all administrative districts. SMEs are advantageous as they can quickly access bank loans, even in remote areas. It is also advantageous to the banks that they can easily collect relevant information from SMEs due to their area coverage.

Nevertheless, despite banks having enough funds and comprehensive coverage throughout the country, it is still challenging for SMEs to access funds from them (Chale & Mbamba, 2018; Mori & Richard, 2012). SMEs frequently have higher finance costs and other funding restrictions for a variety of reasons, such as: (1) their informality or unregistered (SMEs do not keep financial and operational records, do not prepare a financial statement and do not pay tax), (2) their opaqueness (difficulty to know if SMEs can run their viable projects and not easy to understand if they have the willingness to pay), (3) lack of transparency and have no collateral to offer as insurance for the loan (Balana & Oyeyemi, 2022; Christopher, 2021; Gyimah et al., 2023; Mbowe et al., 2020). However, as previously mentioned, banks serve as financial intermediaries by gathering data from SMEs, keeping a close eye on them, and fostering commercial ties to make it easier for them to offer loans. As a result, though still below expectations, bank lending to SMEs has increased; SMEs' primary finance source is banks. Berger

&Udell (2006) argues that the availability of external finance for SMEs is an area of significant research interest around the globe. Therefore, more efforts should be put on the supply side to examine what drives banks to increase or decrease loans. This study digs deeper to address the general problem of having a considerable bank credit gap from banks to SMEs in Tanzania. The following section below discusses various theories related to credit flow to SMEs that could be used to solve this problem.

2.3 Overview of the Past Theoretical Frameworks for Credit Supply

This section provides several credit supply theories that could be used to explain the bank credit supply relationships. Then, among other theories, the financial intermediation theory is selected as the basic theory of this study. The justification for adopting this theory is provided. Consequently, the past studies' models are reviewed to identify the gap filled by the current study. Credit supply is the main service banks provide and a significant source of bank profits. The demand and supply of financial services have two dimensions (Awunyo-Vitor, 2018). The demand side looks at the decision made by individuals or groups to use banks' services, while the supply side examines the provision of financial services or financial intermediation (Awunyo-Vitor, 2018; Babatunde & Oyedokun, 2022; Bongomin et al., 2021; Garr & Awadzie, 2021). Some theories examine the use of financial services involving both the demand and supply side, and others examine the access to financial services or financial intermediation involving only the supply side. However, based on this study's scope, which examines the drivers of

bank credit to Ap-SMEs, the researcher focuses on the supply side of credit, which is the financial intermediation. This study aims at examining what should be done to increase credit flow to the Ap-SMEs.

Wojnilower et al. (1980) contend that credit growth depends on conditions set by finance suppliers. Ekpu (2015) agrees that while many studies have increased our understanding of the demand side of bank finance, very few studies have done the same from the supply perspective. Banks serve as the primary source of capital for small enterprises worldwide. Thus, if the SME sector is to perform, considerable efforts must be spent to give it access to bank credit. According to Boushnak et al. (2018), the SME financing gap is predominant in sub-Saharan countries since many report an extensive scarcity of financing for all SMEs. With this struggle of SMEs receiving a meagre share of total bank loans (Glavanits, 2007), still, SMEs form a large part of enterprises and significantly contribute to employment and economic growth in emerging economies. Therefore, to scale up credit access to SMEs, researchers such as (Beck et al. 2005; Demirgüç-Kunt & Klapper, 2012; Imran & Nishat, 2013; Kendall et al.,2010) agree that efforts should be directed toward supply-side strategies.

Most available studies in Tanzania consider the demand side approach (Christopher, 2021; Kira & He, 2012; Kombe et al., 2017; Mbowe et al., 2020; Nkwabi et al., 2019; Woldie et al., 2012) by examining what drives SMEs to demand credit from banks. It is unclear if studies consider the supply-side variables of bank credit in Tanzania. Therefore, this research will analyze the

existing bank credit gap to Ap-SMEs in Tanzania by looking at the supply side (credit decision-makers). It is conventionally argued that SMEs' insufficient financing is most importantly inclined to supply-side factors as SMEs face considerable obstacles in accessing banks' finance (Bhalla & Kaur, 2012; De la Torre et al., 2008; Mori & Richard, 2012). This research takes the same angle to examine the SMEs' credit gap from the supply perspective. The challenge of credit constraint to SMEs is not having low-quality SMEs but is often related to lenders' conservatism, who do not trust SMEs and deliberately decide whether to give a loan (Moro & Fink, 2013). Nevertheless, on the demand side, SMEs struggle to obtain finance from financial institutions, but the credit suppliers have been the victims of the procedures and processes they create, which are the hammer to SMEs' financing.

Consequently, the researcher concentrates on the transaction cost theory and information asymmetry theory, which form the Financial intermediation theory Gurley and Shaw (1960); Allen and Santomero (1997); Scholtens and Van Wensveen (2003) see Figure 2.1 as framed by Awunyo-Vitor (2018). This theory explains the supply side of financial services, including bank credit.
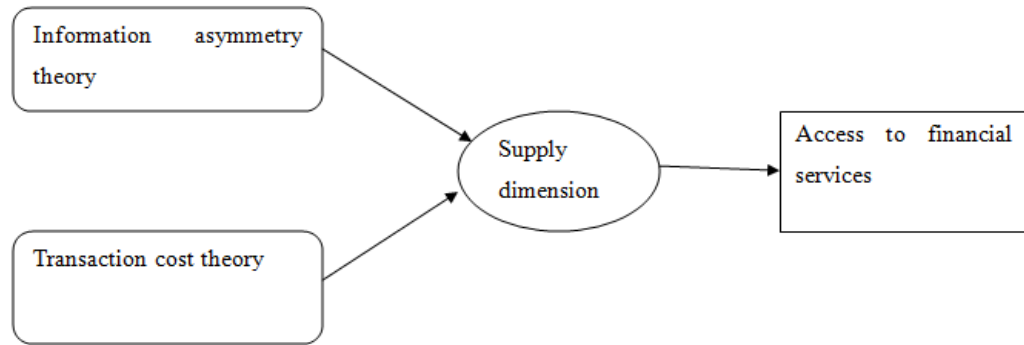
Source: Awunyo-Vitor (2018)

Figure 2. 1 Theory of Access to Credit

2.3.1   The Financial Intermediation Theory (FIT)

FIT is the traditional banking theory of intermediation based on transaction costs and asymmetric information (Allen & Santomero, 1997; Diamond, 1984; Gurley & Shaw, 1960; Scholtens & Van Wensveen, 2003). The fit theory appropriately underpins the financial intermediaries' role in the economy by linking lenders and borrowers. The theory regarding financial intermediation was first developed by Gurley & Shaw (1960). There has been an effort to extend this theory, such as Diamond (1984), Allen &Santomero (1997) and Scholtens & Van Wensveen (2003). Gurley and Shaw (1960) argued that high transaction costs, lack of complete information, and regulation describe financial intermediaries' existence. The FIT accounts for institutions that take deposits, issue insurance policies, and channel funds from savers to borrowers. The theory of financial intermediation portrays that intermediaries exist to reduce transaction costs and the lack of information that a lender of funds could encounter under direct financing.

Diamond (1984) developed the financial intermediation theory to reduce the cost of monitoring information to resolve the agents' incentive costs as monitoring costs between borrowers and lenders. Diamond argues that having diversification in intermediaries helps resolve incentive problems even in a free-risk economy. A bank, as an intermediary, collects money from a depositor and is delegated to channel the funds to a borrower by monitoring the costs arising within loan contracts binding both the intermediary and the borrower (Diamond, 1984). It means that, with the financial intermediaries, households (surplus units) can release funds without worrying about transaction costs, as these costs will be the intermediary financial burden. So, the intermediaries are chosen to act as delegated monitors on behalf of the depositors.

Furthermore, Allen and Santomero (1997), through what is known as "the new financial intermediation theory," extended the FIT by analyzing the role of intermediation in the new context of financial developments by stressing risk trading and participation costs. They argued that financial intermediation theories focus on information asymmetry and transaction costs, but these factors cannot explain the financial sector's developments, such as swaps, futures, and options. They further argue that participation costs are crucial to understanding intermediaries' current activities, focusing on risk management. The argument is that during the past few years, the financial systems of various nations have changed, and intermediation theories must adjust to and reflect these developments. New markets had emerged, and financial markets expanded. As a

result, transaction costs have dropped, and information has become cheaper and more available due to technological changes. Additionally, intermediaries' heavy risk management initiatives are not satisfactorily explained by the existence of transaction costs and asymmetric information. They expanded the theory by introducing the risk management issue and participation costs undertaken by banks as one factor for conducting the financial intermediation.

Nevertheless, Scholtens and Van Wensveen (2003) criticized Allen and Santomero (1997) through the amended FIT, including bank product innovation and institutional and behavioral frictions preventing optimal credit allocation. They argued that the traditional intermediation theory is ineffective and difficult to align with the changes in the banking business. They disagreed that risk management is the most crucial issue in the financial industry and that making the participation costs the central concept is irrelevant. Their main arguments are based on two facts; (1) that the management of risks by intermediaries has always been the bread and butter of financial intermediaries, and (2) that intermediaries exist to cut down transaction costs and reduce information opaqueness. However, the current developments in information technology, changes in financial regulations, and expansion of financial markets have significantly reduced transaction and information asymmetries. Unfortunately, their argument by then was entirely against the founders of the intermediation theory and its prior extenders of the theory. While the traditional theory economists were encouraging the increase of intermediaries, Scholtens and Van Wensveen (2003) concluded

that the traditional theory of financial intermediation did not provide a reasonable understanding of the purpose of the existence of financial intermediaries. They concluded that ICT, such as financial technology, has helped banks make financial innovations that reduce information asymmetries and transaction costs. The transaction costs have not disappeared, but they have taken a different appearance in the form of information searching and gathering costs, selection-related costs, and processing of loan costs. This extended new theory underpins three purposes of the existence of intermediaries, which include: (1) information problems, (2) transaction costs and (3) institutional and regulatory factors.

Generally, the financial intermediation theory is applied when researchers are analyzing the influence of credit decision-making by channelling funds from the lenders to the borrowers through an intermediary (Canales & Nanda, 2012; Distinguin et al., 2016; Giannetti & Jentzsch, 2013; Moro & Fink, 2013; Oladapo & Adefemi, 2015; Yan Shen et al., 2009). According to Huang et al. (2016), bank credit to SMEs information asymmetry makes distinguishing between good and bad borrowers difficult. Asymmetric information typically results in adverse selection and moral hazard problems. These two problems create an additional hurdle for SMEs to access formal banking credit from banks. SMEs are particularly susceptible to a lack of credit access because of information opaqueness (Andrianova et al., 2015; Berger et al., 1999; Klapper & Parker, 2011). The owner or managers of an SME generally have better information about business prospects than potential lenders. SMEs are victims of market

imperfections of financial markets in obtaining external funds compared to larger companies. The presence of an imperfect financial market is a market failure when a competitive environment fails to bring about a well-organized allocation of credit and thus distorts investment.

The financial intermediation theory explains commercial banks' role in channelling funds through business credit availability to owners or managers of SMEs to enhance their stability (Babatunde & Oyedokun, 2022; Bongomin et al., 2021; Borochin & Chatterjee, 2020; Garr & Awadzie, 2021). Because SMEs are classified as risky borrowers by financial institutions, meeting their standards has become a barrier for them to obtain funds from banks, and if they do, they face costly lending rates. Therefore, due to the limitation of funds, the SMEs cannot invest in new, improved assets, develop new products, and make technological innovations and as a result, the SMEs will operate under capacity and obtain low revenue with stunted growth. Both lenders and borrowers face transaction costs during lending activities, which affect the lending rates. Fachini et al. (2008) report that, when lending to SMEs, the lender is fully responsible for the procedural costs and, therefore, transaction costs are higher to lenders than to borrowers. From the lender's perspective, transaction costs include the expenses incurred in mobilizing deposits, information search costs about potential borrowers, and processing, monitoring, and collecting loans. Thus, when banks extend loans to borrowers and incur costs, they usually recover from the borrower in two aspects. (1) Including these costs into the lending rate, (2) deducting the

loan amount by charging the borrower the loan processing fee before reimbursement. Lenders' transaction costs are created by searching, handling, processing, and analyzing the required information to assess potential borrowers, evaluating collaterals, and monitoring loans. In lending, information asymmetry limits lenders from making informed decisions before making a credit decision. Therefore, lenders either reject loan proposals, impose additional collateral requirements, or charge high-interest rates to borrowers (Balana & Oyeyemi, 2022). Credit assessment is another obstacle to SME financing as banks do not finance most SMEs for not meeting the credit requirements. The bank stands at a loss if the credit risk is not managed. Credit risk is the possibility that the borrower will not fulfil the conditions outlined in the loan agreement due to the borrower's unwillingness to execute his obligation, or sometimes his capacity to do so can be impaired.

2.3.2 The Loanable Funds Theory (LFT)

LFT explains the relationship between demand for money and supply for money. The LFT's proponents believe that the funds for credit delivery depend on available savings. That means the supply of savings influences borrowers' investment levels. As the savings level increases, the credit supply amount also increases. They further argue that the higher savings obtained through cutting down consumption and government expenditure would increase credit supply, decrease lending rates, and, therefore, more investments (Tsiang, 1980).

However, Lindner (2013) critiqued the LFT by showing that the savings level does not limit credit supply and nobody postpones to supply of credit. Gregory Mankiw's book on the LFT (Mankiw, 1997) and the book by Krugman (2009) made an exposition of the LFT by depicting the application and challenges of the theory. They argue that credit supply and investment decisions depend on the bank's decisions and the financial system in a monetary economy. Even when banks are so liquid, they can still make credit rationing or undertake sectoral lending (Domeher et al., 2017).

McLeay, Radia and Thomas (2014) criticized and rejected the previous conventional theories of demand and supply of loanable funds. The Bank of England (2014) explained these post-Keynesian heterodox economists better than the LFT. The main misunderstanding in most literature was that banks act as intermediaries channelling the deposits from savers to borrowers in the form of credit, such as individuals, SMEs, or companies, to finance their economic activities (Ekpu, 2015). McLeay et al. (2014) state that commercial banks are not merely intermediaries who depend on savings to lend money; they are money creators.

The Post-Keynesian Endogenous Money theory assumes banks can create money through lending. Any issued loan has its corresponding deposit in the borrower's account. Although commercial banks create money through lending, they are restricted by regulations that control their activities to maintain the financial

system's stability. The second misconception relates to the "money multiplier approach" to monetary creation, which postulates that the central bank controls the amount of money it influences the number of credits and deposits in the economy. According to this logic, the central bank implements monetary policies by determining the reserve level (Bernanke et al., 1991).

However, Musgrave (2014) reports that it is wrong to perceive that the alteration of bank reserves drives bank credit supply. Banks make credit decisions for a given time based on the possibility of making profits given the available investment or lending opportunities. Banks lend money because they have excess liquidity and depend on the results after making a credit risk assessment. If the lending opportunity is not in their favour, the extra amount created from reserves will not make them lend. The interest rate that commercial banks receive on money deposited at the central bank considerably impacts the interest rate at which they are willing to lend on equal terms. Also, bankers' interest rates will affect the demand side. The Post-Keynesian proponents disagree that interest rates influence bank lending behavior. In general, Keynes' LFT and Post Keynesian theory attempt to explain what drives the supply of bank credit. According to the notion, credit levels are determined by the loanable funds available from savings. According to Keynes, the interest rate on loanable funds, which determines loan demand, is governed by the forces of demand (investments) and supply (credit funds) (savings). Post-Keynesian thinkers disagree, describing monetary policies

as part of bank credit supply drivers, with the caveat that banks' credit decisions are based on profitable lending opportunities.

In the bank production theory, inputs and outputs have been rigorously specified in the context of the financial firm, along with careful consideration of production and cost circumstances. It was established that the decision-making process formerly ascribed to the financial company was at odds with legitimate economic definitions of outputs and inputs and the technical features of production and cost of financial institutions. As a result of the preceding analysis, the financial firm's production process is, from the firm's perspective, a multistage production process with intermediate outputs, where loanable funds, borrowed from depositors and serviced by the firm with the use of capital, labour, and material inputs, are used in the production of earning assets (Sealey & Lindley, 1977). It could be argued that the output of the financial firm is, therefore, produced with loanable fund inputs where loanable funds are "produced" through other production operations of the financial firm. The fees that banks typically charge rarely, if ever, generate enough money to cover the cost of the services, even though intermediate services provided to demand deposit customers of commercial banks occasionally result in service costs to the bank (Benston, 1972). If loanable funds are "produced" through other production processes at the financial firm, it may be claimed that the output of the financial firm is produced with loanable funds as inputs.

The current study will use the FIT to investigate the variables influencing credit flow in the Tanzanian banking industry. Since its key relationships significantly impact credit flow from banks to SMEs, the current study utilizes the extended FIT by Scholtens and Van Wensveen (2003). This theory can potentially address the current issues with bank credit supply for Ap-SMEs. As already explained, the traditional FIT explains the challenges of transaction costs and information asymmetry, credit risk management, lending environment and levels of prevailing technology in a country. The FIT gives the critical concepts of why banks exit together with their core functions. Tanzania has a bank-based financial system meaning that banks act as the engine for financial development. Financial intermediaries (banks) are increasing in the country, but this increase in banks accompanied by increased financial services does not correspond with the SMEs' flow of credit. Thus, employing the FIT might give reliable results in this study. Additionally, it is argued that asymmetric information is the main reason banks lend so little in Africa (Andrianova et al., 2015) and the FIT deeps down these problems as it includes the theory of information asymmetry.

As already pinpointed, the loanable fund's theory explains how credit could be extended to loan applicants. It stresses interest rates as a significant factor for credit rationing and that the supply of loans depends on the level of savings. Due to informational opaqueness, lending costs, loan risks, and bank lending structures, SMEs have difficulty obtaining bank financing (Alibhai et al., 2017; Mushtaq et al., 2022; Osano & Languitone, 2016; Scholtens & Van Wensveen,

2000). Thus, the current study's decision to adopt the financial intermediation theory is considerable. The following section discusses various research models conducted around the globe examining the factors that influence banks to increase or decrease credit supply to SMEs.

2.4 Overview of the Relevant Past Studies' Research Models

As pinpointed in chapter one, there are limited studies about drivers of the bank the flow of bank credit to Ap-SMEs, specifically from the lender's side. The available studies vary from cross-country studies to country-specific studies. They analyze various aspects of drivers of credit supply to SMEs. Moreover, they apply various theories, methodological and data analysis techniques depending on the context, data availability, and relevance to the study. The critical review of the empirical studies on bank credit, as shown in Table 2.1, is discussed in this section. The studies that have discussed this study's variables and framework are portrayed too. However, the main drivers for the flow of bank credit to SMEs from the supply side are grouped as (1)bank structure (bank size in terms of assets and deposits, bank ownership, organization structure, bank capital and liquidity and market power), (2) risk and cost factors connected to the lending business (transaction costs, information asymmetry), (3) the lending technology (transaction lending and relationship lending and credit scoring) and (4) the lending infrastructure (the economic environment and the legal & regulatory environment).

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Table 2. 1 Summary of Past Empirical Studies on Bank Credit Supply

Author and year	Country of study/ & data collection Period	Theory or theories used	Sample Size & sampling technique	Respondents	Data analysis technique	Variables confirmed
Cantú et al. (2020)	Latin America	NIL	41 branches of the 12 banks- purposeful sampling / judgmental sampling	Secondary data	Meta-analysis techniques.	Bank capital, sources of funding, and commercial business model
Sheng (2020)	China	NIL		Secondary data	Regression model	FinTech and size of the bank
Boushnak et al. (2018)	Egypt	NIL	One bank at head office, branches and centres allocated in 5 zones - non-probability sampling	Questionnaires to credit analysts and supervisors	Analysis of a Moment Structure	Credit bureau Report
Jude (2018)	Cameroon	Financial Intermediation Theory	Four commercial banks	Interviews with loan officers responsible for SMEs	Content analysis	Confidence
Awunyo -Vitor (2018)	Ghana	Financial Intermediation Theory				Transaction costs and information asymmetry
Osano & Languitone (2016)	Mozambique	Information asymmetry theory	324 employees of 3 banks assessed at head office - stratified sampling	Questionnaires to bank managers and the staff dealing with SMEs	Multiple regression analysis	Structure of the financial sector, awareness of funding and collateral
Ekpu (2015)	Nigeria	Post-Keynesian and	12 banks based on branch types	Questionnaires to Relations	Descriptive statistics	The high transaction costs,

		Loanable Funds Theory	and bank categories - purposeful sampling/judgmental sampling	hip managers and loan officers	and ordinal logistic regression (OLR) models	regulations and the business environment.
Rabab'ah (2015)	Jordan	NIL		Secondary data for commercial banks	Regression Analysis	Non-performing loans, capital, liquidity, asset size, lending rate, deposit rate, window rate, legal reserve, inflation, and economic growth rate
Mutezo 2015)	South Africa	Agency theory and Static Trade-Off theory	222 bank branches of 4 banks - stratified sampling	Questionnaires to relationship managers, credit managers, risk managers, supervisors, and credit analysts	Multiple regression analysis	Transaction costs, new techniques, collateral, bank-SME relationships, loan technologies, creditworthiness, and risk management
(Totolo, 2015)	Kenya	NIL	44 licensed commercial banks - purposive sampling	Questionnaires to Licensed commercial banks	Descriptive statistics and interpretation of time-series trends	Lending technology and bank size
Amidu (2014)	SSA	NIL		Secondary data	A regression model with the use of General Least Square technique	Bank characteristics, countries' macroeconomic environments, market structure and regulatory

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Study	Country	Theory	Sample	Data collection	Analysis technique	Findings
					s	initiatives
Imran & Nishat (2013)	Pakistan	NIL		Secondary data for commercial banks	Autoregressive Distributed Lag (ARDL) by	Foreign obligations, domestic deposits, economic expansion, the rate of exchange, and the monetary environment
Moro & Fink (2013)	Germany and Italy	NIL	Nine banks based on 449 bank-firm - Random sampling	Questionnaires to loan managers	Ordinary least squares (OLS)	Trust, ability and benevolence/integrity of loan managers
Trönnberg & Hemlin (2012)	Sweden					Loan officers' decision-making, bank characteristics, loan officers' deliberate and intuitive reasoning approaches
Canales & Nanda (2012)	Mexico	NIL	83,930 loans	Interviews with bank managers and credit managers in SMEs departments	Regression	Bank organizational structure
Mori & Richard (2012) - Unpublished	Tanzania	Asymmetric information and agency theory	Eight loan officers of 6 banks	Interviews with bank officers SMEs.' loan appraisal and administration		Credit risk, poor documentation by borrowers, financial understanding by SMEs, lack of awareness of bank products,

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						stagnant businesses, and proper securities
Bhalla & Kaur (2012)	India	NIL	Branches of banks	Question naires to bank managers or senior loan officers	Weighted average scores (WAS) and factor analysis	Conservative approach of commercial banks to SMEs
Fatoki & Smit (2011)	South Africa	Informati on asymmet ry theory	Branches of 4 banks	branches of commerc ial banks between January and Septembe r 2009	Descripti ve statistics	Managerial competencies, collateral, networking and business information, macro-economy, the legal environment, ethical perception, crime and corruption
Shen et al. (2009)	China	NIL	Branches of the existing banks	Question naires to bank governor s and loan officers	Regressio n	Total bank assets, more local lending authority, more competition, carefully designed incentive schemes, and more vigorous law enforcement
De la Torre et al. (2008)	Argenti na, Chile, Colomb ia, and Serbia	NIL	Argentina 14 banks Chile 8 banks Colombia 7 banks and one leasing company Serbia 8 banks	Question naires to banks' top managem ent, unit managers and risk managers in late 2006 and	Probit or OLS regressio n analysis	Type of bank involvement

					2007		
Deakins et al. (2008)	Scotland	Information asymmetry	Eight banks	Interviews with current bank lending officers and SMEs			Financing gap
Kakuru (2008)	Uganda	Information asymmetry	16 loan officers from 4 banks	Questionnaires and interviews with loan officers	Factor analysis was .		Guidelines and practices for bank lending, bank institutional structure, borrower knowledge of these rules and practices, and degree of alignment between loan officers' objectives and those of the organization

Source: Compiled from the literature

Most past studies are deductive; therefore, the quantitative methodology has been a common approach when examining SMEs' bank credit flow (see Table 2.1). Based on the sample results, these studies aim to test and confirm the projected models' hypotheses and get a general picture of the target population.(Creswell & Creswell, 2017). Therefore, the quantitative methodology is perfect for this study due to the importance of Ap-SMEs in the economy to produce valid and reliable results. Additionally, the majority of earlier studies used non-probability sampling methods such as purposeful sampling /judgmental sampling in selecting respondents (Boushnak et al., 2018; Cantú et al., 2020; Ekpu, 2015; Totolo,

2015). On the other hand, non-probability sampling procedures are not ideal for studies that would like to generalize their findings to the entire population. Probability approaches ensure that any population unit has an equal chance of being chosen (Creswell & Creswell, 2017). In a few studies, the flow of bank loans to SMEs was examined using probability sampling techniques such as stratified and simple random sampling (Mutezo, 2015; Osano & Languitone, 2016). However, the probability sampling techniques in the above studies fit their study contexts. The researcher will employ the multistage cluster sampling method in the current study because the population can be divided into clusters before reaching the targeted respondents (see section 3.3.4).

Furthermore, as most past studies used a quantitative approach, questionnaires were the primary research tool (Bhalla & Kaur, 2012; De la Torre et al., 2008; Kakuru, 2008; Moro & Fink, 2013). The questionnaire helps collect a large quantity of data from many banks in various areas as it involves fewer administrative costs (Ali et al., 2014). In this study, the questionnaire is helpful to the researcher to easily reach respondents (lending officers) who are typically busy during the day, so holding the interview may not be ideal. Some questionnaires in other studies were not returned; unfortunately, the methods used in distributing these questionnaires were not. As noted by Andrews, Nonnecke and Preece (2003), the are several reasons for unreturned questionnaires, such as mail questionnaires may not reach the respondent due to inactive/invalid email address, or a respondent might have multiple emails and thus not see it in time, or

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a respondent might fill the incoming mail is spam. In order to limit the amount of incomplete and lost surveys, the current study used the Drop Off and Pick Up approach to gather the questionnaires (Trentelman et al., 2016). However, online questionnaires through the mail and other social networks were used when the former is not easy to use.

Also, the sample size in past studies ranged from 1 to 4 banks (Boushnak et al., 2018; Cantú et al., 2020; Fatoki & Smit, 2011; Moro & Fink, 2013; Osano & Languitone, 2016). The present study will increase the sample to include the branches of almost all banks serving the agro-processing industries in the study area. Insufficient statistical power may result from an improperly sized sample, making it unable to determine the true link between the constructs (Wolf et al., 2013). Previous studies have used quantitative and qualitative data analysis methodologies (see Table 2.1). Except for Boushnak et al. (2018), who used structural equation modelling (SEM), most of the previous studies in the same table used ordinary least squares (OLS) regression analysis and multiple regression for data analysis to investigate bank credit flow to SMEs (De la Torre et al., 2008; Moro & Fink, 2013; Mutezo, 2015; Rabab'ah, 2015). SEM will be used to test the hypothesis that underlies this study. Unlike SEM, which is the second generation, the first-generation multivariate methods are challenged to be unable to model individual variables and cannot evaluate the range of single variables (Tabachnick & Fidell, 2001).

Similarly, the data analysis literature indicates that research involving moderators and mediators applies second-generation methods to analyze the data (Ali, Shakri, & Javaid, 2019; Amawate & Deb, 2021; Anning-Dorson, 2017; Zhou, Mavondo & Saunders, 2019). Anning-Dorson (2016) reports that SEM is the best when assessing moderation and mediation relationships in the model. He further argues that researchers apply SEM to manage measurement errors, give the details on the degree of exactness of the tested model, and measure both effects of moderation-mediation within a particular model. Cementing on the same argument, Hair et al. (2017) argue that assessing the causal relationships' soundness in the model is likely achievable in SEM if a hypothesis has solid theoretical support, as with this study. Therefore, in this study, the researcher adopts VB-SEM analysis because it includes both direct and indirect effects (Hair et al., 2017), and more so, some of the stated hypotheses in this study seek to predict moderation and mediation effects of the operational model.

2.4.1 Transaction Costs and Bank's Financing Decisions

The financial intermediation theory portrays that one of the reasons for the existence of banks is to manage transaction costs when channelling funds to borrowers (Allen & Santomero, 1997). The lender's transaction costs that limit credit availability are associated with loan appraising, collateral assessment costs, monitoring costs, legal fees, and acquiring information from a specialized agency

like the credit reference bureau (Balana & Oyeyemi, 2022; Nguvava & Ngaruko, 2016).

Similar studies point out that banks that operate at low transaction costs provide credit at low costs (Chuta & Liedholm, 1985; Olomola, 1992; Saito & Villanueva, 1981). Such studies highlight that the higher the transaction costs on the lender, the greater the chance for SMEs' access to credit to be minimized. Shamshur and Weill (2019) extended that efficiently operating banks are likely to influence greater credit flow to SMEs because they operate at low cost and result in low credit costs. Rosavina, Rahadi, Kitri, Nuraeni and Mayangsari (2019) have further found that the transaction costs of supplying bank credit to small businesses are higher depending on the size of an SME. Usually, smaller credit facilities tend to have higher transaction costs than enormous credit. They argue that small loans are costly because they involve high administrative costs and banks may not recover all costs through fees. Small credit facilities attract higher interest margins, even if the risk is the same as more extensive credits. It means that small businesses become victims of being regarded by banks as undesirable projects over large firms (Zambaldi et al., 2011).

Nevertheless, Scholtens and Van Wensveen (2003) have asserted that ongoing technological developments and various deregulations have reduced transaction costs. Their findings are supported by Sheng (2020) and Cheng et al. (2020), who argue that digitalizing transactions and managing bank systems using financial

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technology have reduced transaction costs and as a result, there has been a flow of more loans to the small firms.

According to the Financial Sector Deepening Trust (2013), high transaction costs persuade banks not to provide credit services to all categories of rural-based borrowers. In Tanzania, few banks have penetrated the credit market, particularly SME financing, due to their ability to manage transaction costs. Commercial banks in Tanzania face high transaction costs during lending activities (Mashenene, 2015; Nguvava & Ngaruko, 2016; Woldie et al., 2012). The transaction cost has been one of the reasons for banks to limit their lending in rural areas compared to urban areas. Thus, commercial banks prefer to extend loans directly because they involve low credit transaction costs. They further highlight the high transaction costs prevailing in the credit market, including time and transport costs, costs associated with lawyers, meeting facilitation, security evaluation, contract breaching (case filing, debt collectors) and other charges. The plausible explanation might be that banks have not yet fully utilized the available technology when undertaking their lending activities. Because of this, the current study aims to investigate how the moderation effect of FinTech influences the flow of credit to small enterprises.

2.4.2 Asymmetric Information and Bank's Financing Decisions

Information asymmetry is another obstruction that limits banks from extending credit to SMEs. According to the FIT's hypotheses, there is a link between information asymmetry and the availability of bank loans. Since most SMEs are opaque, they have struggled for credit access as banks shy away from avoiding moral hazards and adverse selection. The Information is of two types: hard information and soft information. Soft information represents the qualitative information obtained from loan applicants. Usually, this information is not public or transparent (Boot &Thakor, 2000; Petersen, 2004).

On the other hand, hard information is easy to collect in public due to financial statements' availability (Petersen, 2004; Scott, 2004). Most empirical studies have suggested that information asymmetry negatively influences the supply of bank credit and it is mentioned to be the main factor for the inaccessibility of finance (Bonini et al., 2016; Campanella et al., 2013). Due to the information gap that structurally characterizes SMEs, banks lack reasonable grounds to help them extend loans to SMEs. This scenario leads to credit rationing, which creates a shortage of loans to potential borrowers.

Additionally, SMEs usually do not disclose relevant information that might help banks reach a decision and hide the information they think might not favour them when applying for a loan. Thus, bankers are limited from knowing the projects' profits compared to the borrower. Due to a lack of credit information, banks have no lending appetite for SMEs, and they are doing so to avoid the challenges and

costs of obtaining potential SME borrowers' information and avoiding moral hazards and adverse selection problems (Calice et al., 2012).

Furthermore, adverse selection starts when loan applicants withhold private information about their business conduct. Lack of sufficient information decelerates bankers' efforts to increase SMEs' lending activities and adequately distinguish between good and bad borrowers (De Meza & Webb, 1987; Serame, 2019). Bankers cannot precisely distinguish between firms with low-risk behavior or low profits and those with high-risk behavior or high expected profits. In reducing this perceived risk, lenders use interest rates to screen the two types of different characteristics of borrowers, as explained above. High-risk firms will be ready to borrow funds at high-interest rates and, low-risk firms will avoid borrowing because of the high costs of loanable funds and the average quality of borrowers will decline.

The loan's misallocation is a moral hazard, recognized as one of the main reasons the lenders decide to ration the loan values. Therefore, information asymmetry can change the lender's attitude towards the borrower, leading a lender to high pricing of loans plus costs for applying for the loan. Because of perceiving SMEs as risky, banks adopt measures to control such risks, such as reducing the loan amount and enforcing high collateral requirements to discourage credit demand. Banks sometimes limit credit provision to specific projects due to information asymmetry (Distinguin et al., 2016). Similarly, new business enlarges information

asymmetry, slows down credit flow and limits expansion. From the above discussion, lenders decide to charge high-interest rates to SMEs or reject SMEs' loan proposals altogether due to the information gap.

Recently, studies such as Cheng and Qu (2020) and Sheng, 2020) claim that the banking industry's technological developments have significantly reduced the problem of the information gap that causes high loan costs and other issues, credit reference bureaus (CRB) and the lending relationship technology. Typically, banks incur costs searching for information on the borrowers' financial viability before making the credit decision. Technological advancements such as financial technology (FinTech) and financial derivatives for managing risks have reduced monitoring costs due to the easy availability of information. The above authors' argument makes information asymmetry and transaction costs irrelevant regarding their influence on credit supply. For instance, P2P lending has been accelerated by the availability of borrowers' information due to FinTech. However, other studies have suggested that one of the tools to reduce asymmetric information for SMEs is to create credit relationships with banks and other financial institutions (Beck et al., 2018; Berger & Udell, 1995; Hirsch et al., 2018). Relationship lending is based on soft information allied with SMEs obtained over some time in which most banks depend on credit decisions because of the existing information gap.

In Tanzania, information asymmetry was the first problem for SMEs' credit constraints. According to (Calice et al., 2012), about 75% of commercial banks in Tanzania mentioned this aspect as a significant obstacle to their SMEs' dealings.

The common reasons cited here are threefold: (1) the absence of credit reference bureaus (CRBs) but lucky enough that since the year 2013 up to date, two CRBs have been working in the country, providing essential credit information to bankers; (2) bankers' unreliable means of identifying borrowers due to lack of system identification. However, the government started issuing national IDs in 2013; one of the purposes is to help bankers identify their borrowers and reduce the asymmetry problem; and (3) to the informality of SMEs, which is still a challenge to bankers to extend loans fully. Despite all such efforts, information asymmetry is a problem for SMEs' credit access. Besides credit risk management and asymmetric information, lending involves many transaction costs (Awunyo-Vitor, 2018; Ekpu, 2015; Mutezo, 2015).

2.4.3   Credit Risk Management and Banks' Financing Decisions

The financial intermediation theory portrays that one of the reasons for the existence of banks is to manage risks that arise in the process of channelling funds from savers to borrowers (Allen & Santomero, 1997; Scholtens & Van Wensveen, 2003). Credit risk is a significant risk for banks resulting from lending activities. Prominent researchers such as Baiden (2011), Bhatt (2012), Boushnak et al.(2018), Bruns and Fletcher (2008), and Iman (2018) depict that credit risk is a significant threat that can lead to instability and collapse of banks and other lenders around the world. Risks that may face banks and costs associated with financing SMEs constrain bank credit flow to SMEs. Therefore, banks undertake

credit risk assessments and scrutinize borrowers before extending loans to them during lending. From this assessment, SMEs' lending proposals may be accepted or rejected before deciding. The likelihood of the SME securing a loan decreases with increasing credit risk. Basel Committee on Banking describes credit risk as the bank loss arising when the borrower is unwilling to repay the loan or when any event is impairing the ability of the borrower to repay the loan. In the case of an SME, credit risk involves both business risk and owner's risk.

Researchers have examined the various indicators of credit risks in the banking business, which has resulted in the presence of high non-performing loans, high requirements of collateral and high lending interest rates (Balana & Oyeyemi, 2022; Berger & Udell, 2006; Liang et al., 2017; Osano & Languitone, 2016; Shihadeh et al., 2019). Furthermore, there have been efforts to handle credit risks so that commercial banks can increase their lending in the SME sector. Firstly, to protect against credit risk, studies have found that pledging collateral reduces non-repayment funds (Berger & Udell, 2006; Liang et al., 2017; Osano & Languitone, 2016). The pledged collateral acts as insurance and is a fallback to a lender if the borrower defaults. The demanded collateral secures banks from the risk of non-payment of the borrowed funds. However, the collateral value in many banks should be greater or equal to 100% to cover the principal amount, interest payments, and other transaction costs if the customer defaults (Bhatt, 2012). Collateral affects the loan amount and impacts the interest rate on the loan's

maturity and size. Nevertheless, because many SMEs do not have assets to pledge as collateral, their credit access is limited.

Secondly, most banks have adopted CAMPARI (*Character, Ability, Margin/interest rate, Purpose, Amount, Repayment period and Insurance/collateral*) as an essential lending factor to manage borrowers' credit risk, including small businesses. It is a framework with tools adopted by bank credit officers to scrutinize the borrowers' credibility but with a powerful influence on credit decision-making (Bhatt, 2012; Boushnak et al., 2018; Thomas, 2000). Chepkoech (2014) reported that banks in Kenya use 5Cs (capacity, capital, collateral, conditions, and character) as the most common risk qualitative assessment techniques, followed by other quantitative methods. Banks examine credit risk by looking at the borrower's perspective on collateral, condition, characters, capacity, and capital measurement to control the non-repayment rate. When securitizing CAMPARI and 5Cs, many SMEs are found not to qualify for the loans due to their opaqueness.

Cheng and Qu (2020) and Wang et al. (2020) have recently extended the previous studies on handling credit risks and have suggested bank financial technology as a critical tool in reducing credit risks due to current developments in ICT. They argue that, with FinTech, the management of credit risk becomes so easy for the bank and as a result, more loans are being supplied to SMEs. Similarly, in Tanzania, credit risk management by CAMPARI has been the major obstacle to

SME financing (Kadete, 2014; Mori & Richard, 2012; Mosha, 2016). So many SMEs do not qualify for loans because they fail to meet these seven conditions. The most pinching collateral conditions are such as (1) collateral, which has a value of about 125% of a loan value, (2) SMEs have registered collateral and in case the demanded collateral is a house or land, it should have the title deed and (3) banks prefer fixed assets to be used as collateral. Therefore, it is difficult for SMEs to obtain credit from banks with these conditions.

Moreover, obtaining the tilted deed in Tanzania is very bureaucratic and the procedures take longer before one obtains his title to the property (Mbowe et al., 2020). Sincerely credit risk management has been the major limiting factor for banks' credit flow to SMEs since they charge very high-interest rates due to the avoidance of credit risk. Moreover, they provide fewer funds, demanding collateral with cumbersome conditions and issuing very short-term loans that do not help the SMEs with their financing. Collateral is the leading obstacle in limiting SMEs' excess to finance.

2.4.4   Institutional Lending Structure and Bank's Financing Decisions

Many institutional parameters influence a particular bank's rules and lending environment, resulting in variations in lending decisions. Deflorio (2018) argues that the financial institutions' role is to create a context with policies that financially support SMEs and promote their growth. A tighter lending environment within a bank affects the credit flow to SMEs. Studies show

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significant variations across banks in SMEs' credit constraints (Djankov et al., 2007; Pagano & Jappelli, 1993). The banks' different credit policies, organizational structures, internal guidelines, upward recommendation systems, authorization limitations, and headquarters directives also impact the credit flow to SMEs (Bhalla & Kaur, 2012; Bruns & Fletcher, 2008; Canales & Nanda, 2012; Cantú et al., 2020; Kakuru, 2008; Moro & Fink, 2013; Trönnberg & Hemlin, 2012). Therefore, banks must develop a framework to aid credit officers' determinations; otherwise, it becomes a concern.

Kakuru (2008) found that banks with decentralized branches where credit managers are left with greater autonomy to make credit decisions provide more loans to SMEs. The bureaucracies managing loan applications, processing, approval, and monitoring extend loans' waiting periods and restrict credit access. Amidu (2014) further extended the above argument, in which his study found that banks' structures influence credit delivery in Sub-Saharan Africa in an atmosphere where the financial sector is rehabilitated, and banks can operate freely and decentralize offices. Differences in the organizational structure of banks simplify or complicate the operational credit process for loan approval. Organizational structures impact the decision-making process related to the bank's lending objectives by considering channels of communication and levels or limits of loan approval during the process. Furthermore, it is argued that large banks with multiple-layer structures adopt strict rules and procedures, mainly on hard information, to avoid credit risks during the lending process. In contrast, in small

banks, due to few layers of management, head offices may give directions to credit officers to extend loans to SMEs, mainly depending on hard and soft information (Ekpu, 2015; Kakuru, 2008).

Cantú et al. (2020) and Kakuru (2008) report that by creating a favourable lending environment, lending regulations and procedures and overall policies make obtaining loans easier by (1) acting as legal protection to loan managers and (2) providing clarity and harmonization of credit decisions by loan managers. Each bank has its internal credit policy that can influence credit supply or hinder its availability if the policy is too tight. When banks set credit policies, the central focus is to establish procedures that will influence the increase in lending activity (Rajan, 1994). Through credit policies, banks identify sectors of high importance for their lending. Banks have regularly marginalized SME sectors in certain circumstances in their lending policies. Therefore, this study's other attention under institutional structure examines how banks' credit policies, procedures and principles in Tanzania are strategized to finance Ap-SMEs.

However, other studies report that loan officers' decisions limit bank credit flow to SMEs (Berger et al., 2011; Ekpu, 2015; Kakuru, 2008). Andersson (2004) and Bruns & Fletcher (2008) argue that banks deliberately harmonize the credit decision-making process across their branches and loan officers, yet there is a variation in loan officers' decisions. The major reason for this variation was their experience levels and the required knowledge in that area. Supporting the above

argument, Fletcher (1995) emphasizes that loan officers and bank managers sometimes make lending decisions based on their emotions and perceptions by paying little attention to the head offices' existing rules, procedures, and instructions. Kysucky (2015) argues that credit-constrained SMEs' proportion due to discouragement from their bankers within the Euro area is almost four times larger than the rejected ones. This situation automatically limits economic growth due to poor contributions from SMEs. Consequently, this study aims to examine how these factors affect the flow of bank loans to SMEs in Tanzania. However, it was previously found that bureaucratic loan procedures limit SMEs' credit in Tanzania (Mashenene, 2015).

2.5 Financial Technology and Bank Credit Transparency

In this section, the researcher reviews the impact of bank credit transparency and financial technology on bank credit flow to SMEs.

2.5.1   Credit Transparency and the Flow of Bank Credit

According to Bulyga, Sitnov, Kashirskaya and Safona (2020), credit institutions must give the most transparent information about their credit activities because they are essential in the credit market and highly need to be trusted lenders. Schnackenberg and Tomlinson (2016) argue that transparency is all about sharing information, and it is an essential element for disseminating knowledge as more significant transparency is likely to increase the understanding, unity, and lack of

confusion between lenders and borrowers. Bank credit transparency is the quality of information banks deliberately share with their borrowers (Losada-Otálora & Alkire, 2019; Schnackenberg & Tomlinson, 2016). In this regard, three aspects of transparency deserve special attention: disclosure, timeliness, accuracy, and clarity of information.

Informational opaqueness has long been cited in the literature as the main impediment to SMEs obtaining bank finance (Behr et al., 2011; Berger & Udell, 1998; Bonini et al., 2016; Mwonge & Naho, 2022; Vos et al., 2007). However, Information asymmetries are concerned with the two players in the financial market being exposed to unknown information. It is overlooked that for SMEs to discover potential credit services, they also require enough credit information from banks (Osano & Languitone, 2016). When SMEs request for loans, they encounter the lenders' lack of availability of loan information (Ertan et al., 2017; Mashenene, 2015; Mwonge & Naho, 2022). Literature suggests that customer perception of the quality of information depends on how much disclosure, clarity and accuracy borrowers rate to the information a bank shares (Schnackenberg & Tomlinson, 2016). The ease with which borrowers find relevant credit information creates disclosure perceptions that might increase their borrowing ambition perceptions of disclosure, clarity and accuracy of credit information form the basis for bank credit transparency. By increasing the perceived level of any of these aspects, bank credit transparency also increases (Losada-Otálora & Alkire, 2019).

Studies have been conducted to determine the impact of bank financial products' transparency on consumers (Bouvard et al., 2015; de Mendonça et al., 2012; Losada-Otálora & Alkire, 2019; Lusardi, 2008; Rutledge, 2010). Nevertheless, no study focuses on banks' lack of credit transparency on SMEs' credit access. This study aims to fill this gap. Wherever the case, it is believed that if banks and other credit institutions are transparent in their lending processes, the supply of loans to SMEs will increase (Bulyga et al., 2020). Banks are supposed to handle loan requests transparently for borrowers, especially SMEs, who banks typically skip. SMEs need better credit transparency to get bank loans. SMEs experience this discouragement both before and after requesting loans. Potential borrowers are discouraged by a lack of credit transparency and completely avoid applying for loans out of fear that their requests will be denied. In the theory of discouraged borrowers, Kon and Storey (2003) argue that a good number of SMEs that are highly in need of finance choose not to apply for bank loans simply because they feel that their applications may be rejected. This discouragement sometimes is due to the prevailing rumors in the credit market about application and processing of loan costs, high lending rates, collateral requirements and so on. On the other hand, SMEs that decide to apply for loans some of their loan proposals are rejected for unknown grounds.

Greater transparency in the banking industry may aid consumers, particularly borrowers, in making better credit decisions. Borrowers would like credit

transparency in the whole lending process. Banks know this and many of them discuss the need to be more transparent with their borrowers, but when it comes to excise transparency practices in lending activities, many banks turn and run the other way (Ertan et al., 2017). Additionally, borrowing terms differ amongst lenders and are tailored to the requirements of the borrowers. SME loan requests may be rejected by a particular bank but approved by another bank using identical standards. These SMEs might have approached a bank that would approve their loan request if they had full information from all lenders. This study expects this problem to be solved if banks are transparent about the credit criteria used by each. Credit transparency may be achieved if regulators establish the banking code that requires banks to regularly publish whatever it takes to help SMEs apply for loans. On top of that, certain products and services offered by banks appear to be reasonably identical across the banking industry. Therefore, transparency on these products and services terms and conditions could help SMEs make comparisons and make the right choice (Glavanits, 2007). Therefore, for easy comparison, bankers should be transparent. Similarly, SMEs need to familiarize themselves with the basics of financial knowledge to understand the terms and conditions expressed by bankers. The lenders' credit transparency could increase lending activities and make more SMEs access finance (Romero-Martínez et al., 2010).

In Tanzania, some banks have been imparting knowledge to SMEs on managing businesses and keeping records. However, finding a bank conducting training or

workshops on the procedures, methods, and principles of extending loans to SMEs is hard. When assessing SMEs' low growth in Tanzania, Olomi et al. (2008) proposed that SMEs' chances of receiving bank funding are hampered by their ignorance of the offered credit options. According to the desk study by Mashenene (2015, 2014), the unavailability of loan information and knowledge on lending procedures (Mwonge & Naho, 2022) from banks to SMEs existed in the Tanzanian credit market. Nevertheless, optimal credit transparency may not be achieved because demands and expectations are ever-changing. However, lenders are concerned that borrowers will have an advantage if they do so since they can change their proposals to match the bank's standards.

The one fundamental aspect of increasing the credit supply to SMEs, which has probably not been given much attention, is for banks to disclose information to SMEs on their products' terms and conditions (European Commission, 2008). Transparency creates awareness of financial opportunities and obligations on the SMEs' side and their ability to decide which offer suits their needs from the available competitive environment. For instance, transparency on credit terms is part of the Business Banking Code in the UK. The purpose is to allow competition and make banks establish higher standards to assist the SMEs with price comparison before borrowing (Thomas et al., 2006); (2) SMEs require transparency in the credit transaction process. SMEs' transparency involves how the banker handles the loan application, credit assessment procedures, and the relationship after the signed lending contract. It may help SMEs if banks provide

appropriate information about the process in reasonably understandable language (European Commission, 2008). For instance, in some EU countries, banks have ensured their SMEs' transparency in the transaction process and have published codes of conduct that set the standards for handling loan clients (Bulyga et al., 2020; Romero-Martínez et al., 2010); and (3) SMEs require transparency in the credit decision. It is essential to both successful and those SMEs whose loan applications are being rejected. It sounds better if rejected ones are informed in writing of the reasons for their rejection. In particular, it does not mean that all banks should disclose precise details of their internal privacy and how their risk models work, but SMEs require knowing about the criteria used and the critical information considered by the bank so that they can be able to have a dialogue with banks (European Commission, 2008). More so, SMEs' understanding of the approaches for their credit decision boosts their skills of properly managing their business so that they may be able to approach banks for future borrowings. According to Romero-Martínez et al. (2010), various European banks have adopted instruments to increase credit rating and credit scoring processes to lend a hand to SMEs without revealing their rating techniques.

Credit transparency in this study is used as the mediating variable. Baron and Kenny (1986) argue that the mediator best fits the strong relationship between the independent and dependent variables. Therefore, using the mediator in this research follows that the financial intermediation theory and many other empirical studies, as explained above, prove a strong relationship between credit risk

management and bank credit flow. Moreover, transparency grows within an organization, thus using it as an endogenous variable that makes sense (Baraibar-Díez & Sotorrio, 2018). Credit suppliers should try to have transparent credit terms and convey information to SMEs without technical language. It is expected that credit transparency as the mediator is likely to increase the supply of loans during the financial intermediation process and improve lending activities to all types of borrowers. To boost their chances of getting loans and comprehend the elements that increase their chances of receiving better credit ratings, SME managers must understand the logic of the credit process before applying for bank loans (Bruns & Fletcher, 2008)

2.5.2 Financial Technology and the Flow of Bank Credit

According to the financial intermediation theory by Scholtens and Van Wensveen (2003), developments in ICT have simplified the intermediation process so that the traditional reasons for the existence of banks seem to lose value. Various studies examine the effects of bank financial technology on the banking industry (Fu et al., 2016; Gai et al., 2018; Yue Shen & Guo, 2015). However, FinTech is a significant weapon that derives the bank credit supply to SMEs (Jakšič & Marinč, 2019; Livshits et al., 2016; Sedunov, 2017b; Sheng, 2020; Sutherland, 2018). Therefore, due to continuous developments in FinTech, researching how FinTech can influence the financial intermediation process to increase bank credit supply to Ap-SMEs will be one of the focuses of the current study.

The application of FinTech to SME credit supply includes cloud computing technology, big data technology, mobile banking technology, internet technology, blockchain and artificial intelligence technologies (Cheng & Qu, 2020; Sheng, 2020). According to Mutezo (2015), one of the challenges for SMEs seeking bank financing in developing countries involves the lack of appropriate technology to reduce obstacles in channelling funds from the banks to borrowers. Financial technology and the extensive usage of the Internet have transformed the delivery of several banking services in modality, processing, and outlets. Internet and mobile banking provide the means for customers to have self-service financial services, and due to technology, the costs of entering the finance industry are lowered.

There is a relationship between FinTech and transaction costs as the introduction of mobile technology has facilitated the easiness of credit access and, to a large extent, has reduced transaction costs. Technology innovations from the lender can increase efficiency, reduce transaction costs, and cover the unbanked populations at longer distances. Similarly, with FinTech, large banks can imitate small banks' organizational structures and decentralize the credit decision power to local branches (Kigen, 2011; Liberti, 2018). For example, Mobile banking has reduced transaction expenses for lenders and borrowers (Kumar, McKay & Rotman, 2010). Technological innovations are thought to reduce physical distance obstacles when searching for banking services. The increase in e-banking

applications connected to financial services is anticipated to encourage financial access for the unbanked.

Sheng (2020) points out that, FinTech reduces the information asymmetry between banks and SMEs. It may enhance the availability and accuracy of financial information, increase information sources and channels, and lower information friction between banks and SMEs (Sanchez, 2018). According to Sutherland (2018), FinTech expands information sharing among lending institutions. Thus, acquiring credit information from other lenders will likely decrease the cost of screening and monitoring SMEs and processing loans.

Furthermore, it is reported by Cheng and Qu (2020) that FinTech negatively influences credit risk in Chinese commercial banks. When analyzing the lending records, they found that FinTech impacts banks' ability to manage SMEs' credit risks. Their argument that financial technology affects credit risk is based on three essential aspects: (1) Technologies applied by banks improve overall bank risk management efficiency, including credit risk management, (2) FinTech develops banks' corporate governance and other internal controls, thereby and decreasing the credit risk and (3) Banks can use FinTech to diversify their investments and the produced diversification effect is likely to reduce the credit risk.

Over the years now, banks in Tanzania have digitalized their operations so that, in most cases, there is no need for the bank customer to visit a brick-and-mortar institution but instead access the banking services online. Among the online

banking services are internet banking and mostly mobile banking. At the end of 2019, mobile and internet banking transactions' value increased to 20.92% from 15.68 in 2018 (United Republic of Tanzania, 2019). Mobile services have played a significant role in the growth of small and medium enterprises. The banks have been using this advantage of technology to provide services electronically. However, as discussed above, it is unclear how far this rapid application of technology in banking has influenced credit. Many SMEs in Tanzania prefer mobile money transactions for flexible, suitable, secure, speedy and reliable transactions. Banks have developed various innovations with this technology that have helped reach SMEs even in remote areas.

FinTech is a new construct used to examine how the financial intermediation theory applies to loan flow factors for SMEs and is used as a moderating variable to predictive variables (Baron & Kenny, 1986). The moderator variables are characteristically applied in research when there is inconsistent relation between independent and dependent variables (e.g., a relationship works in one surrounding but not in another, or for a particular population but not for another). Recently, there have been some arguments from studies that transaction costs and information asymmetry are no longer relevant because FinTech has reduced transaction costs and the availability of information has increased among lenders (Jagtiani & Lemieux, 2017; Scholtens & Van Wensveen, 2003; Sheng, 2020; Thakor, 2020). Therefore, this study introduces FinTech as a moderator to determine its impact on credit supply to Ap-SMEs.

However, Demirgüç-Kunt and Huizinga (2010) contend that despite FinTech having increased bank credit supply to SMEs, it has also increased other risks such as technical, privacy protection transactions, and data security risks. Additionally, Cheng and Qu (2020) further argue that bank financial technology has been developed in many countries without the amendments of the corresponding regulations, increasing regulatory risks. They cite China's example that FinTech has gained rapid momentum in the banking sector while the allied bank supervision has been growing slowly.

2.6 The Proposed Study's Conceptual Framework

The current study aims to develop a model for the supply of bank credit to increase the supply of credit to Ap-SMEs. The study seeks to identify the factors that will influence bankers to increase lending activities to SMEs in general, particularly agro-related, as Tanzania aims to use this sector and transform the economy into a semi-industrial one. To attain the main objective, FIT with refined FIT constructs discussed by Scholtens and Van Wensveen (2003) is adapted to create a conceptual model for this study. It should be noted that the extended theory of FIT by Scholtens and Van Wensveen (2003) does not directly give the constructs, but at least it gives the factors considered by banks when undertaking their intermediation role. However, because there has been no direct research on the variables affecting the flow of bank credit to ap-SMEs globally, this study's constructs are based on the advice of Miles and Huberman. Miles and Huberman

(1994) argue that to clearly and deeply understand the context in which a phenomenon occurs, it is necessary to construct a model or matrix that helps link data with the justification that explains why specific things happen. As a result, the researcher blends several concepts from the FIT and the empirical literature review to construct a conceptual model that is thought to accomplish the given objectives for identifying the drivers of bank credit flow to Ap-SMEs.

Thus, FIT concepts can address the following two major issues facing Ap-SMEs from the suppliers of finance in Tanzania and it will be the fundamental theory in the current study. They include: (1) a considerable bank credit gap to SMEs even though banks' performance is reasonable to meet the credit demands (Fouejieu et al., 2020) and (2) undercapitalization of Ap-SMEs triggered by their limited access to finance due to posed credit assessment processes from banks (World Bank, 2018). The conceptual model is constructed as follows:

First, the proposed conceptual model consists of the lending factors, including lending costs, information asymmetries, transaction risks and institutional environment structures (Allen & Santomero, 1997; Coase, 1937; Scholtens & Van Wensveen, 2003). The construct of the institutional lending structure is not new, as it has been discussed indirectly by the FIT as part of bank regulation but more so has been proved and suggested by various empirical studies among the crucial factors affecting the credit availability to SMEs (Bruns & Fletcher, 2008; Ekpu, 2015; Kakuru, 2008; Moro & Fink, 2013; Taremwa et al., 2022). Thus, this

construct is fundamental, especially considering the solution to Tanzania's huge bank credit gap.

Secondly, financial technology (FinTech) is added as the moderating variable on the predictive variables of transaction costs, information asymmetry and credit risk management. Electronic banking has recently increased among banks and customers when providing and accessing financial services. Evidence from the literature shows that financial technology influences banks to supply credit to SMEs (Cheng & Qu, 2020a; Sheng, 2020). However, as explained in 2.5.2 in the literature, there has been an inconsistent relationship between FinTech and other variables of transaction costs, information asymmetry and credit risk management. Therefore, using FinTech as a moderator, the researcher intends to measure how it modifies the degree to which independent variables and a dependent variable are correlated or how it directly influences bank credit flow to Ap-SMEs.

Thirdly, credit transparency is added to the conceptual model as the mediating variable between credit risk management and bank credit flow. If banks consider factors when assessing loan proposals that are transparent to the SMEs before making the credit decision, it might influence the increase of lending activities. So long as this study aims to improve the supply of bank credit to the agro-processing industries, this research looks at filling this gap left out unresearched. Credit transparency is an intervention sought to remove the credit gap that has

existed for a long time. Mediating variables is essential to many fields of study, mainly when researchers aim to understand how two variables are related (MacKinnon, 2011).

Over the years, banks have provided financial assistance, advising businesses, monitoring and counselling SMEs during and when starting new businesses, and modernizing the existing ones. However, as information asymmetries characterize the financing process, high transaction costs and emerging credit risks, SMEs' financing remains narrow and shallow. The usual convention is that SMEs are essential for economic growth and social development. Banks have not been able to provide SMEs with the necessary credit despite the rising demand for bank credit because of several reasons, including the high transaction costs involved, the high default rates of SMEs, a lack of adequate security, the information asymmetries of SMEs, and the perceived risks associated with SMEs operations (Binks & Ennew, 1996; Mori & Richard, 2012; Nkwabi et al., 2019; Olomi et al., 2008)
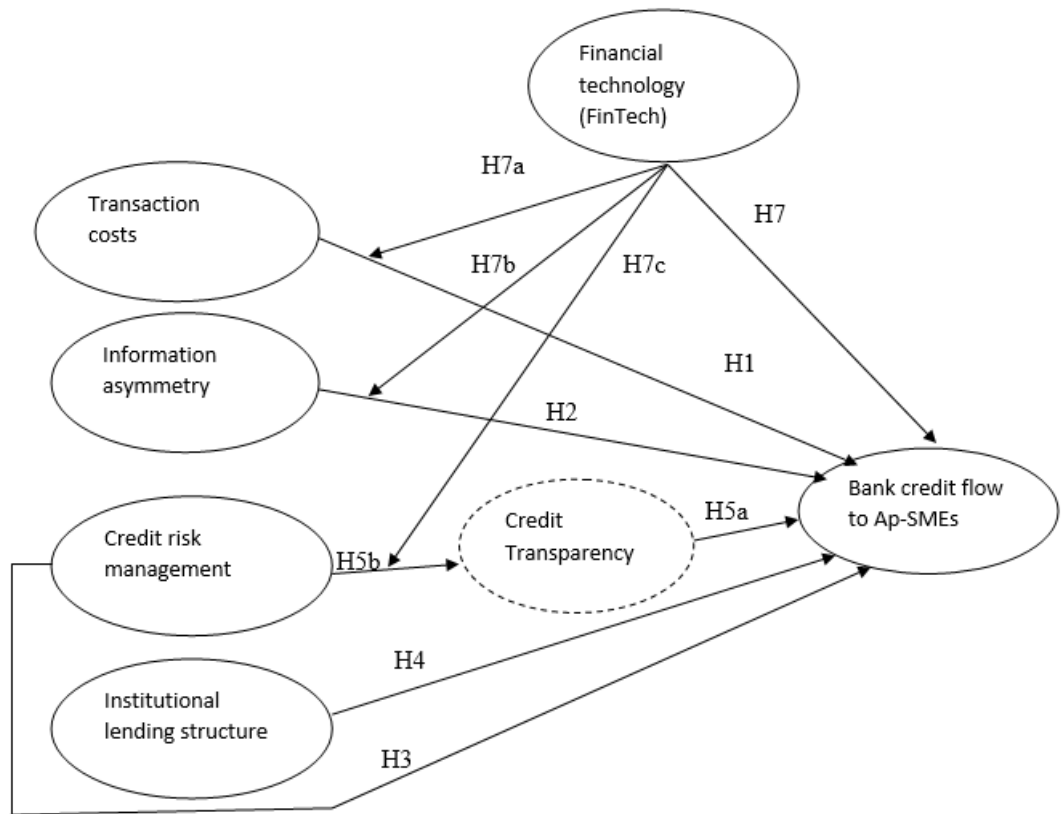
Figure 2. 2 The proposed Current Study's Conceptual Research Model

2.7 The Development of Current Research's Hypotheses

The relationship between transaction costs, information asymmetry, credit risk, institutional lending structure, and bank loan flow to Ap-SMEs is investigated in this study. The current study also evaluates how FinTech moderates the impact of transaction costs, information asymmetry, and credit risk. The indirect impact of bank credit transparency as a mediator on the flow of bank credit is also examined in this study. The hypotheses presented in the following sub-topics support the causal relationship between the variables.

2.7.1 Transaction Costs and Bank Credit

In the context of this study, transaction costs are the total direct and indirect expenses incurred by banks when providing loans to SMEs. These expenses include time and travel expenses, legal fees, meeting facilitation costs, costs associated with determining the viability of a business, security evaluation costs, and costs associated with contract violations (such as the filing of lawsuits and the hiring of debt collectors), among other expenses (Nguvava & Ngaruko, 2016). Bank credit flow to SMEs is constrained by processing costs incurred during the loan procedure (Ekpu, 2015; Mutezo, 2015; Saito & Villanueva, 1981).

Due to transaction costs, lending rates rise, loans are smaller once processing fees are subtracted, and in some cases, lenders may decide not to approve loan requests (Berger & Udell, 1995, 2002). The loan amount given to SMEs depends on the size of the SME. Typically, smaller credit facilities tend to have a relatively higher transaction cost per dollar lent than more extensive credits; not all that cost can be recovered through fees. Small credit facilities tend to attract higher interest margins, even if the risk exceeds more extensive credits (Ekpu, 2015). SMEs become victims of being regarded as undesirable projects over large firms. Scholtens and Van Wensveen (2003) contend that the banking industry has recently undergone modernisation, which has decreased transaction costs to the point that banks no longer need to ration lending to SMEs. Considering Tanzania's initiatives to support agro-processing growth industries, this study appropriately investigates the transaction costs linked to bank loans to the

country's agro-processing industry. High transaction expenses on the part of the banks are anticipated to restrict bank loan flow to Ap-SMEs. This fact leads this study to predict that:

H1: The flow of bank credit to Ap-SMEs is directly and negatively impacted by transaction costs.

2.7.2   Information Asymmetry and Bank Credit

Information asymmetry in this study refers to a lack of information or a mismatch between bank information on SMEs and SMEs' information (Stiglitz & Weiss, 1992). According to research by Bonini et al. (2016), Campanella et al. (2013), and Distinguin et al. (2016), information asymmetry has a negative impact on bank credit flow. In some instances, banks limit the provision of credit to specific projects due to information asymmetry. The more banks lack information on SMEs, the lower the chance for credit access.

However, other academic works, such as Cheng & Qu (2020) and Sheng (2020), contend that the banking industry's technological improvements significantly reduce the information asymmetry problem. For example, electronic banking and credit reference bureaus (CRBs) have made it easier for bankers to quickly gather the data required to grant credit to SMEs (Boateng & Abdulrahman, 2013; Mutezo, 2015). According to the study's findings, banks tend to give loans to SMEs with more open documentation, cheaper interest rates, and minimal

collateral requirements, so if they have all the pertinent information on Ap-SMEs, the credit supply will probably grow. This fact leads this study to make the following predictions:

H2: The flow of bank credit to Ap-SMEs is directly and negatively impacted by information asymmetry.

2.7.3   Credit Risk Management and Bank Credit

In the current study, credit risk management is a collection of integrated tasks and activities for managing the credit risks that commercial banks must manage by incorporating essential risk management techniques and processes about the banks' goals (Nikolaidou & Vogiazas, 2014). It can be recalled that risk management practices regulate the possibilities and threats that can result in risk, not the risks themselves. Most studies show that credit risk management negatively affects bank credit supply to SMEs through credit risk assessment, as suggested by the financial intermediation theory (Baiden, 2011; Boushnak et al., 2018; Chepkoech, 2014). These studies emphasize how credit assessments conducted before reaching a lending decision limit SMEs' number of loans. Bank loan amounts to SMEs have decreased due to their high credit risk. The less likely an SME is to get a loan, the bigger the credit risk.

According to Thampy (2010), the need for collateral seems to be a substantial barrier to SME financing because banks view it as a risk buffer. Most SMEs cite the absence of collateral as a major factor in why banks declined their loan offers.

According to several empirical investigations, the risk of borrowers and collateral are significantly positively correlated (Duarte et al., 2016; Jimenez et al., 2006). Before extending loans, commercial banks implemented a variety of credit risk evaluations. While some view the five Cs of lending as the primary tool, others see collateral as the primary means by which bankers mitigate risk. Due to SMEs' exclusion from credit risk management, these methods have had a negative impact on the flow of credit to them. This fact leads this study to predict that:

H3:   The flow of bank credit to Ap-SMEs is directly and negatively impacted by credit risk management.

2.7.4   Institutional Lending Structure and Bank Credit

The institutional lending structure in this study relates to a bank's lending culture, credit policies, lending principles, and lending practices (Kakuru, 2008; Totolo, 2015). The flow of credit to SMEs is influenced by variations across banks in their credit policies, organizational structures, training programs for their credit employees, internal guidelines, upward recommendation systems, permission restrictions, and head office directives (Bruns & Fletcher, 2008; Ekpu, 2015; Kakuru, 2008; Moro & Fink, 2013; Mutezo, 2015). Banks have frequently marginalized SME sectors in their lending strategies in some situations. In this study, the institutional structure of Tanzanian banks is strategically planned to fund AP-SMEs. As a result, this study suggests that:

H4: The flow of bank credit to Ap-SMEs is directly and positively impacted by institutional lending structures.

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2.7.5 Credit Transparency and Bank Credit

Transparency is defined in this study to be more than just disclosure and to include the applicability, promptness, clarity, and correctness of credit information supplied by banks with SMEs regarding loan terms, conditions, assessment procedures, and any other credit-related elements of the lending process (Baraibar Díez & Luna Sotorrio, 2018; Jordan et al., 2000). As mentioned earlier, when credit transparency was discussed theoretically and empirically, it was observed that it could create direct and indirect effects on the flow of bank credit to SMEs. Because of this, the credit transparency subject is divided into the following sub-topics.

a) Direct Relationship

Greater transparency in the banking industry may aid consumers, particularly borrowers, in making better credit decisions (Losada-Otálora & Alkire, 2019). Borrowers would like credit transparency in the whole lending process. The lenders' credit transparency could increase lending activities and make more SMEs access finance (Romero-Martínez et al., 2010). This level of transparency provides information on how banks invest the public deposits. Through credit transparency, SMEs can access the information on banking products and charged interest rates by different bankers together with their terms and conditions, and then select banks that can best fulfil their financial expectations. Bank credit

transparency specifically when lending SMEs does not only give advantage to the demand side, but it can also help the regulators to compare the performance of different banks in a transparent and verifiable way when they decide to take action to banks that go against best lending practices. Thomas et al. (2006) propose that greater bank transparency is necessary to understand better and address financial exclusion in some of the most disadvantaged communities. Bank transparency is considered an essential tool when dealing with financial inclusion. Out of transparency, SMEs can compare the individual banks' lending practices and lending patterns, which may improve performance on both sides of demand and supply.

Credit transparency to SMEs is also believed to allow small businesses to identify their strength and weakness and then form positive relationships with their banks to seek loans in the future. The importance of bank credit transparency has been recognized in the US and UK. In these countries, banks must regularly publish the procedures and credit assessments used when analyzing various types of loans (Romero-Martínez et al., 2010). Credit transparency helps to highlight the difficulty that SMEs face in obtaining loans. Several UK and US banks have already reached this transparency level as part of their banking operation. Why should other banks, especially in developing countries, not be transparent in their lending activities? Generally, the one fundamental aspect for increasing the credit supply to SMEs, which has probably not been given much attention, is for banks to disclose information to SMEs on their products' terms and conditions (e.g.,

interest rates and collateral requirements among bankers). Based on the discussion above, it is hypothesized that:

H5a: The flow of bank credit to Ap-SMEs is directly and positively affected by credit transparency.

b) Indirect Relationship (Mediating Effect)

Based on prior literature from Losada-Otálora and Alkire (2019) and Schnackenberg and Tomlinson (2016), this study considers bank credit transparency as the perceived quality of information banks deliberately share with their borrowers. Therefore, in this regard, three aspects of transparency deserve special attention: disclosure, accuracy, and clarity of information. Banks are obligated to manage loan proposals clearly to the borrower. SMEs need better credit transparency to get bank loans. Lack of credit transparency deters potential borrowers from applying for loans out of fear that their requests will be denied (Kon & Storey, 2003).

When assessing SMEs' low growth in Tanzania, (Olomi et al., 2008) argues that SMEs' chances of obtaining bank financing are hampered by their ignorance of the financial services offered. In general, the credit transparency required by SMEs from banks sought to increase the availability of finance to SMEs apart from transparency in terms of credit decisions and bank values, including: (1) SMEs require transparency in the terms and conditions for products and services.

This contributes to the awareness of financial opportunities and obligations on the side of the SMEs and as well they can also decide which offer suits their needs from the available competitive environment. The purpose is to allow competition and make banks establish higher standards to assist the SMEs with price comparison before borrowing(Thomas et al., 2006).

Secondly, SMEs require transparency in the credit transaction process. SMEs' transparency involves how the banker handles the loan application, credit assessment procedures, and the relationship after the signed lending contract. For instance, in some EU countries, banks have ensured their SMEs' transparency in the transaction process and have published codes of conduct that set the standards for handling loan clients (Romero-Martínez et al., 2010). However, in countries with a house bank system, it is disputed that issuing banking codes on credit transparency has no impact on transparency (Bulyga et al., 2020). According to Romero-Martínez et al. (2010), various European banks have adopted instruments to increase credit rating and credit scoring processes to lend a hand to SMEs without revealing their rating techniques. Consequently, the following hypotheses are put forth by this study:

H5b: Credit risk management has a positive and direct effect on credit transparency

H6: The relationship between credit risk management and bank credit flow to Ap-SMEs is mediated by credit transparency.

2.7.6 Relationship between FinTech and Bank Credit

In this study, financial technology applies emerging technologies in the banking industry, including internet information technology, big data, blockchain technology, and artificial intelligence. As mentioned earlier, when financial technology was discussed theoretically and empirically, it was observed that FinTech could create direct and indirect effects on the delivery of bank credit to small businesses. Therefore, the discussion on FinTech is segregated into the following sub-topics.

a)   The direct relationship to the Flow of Bank Credit

Recently, the advancement of financial technology has been under the microscope of different disciplines. It is argued that FinTech has been the rocket to fasten the supply of credit to SMEs (Cheng & Qu, 2020; Jagtiani & Lemieux, 2017; Jakšič & Marinč, 2019; Sheng, 2020). Kigen (2011) contends that by using e-banking, SMEs can apply online for lines of credit, SMEs can get updates on their credit assets, and successful SMEs can get information after credit appraisal. According to Mutezo (2015), one of the challenges for SMEs seeking bank financing in developing countries involves the lack of appropriate technology to reduce obstacles in channelling funds from the banks to borrowers. Technology and the widespread usage of the internet have progressively transformed the modality and delivery of several banking services. Internet and mobile banking have become the self-service delivery channel, while new information technologies have

lowered barriers to entering the finance industry. In the Philippines, it was reported that lending rates were very high before the introduction of mobile banking. For instance, a rural Green Bank in the Philippines encouraged using e-cash by reducing the lending rates from 2.5% to 2% per month (Kumar et al., 2010).

Furthermore, it is reported by Cheng and Qu (2020) that in China, FinTech negatively influences credit risk in Chinese commercial banks. They found that FinTech impacts banks' ability to manage SMEs' credit risks. Their argument that FinTech affects credit risk positively, thereby increasing bank loans, is based on three essential aspects: (1) Technologies applied by banks improve the efficiency of managing bank risks, including credit risk management, and (2) FinTech stabilizes the corporate governance of banks and other internal controls used to influence the delivery of credit and (3) Banks can use FinTech to diversify their investments and the produced diversification effect is likely to reduce the credit risk. Tanzania's central bank emphasizes that banks should push big data applications into their processes and operations to improve service delivery, including credit to the private sector. Weng et al. (2023) and Demirgüç-Kunt and Huizinga (2010) argue that bank financial technology has improved business models that have increased bank loans because they use the short time to analyze and assess loan proposals.

Thus, this study predicts that:

H7: The flow of bank credit to Ap-SMEs is directly and positively impacted by financial technology (FinTech).

b) **Indirect Relationship (Moderating Effect)**

FinTech's influence on what factors influence banks' lending to SMEs is not directly addressed in research, but the impact of FinTech on SMEs' credit supply processes is. With FinTech, the number of visits by banks and SMEs is reduced during the lending activity. Finally, the banks will likely supply loans to many SMEs due to reduced transaction costs (Purcell & Toland, 2003). FinTech involves less documentation; few staffs and physical branches, and therefore banks' profits from lending activities increase due to lower transaction costs (Cheng et al., 2006). For example, lending through e-banking technology can significantly reduce the time it takes to process loans by allowing the potential borrower to do much of the work (reducing transaction costs). Thus, offering e-lending services to SMEs allows banks to increase their business amount as FinTech cuts down transaction costs. Additionally, e-banking technology allows lenders to reach more SMEs outside their traditional market areas. According to Mutezo (2015), utilizing technologies like e-banking and mobile phone banking increases access to bank credit regardless of location or distance from the bank. Based on the above analysis, FinTech alleviates transaction costs of bank credits to Ap-SMEs.

Sanchez (2018) argues that FinTech will help banks improve credit information availability and accuracy, increase the number of information access channels and sources, and decrease the information gap between banks and small businesses. The advancement of FinTech has led to increased information sharing among credit market participants (Sutherland, 2018; Weng et al., 2023). Information sharing with rich datasets from other banks may decrease the expenses of identifying prospective borrowers. Moreover, information sharing due to FinTech limits SMEs' habits and reduces credit risk. FinTech has helped lenders analyze risk information at lower costs (Livshits et al., 2016). Mutezo (2015) reports that in South Africa, lenders can use the increased flow of information and real-time interaction with SMEs due to e-banking to offer various products and services relevant to a particular customer. As a result, information asymmetry in the flow of bank loans to Ap-SMEs can be eliminated by FinTech. Therefore, this study formulates the following hypotheses:

> *H7a: Financial technology positively moderates transaction costs to increase Ap-SMEs' bank credit flow.*

> *H7b: Financial technology positively moderates information asymmetry, increasing bank credit flow to Ap-SMEs.*

> *H7c: Financial technology positively moderates credit risk to increase bank credit flow to Ap-SMEs.*

Table 2. 2 Summaries of Hypotheses

H1	The flow of bank credit to Ap-SMEs is directly and negatively impacted by transaction costs.
H2	The flow of bank credit to Ap-SMEs is directly and negatively impacted by information asymmetry.
H3	The flow of bank credit to Ap-SMEs is directly and negatively impacted by credit risk management.
H4	The flow of bank credit to Ap-SMEs is directly and positively impacted by institutional lending structures
H5a	The flow of bank credit to Ap-SMEs is directly and positively affected by credit transparency.
H5b	The relationship between credit risk management and bank credit flow to Ap-SMEs is mediated by credit transparency.
H6	The relationship between credit risk management and bank credit flow to Ap-SMEs is mediated by credit transparency.
H7	The flow of bank credit to Ap-SMEs is directly and positively impacted by financial technology (FinTech)
H7a	Financial technology positively moderates transaction costs to increase the bank credit flow to Ap-SMEs
H7b	Financial technology positively moderates information asymmetry to increase bank credit flow to Ap-SMEs
H7c	Financial technology negatively moderates credit risk to increase bank credit flow to Ap-SMEs

Table 2. 3 Relationships Between Objectives and Hypotheses

Objective number	Relevant hypotheses or hypotheses
1	H1, H2, H3 and H4
2	H5a, H5b and H6
3	H7, H7a, H7b and H7c

2.8 Summary of Literature Review

In conclusion, most previous studies have concentrated on determining SMEs' credit access factors, mainly from the demand side and very few from the supply side. A specific empirical study that focuses solely on the supply side is necessary, mainly focusing on suppliers of SMEs' finance. Moreover, just a few studies on the supply side have been conducted, and their findings cannot be generalized to the Tanzanian context (Boushnak et al., 2018; Ekpu, 2015; Mutezo, 2015). Moreover, from the literature review, it is noted that no study was conducted to examine the drivers of bank credit flow to Ap-SMEs processing SMEs from the supply side, and this study fills that gap. Also, the theories used in past studies are not uniform, as researchers have tested the variables based on their study's context.

FIT is a more comprehensive theory for this study than other theories since it can address some of the problems with the ongoing research. To address additional problems, the theory is broadened to include credit transparency as a mediating variable and bank financial technology as a moderator. The current research paradigm differs from past research models due to its wider scope.

Furthermore, most studies have been dominated by non-probability sampling techniques and secondary data (Table 2.1). The current study uses the probability sampling technique to generalize the sample results to the targeted population, and due to the nature of the current target respondents, the primary data is ideal.

In previous studies, first-generation multivariate data analysis approaches were frequently used. The approaches, however, are not without criticism because they do not take measurement errors in observed variables into account and do not assess a model with many layers in a single study. PLS-SEM, a second-generation multivariate approach, is utilized in this study to evaluate the data and derive insights important for policymakers and future researchers to use as references. The following chapter will review the enhanced research methodology and data analysis techniques used in the current study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes and justifies the critical methodological concepts applied to examine bank credit flow drivers to Ap-SMEs in Tanzania from the supply perspective. The study employs the methodology of quantitative analysis of survey data. This chapter is structured as follows: research design, research tool development, research constructs, data collection method, data analysis method, ethical considerations, and summary of research methodology.

3.2 Research Design

This study use quantitative research techniques to represent data quantitatively (Babbie, 2013). Quantitative research also addresses a specific problem and is used in descriptive investigations. Statistics tests are run on the results of the quantitative analysis to quantify the data and extrapolate the findings from a representative sample to the target population (Parija & Kate, 2018). Furthermore, depending on the data acquired, the quantitative method provides a helpful analysis of the research variables.

Table 3. 1 Overview Past Studies' Research Design Study Context

Authors' name (year)	The source of data	Reasons for using the sources of data
Cantú et al. (2020)	Quantitative data	To analyse how bank-specific characteristics affect commercial bank lending.
Ekpu (2015)	Quantitative data	To investigate the Microstructure of Bank Lending to SMEs: Evidence from a Survey of Loan Officers in Nigerian Banks
Mutezo (2015)	Quantitative data	Understanding the connection between restriction of credit and bank supply Transaction costs, security, creditworthiness, loan technology, and bank-SME relationships
Amidu (2014)	Quantitative data	To examine the main factors that influence bank lending in Sub-Saharan Africa (SSA)
Imran & Nishat (2013)	Quantitative data	The association of bank credits to the private sector
Moro & Fink (2013)	Quantitative data	To assess relationship lending based on managers' trust.
Boateng & Abdulrahman (2013)	Quantitative data	To investigate the elements affecting the granting of bank credit to SMEs
Canales & Nanda (2012)	Quantitative data	To study how the organizational structure of banks impacts small business lending.
Bhalla & Kaur (2012)	Quantitative data	To analyse the attitude and Decision-making Criteria of Commercial Banks toward financing SMEs
Shen et al. (2009)	Quantitative data	To understand the relationship between bank size and SME lending.
De la Torre et al. (2008)	Quantitative data	To assess the banks' involvement with SMEs and ascertain how banks have a significant level of credit exposure to the SME segment

Source: Compiled from literature

Because the above researches are deductive, as is the case with this research, all employed the quantitative survey methodology to examine the factors impacting SMEs' access to credit, as shown in Table 3.1 above.

3.2.1 Survey location

This study adopts the survey strategy in which the researcher studies a sample of individuals; then generalizes the whole population (Yin, 2009). The study location aims to cover the entire country of Tanzania through its five zones (clusters): the Central, Coast, Lake, Northern and Southern highlands zones. Agro-related activities and the most significant number of banks abound in these five zones. For that matter, Dar es Salaam represents the Coast zone, Dodoma for the Central zone, Mwanza for the Lake zone, Arusha for the Northern Zone, and Mbeya for the Southern highlands zone. United Republic Tanzania (2019), reports that there are 957 bank branches located throughout Tanzania and 512, equivalent to 54% of all bank branches, are in these five selected regions. The 290 branches are in Dar es Salaam, Arusha (68), Mwanza (67), and Mbeya (46) and 41 branches are in Dodoma. These five regions are among the top six regions with many Ap-SMEs. There is no current data, but the available data shows that in 2013 the total number of agro-related SMEs in these five regions was 165,060 out of 362,881 establishments, equivalent to 45%   (United Republic of Tanzania, 2013) (See table 3.4).

3.2.2 The Present's Research Target Population

The entire group being studied is the targeted population to get the data needed to meet the research goals (Bradley, 2007). These are head offices and branches of banks located in the survey area. The researcher uses bank branches to collect data from lending officers to determine the drivers of bank credit flow from the lenders' side to the Ap-SMEs. These include lending officers like (1) branch managers, (2) credit officers, (3) credit analysts, (4) and relationship managers. The researcher uses branches of banks because of their business interaction with customers, but it is through branches that most credits are processed and extended. Similarly, some loans require authorization from headquarters, and in some banks, all loan applications are only processed at headquarters.

3.2.3 Sample Size of the Present Study

For this study's scope, the researcher obtains the sample size using the formula of Yamane (1967) and uses the same formulation because the sample meets the formula assumptions such as (1) normal distribution of population's characteristics; (2) using probability techniques to select a sample; and (3) elements of the population are homogeneous. As a result, Yamane's (1967) formula was utilized based on a finite population because the current research population (bank branches) size was known.

Table 3. 2 Computation for Sample Size

Formula
$n = \quad N/ (1+N(e^2)$

Where:

n	= the sample sizes
N	= the study population (number of bank branches).
e	= the level of precision (set at 0.05 for this study)

Calculation	**Answer**
n = 957/ (1+ (957*0.05²)) = 397.18	$\approx$ 397 bank branches

At a 95% confidence interval, the estimated minimum sample size is 397 bank branches from the country. Past studies' sample size was the branches of banks ranging from 1 bank to 4 bank respondents (Boushnak et al., 2018; Cantú et al., 2020; Fatoki & Smit, 2011; Moro & Fink, 2013; Osano & Languitone, 2016). The study will increase the sample to include all banks in the survey area serving Tanzania's agro-processing industries. If the sample size is not representative enough, it may result in a sample with insufficient statistical power to assess the true association between the constructs (Wolf et al., 2013).

3.2.4   Sampling Design

The current study applies the probability sampling technique because it is a survey study that intends to generalize the results over the targeted population.

The probability technique is more appropriate to give each element an equal chance in selecting a sample (Leedy & Omrod, 2010; Saunders et al., 2007).

Table 3. 3 Overview of the Past Studies' Sampling Techniques

Author and year	Sample Size & sampling technique	Reasons for using the sampling method
Boushnak et al. (2018)	Non-probability sampling	Case study
Osano & Languitone (2016)	Stratified sampling	Classify the respondents, including relevant management and staff from BIM Bank, BCI Bank, and Standard Bank, who deal with SMEs.
Ekpu (2015)	Purposeful sampling/judgmental sampling	Deciding which cases comprise the sample
Mutezo 2015)	Stratified sampling	Survey study to generalize the results to the target population
Totolo (2015)	Purposive sampling	To obtain a sample of banks for an interview based on market share and their involvement with SME lending
Moro et al. (2013)	Random sampling	To obtain the sample of banks characterized by German culture and Italian culture to determine trust in loan managers and SMEs' access to loans
Shen et al. (2009)	Stratified sampling	Survey study to get a representative sample of banks' lending to SMEs in China

Source: Compiled from literature

As indicated in table 3.3, the researchers have employed non-probability (e.g., Boushnak et al., 2018; Cantú et al., 2020; Ekpu, 2015; Totolo, 2015) and probability (e.g., Mutezo, 2015; Osano & Languitone, 2016). Since the study intends to generalize the intended population results, non-probability sampling techniques are imperfect (Creswell & Creswell, 2017). Based on the purpose of the current study, the researcher employs the probability sampling technique to get the targeted respondents. Because each zone has banks that supply loans to Ap-SMEs, this study uses a multistage cluster sampling technique to ensure banks' representation throughout the country. The population will be divided into clusters (geographic areas such as regions and districts). Nongkynrih (2012) argues that cluster sampling is more practical for the scattered population and that selecting a sample representing all elements is hard. Multistage cluster sampling involves various stages in which the cluster diminishes until one obtains the respondents (Acharya et. al, 2013).Therefore, in applying the multistage cluster sampling technique, Acharya et al. (2013) propose the following four steps:

In the first step (primary sampling unit), the researcher chooses the sampling frame given the population of interest. As the study intends to cover the entire country, the current researcher segregates the population into five Tanzanian zones (clusters) Coast, Central, Northern, Lake, and Southern zones. In the second step (secondary sampling unit), the current researcher uses the purposive sampling method to select one region with the highest number of bank branches (see table 3.4) to represent the zone. That being the case, Dodoma

represents the central zone, Dar es salaam for the Coast zone, Arusha for the northern zone, and Mbeya for the southern zone. Moreover, these regions are cities, and thus, all branches within the city area may be sampled because most banks and agro-processing firms are located in major urban centres where infrastructure is well established.

In the third step (tertiary sampling unit), as shown in Table 3.4, the researcher computes the number of branches (proportion) selected per region using the sample obtained in section 3.2.3 above. Then, the simple random sampling technique is used to select bank branches for distributing the questionnaire. In the fourth step (quaternary sampling unit), the researcher uses the purposive sampling technique to get one respondent to fill out the questionnaire from each branch. The targeted respondent is the lending officer in the SME credit department. Nevertheless, if no specific department within the branch deals with SMEs loans, one of these (credit officers, credit analysts, and branch manager) will be selected. Leedy and Omrod (2010) suggest that a researcher will likely use purposive sampling when selecting participants who might provide desired data on a topic of interest.

Table 3. 4 Proportionate Sample Size

Zones	Regions/Cities	Branches and head offices per region	The proportion of branches to be selected per region	Proportion %
Coast zone	Dar es Salaam	330	238	60
Central zone	Dodoma	41	29	7.3
Northern zone	Arusha	68	49	12.3
Lake zone	Mwanza	67	48	12.1
Southern highlands zone	Mbeya	46	33	8.3
Total		552	397	100%

Source: Bank of Tanzania (2019)

Therefore, the researcher selects 238 branches from the coastal zone, 29 branches from the Central zone, 49 from the Northern zone, 48 from the Lake Zone, and 33 from the Southern highlands zone.

3.3 Development of Research Tool

This section describes the processes that questionnaires undergo before they can be used for the final study. The researcher designs a study questionnaire using the measurement items from past studies. The measurement tools used in this study were modified from earlier research on bank credit and some from other fields. Then, the items are customized to fit the study's context. The researcher conducted the pre-test to ensure the measurement instruments' face validity by involving experts from academic institutions and practitioners in the banking industry. Later, the pilot study ensured the tools' validity and reliability (Saunders

et al., 2015). The prepared research tools consist of statements that measure all seven constructs of the operational model: transaction costs, information asymmetry, credit risk management, institutional lending structure, bank financial technology and credit transparency. See the operational definition in Table 3.5 here below.

Table 3. 5 Definitions of the Study's Constructs

Construct's name	Operational Definition
Transaction costs	Refer to the total direct and indirect expenses incurred by banks when providing loans to SMEs, including time and transportation expenses, attorney fees, meeting facilitation expenses, business viability assessment expenses, security evaluation expenses, and costs associated with contract breaches (case filing expenses, debt collector hiring expenses, and other expenses) [a]
Information asymmetry	Lack of knowledge or incorrect information provided by banks on SMEs, in which case SMEs have greater information than the banks, including the expenses associated with default risk [b]
Credit risk management	Defined as the likelihood that SMEs will fail to meet the obligations as stipulated in the loan agreement due to the SMEs' unwillingness to execute their commitments or their capacity to do so being impaired [c]
Institutional lending structure	Refers to the bank's lending culture, credit policies, lending principles, and lending practices [d]
Financial technology	The application of emerging technologies in the banking industry, including cloud computing technology, big data technology, mobile banking technology and internet technology [e][f]

Credit transparency	Refers to the prompt, clear, and accurate sharing of credit information by banks with SMEs regarding credit terms, conditions, assessment processes, and all other credit factors associated with the lending process [g][h]
Flow of credit	Refers to the availability of credit [i]

Source:

a Nguvava and Ngaruko (2016)	d Kakuru (2008)	g (Baraibar et. al (2018)
b Stiglitz and Weiss (1992)	e Cheng and Qu (2020)	[h] Jordan et al. (2000)
c Bhatt (2012)	f Sheng (2020)	[I] Black & Strahan (2002)

3.3.1 Measurements of the Current Research's Constructs

According to Table 3.6, the measurement items for this study were obtained from earlier research in diverse situations. Adopting a single source for all measurement items could reduce bias when using measurement items from other studies (Eichhorn, 2014). The measuring indicators in this study comprise 33 items that form the study's questionnaire. The researcher customizes the items' wordings without altering the intended measurement meaning for each item. The definition of each operational construct is given in Table 3.5 above.

Table 3. 6 Measurement Items Used in the Current Study

Constructs		Items		Source of adoption
	TC1	My bank does not use too much time to reach the credit decision of granting loans to agro-processing SMEs regarding the requested amount.		Dahlstro et.al (2005)
	TC2	In my bank, the administrative costs of agro-processing SMEs loans are low.		Ekpu (2015)
	TC3	My bank incurs lower costs to obtain information before granting a loan to agro-processing SMEs		Ekpu (2015)
	TC4	Lending to agro-processing SMEs is not costly because they are easy to monitor.		Ekpu (2015)
Information asymmetry	IA1	The information from the agro-processing SMEs is often well formulated		Kakuru (2008)
	IA2	The information from the agro-processing SMEs is often easy to understand		Mutezo (2015)
	IA3	Most agro-processing SMEs are completely honest to my bank with their financial records.		Mutezo (2015)
Credit risk management	CRM1	My bank's collateral requirements are high in agro-processing SMEs		Ekpu (2015)
	CRM2	My bank trusts the agro-processing SMEs' source of repayment.		Ekpu (2015)
	CRM3	My bank trusts the agro-processing SMEs about the continuity of their businesses.		Ekpu (2015)
	CRM4	My bank is safe to lend to agro-processing SMEs		Ekpu (2015)
Institutional lending structure	ILS1	Dealing with SMEs engaged in agro processing is made simple for me by my bank's lending policies.		Ekpu (2015; Kakuru (2008)
	ILS2	The targets that are given to me by my bank make me increase the level of loans that I give to agro-processing SMEs		Kakuru (2008)
	ILS3	The internal contacts by my bank's lending structures enable flexible credit decision-making for SMEs engaged in agro-processing.		Kakuru (2008)
	ILS4	The institution lending criteria offer a practical and useful framework for		Kakuru (2008)

		evaluating loans for agro-processing.	
Bank financial technology (FinTech)	FinTech1	Financial technology allows my bank to communicate better with agro-processing SMEs	Wu et.al (2014);Wu et.al (2010)
	FinTech2	My bank financial technology increases the number of information channels for credit decision-making to agro-processing SMEs	Wu et.al (2014); Wu et.al (2010)
	FinTech3	My bank financial technology increases the sources to obtain accurate information for credit decision making for agro-processing SMEs	Wu et.al (2014); Wu et.al (2010)
	FinTech4	My bank financial technology helps me to extend loans to agro-processing SMEs	Wu et.al (2014); Wu et.al (2010)
Credit Transparency	CT1	My bank helps SMEs during the process of preparing for the loan proposal	Kakuru (2008)
	CT2	Once my bank receives their loan request, agro-processing SMEs are unaware of the procedures to follow.	Kakuru (2008)
	CT3	Agro-processing SMEs do not easily understand the information provided by my bank about its credit services.	Liu et al. (2015)
	CT4	It is difficult for SMEs to obtain sufficient information about my bank's credit service offerings.	Liu et al. (2015)
Credit Flow	CF1	My bank predicts high revenue for lending continuously to the agro-processing SMEs	Gill et al. (2018)
	CF2	My bank is willing to lend to agro-processing SMEs if it would help to tackle loan losses.	Gill et al. (2018)
	CF3	My bank is willing to support the continuation of agro-processing SMEs if it contributes to their performance.	Gill et al. (2018)
	CF4	My bank focuses on lending to agro-processing SMEs to expand the base of borrowers.	Khan et al. (2020); Warsame et.al (2016)

Source: Compiled from literature

3.3.2   Pre-test and Pilot Study Procedures and Results

Testing the validity of measuring items is equally vital after deciding on a research strategy. According to (Bell et al., 2018), validity and reliability are essential in research to ensure that the tools used to measure the constructs are accurate, give what is intended and that these measurement items are consistent and stable among all respondents. According to Babbie (2013), researchers are generally recommended to establish specific questionnaire pre-testing procedures. Lynn (1986) suggests improving the quality of the questionnaire by testing its validity. The pre-testing passed through various procedures: Firstly, the measuring items were tested by selecting academicians who researched the banking sector and bank credit-related aspects (Sangoseni et al., 2013). Under this category, three experts with the education level of PhD from local universities were selected to give their expert views. These experts ensured the comprehensiveness of questions, relevance, and format suitability. Secondly, the current researcher involved two industrial banking experts. These are the experts at the senior level from commercial banks located in Tanzania based on their experiences and expertise in financing Ap-SMEs or other SMEs. Afterwards, the researcher modified the measuring items by incorporating the comments obtained from these academicians and practitioners. Furthermore, the researcher used each

statement's rating to compute the item-content validity index (I-CVI) see Table 3.7.

Therefore, five experts were used to determine the content validity by giving comments (see Appendix A3). According to Armstrong et al. (2005), the suggested number of experts to assess the instruments ranges from 2 to 20. Table 3.7 shows the CVI results. Each item was rated as "not relevant," "somewhat relevant," "relevant," or "highly relevant" by the experts. (See appendix A2). For computing the content validity index (CVI), ratings of all items were used. CVI is the best popular method to estimate social studies' content validity (Polit et al., 2007). They further propose that the measurement items to be adopted have an index of 0.78, the acceptable threshold; otherwise, the measuring item must be rejected. Based on CVI, 47 items were reviewed. On the other hand, nine (9) items were deleted since they did not meet the necessary threshold of 0.78. Consequently, 38 items that met for the pilot study, the CVI standards were kept (see appendix B). In other words, items 2, 6, 7, 14, 19, 21, 31, 33 and 34 were irrelevant to the current study.

Table 3. 7 Results of the Pre-test

Item	Name	Industry Experts		Academic Experts			Agreements	I-CVI	Interpretation
		Expert 1	Expert 2	Expert 3	Expert 4	Expert 5			
Item 1	TC 1	2	4	4	4	4	4	0.8	Clear
Item 2	TC 2	2	1	4	2	2	0	0	Not Clear
Item 3	TC 3	3	3	4	2	3	4	0.8	Clear
Item 4	TC 4	4	4	4	3	3	5	1	Clear
Item 5	TC 5	3	4	4	4	1	4	0.8	Clear
Item 6	TC 6	1	4	4	1	2	2	0.4	Not Clear
Item 7	TC7	5	5	5	4	5	5	1	Clear
Item 8	IA 1	4	4	4	1	2	2	0.4	Not Clear
Item 9	IA 2	4	4	4	2	3	4	0.8	Clear
Item 10	IA 3	4	3	4	5	3	4	0.8	Clear
Item 11	IA 4	4	1	4	4	3	4	0.8	Clear
Item 12	IA 5	4	3	4	3	4	5	1	Clear
Item 13	IA 6	4	4	4	4	3	5	1	Clear
Item 14	IA 7	4	4	4	2	4	4	0.8	Clear
Item 15	CRM 1	4	2	4	1	1	2	0.4	Not Clear
Item 16	CRM 2	4	1	4	1	4	4	0.8	Clear
Item 17	CRM 3	4	2	4	3	3	4	0.8	Clear
Item 18	CRM 4	2	4	4	3	3	4	0.8	Clear
Item 19	CRM 5	4	4	4	4	4	5	1	Clear
Item 20	CRM 6	2	1	4	1	4	2	0.4	Not Clear
Item 21	CRM 7	5	5	4	4	4	5	1	Clear
Item 22	ILS 1	4	4	4	3	4	5	1	Clear
Item 23	ILS 2	4	1	4	1	4	3	0.6	Not Clear
Item 24	ILS 3	4	4	4	2	4	4	0.8	Clear
Item 25	ILS 4	4	4	4	2	4	4	0.8	Clear
Item 26	ILS 5	4	3	4	3	2	4	0.8	Clear
Item 27	ILS 6	4	4	4	3	2	4	0.8	Clear
Item 28	ILS 7	5	4	5	4	5	5	1	Clear
Item 29	FinTech 1	4	4	4	4	4	5	1	Clear
Item 30	FinTech 2	4	4	4	4	4	5	1	Clear
Item 31	FinTech 3	4	3	4	4	4	5	1	Clear
Item 32	FinTech 4	3	4	4	4	3	5	1	Clear
Item 33	FinTech 5	4	4	4	4	3	5	1	Clear

Item 34	FinTech 6	4	3	3	4	1	3	0.6	Not Clear
Item 35	FinTech 7	5	5	5	5	5	5	1	Clear
Item 36	CT 1	3	4	4	3	3	5	1	Clear
Item 37	CT 2	3	4	4	2	3	4	0.8	Not Clear
Item 38	CT 3	4	4	4	1	2	3	0.6	Not Clear
Item 39	CT 4	4	4	4	3	2	4	0.8	Clear
Item 40	CT 5	3	4	4	3	2	4	0.8	Clear
Item 41	CT 6	4	4	4	3	3	5	1	Clear
Item 42	CT 7	3	1	4	3	3	4	0.8	Clear
Item 43	CF1	4	4	4	3	4	5	1	Clear
Item 44	CF 2	4	3	4	4	4	5	1	Clear
Item 45	CF 4	2	4	4	3	4	4	0.8	Clear
Item 46	CF 5	5	5	5	5	5	5	1	Clear
Item 47	CF 6	4	5	5	5	4	5	1	Clear

1- Not relevant 2- Somewhat relevant 3- Relevant 4- Highly relevant

3.3.3 Pilot Study

Before the main survey, the pilot study was conducted to establish the validity and reliability of each construct's measuring indicators, test the participants' consistency for data collection in the main study, and identify any difficulties (Dikko, 2016). Furthermore, according to Yin (2009), the pilot study refines the researchers' data collection method based on its content and procedures.

3.3.3.1 Pilot Study, Data Collection and Results

The pre-test results were used to create the questionnaire used in the pilot study (see Appendix B). The researcher considered using a 5-point Likert scale questionnaire with responses ranging from "strongly agree" to "strongly disagree" to reduce respondents' discomfort while enhancing response rate and quality

(Sachdev & Verma, 2004). The researcher randomly selected one region from the five zones, which could be the main study area. The Dar es Salaam region was chosen to test the questions' reliability and validity by identifying the weak spots and getting the respondents' culture. The data for the pilot study were collected from bank branches through a random sampling technique.

Confirmatory Factor Analysis (CFA) was performed to assess the validity and reliability of the assessment items utilized in this investigation because they were taken from earlier studies and then modified to fit the current study (DeVon et al., 2007). The pilot study used a questionnaire with thirty-eight (38) items. Eighty (80) branches of banks and their head offices (20% of 397, which is the sample size) were randomly selected, in which 80 questionnaires (one questionnaire per branch) were distributed to anyone who was involved in SME loan processing. Out of 80 distributed questionnaires, 68, equivalent to an 85% response rate, were returned from targeted respondents. Following the suggestions and earlier procedures, five (5) questionnaires with at least 10% of their variables' missing data were eliminated because many of the assertions were left unanswered (Asiamah et al., 2021; Roda et al., 2014). Twelve (12) were not returned for several reasons, including bankers being busy and missing some officers in their offices during collection due to borrowers' site visits. Thus, sixty (63) questionnaires were used to analyze the pilot study.

The pilot data were descriptively analyzed using IBM SPSS Statistics 21, while the validity and reliability were analyzed using the Smart PLS version 3.0, the analytical data tool used in the main survey. Because the PLS-SEM analysis technique, which emphasizes prediction and confirmation, could be used in the main study, for the sake of consistency, Smart PLS was chosen as the analysis tool for the pilot study to test the validity and reliability of the construct's measures. In addition, The PLS-SEM technique performs confirmatory and exploratory factor analyses (Hair et al., 2017; Lau et al., 2020; Lowry & Gaskin, 2014).

3.3.3.2   Demographic Characteristics of Respondents

The data screening showed there were no missing value problems. The profiles of the respondents are compiled in Table 3.6, which includes the respondent's title, experience, age of the bank in the banking industry, number of bank branch information, banks with SME units, and banks with agro-processing SME units. Among the respondents, about 41.3% of lending officers had experience above seven years in bank credit aspects. According to statistics, agro-processing SME units were formed by roughly 77.8% of banks, and the majority (68.3%) has been functioning in Tanzania for more than 15 years.

Table 3. 8 Response Rate and Demographic Profile of the Respondents

Demographic	Category	Frequency	Per centage (%)
Rank of respondent	Branch Manager	8	12.7
	Credit Manager	10	15.9
	Credit officer	27	42.9
	Relationship Manager	18	28.6
Experience of the respondent (years)	0 – 3	12	19.0
	4 – 6	25	39.7
	7 – 10	16	25.4
	11 and above	10	15.9
Bank's age (years)	0 – 5	3	4.8
	6 -10	3	4.8
	11 – 15	14	22.2
	Above 15	43	68.3
Number of branches	0 – 10	3	17.3
	11 – 20	10	15.9
	21 – 30	12	19.0
	31 – 40	12	19.0
	41 – 50	2	3.2
	Above 51	24	38.1
SMEs unit	Yes	61	96.8
	No	2	3.2
AP- SMEs unit	Yes	49	77.8
	No	13	20.6
	Missing value	1	1.6

3.3.3.3 Reliability and Validity Analysis for Pilot Study

Hair et al. (2014) state that the first evaluation criterion is internal consistency reliability. As opposed to Cronbach's alpha, the traditional criterion for internal consistency, the author recommends composite reliability as an appropriate measure of internal consistency. Table 3.9 shows that the current study's items met the liability and validity threshold levels. The composite liability was above 0.708, a condition greater than the acceptable range. Some indicators, such as CF1, CT2, CT5, FinTech1, IA6, ILS1 and ILS6, with outer loadings between 0.40 and 0.70, were not deleted because their removal would not result in an increase

in composite reliability or AVE over the given threshold value (Hair et al., 2014). In contrast, items that fell below the threshold and decreased the CR and AVE were eliminated, including CR1, FinTech6, IA1, IA4, and TC5.

Table 3. 9 Construct Reliability and Validity

Construct	Indicator	Loading	CR	AVE
Credit Flow	CF1	0.691	0.863	0.558
	CF2	0.709		
	CF3	0.727		
	CF4	0.832		
	CF5	0.767		
Credit Risk	CR1	0.256*	0.804	0.539
	CR2	0.775		
	CR3	0.872		
	CR4	0.855		
	CR5	0.564		
Credit Transparency	CT1	0.761	0.853	0.541
	CT2	0.613		
	CT3	0.841		
	CT4	0.808		
	CT5	0.625		
Financial Technology	FinTech1	0.660	0.890	0.621
	FinTech2	0.840		
	FinTech3	0.775		
	FinTech4	0.791		
	FinTecH7	0.858		
	FinTech6	0.227*		
Information Asymmetry	IA1	0.248*	0.818	0.536
	IA2	0.835		
	IA3	0.798		
	IA4	0.455*		
	IA5	0748		
	IA6	0.501		
Institutional Lending Structure	ILS1	0.647	0.878	0.551
	ILS2	0.854		
	ILS3	0.825		
	ILS4	0.794		
	ILS5	0.714		
	ILS6	0.580		
Transaction Cost	TC1	0.805	0.911	0.720
	TC2	0.908		
	TC3	0.857		
	TC4	0.820		
	TC5	0.320*		

Construct validity assessment was carried out by determining convergent validity, which was used to determine how an indicator converges on its respective construct. The average variance extracted (AVE) is a common statistic used to determine construct-level convergent validity (Hair et al., 2011). Table 3.9 shows that the constructs' average variance extracted (AVE) values range from 0.607 to 0.833, greater than the cut-off value of 0.5 (Fornell & Larcker, 1981; Hair et al., 2021), implying acceptable convergent validity in this pilot study. The pilot study results exceeded the minimum threshold as the AVE and CR met the minimal threshold criterion. The results show that each variable's measurement tools were valid and reliable, allowing for the start of data collecting. The method for gathering survey data is covered in the following section, along with a final questionnaire with 33 measurement items. Respondents recommended that each variable's measuring items were reliable or consistent after the pilot study's analysis.

3.4   Data Collection Methods and Period

The time attribute is essential in planning and carrying out a research study (Babbie, 2013). This study gathered data from various zones separated by large geographical distances; therefore, before gathering data, some issues were to be considered, particularly time and cost. Because the study involved a large-scale survey with a specific time emphasis on banks, a cross-sectional study was

chosen as the most appropriate and sufficient method. In this situation, the main survey data was collected only once for three months, from June to August 2021, using the drop-off and pickup approach. The Google form was also created to distribute questionnaires to branches already informed about the study from their headquarters. As eligible members were present during banking hours (9 a.m. to 4 p.m.), the questionnaires and an oral explanation of the survey were given. One member was further selected based on experience and seniority in credit-related aspects. The selected respondent was left with a self-completion questionnaire (with all instructions) because they could not fill it out on the spot as they were swamped delivering services to customers. The agreement was formed to pick up a completed questionnaire at a specific time (within two days), as Jackson-Smith et al. (2016) suggested.

Furthermore, two (2) skilled and experienced research facilitators who were bank credit analysts helped the researcher distribute and collect questionnaires. The two had good interpersonal contact skills with other banks and guaranteed that the data collection process was completed thoroughly. Many call-backs were made to collect completed questionnaires that were unavailable at the scheduled pickup time, and for upcountry locations, the respondent was asked to mail or fill it out electronically via a created Google form. Similarly, follow–up was carried out to remind those who had not yet completed the surveys to do so (Creswell, 2013).

3.4.1 Main Survey Data Collection Areas

Table 3.10 calculated the required sample size in each region using a proportional sampling technique based on the number of bank branches. 484 questionnaires were circulated based on pilot study experience to get a minimum of 397 responses. Because each branch had only one respondent, the number of questionnaires issued reflected the number of respondents in that region.

Table 3. 10 Response Pattern

Zones	Regions	BRHR*	PBR	PBR %	QD	QC
Coast zone	Dar es Salaam	330	238	60	289	265
Central zone	Dodoma	41	29	7.3	36	27
Northern zone	Arusha	68	49	12.3	60	44
Lake zone	Mwanza	67	48	12.1	59	41
Southern highlands zone	Mbeya	46	33	8.3%	40	24
Total		552	397	100%	484	401

Source: *BOT (2019)

Note: BHR: Branches and head offices per region   PBR: Proportional of branches

   QD: Questionnaires distributed   QC: Questionnaires collected

3.5   Data Analysis Method and Use of PLS-SEM

Variance Based-SEM (VB-SEM), often referred to as PLS-SEM and Covariance Based (CB-SEM) are techniques used in structural equation modelling (SEM). Although they have different objectives, both SEM techniques investigate measurement theory and structural path models. According to Astrachan et al. (2014), implementing PLS-SEM has several benefits, even though the two SEM approaches have different objectives. Without inflating the t-statistics, PLS

integrates several appropriate strategies for complicated models with many endogenous and exogenous components and indicator variables. Each indicator's contribution to the composite score of the construct can change subject to the PLS algorithm. PLS is designed to indicate that an alternative hypothesis is significant, enabling the researcher to reject the null hypothesis by displaying significant t-values and high R^2 (Lowry & Gaskin, 2014)

In addition to the benefits already mentioned, this study used PLS-SEM for reasons that: Firstly, Gefen & Straub (2005) and Lowry & Gaskin (2014) recommended adopting PLS-SEM since it may be used for both confirmatory and predictive investigations. Therefore, smart PLS is the best alternative for the present study because it enables hypothesis prediction, confirmation, and validation. It examines the effects of bank financial technology, credit transparency, and FIT constructs on bank credit supply to Ap-SMEs. Secondly, compared to earlier univariant statistical techniques, PLS-SEM offers a more accurate study of the mediation and moderation effects (Sarstedt et al., 2017). The Smart PLS program is well recognized for its two-stage technique, which permits direct interactions, and this study uses a moderator (Hair et al., 2019). Due to its greater ability to handle measurement errors, it is noticeably more sensitive to moderator effects (Sarstedt et al., 2016). Similarly, the researcher employed Smart PLS software version 3 to fulfil the goals of the current investigation. This program can model and evaluate the relationship between the latent model constructs in the current study effectively and correctly.

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3.5.1 Data Normality Assessment

Non-normal data is common in social science and psychology research (Bentler et al.,1987). Data does not have to be normally distributed in PLS-SEM because it is a non-parametric statistical method, unlike the maximum likelihood (ML)-based methodology CB-SEM, which must (Sarstedt et al., 2016; Sim et al., 2021). However, the data were tested to see if it was normally distributed. Appendix E indicates that the data distribution's skewness and kurtosis can be utilized to determine non-normality (Hair et al., 2003). The two normality tests of skewness and kurtosis were used to determine the normality of the current study's data. According to Kline (2005), data is normally distributed if the skewness value is within the range of -2 x +2 and the kurtosis value is within the range of -3 x +3. From the descriptive statistics, the skewness's lowest value was -0.175 and the highest value was +0.210. For that case, the skewness condition was met. On the other hand, the lowest value for kurtosis was -0.157, and the highest value was +2.696. Again, the kurtosis condition was met. Therefore, the results show that the current study's data is normally distributed.

3.5.2 Common Method Bias (CMB)

The common method bias (CMB) is a degree of inflated correlations between constructs that is likely to happen in research using a single data source, a single data collection method, or self-reported questionnaires (Buckley et al., 1990;

Koloseni, 2017). Such variance could negatively impact the results, inflating or deflating the findings (Ylitalo, 2009). As a result, it is necessary to keep an eye on the CMB effect before hypothesis testing, identify it once data has been collected, and take corrective action to lessen the effect of variance. A few preventative steps were taken to control the occurrence of CMB to account for the CMB effect. First, the questionnaire did not include the names of the studied variables. This stops respondents from concluding the link between a variable's measured items. As an illustration, the name of the variable bank credit flow was deleted, leaving only the components needed to test it (see Appendix C). This decreases the possibility of (1) a similar answering style: answering without reading each measured item; and (2) social desirability: giving answers to questions in a way that others might consider acceptable rather than giving answers that accurately reflect own viewpoint (Podsakoff et al., 2003).

Second, Podsakoff et al. (2003) proposed that guaranteeing participants' anonymity would make them less inclined to change their answers and have a lower apprehensive evaluation. Additionally, this measure lessens the respondent's assessment anxiety challenges, such as concern over unfavourable outcomes that might result from their responses to the questionnaire (Chang, Van Witteloostuijn, & Eden, 2010). Thus, the importance of participant anonymity was emphasized. Kock (2015) also argued that Variance Inflation Factor (VIF) results should be considered while examining the typical technique bias in PLS-SEM. According to the author, a VIF score larger than 3.3 indicates pathological

collinearity, which signals model contamination due to common technique bias. Before a model can be said to be free of common method bias, all VIF values must be ≤ 3.3. All the constructs in this research had VIF values ranging from 1.185 to 2.796, indicating that none of the VIF values is greater than 3.3. As a result, the standard bias approach did not affect the participants' responses.

3.6   Ethical Considerations

The ethical standards that the researcher considered are described in this section. Ethical concerns are frequently observed, especially in research design, reporting, and data use (Saunders et al., 2007). Tunku Abdul Rahman Universiti (UTAR) permitted research in the United Republic of Tanzania (See appendix F). Similarly, my academic sponsor, the Institute of Finance Management (IFM), sent an introductory letter to all banks in the survey area requesting permission to collect data for academic purposes only (See appendix G).

In addition, the researcher explained the research's purpose and informed the participants that participation was free of consent through the questionnaire. McGivern (2006) and Leedy and Omrod (2010) report that explaining the principle of voluntary participation in research to the participant helps one know the nature of the study and its importance. Moreover, the researcher provided a guarantee to the participants on the confidentiality of the data. According to Gray et al. (2007), the researcher should secure participant anonymity about the data they submit and safeguard their interests (see Appendix C). Therefore, the

researcher informed participants: (1) that there would be no reference to any individual during the whole research process, such as disclosing their names or bank names, and (2) that the researcher will keep confidential the survey data and no potential harm or discomfort that would be caused to the participants.

3.7 Summary of Research Methodology

This chapter has expressed the methodological side applied to this study. The suggested research methods facilitated the understanding of drivers of bank credit to Ap-SMEs in Tanzania during the main research. The researcher adopted the quantitative approach because it is suitable for generalizing the results instead of the qualitative approach, in which generalization does not hold. Respondents to a self-administered closed-ended questionnaire were sampled based on the multistage cluster probability techniques, and the researcher randomly selected the units of interest.

The researcher engaged academicians and banking professionals to assess the initial stage's face validity to ensure the accuracy and clarity of comprehending the measurement items that might fit the current study. The next step involved the pilot study that the researcher conducted before the main study to test the participants' consistency and other related data collection aspects. Finally, this chapter has described Smart PLS, the statistical tool for PLS-SEM analysis, to give the operational model results adopted in this study. The results and discussions are presented in chapter four.

CHAPTER 4

DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

The descriptive and inferential results are reported and interpreted in this chapter.
In order to predict and validate the links proposed by the study, the chapter also
examines the results of many statistical tests carried out before developing the
final measurement model by the partial least squares structural equation model
(PLS-SEM).

4.2 Descriptive Information and Response Rate of Respondents

The goal and significance of this research survey were explained to the
participants. 401 sets of the 484 distributed questionnaire sets were returned. A
minimum of 10% of the data from two (2) questionnaires with missing variables
was eliminated (Asiamah et al., 2021; Roda et al., 2014). Ultimately, we obtained
399 usable sets, which yielded a response rate of 82.4%. Prior to data analysis, the
gathered data was managed using SPSS. Table 4.1 summarizes the respondents'
profiles which include their position and experience. We looked at demographic
information, including the bank's age in Tanzania, its branch location, and
whether it had SME or Ap-SME units. Lending officers have an average of 79.5%
four years of bank credit experience. This sums up the respondents' understanding
of and exposure to loans. According to statistics, only 72.2% of banks had created
agro-processing SME units, whereas 90.5% of banks had created SME units. This
would indicate that SME lending is crucial to Tanzanian banking. About 64.4% of

the banks in Tanzania have been in operation for longer than 15 years. This likely

demonstrates their level of familiarity with the Tanzanian SMEs financing sector.

Table 4. 1 Demographic Statistics

Demographics	Category	Frequency	Percentage (%)
Rank of respondent	Branch Manager	63	15.8
	Credit Manager	63	15.8
	Credit Officer/Analyst	174	43.6
	Relationship Manager	99	24.8
Experience of the respondent (in years)	0 – 3	82	20.6
	4 – 6	132	33.1
	7 – 10	128	32.1
	11 and above	57	14.3
Bank's age (in years)	0 – 5	16	4
	6 -10	51	12.8
	11 – 15	75	18.8
	Above 15	257	64.4
Number of branches	0 – 10	58	14.5
	11 – 20	95	23.8
	21 – 30	37	9.3
	31 – 40	35	8.8
	41 – 50	36	9.0
	Above 51	138	34.6
SME unit	Yes	361	90.5
	No	38	9.5
AP - SMEs unit	Yes	287	72.2
	No	111	27.8

4.3   Analysis of Study Variables' Descriptive Statistics

Table 4.2 shows that, except for Information asymmetry and Credit transparency,

which have scored at least 1.25 and 3, respectively, other variables used in this

investigation were given a 1.00 rating. As a result, respondents disagree with the

statements indicated in all other variables at minimum levels. The mean value of

all constructs ranges from 1.9380 to 3.9716, meaning they are below and above the mid-point of 3 (Lau et al., 2020). These findings show that all the variables-related questionnaire statements disagreed slightly. However, a maximum score of 5.00 implies that most respondents strongly agree with the statements and a maximum score of 3.00 implies that respondents disagree with the statements used to analyze the study's variables. Furthermore, the standard deviation shows how far apart the variables in this study are.

Table 4. 2 Descriptive Statistics for Constructs

Construct	N	Min	Max	Mean	Std. Deviation
Credit Flow	399	1.00	5.00	3.8117	.65061
Transaction Cost	399	1.00	3.00	1.9672	.65395
Information Asymmetry	399	1.25	3.00	1.9380	.56020
Credit risk management	399	1.00	3.00	2.1353	.47736
Institutional Lending Structure	399	1.00	5.00	3.2900	.73563
Financial Technology	399	1.00	5.00	3.7003	.73885
Credit Transparency	399	3.00	5.00	3.9716	.46582
Valid N (listwise)	399				

In Table 4.2, The scores of all variables in the standard deviation column range from 0.47736 to 0.73885. This suggests that these variables are evenly distributed rather than spread widely. The above values are very close, implying average data dispersion. Furthermore, the study discovers that the degree of difference in standard deviation and mean scores is relatively similar when comparing standard deviation and mean differences. As a result, there is no noticeable variation in the distribution of the study's variables.

4.4 Measurement and Structural Models

The Geodesic discrepancy (dG) and the Unweighted least squares discrepancy (dULS) are two distance measurements that connect most methods for calculating the difference between two matrices when evaluating measurement model fitness (Henseler et al., 2016). In this study, dG and dULS have values of 0.446 and 1.673, respectively and this backs up the idea of a well-fitting measurement model (Ogbeibu et al., 2021) (See Table 4.3). The R^2 values would then be estimated and analyzed in the structural model, according to Henseler et al.(2016) recommendations.

4.4.1 Testing the Inner Measurement Model

Distance metrics include the Geodesic discrepancy (dG) and the Unweighted least squares discrepancy (dULS) that connect most methods for calculating the difference between two matrices when evaluating measurement model fitness (Henseler et al., 2016). In this study, dG and dULS have values of 0.446 and 1.673, respectively and this backs up the idea of a well-fitting measurement model (Ogbeibu et al., 2021) (See Table 4.3). The R^2 values would then be estimated and analyzed in the structural model, according to Henseler et al.(2016) recommendations.

Table 4. 3 Fit Summary

Construct	Saturated Model	Estimated Model
SRMR	0.065	0.069
dULS	1.673	1.775
dG	0.446	0.452

According to Henseler et al. (2016), researchers should analyze the estimated Standardized Root Mean Square Residual (SRMR) model to verify overall and approximation model fit. The authors also claim that the SRMR is the best approximate model fit criterion for PLS path modelling. Hu and Bentler (1999) stated that for PLS path models, an SRMR threshold of less than 0.08 is more acceptable. The SRMR data in Table 4.3 has a value of 0.065, less than the required threshold of 0.08. Therefore, Table 4.3 support the overall measurement model used in this investigation, indicating that it is very significant and well-fitting (Henseler, 2017).

Table 4.4 demonstrates a degree of variance explained in the credit flow construct (dependent variable), with an R^2 value of 28.2, all endogenous constructs have explanatory power significantly higher than the threshold value of 0.26 (Cohen, 1988). Furthermore, bootstrapping results show that the R^2 value is statistically significant (t =7.109; p $\leq$ 0.000). This means that all external characteristics in this study, taken together, explain a considerable portion of the variation in credit flow and are thus regarded significant enough to warrant further interpretation (Ramayah et al., 2018).

Table 4. 4 Inner Measurement Model Evaluation

MODEL FIT INDEX	Original Sample (O)	T Statistics	P-Values	Decision
R^2 of CF	0.282	7.109	0.000	Significant
R^2 of CT	0.120	4.281	0.000	Significant
Adjusted R^2 of CF	0.271	6.715	0.000	Significant
Adjusted R^2 of CT	0.115	4.154	0.000	Significant

4.4.2   Testing the outer Measurement Model

Figure 4.1, a total of 33 indicator items were included in this investigation, with six being removed from the measurement model and 27 items retained. According to the general principle that 20% of the deleted items may be used to specify models, such items had low loadings and were eliminated to boost model fitness (Hair et al., 2011; Sarstedt et al., 2017). The discarded items are CF4 from credit flow, IA4 from information asymmetry, ILS4 and ILS5 from institutional lending structure, FinTech7 from financial technology and CT5 from credit transparency. They were removed because of their low loadings. Three indicator items are used to measure information asymmetry constructs in Table 4.5. Using three indicators per construct also aligns with Hair et al. (2011), who insisted that three indications   per   construct   are   accepted.

After 500 iterations, the outer/reflective measurement model's factor analysis results were obtained. The consistent estimation indicates a solid estimate, which is much above the minimum 300 iterations, implying that the data is normal

(Wong, 2013). All indicator items exhibit high and stable loadings, as shown in Table 4.5. Three indicator items have loadings of 0.683 (CR4), 0.605 (CT1) and 0.698 (CT4), as justified by Gefen and Straub (2005), and the rest vary from 0.710 to 0.939, which is higher than the preferred minimum level of 0.7 (Sarstedt et al., 2016; Sim et al., 2021; Wong, 2013). This suggests that each item contributes to the construct in question. Based on the composite reliability ratings, all the constructs utilized in this study had strong internal consistency reliability, ranging from 0.813 to 0.891. Thus, the constructs used in this study demonstrate that they have very high internal consistency and reliability levels. The Average Variance Extracted (AVE) is used to verify convergent validity. According to (Hair et al., 2017), Every AVE number is higher than the cut-off point of 0.5 (see Table 4.5). In this situation, the investigation concludes that all constructs have convergent validity.

In Table 4.6, another technique for assessing discriminant validity is the Fornell-Larcker criterion. The Fornell-Larcker criterion, according to (Hair et al., 2014), compares the square root of the AVE values to the correlations of latent variables. According to Table 4.5, each construct's AVE, which ranges from 0.722 to 0.834, has a square root bigger than its highest correlation with any other construct. The Heterotrait-Montrait Ratio (HTMT) of corrections, established by Henseler et al. (2015), is another method for determining discriminant validity. It estimates the actual correlation between two constructs.

Due to fulfilling the requirements, this study can conclude that discriminant validity is well-established. The HTMT should be less than 0.85 as a factor correlation estimate (Henseler et al., 2016). The HTMT in this study ranged from 0.073 to 0.566. As a result, all constructs are distinct, demonstrating discriminant validity (see Table 4.7). Similarly, Table 4.8 includes a cross-loadings assessment to ensure no indicator is unintentionally allocated to the incorrect construct. As all indications seem to have loaded into their appropriate predicting constructs, there are no cross-loading issues. Hence there was no discriminant validity problem within the constructs. The outer loadings of all indicators on the related construct were bigger than those on other constructs (see Table 4.8).

Table 4. 5 Validity and Reliability of the Measurement Model

Construct	Items	Loadings	CR	AVE	VIF
Credit Flow	CF1	0.753	0.819	0.532	
					1.329
	CF2	0.726			
					1.314
	CF3	0.726			
					1.384
	CF5	0.710			1.346
Credit risk	CRM1	0.721	0.817	0.528	1.292
management	CRM2	0.739			1.511
	CRM3	0.760			1.539
	CRM4	0.683			1.185
Credit	CT1	0.605	0.804	0.509	2.377
Transparency	CT2	0.709			1.250
	CT3	0.820			2.796
	CT4	0.698			1.366
Financial	FinTech1	0.722	0.865	0.617	1.470
Technology	FinTech2	0.826			1.721
	FinTech3	0.821			1.757
	FinTech4	0.768			1.539
Information	IA1	0.938	0.884	0.719	2.197
Asymmetry	IA2	0.738			1.454
	IA3	0.857			1.817
Institutional	ILS1	0.796	0.836	0.561	1.487
Lending Structure	ILS2	0.707			1.569
	ILS3	0.755			1.605
	ILS6	0.727			1.289
Transaction Cost	TC1	0.877			1.774
	TC2	0.939	0.913	0.724	2.180
	TC3	0.793			1.912
	TC4	0.786			1.799

Figure 4. 1 Preliminary Measurement Model Displaying the Factor Loadings
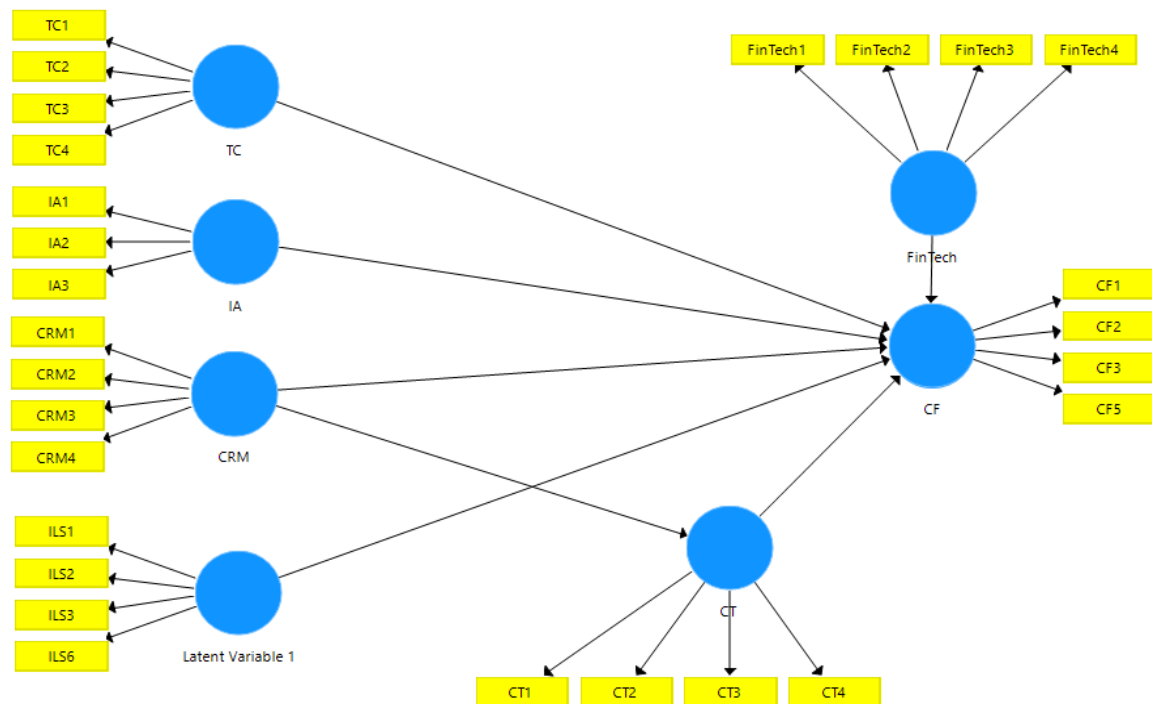
Figure 4. 2 Final Measurement Model Showing the Factor Loadings

Table 4. 6 Discriminant Validity

Construct	CF	CRM	CT	FinTech	IA	ILS	TC
CF	**0.729**						
CRM	0.201	**0.722**					
CT	0.158	-0.018	**0.766**				
FinTech	0.431	-0.033	0.266	**0.786**			
IA	0.203	0.199	-0.010	0.121	**0.834**		
ILS	0.314	-0.021	0.419	0.400	0.072	**0.749**	
TC	0.125	0.201	0.090	0.009	0.214	0.029	**0.821**

Note: CF=Cash Flow; TC: Transaction cost; IA: Information Asymmetry; CRM: Credit risk management; ILS: Institutional Lending Structure; FinTech: Financial Technology; CT: Credit Transparency

Table 4. 7 The Heterotrait-Monotrait Ratio (HTMT)

Construct	CF	CRM	CT	FinTech	CT
CF					
CRM	0.274				
CT	0.197	0.081			
FinTech	0.566	0.086	0.327		
IA	0.255	0.285	0.088	0.159	
ILS	0.429	0.057	0.498	0.519	0.088
TC	0.149	0.266	0.114	0.076	0.258

Note: CF=Cash Flow; TC: Transaction cost; IA: Information Asymmetry; CR: Credit risk management; ILS: Institutional Lending Structure; FinTech: Financial Technology; CT: Credit Transparency

Table 4. 8 Cross-Loadings

Constructs	CF	CRM	CT	FinTech	IA	ILS	TC
CF1	0.752	0.125	0.199	0.345	0.176	0.291	0.101
CF2	0.730	0.182	0.084	0.342	0.161	0.176	0.133
CF3	0.716	0.214	0.065	0.254	0.068	0.180	0.039
CF5	0.717	0.074	0.099	0.304	0.175	0.261	0.080
CRM1	0.108	0.664	-0.059	-0.037	0.131	-0.043	0.167
CRM2	0.108	0.725	-0.001	-0.069	0.198	-0.022	0.127
CRM3	0.152	0.761	0.005	-0.009	0.151	-0.010	0.197
CRM4	0.186	0.736	-0.007	-0.001	0.117	0.001	0.103
CT1	0.037	-0.008	0.738	0.170	0.021	0.151	0.058
CT2	0.049	-0.069	0.705	0.195	-0.088	0.373	0.008
CT3	0.122	-0.026	0.845	0.159	0.007	0.296	0.064
CT4	0.217	0.043	0.769	0.259	0.043	0.358	0.131
FinTech1	0.282	-0.025	0.268	0.722	0.168	0.330	0.068
FinTech2	0.376	-0.004	0.236	0.826	0.108	0.383	-0.011
FinTech3	0.350	-0.013	0.205	0.822	0.087	0.277	0.039
FinTech4	0.338	-0.065	0.137	0.768	0.029	0.268	-0.056
IA1	0.219	0.160	0.035	0.159	0.928	0.089	0.169
IA2	0.136	0.213	-0.041	0.034	0.755	0.036	0.189
IA3	0.133	0.140	-0.046	0.079	0.810	0.040	0.195
ILS1	0.261	-0.030	0.280	0.274	0.082	0.767	0.088
ILS2	0.204	-0.025	0.264	0.264	0.023	0.726	0.017
ILS3	0.212	-0.021	0.367	0.318	0.015	0.793	-0.031
ILS6	0.260	0.010	0.333	0.333	0.092	0.707	0.018
TC1	0.114	0.121	0.050	0.048	0.193	0.024	0.838
TC2	0.134	0.218	0.083	-0.007	0.197	0.032	0.930
TC3	0.042	0.158	0.053	-0.003	0.095	0.001	0.731
TC4	0.076	0.165	0.115	-0.020	0.182	0.025	0.769

Note: CF=Cash Flow; TC: Transaction cost; IA: Information Asymmetry; CRM: Credit risk management; ILS: Institutional Lending Structure; FinTech: Financial Technology; CT: Credit Transparency

4.5   Evaluation of the Structural Model

After evaluating the measurement model, Smart PLS 3 was used to evaluate a structural model. First, without the moderating effects, the baseline model was evaluated. The structural model addresses the link between constructs. Unlike covariance-based alternatives, the PLS approach does not provide statistical tests to measure the calibrated model's overall goodness due to the assumption of distribution-free variance. Non-parametrical tests, on the other hand, can be employed to assess the structural model's quality (Hair et al. (2021).

4.5.1   Model Fit Assessment

The VIF was investigated to see whether there were any issues with multicollinearity. The structures have no multicollinearity findings, as shown in Table 4.5. The VIF handles multicollinearity in a multiple regression model, displaying linear connections between two or more predictor components (Hair et al., 2017). According to Hair et al. (2010), multicollinearity occurs when there is an estimated direct link between two or more independent variables. Table 4.5 shows the results of the VIF model. A careful assessment of all VIF values reveals that the construct is sufficiently valid. The data fall far short of the maximum criteria of 5, with a range of 1.182 to 2.796 (Hair et al., 2021; Wong, 2013). This confirms that each construction is unique and the outer measurement model complies with the demands of the multicollinearity assessment.

This study estimated the structural model using the PLS bootstrapping option with 5,000 samples (Lowry & Gaskin, 2014). According to (Hair et al. 2016; Henseler, 2017; Hu & Bentler, 1999), the standardized root mean square (SRMR) is the sole approximate model fit criterion for examining PLS modelling (2016). We also use the bootstrap-based test to obtain values for discrepancy measures such as the squared Euclidean Distance (dULS) and the Geodesic Distance (dG)(Henseler & Schuberth, 2020). Table 4.3 shows the corresponding values of discrepancy measures, including the SRMR value, indicating a good measurement model fit for the study and that the defined model appropriately fits our acquired data. (Henseler & Schuberth, 2020; Hu & Bentler, 1999).

Since each hypothesis has a specific direction, a one-tailed test was chosen (Ramayah et al., 2018). At a significance threshold of 0.05, full bootstrapping with Bias-Corrected and Accelerated (BCa) was used. The bias-corrected and accelerated (BCa) bootstrapping routine somehow addresses the problem in situations of nonnormal data by skewness-correcting the confidence intervals (Efron, 1987; Hair et al., 2017). The results are listed in Table 4.9 in the order that the hypotheses were tested.

4.5.2 Relevant Standards for the Statistical Analysis

Firstly, Hair et al. (2016) and Sim et al. (2021) proposed evaluating the baseline model without moderating effects. The authors underline the need to estimate the PLS structural model's major effects and then do a moderation analysis. Hair et al. (2016) report that this approach helps avoid frequent blunders like conflating primary and fundamental effects. Three separate categories comprising several hypotheses relating to their special assessments have been emphasized in this study's examination of the eleven (11) hypotheses explored. Group One contributes to the first research question by examining the varied effects of lending factors on bank credit flow.

The subsequent set examines the mediating effect of credit transparency between credit risk management and credit flow. This helps to answer the second research question (Does credit transparency mediate the effect of credit risk management on bank credit flow to Ap-SMEs?). The third set of hypotheses examines the moderating influence of financial technology on bank credit flow. This will help to answer the third research question (Can bank financial technology moderate the effect of lending factors on the bank credit flow to Ap-SMEs?).

Table 4. 9 Direct Relationships Path Coefficients

Hypothesis	Relationship	Path coefficient	f^2	T Statistics	P-Values	Decision
H1	Transaction Cost -> Credit Flow	-0.049	0.003	1.131	0.129	**Not supported**
H2	Information Asymmetry -> Credit Flow	-0.079	0.008	1.755	0.040[*]	**Supported**
H3	Credit risk management -> Credit Flow	-0.149	0.026	2.962	0.002[**]	**Supported**
H4	Institutional Lending Structure -> Credit Flow	0.157	0.028	3.189	0.001**	**Supported**
H5a	Credit Transparency -> Credit Flow	0.121	0.018	2.432	0.008[**]	**Supported**
H5b	Credit risk management -> Credit Transparency	-0.320	0.120	6.470	0.000[**]	**Supported**
H7	Financial Technology -> Credit Flow	0.354	0.145	7.095	0.000[**]	**Supported**

Note: *** p< 0.01, **p < 0.05, *p < 0.1 (based on one tailed test)

The f^2 was examined based on the interpretation guidelines given by Cohen (0.02 – small, 0.15 – medium and 0.35 – large), and it was found that the f^2 for all variables range between small and medium (Cohen, 1988). Furthermore, as shown in Table 4.10, the predictive relevance (Q²) was investigated using a blindfolding procedure with the omission distance parameter set to 8. Chin (1998) recommends 5 to 10 omission distances. In examining the value of Q², the cross-validated redundancy (CVR) method was used (Hair et al., 2017). If the value of Q² is greater than zero, the model is said to be predictive (Hair et al., 2016). Table

4.10 shows that the values of Q² for CF (Q2 = 0.137) and CT (0.043) are significantly higher than zero. As a result, the model is appropriately predictive regarding out-of-sample prediction (Hair et al., 2014).

The baseline model's coefficient of determination (R^2) (see Table 4.10) implies that the study's model can account for 28.2%, explaining the drivers of credit supply to agro-processing industries. Furthermore, the R^2 for credit, transparency is 0.100, implying that credit risk management and institutional lending structure account for 10% of the variation in credit transparency. The coefficient's score is compatible with Cohen (1988), who shows the values of 0.75, 0.50 and 0.25 express high, medium and small, respectively.

Table 4. 10 Coefficient of Determination in the PLS Method

Construct	R^2	R^2	Q^2
Credit Flow	0.282	0.271	0.137
Credit Transparency	0.102	0.100	0.043

Finally, we used the PLS predict technique with 10 folds and 10 replications to evaluate our model's out-of-sample predictive potential, comparing PLS-SEM RMSE values to those from the linear regression model (RMSE of the linear model (LM)) in the PLS predict the output. The PLS-SEM results should have a lower prediction error than the LM results (e.g., in terms of RMSE or MAE). It is important to note that the LM prediction error is only available for indicator (item) variables and not for latent variables (Shmueli et al., 2019). Compared to

the LM results, the PLS RMSE is minimal (see Table 4.11), demonstrating that this research model has good predictive power.

Table 4. 11 Predictive performance of the PLS path

Indicator	PLS PREDICT RMSE	LM RMSE
CF1	0.879	0.890
CF3	0.791	0.783
CF5	0.995	1.009
CF2	0.735	0.750
CT3	0.652	0.694
CT2	0.654	0.674
CT4	0.629	0.626
CT1	0.887	0.889

4.6   Hypothesis Testing

4.6.1   Testing the Direct hypotheses

The direct relationship on structural model findings was assessed (p-value) by considering all direct paths between endogenous and exogenous variables inside the bank credit flow model, parameter estimates, and significant levels.

> *H1: There is a negative relationship between transaction costs and the*
> *flow of bank credit to Ap-SMEs*

This hypothesis is not supported. The path coefficient results in Table 4.10 reveal that transaction costs do not significantly impact credit flow to Ap-SMEs. The effect size (f^2) is also used to determine the extent to which transaction costs

negatively impact bank credit flow (Table 4.8). Cohen (1988) claimed that effect sizes of 0.02, 0.15, and 0.35 indicate a small, medium, and large influence, respectively (Table 4.10). Transaction costs do not affect credit flow because of the size of 0.003. With highlighted t-statistics of 1.124 and p-values of 0.131, the effect size is thus insignificant. As a result, this study concludes that transaction costs have no influence and statistical significance on bank credit flow to agro-processing SMEs.

H2: There is a negative relationship between information asymmetry and the flow of bank credit to Ap-SMEs

This hypothesis is supported. The information asymmetry significantly affects bank credit flow to Ap-SMEs, based on t-statistics. The effect size f^2 is also used to determine how information asymmetry impacts bank credit flow (Table 4.10). Based on Cohen's (1988) effect size, information asymmetry has a minimal influence on bank credit flow of 0.008, less than the threshold of 0.02. Furthermore, according to the highlighted t-statistics of 1.755 and p-values of 0.040 (significant at a 0.5 confidence interval), the effect is thus significant. As a result of this research, the Tanzanian banking industry's information asymmetry significantly impacts bank credit flow to Ap-SMEs.

H3: There is a negative relationship between credit risk management and the flow of bank credit to Ap-SMEs.

This hypothesis is supported. Based on path coefficient and t-statistics, credit risk management negatively affects bank credit flow to Ap-SMEs. The effect size (f^2) is also used to determine how credit risk management impacts bank credit flow (see Table 4.9). Based on Cohen (1988), due to the effect size, credit risk management has a considerable influence on bank credit flow of 0.026, greater than the threshold of 0.02. Furthermore, according to the highlighted t-statistics of 2.914 and p-values of 0.002 (significant at a 0.1 confidence interval), the effect is thus significant. As a result of this research, the Tanzanian banking industry's credit risk management has a significant effect on bank credit flow to Ap-SMEs

H4: There is a positive relationship between institutional lending structure and the flow of bank credit to Ap-SMEs

Table 4.10 shows that the institutional lending structure strongly impacts credit flow. This supports the previously hypothesized relationship between institutional lending structure and bank credit flow. This is also true for the 0.157 positive path coefficient. The effect size, which measures how much institutional lending structure influences bank credit flow, is 0.028, greater than 0.02 (Cohen, 1988; Wong, 2013), implying that institutional lending structure considerably impacts bank credit flow (p-values of 3.189 and 0.001) corresponding to a confidence interval of 0.1 (Carlo, 2014; Figueiredo et al. 2013; Gelman, 2013). This supports the study's hypothesis H4, which states a relationship between institutional

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lending structure and the flow of bank credit in the Tanzanian bank lending business.

4.6.2   The Mediation Effects of Bank Credit Transparency

Mediation occurs when some intervening variable M explains a causal influence of some variable X on an outcome Y; it is said to be mediation (Shrout & Bolger, 2002). A change in the exogenous construct leads to a change in the mediator construct, which changes the endogenous construct in the PLS path model.

> *H5a: There is a positive relationship between bank credit transparency and the flow of credit*

The hypothesis of bank credit transparency as a mediator is supported. In this hypothesis, the researcher determines its direct relationship with credit flow. Bank credit transparency significantly affects bank credit flow to Ap-SMEs, based on t-statistics and its positive path coefficient. The effect size (f^2) is also used to determine how bank credit transparency impacts bank credit flow (see Table 4.9). Based on the effect size of 0.018, bank credit transparency ultimately influences bank credit flow but is less than the small threshold of 0.02 Cohen (1988). Furthermore, the highlighted t-statistics of 2.432 and p-values of 0.008 indicate that the effect is significant at a 0.1 confidence interval. As a result of this research, the Tanzanian banking industry's bank credit transparency significantly affects bank credit flow to Ap-SMEs.

H5b: There is a negative relationship between credit risk management and bank credit transparency

This hypothesis is supported (as initially hypothesized). In this hypothesis, the researcher determines the relationship between credit risk management and bank credit transparency to borrowers. The path coefficient is negative, but the effect size is less than t 0.02 (f square = 0.120). Moreover, credit risk management significantly affects credit transparency, based on t-statistics of 6.470 and its p-value of 0.000 (See Table 4.10). As a result of this research, the Tanzanian banking industry's bank credit risk management has a negative relationship with bank transparency to borrowers in credit-related matters. As credit transparency increases, the lenders' credit risk management decreases.

Table 4. 12 Mediating Path Coefficients of Credit Transparency

Hypothesis	Relationship	Path coefficient	T Statistics	P-Values	Decision
H5b	CRM -> CF	-0.149	3.191	0.002**	Direct
H6	CRM -> CT -> CF	-0.039	2.251	0.012*	Mediation

Note: Based on a one-tailed test, ** p 0.01, t value > 2.327, and *p 0.05, t value > 1.645

H6: The relationship between credit risk management and bank credit flow to Ap-SMEs is mediated by credit transparency.

Table 4.12 reveals that bank credit transparency statistically mediates the indirect relationship between credit risk management and credit flow. This hypothesis is

supported and based on the t-statistic of $= 2.245$ and p of 0.012 at a confidence interval of 0.05; the indirect effect of credit risk management on credit flow to Ap-SMEs through bank credit transparency is significant. The path coefficient of the direct impact of CRM -> CF is -0.149 (see Table 4.9), and the path coefficient of CRM -> CT -> CF is -0.039 (see Table 4.13). As a result, the negative link between CRM and CF is reduced by 0.11, from -0.149 to -0.039, by adding credit transparency as a mediator.

On the other hand, the variance accounted for (VAF), which measures the strength of mediation in the two relationships, was calculated to estimate its practical size (Shrout & Bolger, 2002). VAF was calculated based on the formula given by Esposito Vinzi, Chin, Henseler, & Wang (2010). VAF = a*b/(a*b) +c, where a, b and c are the path coefficients of the respective variables. Based on the path coefficients as indicated in Table 4.9, the VAF for the indirect relationship of CRM -> CT -> CF is given as $\text{VAF} = \frac{-0.320*0.121}{(-0.320*0.121)-0.149} = 20.6\%$. Hair (2014) indicates that VAF > 80% (full mediation), 20% ≤ VAF ≤ 80% (partial mediation) and VAF < 20% (no mediation). As a result, the partial mediation requirement is met with a variance accounted for (VAF) magnitude of 20.6%. The effect is classified as partial mediation if the indirect effect (=2.145, =0.012) is significant but has a smaller impact than the direct effect (= 2.914, = 0.002) (Akhtar et al., 2018; Haider & Kayani, 2020; Kale et al., 2019).

A further investigation was conducted to fully comprehend the nature of the mediation effect between CRM and CF, and a partial mediation was discovered. (Hair, Hult, Ringle, Sarstedt et al., 2021; Nitzl et al., 2016; Zhao et al., 2010). Since the direct and indirect impacts are both considerable and have the same (negative or positive) directions, complementary mediation is established (Baron & Kenny, 1986; Zhao et al., 2010) (see Table 4.13). According to this complementary mediation hypothesis, credit transparency confounds or falsifies the relationship between credit risk management and bank credit flow. Moreover, it signifies that when credit transparency is inserted, the path from credit risk management to credit flow is reduced in total size but remains different from zero (Nitzl et al., 2016; Zhao et al., 2010).

4.6.3   The Moderating Effect of FinTech

The baseline model was extended to incorporate the moderator to evaluate a moderating effect in this study. This study employs a two-stage approach to moderation analysis. This strategy is advised if the study aims to see if the moderator significantly impacts the relationship (Hair et al., 2016; Sim et al., 2021). Furthermore, the two-stage approach has more statistical power than the product-indicator or orthogonalization approaches (Hair, Sarstedt, & Ringle, 2019). When the moderation impact of financial technology was examined, the measurement model was also reanalysed to establish its reliability and validity. Table 4.13 displays the tested hypotheses for financial technology.

Table 4. 13 Moderating Path Coefficients of FinTech

Hypothesis	Path	Path Coefficient(β)	Standard Deviation (STDEV)	t Statistics (|β /STDEV|)	p-Value	Decision
H7a	FinTech-TC -> CF	-0.015	0.058	0.300	0.382	**Not accepted**
H7b	FinTech-IA -> CF	0.067	0.049	1.373*	0.085	**Accepted**
H7c	FinTech-CRM -> CF	-0.082	0.052	1.399*	0.081	**Accepted**

Note: *** p< 0.01, **p < 0.05, *p < 0.1

Furthermore, the R^2 change becomes a significant concern in moderation analysis. The prior R^2 for the baseline model was 0.282, but now it is 0.291 in the interaction effect model. The R^2 change of 0.009 indicates that the R^2 has changed by 3.2% because of the inclusion of the financial technology interaction term (additional variance). According to Hair et al. (2021), the following formula is used to compute the interaction effect size:

$$f^2 = \frac{R^2 \text{ with moderator included} - R^2 \text{ with moderator excluded}}{1 - R^2 \text{ with moderator included}}$$

$$f^2 = \frac{0.291 - 0.282}{1 - 0.291} = 0.013$$

Kenny (2018) and Hair, Hult, Ringle, Sarstedt, et al. (2021) suggest 0.005, 0.01, and 0.025 as more realistic thresholds for small, medium, and large, respectively, as effect sizes of moderation but caution that even these figures are ambitious.

Therefore, with the f^2 of 0.013, the financial technology in this study has a medium impact size of moderation.

H7: There is a positive relationship between bank financial technology and credit flow to Ap-SMEs

The hypothesis is supported. The bank financial technology strongly impacts credit flow to agro-processing SMEs (Ap-SMEs), according to the t-statistics findings in Table 4.10. This confirms the previously hypothesized relationship between bank financial technology and credit flow. The effect size measures how much bank financial technology influences credit flow (CF) and is 0.145. This suggests a medium effect (Cohen, 1988), implying that bank financial technology has a medium and significant influence on CF. It is, therefore, significant (p-values of 6.997 and 0.000), corresponding to a confidence interval of 0.05 (Figueiredo et al., 2013). As a result, it is now possible to conclude that bank financial technology significantly affects bank loan flow in the Tanzanian banking sector, supporting the study's hypothesis H7.

H7a: Bank financial technology positively moderates transaction costs on credit flow to Ap-SMEs.

The three lines in Figure 4.3 depict the link between transaction costs (TC) and credit flow (CF). For higher levels of FinTech, the negative relationship between

TC and CF rises from -0.049 to -0.064 (-0.049 +(-0.015) = -0.064) because the green line slope is steep. However, for FinTech at a lower level, the relationship between TC and CF reduces from -0.049 to -0.034 (-0.049 - (-0.015) = -0.034) because the slope of the red line is not steeper.

In Table 4.13, the path coefficient of the interaction term FinTech-TC -> CF is -0.015 less than 0.10 to be statistically significant, as suggested by Lohmöller (2013). Also, the t-statistics value of 0.300 at a p-value of 0.382 of the interaction term is statistically insignificant and lower than the suggested threshold at the confidence interval of 0.1 (Carlo et al., 2014). This means that FinTech does not moderate the relationship between TC and CF. Overall, these findings show that FinTech does not have a significant impact that reduces the negative effect on the relationship between TC and FC. The present analysis demonstrates that the more sophisticated the FinTech, the higher the correlation between transaction costs and bank credit flow to agro-processing SMEs
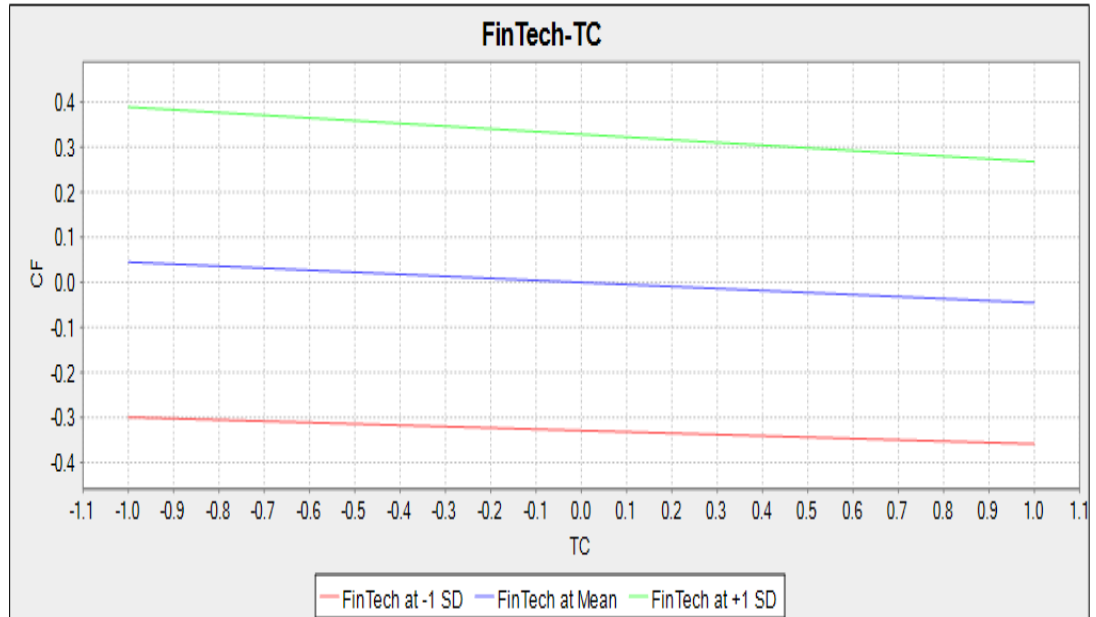
Note: Green line (High FinTech); Blue line (FinTech at Mean); Red line (Low FinTech)

Figure 4. 3 Moderating Effect of FinTech on Transaction Costs

H7b: Bank financial technology positively moderates information asymmetry to influence bank credit

Based on Figur e 4.4, for higher levels of FinTech (for every standard deviation unit rise of FinTech – green line), the negative relationship between information asymmetry (IA) and bank credit flow (CF) diminishes by the size of the interaction term from -0.079 to -0.012 (-0.079 +0.067) = -0.012) because the green line slope is not as steep. On the contrary, for FinTech at a lower level (FinTech -red line), the negative link amid IA and CF rises from -0.079 to -0.146 (-0. 079 – 0.067) = -0.146) since the red line slope is steeper.

In Table 14.4, the path coefficient of the interaction term FinTech-IA -> CF is 0.067, approximately 0.10, to be statistically significant, as suggested by Lohmöller (2013). Conclusively, FinTech reduces the negative relationship between IA and CF. These findings reflect that the negative association between IA and bank credit flow to AP- SMEs in Tanzania's banking industry becomes less when FinTech is used.

Note: Green line (High FinTech); Blue line (FinTech at Mean); Red line (Low FinTech)

Figure 4. 4 Moderating Effect of FinTech on Information Asymmetry

> *H7c: Bank financial technology positively moderates the effect of credit risk management on credit flow to Ap-SMEs.*

The relationship between bank credit flow (CF) to SMEs engaged in agro- the three lines in Figure 4.5 show processing. Because the slope of the green line is not steep, the negative association between CRM and CF decreases as FinTech

grows from -0.149 to -0.067 (-0.149(-0.082) = -0.067). Moreover, when FinTech is low, the slope of the red line is higher, increasing the relationship between CRM and CF from -0.149 to -0.131 (-0.149 + (-0.082) = -0.131).

In Table 14.4, the path coefficient of the interaction term between FinTech-CRM -> CF is -0.082, approximately 0.10, to be statistically significant, as suggested by Lohmöller (2013). Also, the t-statistics value of 1.399 at a p-value of 0.081 of the interaction term is statistically significant at the confidence interval of 0.1 (Carlo et al., 2014). This means that FinTech moderates the negative relationship between CRM and CF. These findings show that FinTech significantly reduces the negative effect on the relationship between CRM and FC. This shows that the negative relationship between CRM and bank CF to AP- SMEs is smaller the more advanced FinTech is.

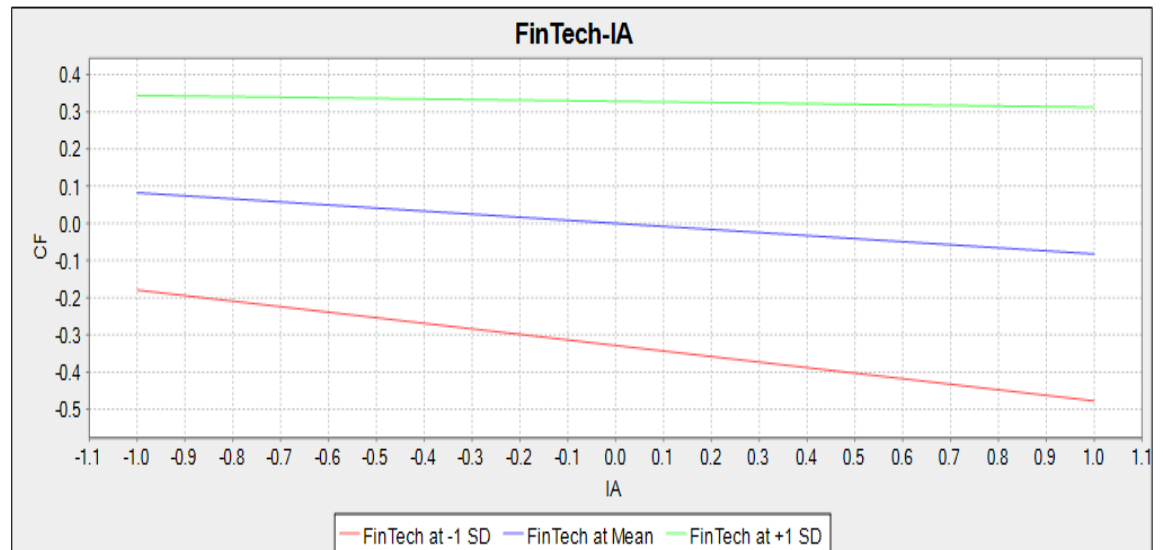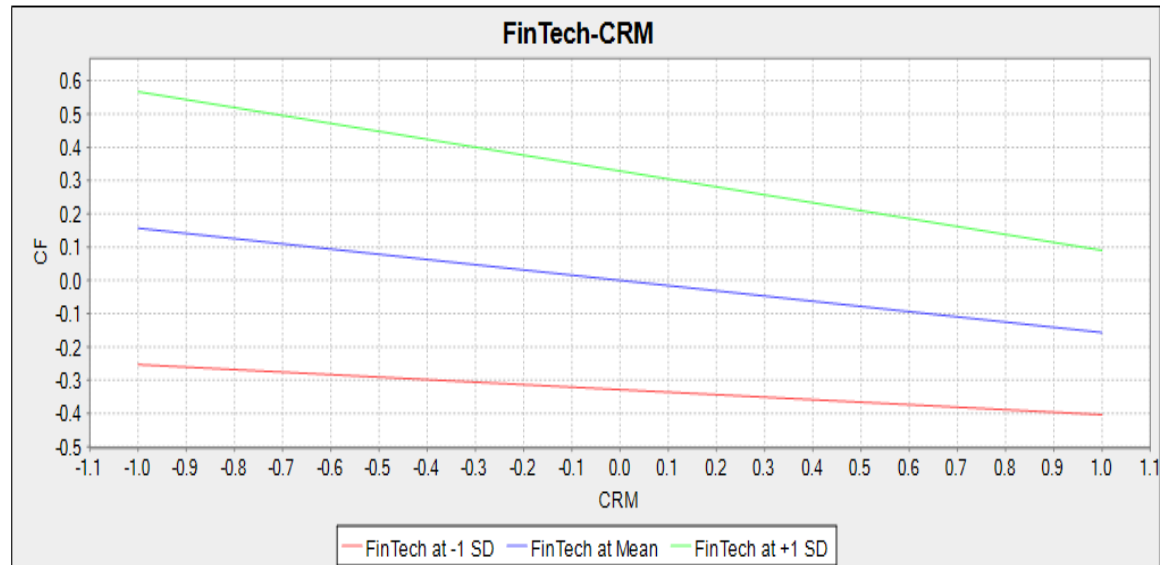**Note**: Green line (High FinTech); Blue line (FinTech at mean); Red line (Low FinTech)

Figure 4. 5 Moderating Effect of FinTech on Credit Risk Management

4.7   Summary of Data Analysis

This chapter aimed to increase the outcomes' reliability and trustworthiness. The chapter focused on the analysis of the study's descriptive statistics and briefly explained the significance of the demographics of the respondents. It has also investigated seven (7) constructs that addressed direct, mediating and moderating effects. Nine (9) different hypotheses out of 11 examined hypotheses have been confirmed and supported. Two different hypotheses in all, nevertheless, were not supported. Table 4.15 highlights the findings for each investigated hypothesis. As a result, the following chapter will discuss the study's findings more. This will also involve a discussion of the supported and unsupported hypotheses about findings from the body of existing literature.

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Table 4. 14 Conclusions and Discussion in Brief

Research objectives	Hypotheses	Remarks
RO1: To examine how the lending factors impact the flow of bank credit to ap-SMEs	H1	Not supported
	H2, H3 and H4	All hypotheses Supported
RO2: To examine the mediation effects of credit transparency between credit risk management and bank credit flow to agro-processing SMEs	H5a, H5b and H6	All hypotheses Supported
RO3: To estimate the moderating effects of FinTech on the lending factors on the bank credit flow to agro-processing SMEs	H7a	Not supported
	H7, H7b and H7c	All hypothesis Supported

Note: RO: research objective

CHAPTER 5

DISCUSSION OF FINDINGS

5.1 Introduction

This chapter discusses the study's findings and the theories highlighted in the previous chapter. It considers the effects of financial intermediation structures on bank credit flow, the mediation of bank credit transparency on bank credit flow, and the moderating effects of financial technology on transaction cost, IA, and CRM on bank credit flow. The structure of the discussion reflects three objectives, which are consistent with the study's findings and tested hypotheses which include:

a) To examine how the lending factors impact the flow of bank credit to ap- SMEs.

b) To examine the mediation effects of credit transparency between credit risk management and bank credit flow to agro-processing SMEs.

c) To estimate the moderating effect generated by financial technology (FinTech) on the predictive variables (transaction costs, information asymmetry and credit risk assessment) toward bank credit flow to agro-processing SMEs

5.2 The Impact of Direct Constructs

Objective One: To examine how the lending factors impact the flow of bank credit to ap-SMEs.

This objective aimed to examine how the financial intermediation relationships can interact by the partial least squares technique to influence credit supply to the agro-processing SMEs. Four hypotheses, H1, H2, H3, and H4, were tested, as summarized in Table 5.1.

Table 5. 1 Summary of the findings; the Drivers of Credit Flow

	Hypothesis	Existence of Influence/Association	Path Coefficients
H1	There is a negative relationship between transaction costs and the flow of bank credit to Ap-SMEs	Not significant negative influence	-0.045
H2	There is a negative relationship between information asymmetry and the flow of bank credit to Ap-SMEs	Significant negative influence	-0.082
H3	There is a negative relationship between credit risk management and the flow of bank credit to Ap-SMEs	Significant negative influence	-0.149
H4	The flow of bank credit to Ap-SMEs is directly and positively impacted by institutional lending structures	Significant positive influence	0.157

The results of this study partially (in a negative direction but not significantly) support other studies that found a negative and significant correlation between transaction costs and the flow of bank credit to SMEs (Berger & Udell, 1995; Ekpu, 2015; Mutezo, 2015; Nguvava & Ngaruko, 2016; Saito & Villanueva, 1981; Zambaldi et al., 2011). The study presents evidence that bank lending costs

negatively but not significantly influence the flow of bank loans to Ap-SMEs. Therefore, the findings of this study contradict the original hypothesis (H1) (Table 4.10). These results probably support the modern financial intermediation theory, which postulates that the advancement of technology has reduced transaction costs incurred by banks in the lending business (Scholtens & Van Wensveen, 2003). Initially, the theory insisted that commercial banks' monitoring costs hinder lending activities (Gurley & Shaw, 1960). Recall that Ekpu (2015), processing and overseeing small loans at high transaction costs had a detrimental effect on lending earnings.

The mean score of this construct suggests that some lending officers agree that there are costs involved in the processing and monitoring of the loans to Ap-SMEs, but they are not so important to limit the flow of credit to Ap-SMEs. This was reflected in the question, "in my bank, the administrative costs of agro-processing SME loans are low." The following are potential explanations for the study's findings: First, banks in Tanzania transfer most of the costs associated with a given loan onto borrowers (Nguvava & Ngaruko, 2016). The extended loan amount is used to pay the fees upfront. This indicates that bankers will continue to issue credits despite the high transaction costs associated with executing and managing a loan because these costs impact them less. In other words, transaction costs negatively affect the flow of credit from the demand side (SMEs) since the suppliers of funds do not like to bear lending costs at all (Berger & Udell, 1995, 2002). Moreover, the fact that this study focused mainly on agro-processing

SMEs in which the processing sector somehow is protected by the credit guarantee schemes such as PASS it is possible that may be the case would be different for other SMEs in general. The results might differ from other SMEs financing due to their nature and credit analysis requirements. Likewise, most banks extending agro-processing loans have employed credit officers with expertise in agribusiness from the current investigation. Their expertise might absorb some of the arising costs so that banks less feel their effect. Thirdly, the emergence of financial technology in the credit market has reduced transaction costs incurred by banks in the lending business. This financial technology, combined with other technological advancements, has reduced the costs of matching transacting parties, achieving economies of scale in gathering and using massive data, achieving cheaper and more secure information transfer, and eventually reducing verification costs (Cheng & Qu, 2020; Li & Xu, 2021; Molnár, 2018; Thakor, 2020).

The current study's analysis indicates that (IA) has a detrimental effect on the flow of loans to Ap-SMEs. Banks are reluctant to lend to SMEs because they need more information to help them make loan decisions. The study's findings align with the financial intermediation theory, which postulates that borrowers know better about their business prospects and risks than banks (Allen & Santomero, 1997; Scholtens & Van Wensveen, 2003). In other words, a better flow of credit from banks to SMEs is possible without an information mismatch between banks and SMEs. These results are also consistent with the available

empirical facts, which opined that information asymmetry negatively and significantly influences bank credit flow to SMEs (Bonini et al., 2016; Campanella et al., 2013; Distinguin et al., 2016; Ekpu, 2015). According to Song et al. (2020), the knowledge gap between lenders and borrowers is at the root of SMEs' funding problems. For instance, Calice et al. (2012) reported that information asymmetry was the first problem for SMEs' credit constraints in Tanzania. The author further reports that about 75% of commercial banks in Tanzania mentioned this aspect as a significant obstacle to their SMEs' dealings.

The present study indicates that agro-processing SMEs in Tanzania usually do not disclose relevant information to help banks decide. Instead, they display the information they think might favour them when applying for a loan. Thus, bankers are limited from knowing the projects' profits compared to the borrower's. Due to a lack of credit information, banks have no lending appetite for SMEs, and they are doing so to avoid the challenges and costs of obtaining potential SME borrowers' information and avoiding moral hazards and adverse selection problems (Calice et al., 2012; Mushtaq et al., 2022; Scholtens & Van Wensveen, 2003).

The presence of an information mismatch regarding the measurement items employed to measure this construct may have impacted banks' willingness to provide appropriate loans to Ap-SMEs. The mean score of this construct likewise supports the above explanations. The average response was 1.94, which indicates

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that most people disagree more often than they agree with the items indicating information asymmetry. The item "the information from the agro-processing SMEs is often well-formulated" indicated an essential aspect to lending officers, although it is poorly performing. In other words, Ap-SMEs' information received by banks is not well formulated; hence could be the reason for their limited loan flow. Instead, loan professionals concur that most Ap- SMEs are dishonest about their financial statements and future business goals. Ekpu (2015) found that information asymmetry leads to the high-interest rates and stringent collateral requirements for specific SME loans in Nigerian banks compared to larger corporates that enjoy prime lending rates. The same situation exists in Tanzanian banks, where interest rates are high and collateral requirements are too demanding to protect against the impact of SMEs' information asymmetry.

However, CRM to CF has an f-square (f^2) of 0.008), the magnitude of the information asymmetry's effect on limiting credit flow is minor against the study by Olomi conducted in Tanzania (Olomi et al., 2008). The possible reason for this could be due to the recently conducted studies suggesting that the problem of asymmetric information resulting in lending costs and other problems is reducing drastically due to the technological advancements in the banking business and the presence of credit reference bureaus (Cheng & Qu, 2020; Sheng, 2020).

Also, this study discovered that banks' credit risk management negatively impacts loan flow to Ap-SMEs. Previous research demonstrated that CRM strongly affects

CF in SMEs, consistent with our findings (Aysan & Disli, 2019; Beyhaghi et al., 2020; Iman, 2018; Sun et al., 2021). This demonstrates that loan requests from SMEs in Tanzania are virtually always denied because commercial banks use covenants, stringent collateral requirements, credit restriction, loan securitization, and high-interest rates as tools to cut credit losses. Banks have little faith in the sector and are hesitant to lend to ap-SMEs because they are concerned about the long-term survival of the sector. The flow of bank loans to SMEs is inversely correlated with credit risk management. These findings are consistent with the financial intermediation theory (Allen & Santomero, 1997; Scholtens & Van Wensveen, 2003). The findings of this study show that most Ap-SME loan approval decisions are mostly rule-based and driven by the lenders' risk appetite, which is influenced by several factors listed under this construct in the questionnaire, such as high collateral requirements.

Furthermore, the construct's mean score of 2.1353 (See Table 4.2) indicates that Tanzanian banks are doubtful about agro-processing SMEs' repayment sources and business continuity. The previously documented empirical studies depicted that credit risk management limits the volume of loans supplied to borrowers (Bhatt, 2012; Boushnak et al., 2018; Bruns & Fletcher, 2008; Chepkoech, 2014). Like other countries, Tanzanian commercial banks assess credit risk by scrutinizing borrowers' financial viability before issuing loans. After this assessment, a financing decision is reached of either rejecting or accepting SMEs' lending proposals. The item "My bank is safe to lend to agro-processing SMEs"

indicated an essential aspect regarding credit risk management to lending officers. However essential this item is, it was found that its performance is unsatisfactory. In other words, banks in Tanzania are not safe to lend to Ap-SMEs; hence that could be the reason for their limited loan flow.

When managing credit risk, banks use tools such as stringent as covenants, collateral, credit rationing, loan securitization, and loan syndication to reduce credit losses (Berger & Udell, 2006; Liang et al., 2017; Stiglitz & Weiss, 1992); and impose high lending rates (Osano & Languitone, 2016). The tools serve as a buffer to keep bank lending funds secure. Similarly, banks in developing countries have employed the same tools (Beyhaghi et al., 2020). Unlike in developed economies, the above tools are tightened, so many discouraged SMEs are put aside compared to those who dare to apply for bank loans (Kon & Storey, 2003). Tanzanian banks employ the same credit risk management techniques as their international counterparts (Mori & Richard, 2012; Nkwabi et al., 2019; Richard et al., 2008). Likewise, commercial banks in Tanzania have a severe problem with strict collateral requirements and high lending rates (Mashenene, 2015; Nguvava & Ngaruko, 2016). This supports the study's findings, demonstrating that credit risk management negatively and significantly influences bank loans to SMEs engaged in agro processing.

Moreover, most banks in Tanzania have adopted CAMPARI (*Character, Ability, Margin/interest rate, Purpose, Amount, Repayment period and*

Insurance/collateral) as an essential factor in managing borrowers' credit risk, including small businesses. It is a framework with tools adopted by bank credit officers to scrutinize the borrowers' credibility but with a powerful influence on credit decision-making (Bhatt, 2012; Boushnak et al., 2018; Thomas, 2000). Chepkoech (2014) reported that banks in Kenya use 5Cs (capacity, capital, collateral, conditions, and character) as the most common qualitative risk assessment techniques where banks examine credit risk by looking to control the non-repayment rate. When securitizing CAMPARI and 5Cs, many SMEs are found not to qualify for the loans due to their opaqueness. Similarly, in Tanzania, credit risk management by CAMPARI has been the major obstacle to SME financing (Kadete, 2014; Mori & Richard, 2012; Mosha, 2016; Pelleberg, 2012). So many SMEs do not qualify for loans because they fail to meet these seven conditions. The most pinching collateral conditions are such as (1) collateral, which has a value of about 125% of a loan value, (2) SMEs have registered collateral and in case the demanded collateral is a house or land, it should have the title deed and (3) banks prefer fixed assets to be used as collateral. As a result, it is challenging for SMEs to get loans from banks in these circumstances. Connected to that, obtaining the tilted deed in Tanzania is very bureaucratic and the procedures take longer before one obtains his title to the property (Mbowe et al., 2020). Credit risk management has been the major limiting factor for banks' credit flow to SMEs since they charge very high-interest rates due to the avoidance of credit risk. Moreover, they provide fewer funds, demanding

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collateral with cumbersome conditions and issuing very short-term loans that do not help the SMEs with their financing.

In the current study's model, ILS is also the crucial predictor and FinTech when assessing the relative importance of the independent constructs in predicting CF (endogenous). The results show that commercial banks' clear lending and regulatory structures increase the flow of loans to Ap-SMEs. This study is consistent with earlier studies showing a connection between ILS and CF (Cantú et al., 2020; Kakuru, 2008; Moro & Fink, 2013; Trönnberg & Hemlin, 2012). It can be proven that banks' ability to provide loans to the agro-processing industry will increase if they follow reasonable credit lending standards, procedures, policies, and legislation. Each bank has its internal credit policy that can influence credit supply or hinder its availability if the policy is too tight. When banks set credit policies, the central focus is to establish procedures that will influence the increase in lending activity (Rajan, 1994). Through credit policies, banks identify sectors of high importance for their lending. Banks have regularly marginalized SME sectors in certain circumstances in their lending policies.

The current study's findings support the financial intermediation theory (Scholtens & Van Wensveen, 2003), which holds that institutional frameworks and lending policies help banks perform their financial intermediation role. When comparing the findings to previous studies, Deflorio (2018) argues that the financial institutions' role is to create a context with policies and guidelines that

financially support SMEs and promote their growth, similar to what Kakuru (2008) found in Ugandan commercial banks. According to the same study, lending rules, regulations, and policies can help the flow of credit in several ways. Similarly, the current findings concur with the past empirical studies that proper credit lending guidelines, procedures, policies and regulations influence the supply of loans to small businesses (Cantú et al., 2020; Moro & Fink, 2013; Trönnberg & Hamlin, 2012).

The mean score result of the institutional lending structure construct demonstrates that most respondents had a neutral opinion of the institutional lending structures with the flow of bank credit (mean score of 3.29 in Table 5.2). The mean score of this construct demonstrates that while respondents may be interested in institutional lending processes that affect credit flow to Ap-SMEs, it matters less if they do not understand how to take advantage of those mechanisms. Alternatively, it suggests that Tanzanian commercial banks have failed to grasp how institutional lending structures might improve the availability of loans to agro-processing SMEs or that their lending strategies have not given the same sector enough weight. Lending rules and procedures simplify credit by unifying credit decisions and giving lending officers legal protection, clarity, and a pleasant working environment. According to Kakuru (2008), institutional lending mechanisms at Ugandan commercial banks boosted loan officers' trust, making it easier for them to provide credit.

5.3 The Mediation Effects of Bank Credit Transparency

Objective Two: To examine the mediation effects of credit transparency on credit risk management and the bank credit flow to agro-processing SMEs.

Table 5. 2 Summary of the Findings; the Mediation of CT

Hypothesis		Existence of Influence/Association		Path Coefficients
H5a	There is a positive relationship between bank credit transparency and credit flow to Ap-SMEs	Significant influence	positive	0.123
H5b	There is a negative relationship between credit risk management and bank credit transparency	Significant influence	negative	-0.149
H6	Credit transparency mediates credit risk management with the flow of bank credit to Ap-SMEs	Significant influence	negative	-0.039

Three hypotheses—H5a, H5b, and H6—were investigated to use a mediation analysis to address the second study issue. The limits of how credit transparency mediates the relationship between CRM and CF were first investigated using hypotheses H5a and H5b, representing the direct impacts of credit transparency. The relationships between bank credit transparency and cash flow (H5a) and between bank credit transparency and credit risk management (H5b) both exhibited significant impacts (see Table 4.9). The results for H5a agree with those of Losada-Otálora & Alkire (2019), but the results for H5b agree with Bulyga et al. (2020). To put it another way, SMEs gain more credit knowledge when banks promote credit transparency, and as a result, credit information helps them raise their credit scores. Participants in the study think that agro-processing SMEs are

unaware of the formalities that must be followed when their bank receives their loan request.

This study also shows how CRM's detrimental effects on CF are partially attenuated and sequentially by bank credit transparency. The muscles banks use to regulate credit risks may relax if there is high bank credit transparency. It should be highlighted that while SMEs complain about the banks' lack of accessibility to relevant loan information, banks are also challenged by SMEs' informational opacity. Reduced information asymmetry between banks and SMEs due to banks' actions to promote credit transparency may lower credit risk (Liu et al., 2015). According to certain loan officers' explanations, some commercial banks in Tanzania conceal credit information to keep up with rivals, while others conceal credit information to prevent borrowers from abusing the credit systems. However, to establish a reputation and draw in additional borrowers, banks must accurately and honestly report their credit actions (reliably, understandably, and timely).

H6: Given the growing pressure on banks to increase credit availability, this hypothesis is important because it discusses the impact of bank transparency on SMEs' financial well-being. Transparency is undoubtedly significant in the relationship between CRM and bank credit flow. This study demonstrates that bank credit transparency mediates the relationship between CRM and CF in Ap-SMEs. This builds on the work of the European Commission (2008), which

suggested that bank credit transparency is critical for SMEs to maintain long-term financial and credit access by offering specific ways to suit their needs. Similarly, this research backs up Glavanits' (2007) assertion that SMEs might have picked a bank more likely to approve their loan requests if they had access to all the information available from lenders.

CAMPARI (Character, Ability, Margin/interest rate, Purpose, Amount, Repayment term, and Insurance/collateral) has been accepted by most Tanzanian banks as an important aspect in managing the credit risk of borrowers, including Ap-SMEs. It is a framework containing instruments bank credit officers use to assess borrowers' trustworthiness, but it significantly impacts loan decisions (Kadete, 2014; Mbowe et al., 2020; Mori & Richard, 2012; Mosha, 2016). Many SMEs do not qualify for loans when securitized through CAMPARI since they do not match these seven criteria. As a result, banks exposing the credit transaction process, credit terms and conditions, bank values, and how the bank engages SMEs could improve transparency efforts' effectiveness(European Commission, 2008; OECD, 2015). This is because various factors, including the individual SME negotiation, determine the financing decisions. Ap-SMEs do not expect banks to reveal specifics about their risk models' work. On the other hand, Ap-SMEs require information about the criteria employed and the information required by banks to facilitate their interactions with banks and understand their specific bank's approach.

5.4 The Moderating Effect of FinTech

Objective Three: To estimate the moderating effect of financial technology (FinTech) on the predictive variables (transaction costs, information asymmetry and credit risk assessment) toward bank credit flow to agro-processing SMEs.

Table 5. 3 Summary of the Findings; the Moderation of FinTech

Hypothesis		Existence of Influence/Association	Path Coefficients
H7	The flow of bank credit to Ap-SMEs is directly and positively impacted by financial technology (FinTech)	Significant positive influence	0.354
H7a	Bank financial technology reduces transaction costs on credit flow to Ap-SMEs	Not significant negative influence	-0.015
H7b	Bank financial technology reduces information asymmetry on credit flow to Ap-SMEs	significant positive influence	0.067
H7c	Bank financial technology reduces the effect of credit risk management on credit flow to Ap-SMEs	Significant negative influence	-0.082

The findings successfully justified the third study's gap by demonstrating FinTech as a moderator and a significant direct relationship between FinTech and CF. Notably, the study identified FinTech to moderate the negative relationships of IA and CRM to CF. As a result, except for H7a, two hypotheses (H7b and H7c) were accepted. In addition, the direct hypothesis (H7) linking FinTech and CF was confirmed (Table 4.10). The outcomes of this study back up the idea that financial technology directly and significantly impacts credit flow to agro-related SMEs. The findings are related to the financial intermediation theory, which says that

developments in ICT have simplified the intermediation process to the point where the traditional reasons for banks' existence appear to have faded away (Scholtens & Van Wensveen, 2003). Similarly, this research aligns with the previous literature, suggesting that FinTech is a powerful tool for SMEs' credit access (Jakšič & Marinč, 2019; Sedunov, 2017a; Sheng, 2020; Weng et al., 2023). According to Rowan et al.(2018), one of the most noticeable effects of mobile phone technology is the ability to provide loans to unbanked and small businesses that previously did not have access to credit. The author further claimed that risk management for SMEs in Kenya, Tanzania, and Uganda is becoming more automated as bank technology develops.

In Tanzanian commercial banks, the development of financial technology is still in the infancy stage. However, the available bank FinTech and widespread internet use have revolutionized the delivery of various banking services in mode, processing, and outlets. Customers may self-serve financial services via the internet and mobile banking, and the costs of entering the finance industry have decreased because of technological advancements. The introduction of mobile technology has facilitated the easiness of credit access and has reduced transaction costs to a large extent. Technology innovations from the lender and borrower have increased efficiency, reduced transaction costs and covered the unbanked populations at longer distances. For instance, SMEs use mobile phones to repay bank loans (Chale & Mbamba, 2018).

In this study, the items of the FinTech construct have a mean score of 3.7, which indicates that most respondents almost agree with the items reflecting how FinTech plays a role in extending loans to agro-related SMEs. This means that lending officers in Tanzanian banks do not appropriately experience the influence of FinTech in their lending activities though they acknowledge its presence. This is because fintech is still developing and its effect is not much felt compared to FinTech in developed countries like the US, China, Singapore, and the UK (Cheng & Qu, 2020).

H7a, H7b and H7c: In terms of FinTech as a moderator, the outcomes of this study show that, contrary to what was hypothesized, the present bank financial technology in Tanzania does not reduce (moderate) the negativity of transaction costs towards the flow of credit from Tanzanian commercial banks (Cheng et al., 2006; Mutezo, 2015). Tanzanian commercial banks have primarily stuck to traditional lending methods and other psychometric means of processing and assessing borrowers. Banks have not invested much in financial technology like blockchain, machine learning and artificial intelligence (UNCDF, 2021). As a result, banks have failed to capitalize on advances in FinTech by digitizing lending transactions, which involve less documentation, fewer employees, and few physical branches.

Although financial technology development in Tanzania is still in its infancy, the current study supports the hypothesis that FinTech minimizes the negative link

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between IA, CRM, and credit flow. FinTech has changed the supply of various banking services in bank operations, processing, and delivery outlets. According to previous studies (Mushtaq et al., 2022; Sanchez, 2018; Zhang et al., 2020), FinTech is likely to assist banks in improving credit information availability and accuracy, expanding the number of information access channels and sources. In other words, FinTech closes the information gap between banks and small businesses. Furthermore, according to the same studies, sharing data with other banks' large databases could reduce the cost of identifying potential borrowers and reduce credit risk. The findings of this study show that using bank FinTech increases banks' ability to innovate and creates a supportive environment for increasing loans to AP-SMEs. Fintech helps expand the availability of borrowers' information and lessens banks' risks when lending to the agro-processing sector. The items of FinTech that "My bank financial technology increases the number of information channels for credit decision making to agro-processing SMEs" and "My bank financial technology increases the sources to obtain accurate information for credit decision making to agro-processing SMEs" indicated that they are essential in the lending activities. However, they were rated lowly by respondents.

5.5 Summary of the Findings and Discussion

The PLS-SEM results support nine hypotheses (H2, H3, H4, H5a, H5b, H6, H7b, and H7c), while two hypotheses, H1 and H7a, related to transaction costs are not. The variables utilized in this study account for 29.1% (R^2) of the variation in the

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CF to AP- SMEs. This chapter has demonstrated that several bank branches relate to SMEs by establishing specific sections responsible for agro-processing SMEs. Banks are prevented from financing SMEs due to several issues. The study's findings indicate that financial technology, institutional lending arrangements, credit risk management, and information asymmetry all impact bank credit supply to agro-processing SMEs. Also, bank transaction expenses incurred during the lending process had no significant impact on credit flow to Ap-SMEs. The findings successfully justified the study's gap by demonstrating a mediation of bank credit transparency and FinTech as a moderator to influence credit flow to agro-processing SMEs. The results are summarized and synthesized in the next chapter, along with a discussion of the study's contribution to the body of knowledge and suggestions for future studies.

CHAPTER 6

GENERAL CONCLUSIONS AND POLICY IMPLICATIONS

6.1   Introduction

This chapter provides an overview of the major findings. It focuses on certain aspects of commercial banks' credit provision for the agro-processing industry. Additionally, it focuses on theoretical contributions and consequences relevant to this study's financial intermediation conceptual model for agro-processing SMEs. This section includes some management and policy implications for practitioners and policymakers. Finally, the study's limitations and recommendations for future research are presented.

6.2   The accomplishment of Research Objectives

Agro-processing SMEs' most persistent problems are acquiring external financing for growth and expansion, particularly medium- to long-term loans. Due to their information opaqueness and riskiness, banks deem Ap-SMEs and small businesses hazardous. Therefore, this study aimed to identify the drivers of bank credit flow to agro-processing SMEs to lower their failure rate and ensure long-term growth. In addition, the study looked at the reasons for such barriers from the banks' standpoint through the interaction of the financial intermediation theory relationships. The study was prompted by the high failure rate of agro-processing SMEs in Tanzania, attributable to insufficient finance availability. Based on these findings, the study set out to achieve the following three specific objectives:

The first objective was to examine FIT variables' impact on bank credit flow to Ap-SMEs. In this regard, four hypotheses relating to the theory of financial intermediation were established and tested: H1, H2, H3, and H4. The findings revealed that bank transaction costs incurred during lending do not influence bank credit flow. However, IA and CRM negatively affected the bank credit flow to Ap-SMEs. Furthermore, the institutional bank lending structures positively affected the flow of bank credit to Ap-SMEs.

The second objective was to examine the mediation effects of credit transparency between credit risk management and the bank credit flow to Ap-SMEs. This objective was achieved by testing three hypotheses, H5a, H5b and H6 (see Table 4.12). All three hypotheses were found to be significant. The findings revealed that bank credit transparency mediates the effect of credit risk management on bank loan flows to Ap-SMEs. In other words, the muscles to control credit risks may loosen if banks are highly transparent in credit aspects.

The last objective was to estimate the moderating effects of FinTech on the lending factors on the bank credit flow to agro-processing SMEs. This objective was achieved by testing four hypotheses, H7, H7a, H7b and H7c (See Table 4.14). All three hypotheses were significant except H7a, related to bank transaction costs. This implies that applying financial technology in the Tanzanian commercial banking business significantly impacts the named predictors to

influence the supply of loans to Ap-SMEs. In other words, financial technology could reduce information asymmetries and act as a lubricant for credit risk management techniques in the credit market. In addition, FinTech was found to influence bank credit flow directly and positively to the agro-processing sector.

6.3   Theoretical Implications

Tanzania is promoting agro-processing SMEs to shift the country's economy from agricultural to semi-industrial. Therefore, a culture that aims to expand agro-processing loans is unavoidable. Previous studies (Kombe et al., 2017; Magembe, 2017; Mashenene, 2015; Nkwabi et al., 2019; Tisimia, 2014) identified the lack of access to external financing, notably bank loans. They found that most Ap-SMEs could not obtain loans from commercial banks due to numerous factors, mainly their opaqueness. The current study's findings have various consequences for the theory that underpins the phenomena of bank credit to Ap-SMEs. Past studies (Boushnak et al., 2018; Cantú et al., 2020; Distinguin et al., 2016; Mori & Richard, 2012; Moro & Fink, 2013) looked at the drivers of bank credit to SMEs with distinct theoretical concerns. Apart from the well-known relationships of the financial intermediation theory as postulated by Gurley and Shaw (1960) and Scholtens and Van Wensveen (2003), the two variables were added to the theory:

First, the study's addition of the variable of bank credit transparency as a mediator between credit risk management and credit flow to Ap-SMEs helps to integrate the FIT theory. Theoretically, the findings show that increased bank credit

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transparency mitigates a negative link between credit risk management and bank loan flow. This study used complete bootstrapping to evaluate the mediation effects (BCa) using PLS-SEM with bias-corrected and accelerated bootstrapping. (Efron, 1987; Hair et al., 2017).

Second, the current study integrates the theory by adding the variable of FinTech as a moderator between predictive variables. The findings show that FinTech influences loan flow by moderating the adverse correlations between information asymmetry and credit risk management. This study used a two-stage approach instead of product-indicator or orthogonalization procedures with PLS-SEM. The two-stage has better statistical power (Hair et al., 2019) than the product indicator.

Nevertheless, it was discovered that, compared to information asymmetry, credit risk management, and institutional lending structures, the lending costs experienced by bankers had no significance on the flow of credit. Therefore, the altered present research framework broadens researchers' knowledge and brings new literature about bank credit flow to Ap-SMEs. To my knowledge, no research has been done to investigate these connections. Therefore, future researchers could use the study's findings to suggest remedies for the issue of financing available for Ap-SMEs.

6.4   Managerial Implications

The study's conclusions can assist the practitioners and the government focus on the explanatory variables employed to increase loan supply. Furthermore, the research helps examine the current loan practices of Tanzanian banks. Based on the replies gathered through the distributed questionnaires, the current study's findings revealed that bank transaction costs did not impact the supply of bank loans to AP- SMEs. However, the same study found that the following factors could influence the supply of loans to Ap-SMEs: (1) information asymmetry; (2) credit risk management; (3) institutional lending structure; (4) bank credit transparency and financial technology (FinTech) (see Table 4.19). The results support the idea that bank credit transparency can mediate the relationship between credit risk management and bank loan flow to Ap-SMEs. Finally, the results show that FinTech moderates the growth of lending operations to Ap-SMEs (see Table 4.3). Thus, from the study's findings, the following are recommended.

6.4.1 To Policy Makers (Regulators)

The government should harmonize the available policies like the Financial Inclusion Framework of 2021 – 2025, the Integrated Industrial Development Strategy of 2010 and the Five Years Development Plans to reflect the following measures:

First, the government must strengthen the information environment, the legal and judicial environment, and the tax and regulatory regime to achieve an industrial economy via the agro-processing sector. Policymakers should reduce the effect of information asymmetry and credit risk management by revising the financial policies to expedite the loan application services, availability, and approval processes. It should be noted that to stimulate innovation, Ap-SMEs should be facilitated with bank credit. Therefore, the government should encourage banks to accept "reasonable risk" when approving loan applications from Ap-SMEs, particularly for business ventures. To encourage banks to assume "reasonable risk," the government should provide tax incentives to banks that lend to Ap-SMEs, and other banks will be motivated.

Second, credit transparency may be achieved if regulators should require banks to establish a business banking code that requires banks to regularly publish whatever it takes to help SMEs apply for loans. The purpose is to allow competition and make banks establish higher standards to assist the SMEs with

price comparison before borrowing (Thomas et al., 2006). In addition, this banking code should contain a clear set of terms and conditions and present information as clearly as possible, avoiding technical language. Transparency through dialogue from both sides of the credit market (supply and demand) can help overcome several obstacles that result in dishonesty in their partnerships. Policymakers should establish a regular forum for SMEs and banks to discuss matters of shared interest at the national and regional levels.

Third, the institutional lending structure is one of the most relevant variables in this research context. Because Tanzania has aimed to centre its semi-industrial economy via Ap-SMEs, policymakers must guarantee that the Ap-SMEs sector is detailed in banks' financing or credit guidelines. To recognize Ap-SMEs' heterogeneous nature, the central bank (regulator) should examine the contents of banks' lending rules. Similarly, the government should develop policies for Ap-SMEs that benefit local and international processors. These policies should reflect how agro-processing SMEs could easily access bank credit, such as lower processors' lending rates and relaxing collateral conditions. In this vein, the government should work closely with existing government credit guarantee windows, inject more capital, and strengthen the Agricultural Development Bank and Tanzania Investment Bank to provide soft credit to farmers and Ap-SMEs.

6.4.2   To Commercial Banks (Practitioners)

First, in the current study, bank credit transparency has been identified as one of the cornerstones for increasing loan supply to Ap-SMEs. It can lessen the negative impact of credit risk management, limiting credit flow generated by the uncertainty discouraging Ap-SMEs due to insufficient information provided by banks. In a practical sense, bank credit transparency aims to provide a level playing field for banks and SMEs regarding information. This is one of the main challenges for practitioners to consider if they need to increase their lending activities by reducing the Ap-SMEs' capital gap. Bank managers and other financial services providers can use the research's findings to boost loan transparency with SMEs. As a result, bank managers who take on the difficult work of enhancing credit transparency for their borrowers should devise techniques that correctly clarify communicated information with their borrowers more transparently. In addition, IT advances such as apps might be used to disseminate loan information with Ap-SMEs. Technology and big data can assist banks in visualizing complex data and procedures, making them more accessible and understandable to borrowers. If proper credit transparency actions (credit training, timely and understandable information in a banking code issued to the public) relate to loan issues in the agro-processing sector, it will put SMEs in the driver's seat as their loan information knowledge will be increased. Similarly, banks should hold information sessions for SMEs on various topics related to the new financial environment, including credit ratings.

Secondly, according to several studies (Fatoki & Odeyemi, 2010; Mutezo, 2015), Ap-SMEs' lack of access to finance is mainly due to lenders' stringent requirements owing to information asymmetry and credit risk from the SMEs' side. The current study evidenced that Ap-SMEs face similar challenges from the supply side. FinTech companies and banks should develop software compatible with and readily accepted by Ap-SMEs for loan appraisals. Banks' easy acceptance and deployment of FinTech could boost lending to Ap-SMEs and lower the burden of lending expenses imposed on them. Commercial banks could connect loans to the agro-processing industry through technological advancements such as the internet, mobile services, machine learning, artificial intelligence, cloud computing, big data, and big data analytics. Around the globe, it is well known that financial technology pulls out borrowers' information 360 degrees around them (Cheng & Qu, 2020; Mushtaq et al., 2022; Sheng, 2020). Tanzanian commercial banks should strategize and utilize the potential of FinTech when processing and disbursing loans to Ap-SMEs. Generally, utilizing online applications and the automation of due diligence, loan servicing, and regulatory compliance tasks may help the traditional lending process. In addition, FinTech relies on new business models, procedures, technologies, and paradigms to explicitly position bank finance as a service center for SMEs (Mpofu & Sibindi, 2022). FinTech has several advantages, including lowering the cost of lending, broadening the breadth of borrowers' information, and promptly assessing current and future probable loan hazards. However, the expense of

providing financial services is not entirely free. This is because Fintech companies would typically incur costs such as adopting new technology, strengthening existing financial technologies and the cost of online security.

6.5   Research Limitations

The study was conducted in Tanzanian banks. Respondents from various countries are likely to have varied perspectives on the factors of bank credit flow to Ap-SMEs, given the differences in respondents' perceptions, cultural practices, understanding of current credit aspects, and level of agro-processing SMEs awareness (Alfawaz et al., 2010). Therefore, this study's findings should be used with caution as they might not necessarily apply in other countries.

Second, despite the vital importance of microfinance institutions and credit guarantee schemes in facilitating the flow of credit, this study excluded them. Noting that the agricultural sector employs more than 66% of Tanzanians, it involves micro, small, medium, and large enterprises. The current study did not examine the lending by microfinance institutions to micro-processing industries or other alternative providers of funds to them, such as finance companies. Furthermore, the current study did not explore the impact of the available credit guarantee schemes (CGS) on the credit flow to Ap-SMEs.

Lastly, the results and responses might only apply to that period because the data were cross-sectional and collected at a certain duration. The main limitation is

that the study does not apply the longitudinal study that collects opinions at different periods.

6.6 Recommendations for Future Research

The study's limitations generate possible research ideas that could interest future research. The current study was inclined toward the supply side (commercial banks). Although the results are reliable, it is still believed that there is a need for future research to carry out a mixed study to explore both the demand and supply of credit, specifically when testing the effect of credit transparency and financial technology. The study could be duplicated further by integrating more credit dimensions and other lending financial institutions in the investigation to explore the impact of studied variables on loan supply and generalize the current findings. Given the significance of the Ap-SME sector to the economy's growth, it might also be investigated how the government might impact this problem. If the exogenous environment has changed, further studies should be conducted using a longitudinal study design.

In Tanzania, there is ongoing research on the role of commercial banks in agriculture lending. Because the agricultural sector employs more than 66% of Tanzanians, it will be interesting to compare the microstructure of agro-processing MSME lending by microfinance institutions (as well as other alternative providers of funds to MSMEs, such as finance companies) to that of large commercial banks. Similarly, to improve the credit gap in the agro-

processing sector, future research should also focus on exploring the impact of the available credit guarantee schemes (CGS) on the credit flow to Ap-SMEs, specifically the Private Agricultural Sector Support Fund (PASS), the Agro-processors Credit Guarantee Scheme under SIDO (SIDO/SME CG) and Tanzania Agricultural Development Bank (TADB).

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APPENDICES

Appendix A1: Letter Sent to Expert for Content Validity

UNIVERSITI TUNKU ABDUL RAHMAN

Dear Prof / Dr /Mr. / Ms.

I am currently researching on "The Drivers of Bank Credit Flow to Ap-SMEs in Tanzania: Supply Perspectives". This study is conducted as part of my Ph.D. studies at Universiti Tunku Abdul Rahman, Malaysia. I have managed to prepare an instrument adapted from previous studies to measure the constructs of interest.

The current stage is to pre-test the items to establish whether each item was clearly presented, whether appropriate vocabulary or terms have been used, whether there is no ambiguous question – a question with more than one interpretation, and double questions- two questions to which a respondent is asked to provide a single answer and whether questionnaire items match their operational definition. I would be grateful if you could spend some time to read through the items and comment on the attached questionnaire.

Thank you very much in advance for allocating your valuable time to comment on my questionnaire.

Yours sincerely,

Justus Gratian Mwemezi (Researcher)

Ph.D. Student

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Appendix A2: Pre- Test Questionnaire Sent to Experts for Rating

PART A: General information

1   Respondent's Position in the Bank…………………………………………
2   How long have you been in this role in the bank?………………………….
3   How long have you been in the bank overall? …………………………..........
4   Does your bank have a separate unit responsible for managing SME relations?
    Yes/No………………

PART B: Perception of drivers of bank credit flow to Ap-SMEs from lenders side

Please indicate how relevant the measurement item is to the respective variable.
You can mark rating from 1 to 4.

Operational definition	Questionnaire items	Not relevant	Somewhat relevant	Relevant	Highly relevant
Transaction costs Total direct and indirect costs incurred by banks when extending loans to the SMEs such as time and transport costs, local authority and lawyer fees, meeting facilitation costs, business viability measuring costs, security evaluation costs, and contract breaching costs (case filing costs, debt	1 My bank does not use too much time to reach the credit decision of granting loans to agro-processing SMEs regarding the requested amount.	1	2	3	4
	2 It takes resources to appraise the loan proposal before supplying credit to Ap-SMEs				
	3 In my bank, the administrative costs of agro-processing SMEs loans are low				
	4 My bank incurs many costs to obtain information before granting a loan to Ap-SMEs				
	5 Lending to Ap-SMEs is costly because they are				

collectors hiring costs) and other charges		more difficult to monitor				
	6	Ap-SMEs loans constitute a more significant proportion of my bank's loan loss reserves				
	7	Lending to agro-processing SMEs involves fewer costs because bank funds can be recovered easily when the customer defaults.				
Information asymmetry A lack of information or the mismatch of information by banks on SMEs whereby SMEs have better information than the banks	8	The Ap-SMEs owners I deal with give me truthful information about their character	1	2	3	4
	9	The Ap-SMEs I deal with give me truthful information about their projects				
	10	The information from the Ap-SMEs is often poorly formulated				
	11	Important information from the Ap-SMEs rarely comes at the right time				
	12	Most Ap-SMEs are not completely honest with their financial records				
	13	Most Ap-SMEs are not completely honest with their future business plans				
	14	The information from the agro-processing SMEs is often easy to				

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		understand				
Credit risk management The strategies employed by banks that there is no likelihood that SMEs will fail to meet the obligations as stipulated in the loan agreement due to the SMEs' unwillingness to execute their commitments or their capacity to do so is impaired	15	My bank charges a higher interest rate to agro-processing SME customers than to other SMEs				
	16	In my bank, non-performing loans are lower in agro-processing SMEs than in other SMEs				
	17	My bank's collateral requirements differ between Ap-SMEs and other SMEs				
	18	My bank trusts the agro-processing SMEs' source of repayment.				
	19	My bank trusts the agro-processing SMEs about the continuity of their businesses				
	20	My bank's collateral requirements are different for loans to new Ap-SMEs /start-ups as against loans to existing ones				
	21	My bank is not safe to lend to agro-processing SMEs than to other SMEs				
Institutional lending structure The lending culture of the	22	The lending guidelines make it easy for me to deal with Ap-SMEs				
	23	I adjust my bank's lending guidelines to				

bank, credit policies, lending principles and procedures.	suit the Ap-SMEs' needs				
	24 The targets that are given to me by my bank make me increase the level of loans that I give to agro-processing SMEs				
	25 My bank's lending structures facilitates internal contacts for flexible decision-making about credit to agro-processing SMEs				
	26 Lending structures facilitates internal formal contacts within the institution for flexible decision-making about credit				
	27 My bank's lending policy has set a proportion of loan portfolio in SME loans				
	28 Regulatory requirements are influencing my bank lending to Ap-SMEs				
Financial technology (FinTech) Refers to the application of emerging technologies in the banking industry, including cloud computing technology, big data technology, mobile banking	29 Bank FinTech allows my bank to better communicate with Ap-SMEs				
	30 My bank FinTech increase the number of information channels and sources to get the accuracy of the information for credit decision making to Ap-SMEs				
	31 Bank FinTech supports				

technology and internet technology.	my bank to increase the profitability from Ap-SMEs				
	32 Bank FinTech assists the expansion of credit information sharing other lenders				
	33 Bank FinTech enables me to save the time of appraising the loan proposals from Ap-SMEs				
	34 Bank FinTech helps my bank to extend loans to agro-processing SMEs				
	35 Bank financial technology supports my bank to increase the profitability from agro-processing SMEs				
Credit transparency The timely disclosure, clarity, and accuracy of shared credit information from banks to SMEs concerning credit terms, conditions, assessment procedures and all credit aspects related to the lending process	36 My bank helps the SME during the process of preparing for the loan proposal				
	37 My bank involves the SME in the analysis of the information that the borrower provides				
	38 It is easy for SMEs to obtain sufficient information about my bank's credit service offerings				
	39 SMEs know steps and formalities that their request for a loan must go through once received by my bank				

	40	Information provided by my bank about its credit services is clear and easily understood by the SMEs			
	41	It is difficult for an SME to obtain sufficient information about a bank's credit service offerings.			
	42	My bank provides training about credit procedures and principles to SMEs			
Credit Flow The availability of bank credit	43	My bank predicts high revenue for lending continuously to the agro-processing SMEs			
	44	My bank is willing to lend to agro-processing SMEs if it would help to tackle loan losses.			
	45	My bank is willing to support the continuation of agro-processing SMEs, if it contributes to the bank's performance.			
	46	My bank lends to agro-processing SMEs now to get high profits			
	47	My bank focuses on lending to agro-processing SMEs to expand the base of borrowers			

Appendix A3: Questionnaire for Experts' Comments

PART A: General information

1   Respondent's Position in the Bank …………………………………………
2   How long have you been in this role in the bank? ………………………….
3   How long have you been in the bank overall? ………………………….....
4   Does your bank have a separate unit responsible for managing SME relations?
    Yes/No………………

PART B: Perception of drivers of bank credit flow to Ap-SMEs from lenders side

Please indicate how relevant the measurement item is to the respective variable. You can mark rating from 1 to 4.

Operational definition	Questionnaire items		Comments
Transaction costs Total direct and indirect costs incurred by banks when extending loans to the SMEs such as time and transport costs, local authority and lawyer fees, meeting facilitation costs, business viability measuring costs, security evaluation costs, and contract breaching costs (case filing costs, debt collectors hiring costs) and other charges	1	My bank does not use too much time to reach the credit decision of granting loans to agro-processing SMEs regarding the requested amount.	
	2	It takes resources to appraise the loan proposal before supplying credit to Ap-SMEs	
	3	In my bank, the administrative costs of agro-processing SMEs loans are low	
	4	My bank incurs many costs to obtain information before granting a loan to Ap-SMEs	
	5	Lending to Ap-SMEs is costly because they are more difficult to monitor	
	6	Ap-SMEs loans constitute a more significant proportion of my bank's loan loss reserves	
	7	Lending to agro-processing SMEs involves fewer costs because bank funds can be recovered easily when the customer defaults.	

Information asymmetry A lack of information or the mismatch of information by banks on SMEs whereby SMEs have better information than the banks	8 The Ap-SMEs owners I deal with give me truthful information about their character	
	9 The Ap-SMEs I deal with give me truthful information about their projects	
	10 The information from the Ap-SMEs is often poorly formulated	
	11 Important information from the Ap-SMEs rarely comes at the right time	
	12 Most Ap-SMEs are not completely honest with their financial records	
	13 Most Ap-SMEs are not completely honest with their future business plans	
	14 The information from the agro-processing SMEs is often easy to understand	
Credit risk management The strategies employed by banks that there is no likelihood that SMEs will fail to meet the obligations as stipulated in the loan agreement due to the SMEs' unwillingness to execute their commitments or their capacity 'o do so is impaired	15 My bank charges a higher interest rate to agro-processing SME customers than to other SMEs	
	16 In my bank, non-performing loans are lower in agro-processing SMEs than in other SMEs	
	17 My bank's collateral requirements differ between Ap-SMEs and other SMEs	
	18 My bank trusts the agro-processing SMEs' source of repayment.	
	19 My bank trusts the agro-processing SMEs about the continuity of their businesses	
	20 My bank's collateral requirements are different for loans to new Ap-SMEs /start-ups as against loans to existing ones	
	21 My bank is not safe to lend to agro-processing SMEs than to other SMEs	
Institutional	22 The lending guidelines make it easy for	

lending structure The lending culture of the bank, credit policies, lending principles and procedures.	me to deal with Ap-SMEs	
	23 I adjust my bank's lending guidelines to suit the Ap-SMEs' needs	
	24 The targets that are given to me by my bank make me increase the level of loans that I give to agro-processing SMEs	
	25 My bank's lending structures facilitates internal contacts for flexible decision-making about credit to agro-processing SMEs	
	26 Lending structures facilitates internal formal contacts within the institution for flexible decision-making about credit	
	27 My bank's lending policy has set a proportion of loan portfolio in SME loans	
	28 Regulatory requirements are influencing my bank lending to Ap-SMEs	
Financial technology (FinTech) Refers to the application of emerging technologies in the banking industry, including cloud computing technology, big data technology, mobile banking technology and internet technology.	29 Bank FinTech allows my bank to better communicate with Ap-SMEs	
	30 My bank FinTech increase the number of information channels and sources to get the accuracy of the information for credit decision making to Ap-SMEs	
	31 Bank FinTech supports my bank to increase the profitability from Ap-SMEs	
	32 Bank FinTech assists the expansion of credit information sharing other lenders	
	33 Bank FinTech enables me to save the time of appraising the loan proposals from Ap-SMEs	
	34 Bank FinTech can be used to cover more Ap-SMEs in peripherals	
	35 Bank financial technology supports my bank to increase the profitability from agro-processing SMEs	

Credit transparency	36	My bank helps the SME during the process of preparing for the loan proposal	
	37	My bank involves the SME in the analysis of the information that the borrower provides	
The timely disclosure, clarity, and accuracy of shared credit information from banks to SMEs concerning credit terms, conditions, assessment procedures and all credit aspects related to the lending process	38	It is easy for SMEs to obtain sufficient information about my bank's credit service offerings	
	39	SMEs know steps and formalities that their request for a loan must go through once received by my bank	
	40	Information provided by my bank about its credit services is clear and easily understood by the SMEs	
	41	It is difficult for an SME to obtain sufficient information about a bank's credit service offerings.	
	42	My bank provides training about credit procedures and principles to SMEs	
Credit Flow	43	My bank predicts high revenue for lending continuously to the agro-processing SMEs	
	44	My bank is willing to lend to agro-processing SMEs if it would help to tackle loan losses.	
The availability of bank credit	45	My bank is willing to support the continuation of agro-processing SMEs, if it contributes to the bank's performance.	
	46	My bank lends to agro-processing SMEs now to get high profits	
	47	My bank focuses on lending to agro-processing SMEs to expand the base of borrowers	

Appendix B: Questionnaire for Pilot Study

TITLE: THE DRIVERS OF BANK CREDIT FLOW TO AGRO-PROCESSING SMEs IN TANZANIA: SUPPLY PERSPECTIVES

Dear respondent,

Thank you for your willingness to participate in this main survey. The purpose of the survey is to determine the drivers for the flow of bank credit to agro-processing SMEs from the lender's side only. This is an anonymous and confidential survey. You cannot be identified and the answers you provide will be used for academic research purposes only. Also note that there is no right or wrong answer.

For this survey's purpose, we define agro-processing SMEs as enterprises converting agricultural produce from agriculture to final products with the capital in machinery not exceeding TZS 800 million and with employees from 1 and not exceeding 99. Agro-processing SME loans are therefore loans granted to firms of this nature.

Similarly, this questionnaire is to be filled by credit managers/officers or anyone responsible for administration or credit distribution to Small and Medium Enterprises.

For further information contact the researcher through the contact below.

Mr. Justus G. Mwemezi

Email: jmwemezitz@gmail.com

Mobile: +255753063202

PART A: GENERAL INFORMATION

For each of the below questionnaire items, please **CIRCLE ONLY** one option

1. Kindly indicate your current position in the bank.

   [1] Branch Manager

   [2] Credit Manager

   [3] Credit officer/Credit analyst

   [4] Relationship Manager

2. How long have you been in this role in the bank?

   [1] 0 year – 3 years

   [2] 4 years – 6 years

   [3] 7 years – 10 years

   [4] 11 years and above

3. Does your bank have a separate unit responsible for managing SME relations?

   [1] Yes

   [2] No

4. Does your bank have a specific unit responsible for credits to the agro-processing sector?

   [1] Yes

   [2] No

5. For how long has your bank been operating in Tanzania?

   [1] 0 – 5 years

   [2] 6 -10 years

   [3] 11 – 15 years

   [4] Above 15 years

6. What is the number of branches owned by your bank?

   [1] 0 – 10 branches

   [2] 11 – 20 branches

   [3] 21 – 30 branches

   [4] 31 – 40 branches

[5] 41 – 50 branches

[6] Above 51 branches

PART B: Drivers of bank credit flow to agro-processing SMEs

For each of the statements in the questionnaire items list, please circle ONLY ONE (1) number using the agreement-disagreement scale, which you feel best describes your behavior.

No	Measurement items	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
1.	My bank predicts high revenue for lending continuously to the agro-processing SMEs	1	2	3	4	5
2.	My bank is willing to lend to agro-processing SMEs if it would help to tackle loan loses	1	2	3	4	5
3.	My bank is willing to support the continuation of agro-processing SMEs, if it contributes to the bank's performance.	1	2	3	4	5
4.	My bank lends to agro-processing SMEs at the moment to get high profits	1	2	3	4	5
5.	My bank focuses on lending to agro-processing SMEs to expand the base of borrowers	1	2	3	4	5
6	My bank does not use too much time to reach the credit decision of granting loans to agro-processing SMEs regarding the requested amount.	1	2	3	4	5
7	In my bank, the administrative costs of agro-processing SMEs loans are low	1	2	3	4	5
8	My bank incurs fewer costs to obtain information before granting a loan to agro-processing SMEs	1	2	3	4	5
9	Lending to agro-processing SMEs is not costly because they are easy to monitor.	1	2	3	4	5
10	Lending to agro-processing SMEs involves fewer costs because bank funds can be recovered easily when the customer defaults.	1	2	3	4	5
11	The agro-processing SMEs I deal with give me truthful information about their projects	1	2	3	4	5
12	The information from the agro-	1	2	3	4	5

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	processing SMEs is often well formulated					
13	The information from the agro-processing SMEs is often easy to understand	1	2	3	4	5
14	Important information from the agro-processing SMEs often comes at the right time to my bank	1	2	3	4	5
15	Most agro-processing SMEs are completely honest to my bank with their financial records	1	2	3	4	5
16	Most agro-processing SMEs are completely honest to my bank with their future business plans	1	2	3	4	5
17	In my bank, non-performing loans are lower in agro-processing SMEs than in other SMEs	1	2	3	4	5
18	My bank's collateral requirements are lower in agro-processing SMEs than in other SMEs	1	2	3	4	5
19	My bank trusts the agro-processing SMEs' source of repayment.	1	2	3	4	5
20	My bank trusts the agro-processing SMEs about the continuity of their businesses	1	2	3	4	5
21	My bank is not safe to lend to agro-processing SMEs than to other SMEs	1	2	3	4	5
22	My bank's lending guidelines make it easy for me to deal with agro-processing SMEs	1	2	3	4	5
23	The targets that are given to me by my bank make me increase the level of loans that I give to agro-processing SMEs	1	2	3	4	5
24	My bank's lending structures facilitates internal contacts for flexible decision-making about credit to agro-processing SMEs	1	2	3	4	5
25	My bank's lending policy has set a proportion of loan portfolio in agro-processing SMEs	1	2	3	4	5
26	Regulatory requirements are influencing my bank lending to agro-processing SMEs	1	2	3	4	5
27	The institution lending guidelines provide a realistic and practical	1	2	3	4	5

	framework for assessing agro-processing loans					
28	Financial technology (mobile banking, internet banking, big data technology, cloud computing, etc.) allows my bank to better communicate with agro-processing SMEs	1	2	3	4	5
29	My bank financial technology increases the number of information channels for credit decision making to agro-processing SMEs	1	2	3	4	5
30	My bank financial technology increases the sources to obtain accurate information for credit decision making to agro-processing SMEs	1	2	3	4	5
31	Bank financial technology supports my bank to increase the profitability from agro-processing SMEs	1	2	3	4	5
32	Bank Financial technology assists the expansion of credit information sharing to other lenders	1	2	3	4	5
33	Bank financial technology does not enable me to save the time of assessing the loan proposals from agro-processing SMEs	1	2	3	4	5
34	My bank helps the SMEs during the process of preparing for the loan proposal	1	2	3	4	5
35	SMEs know the formalities their request for a loan has to go through once received by my bank.	1	2	3	4	5
36	The SMEs easily understand the information provided by my bank about its credit services	1	2	3	4	5
37	It is easy for SMEs to obtain sufficient information about my bank's credit service offerings.	1	2	3	4	5
38	My bank often provides training about credit procedures and principles to SMEs	1	2	3	4	5

Appendix C: Main Survey Questionnaire and Informed Consent

QUESTIONAIRRE

TITLE: THE DRIVERS OF BANK CREDIT FLOW TO AGRO-PROCESSING SMEs IN TANZANIA: SUPPLY PERSPECTIVES

INTRODUCTION

You are invited to take part voluntarily in a research study that involves sharing of information about the drivers for the flow of bank credit to agro-processing SMEs from the lender's side only. This is an anonymous and confidential survey. You cannot be identified and the answers you provide will be used for academic research purposes only. Also note that there is no right or wrong answer. For this survey's purpose, we define agro-processing SMEs as enterprises converting agricultural produce from agriculture to final products with the capital in machinery not exceeding TZS 800 million and with employees from 1 and not exceeding 99. Agro-processing SME loans are therefore loans granted to firms of this nature. Similarly, this questionnaire is to be filled by credit managers/officers or anyone responsible for administration or credit distribution to Small and Medium Enterprises. It is important that you read and understand this form. If you participate, you will receive a copy of this form to keep for your records.

RISKS

No risk is involved in participating in this study.

PARTICIPATION IN THE STUDY

Your taking part in this study is entirely voluntary. You may refuse to take part in the study, or you may stop participation in the study at any time, without a penalty or loss of benefits to which you are otherwise entitled. Your participation also may be stopped by the researcher without your consent.

CONFIDENTIALITY

- Your information will be kept confidential by the researcher and staff and will not be made publicly available unless disclosure is required by law.
- Data obtained from this study that does not identify you individually will be published for knowledge purposes.
- By signing this consent form, you authorize the information sharing and data transfer described above.

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Consent:

1. By submitting this form, you hereby authorise and consent to us processing (including disclosing) your personal data and any updates of your information, for the purposes and/or for any other purposes related to the purpose.
2. If you do not consent or subsequently withdraw your consent to the processing and disclosure of your personal data, UTAR will not be able to fulfill our obligations or to contact you or to assist you in respect of the purposes and/or for any other purposes related to the purpose.
3. You may access and update your personal data by writing to us at abdelhak@utar.edu.my

Acknowledgment of Notice

[   ] I have been notified by you and that I hereby understood, consented and agreed per UTAR above notice.

[   ] I disagree, my personal data will not be processed.

For further information contact the researcher through the contact below.

Asso. Prof. Dr.Abdelhak Senadjki

Head of Programme (Postgraduate)

Universiti Tunku Abdul Rahman,
Malaysia.
Phone: (605) 468 8888 ext 1038

Or

Mr. Justus G. Mwemezi

Postgraduate Student (Ph.D.)

Universiti Tunku Abdul Rahman

Email: jmwemezitz@gmail.com

Mobile: +255753063202

Participation Agreement

I hereby agree to participate in completing the following survey forms:

I understand that my participation in this survey is completely voluntary and that I am free to decline to participate, without consequence, at any time prior to or at any point during the activity.

The results of this survey will be used for scholarly purposes and publications.

PART A: GENERAL INFORMATION

For each of the below questionnaire items, please CIRCLE ONLY one option

1. Kindly indicate your current position in the bank.

   [1] Branch Manager

   [2] Credit Manager

   [3] Credit officer/Credit analyst

   [4] Relationship Manager

2. How long have you been in this role in the bank?

   [1] 0 year – 3 years

   [2] 4 years – 6 years

   [3] 7 years – 10 years

   [3] 11 years and above

3. Does your bank have a separate unit responsible for managing SME relations?

   [1] Yes

   [2] No

4. Does your bank have a specific unit responsible for credits to the agro-processing sector?

   [1] Yes

   [2] No

5. For how long has your bank been operating in Tanzania?

   [1] 0 – 5 years

   [2] 6 -10 years

   [3] 11 – 15 years

   [4] Above 15 years

6. What is the number of branches owned by your bank?

[1] 0 – 10 branches

[2] 11 – 20 branches

[3] 21 – 30 branches

[4] 31 – 40 branches

[5] 41 – 50 branches

[6] Above 51 branches

PART B:

For each of the statements in the questionnaire items list, please circle **ONLY ONE** (1) number using the agreement-disagreement scale, which you feel best describes your behavior.

| No	Measurement items	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
1.	My bank predicts high revenue for lending continuously to the agro-processing SMEs	1	2	3	4	5
2.	My bank is willing to lend to agro-processing SMEs if it would help to tackle loan loses	1	2	3	4	5
3.	My bank is willing to support the continuation of agro-processing SMEs, if it contributes to the bank's performance.	1	2	3	4	5
4.	My bank lends to agro-processing SMEs now to get high profits	1	2	3	4	5
5.	My bank focuses on lending to agro-processing SMEs to expand the base of borrowers	1	2	3	4	5

6.	My bank does not use too much time to reach the credit decision of granting loans to agro-processing SMEs regarding the requested amount.	1	2	3	4	5
7.	In my bank, the administrative costs of agro-processing SMEs loans are low.	1	2	3	4	5
8.	My bank incurs lower costs to obtain information before granting a loan to agro-processing SMEs	1	2	3	4	5
9.	Lending to agro-processing SMEs is not costly because they are easy to monitor.	1	2	3	4	5
10.	The information from the agro-processing SMEs is often well formulated	1	2	3	4	5
11.	The information from the agro-processing SMEs is often easy to understand	1	2	3	4	5
12.	Most agro-processing SMEs are completely honest to my bank with their financial records	1	2	3	4	5
13.	Most agro-processing SMEs are completely honest to my bank with their future business plans	1	2	3	4	5
14.	My bank's collateral requirements are low in agro-processing SMEs	1	2	3	4	5
15.	My bank trusts the agro-processing SMEs' source of repayment.	1	2	3	4	5
16.	My bank trusts the agro-processing SMEs about the continuity of their businesses	1	2	3	4	5
17.	My bank is safe to lend to agro-processing SMEs	1	2	3	4	5

18.	My bank's lending guidelines make it easy for me to deal with agro-processing SMEs	1	2	3	4	5
19.	The targets that are given to me by my bank make me increase the level of loans that I give to agro-processing SMEs	1	2	3	4	5
20.	My bank's lending structures facilitates internal contacts for flexible decision-making about credit to agro-processing SMEs	1	2	3	4	5
21.	My bank's lending policy has set a proportion of loan portfolio in agro-processing SMEs	1	2	3	4	5
22.	Regulatory requirements are influencing my bank lending to agro-processing SMEs	1	2	3	4	5
23.	The institution lending guidelines provide a realistic practical framework for assessing agro-processing loans	1	2	3	4	5
24.	Financial technology (mobile banking, internet banking, big data technology, cloud computing, etc.) allows my bank to better communicate with agro-processing SMEs	1	2	3	4	5
25.	My bank financial technology increases the number of information channels for credit decision making to agro-processing SMEs	1	2	3	4	5
26.	My bank financial technology increases the sources to obtain accurate information for credit decision making to agro-processing SMEs	1	2	3	4	5
27.	My bank financial technology helps me to extend loans to agro-processing SMEs	1	2	3	4	5

28.	My bank financial technology assists the expansion of credit information sharing to other lenders	1	2	3	4	5
29.	My bank helps the SMEs during the process of preparing for the loan proposal	1	2	3	4	5
30.	Agro-processing SMEs do not know the formalities their request for a loan has to go through once received by my bank.	1	2	3	4	5
31.	Agro-processing SMEs do not easily understand the information provided by my bank about its credit services	1	2	3	4	5
32.	It is not easy for SMEs to obtain sufficient information about my bank's credit service offerings.	1	2	3	4	5
33.	My bank often provides training about credit procedures and principles to SMEs	1	2	3	4	5

THANK YOU FOR YOUR PARTICIPATION!

Appendix D: Final Measurement Model with a Moderator
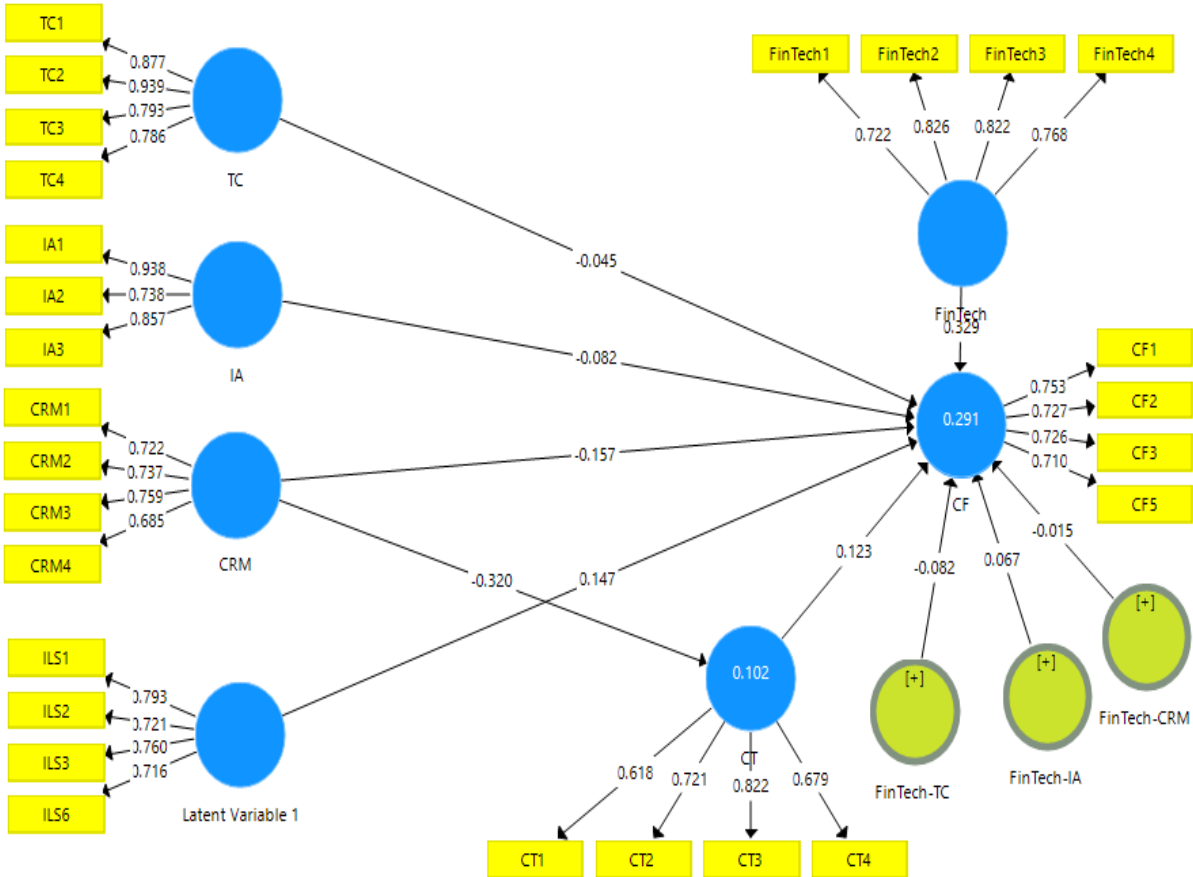
Appendix E: Assessment of Normality

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
CF1	398	1	5	3.83	.926	-.898	.122	.789	.244
CF2	397	1	5	3.94	.783	-1.171	.122	2.696	.244
CF3	399	1	5	4.08	.814	-.981	.122	1.485	.244
CF4	398	1	5	3.45	1.114	-.477	.122	-.452	.244
CF5	399	1	5	3.76	1.028	-.856	.122	.375	.244
TC1	399	2	5	4.26	1.013	-.753	.122	-1.157	.244
TC2	398	2	5	3.89	.727	.124	.122	-1.005	.244
TC3	399	1	5	3.90	.793	-.215	.122	-.425	.244
TC4	399	2	5	3.86	.815	-.213	.122	-.596	.244
IA1	399	3	5	4.25	.880	-.506	.122	-1.523	.244
IA2	399	3	5	3.87	.668	.149	.122	-.772	.244
IA3	399	2	5	4.14	.940	-.625	.122	-.863	.244
IA4	398	3	5	3.89	.691	.142	.122	-.902	.244
CRM1	399	3	5	3.88	.663	.140	.122	-.739	.244
CRM2	399	3	5	3.79	.637	.210	.122	-.641	.244
CRM3	399	3	5	3.82	.657	.201	.122	-.725	.244
CRM4	399	3	5	3.96	.672	.041	.122	-.774	.244
ILS1	398	1	5	3.34	1.050	-.430	.122	-.377	.244
ILS2	399	1	5	3.15	1.118	-.175	.122	-.687	.244
ILS3	398	1	5	3.27	1.065	-.364	.122	-.445	.244
ILS4	399	1	5	3.16	1.161	-.345	.122	-.831	.244
ILS5	399	1	5	3.30	1.109	-.482	.122	-.455	.244
ILS6	399	1	5	3.53	1.031	-.616	.122	-.157	.244
FinTech 1	399	1	5	3.67	1.054	-.820	.122	.271	.244
FinTech 2	399	1	5	3.70	1.024	-.815	.122	.327	.244
FinTech 3	399	1	5	3.70	.967	-.893	.122	.618	.244
FinTech 4	399	1	5	3.61	.978	-.858	.122	.492	.244
FinTecH 7	399	1	5	3.82	.920	-1.229	.122	1.965	.244
CT1	399	1	5	3.72	1.328	-.649	.122	-.674	.244
CT2	398	1	5	3.29	1.072	-.528	.122	-.416	.244
CT3	399	1	5	3.43	.992	-.474	.122	-.170	.244
CT4	398	1	5	3.68	.928	-.698	.122	.328	.244
CT5	399	1	5	3.58	.974	-.495	.122	-.234	.244
Valid N (listwis)	391								

Appendix F: Ethical Approval Letter from UTAR

UNIVERSITI TUNKU ABDUL RAHMAN

Wholly Owned by UTAR Education Foundation (Company No. 578227-M)

Re: U/SERC/121/2021

14 June 2021

Dr Abdelhak Senadjki
Department of Economics
Faculty of Business and Finance
Universiti Tunku Abdul Rahman
Jalan Universiti, Bandar Baru Barat
31900 Kampar, Perak

Dear Dr Abdelhak,

Ethical Approval For Research Project/Protocol

We refer to your application for ethical approval for your research project (PhD student's project) and are pleased to inform you that your application has been approved under Expedited Review.

The details of your research project are as follows:

Research Title	The Drivers of Bank Credit Flow to Agro-processing SMEs in Tanzania: Supply Perspectives
Investigator(s)	Dr Abdelhak Senadjki Dr Lau Lin Sea Justus Gratian Mwemezi (UTAR Postgraduate Student)
Research Area	Social Sciences
Research Location	Banking institutions in Tanzania
No of Participants	225 banking institutions
Research Costs	The Institute of Finance Management (Tanzania)
Approval Validity	14 June 2021 - 13 June 2022

The conduct of this research is subject to the following:

(1) The participants' informed consent be obtained prior to the commencement of the research,

(2) Confidentiality of participants' personal data must be maintained; and

(3) Compliance with procedures set out in related policies of UTAR such as the UTAR Research Ethics and Code of Conduct, Code of Practice for Research Involving Humans and other related policies/guidelines.

(4) Written consent be obtained from the institution(s)/company(ies) in which the physical or/and online survey will be carried out, prior to the commencement of the research.

Kampar Campus : Jalan Universiti, Bandar Barat, 31900 Kampar, Perak Darul Ridzuan, Malaysia
Tel: (605) 468 8888 **Fax:** (605) 466 1313
Sungai Long Campus : Jalan Sungai Long, Bandar Sungai Long, Cheras, 43000 Kajang, Selangor Darul Ehsan, Malaysia
Tel: (603) 9086 0288 **Fax:** (603) 9019 8868
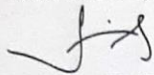**Website:** www.utar.edu.my

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Should you collect personal data of participants in your study, please have the participants sign the attached Personal Data Protection Statement for your records.

The University wishes you all the best in your research.

Thank you.

Yours sincerely,

Professor Ts Dr Faidz bin Abd Rahman
Chairman
UTAR Scientific and Ethical Review Committee

c.c   Dean, Faculty of Business and Finance
       Director, Institute of Postgraduate Studies and Research

Appendix G: Introduction Letter from IFM

THE UNITED REPUBLIC OF TANZANIA
CHUO CHA USIMAMIZI WA FEDHA
THE INSTITUTE OF FINANCE MANAGEMENT
(ESTABLISHED UNDER THE ACT No.3 OF 1972)

Our Ref No: IFM/PF.941   6th July, 2021

To whom it may concern

RE: <u>INTRODUCTION LETTER FOR MR. JUSTUS GRATIAN MWEMEZI</u>

This is to certify that the above named person is an employee of the Institute of Finance Management, employed on permanent and pensionable terms as Assistant Lecturer. Currently he is on research study to accomplish his PhD studies. The aim of his study is to collect data on Drivers of Bank Credit. Please assist him with data collection to accomplish his study.

Thank you for your good cooperation.

Kizzy A. Masoli
For: RECTOR

All correspondence should be addressed to the Rector
5 Shaaban Robert Street, Post Code: 11101, P. O. Box 3918, Dar es Salaam – Tanzania,
Tel: +255222112931-4, Fax: +255222112935, Email: rector@ifm.ac.tz, Website: www.ifm.ac.tz

Appendix H: Sample Acceptance Letter to Conduct Research

CRDB BANK PLC
Head Office: Azikiwe Street,
P.O. Box 268, Dar es Salaam, Tanzania.
Tel: +255 (0)22 211 7441-7
Fax: +255 (0)22 211 6714
Email: info@crdbbank.com
Website: www.crdbbank.co.tz

The bank that listens

09th August, 2021

Ref. No. CRDB/4/10/Vol.12/23

Mr. Justus Mwemezi
P.O.BOX 3918,
Institute of Finance Management [IFM]
DSM - Tanzania

Dear   Mr. Justus,

RE: THE DRIVERS OF BANK CREDIT FLOW TO AGRO-PROCESSING SMEs IN TANZANIA: SURPLPLY PERSPECTIVES

The above subject matter refers. Please be informed that your request for Data Collection on **"the drivers of bank credit flow to agro-processing SMEs in Tanzania: supply perspectives"** has been accepted.
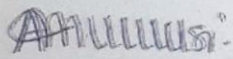
This permission is granted on the condition that the whole process of data collection which includes Questionnaire, Meeting and Interviewing some of our staff will not interfere our daily operations and it shall be conducted on voluntary.

Please be further informed that the data to be obtained shall solely be used for academic purpose and shall not be diverted to any other use without prior consent of CRDB Bank Plc.

Please contact Branch Manager – Holland, Azikiwe, Kibada, and Mlimani City Branch

Thank you.

Yours sincerely,
CRDB BANK PLC

Agnes M. Robert
For: **MANAGING DIRECTOR**

c.c: Branch Manager – Mbagala Branch
c.c: Branch Manager – Azikiwe Branch
c.c: Branch Manager – Kibada Branch
c.c: Branch Manager – M'City Branch

THE BIODATA OF THE CANDIDATE

Justus Gratian Mwemezi is a lecturer at the faculty of accounting, banking and finance, the Institute of Finance Management (IFM), Tanzania. Currently, he is a Ph.D. student at Universiti Tunku Abdul Rahman (UTAR), Malaysia conducting research titled: "The drivers of bank credit flow to agro-processing SMEs in Tanzania: The Supply Perspectives." He received his Master of Economics and Finance for Development at Bradford University, UK, in 2013 and his bachelor's degree in Banking and Finance in 2008 from the Institute of Finance Management (IFM), Tanzania. He has published and has vast experience in teaching and conducting research, particularly in banking, finance, and development economics.

Justus has written and published two journal articles during his PhD that are associated with his PhD study.

1. Augmenting Bank Credit Flow to Agro-Processing SMEs through Financial Technology (FinTech): Evidence from Tanzania - Published

2. Enablers of Bank Credit Flow to Agro-Processing SMEs: The Role of Bank Credit Transparency in Tanzania - Accepted

In addition, as can be seen below, Justus has published a journal article that is not directly linked to the field of his PhD research.

1. Lotto, J., & Mwemezi, J. (2015). Assessing the determinants of bank liquidity: Experience from Tanzanian banks.