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Bachelor Thesis

Supply Chain Finance in Mongolia

Case study

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Statutory Declaration

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I hereby affirm in lieu of an oath that I provided the submitted bachelor thesis

SUPPLY CHAIN FINANCE IN MONGOLIA

I did not use any sources other than those stated. In case that the work is additionally submitted on a data medium, I declare that the written and the electronic form are completely identical. The work was not submitted in the same or similar form to any examination authority.

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Acknowledgment

First and foremost, I would like to express my gratitude – to the German Mongolian Institute for Resources and Technology, and all supervisors, professors, and lecturers who assisted me in this process and provided me with knowledge over the past five years.

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Finally, I'd like to express my profound thanks to my family and friends for allowing me to be here and for always supporting and being there for me. I'll never know where I would have gone if it hadn't been for them.

Sincerely grateful,

Khongorzul Bayarsaikhan

Abstract

Previously, supply chain research focused on integrating products/services and information flows while ignoring financial considerations. In today's highly competitive and fast-changing corporate climate, where the organization of all resources is important, creating an effective supply chain is essential and its finance is getting more crucial.

This thesis work aims to access the current state of SCF in Mongolia and identify the significant issues that need to be addressed in order to improve access to finance. Also, one of the landlocked countries similar to Mongolia has been chosen as an international case study to examine the country's economic development and financial issues.

Last but not least, digital trade is becoming more popular. E-commerce platforms are rapidly growing and giving integrated solutions that make it easier for businesses to acquire. This paper was written with the help of a startup firm that is developing SCF platform, highlighting the importance of SCF use and implementation.

Abbreviation

SC	Supply chain
SCF	Supply chain finance
SME	Small and Medium Enterprise
GDP	Gross Domestic Product
PO	Purchase Order
RF	Reverse Factoring
DD	Dynamic Discounting
IF	Inventory Financing
POF	Purchase order Financing
OECD	Organization for Economic Cooperation and Development
ROI	Return on Investment
BOM	Bill of Materials
NBFI	Non-Banking Financial Institutions
MFOs	Microfinance Organizations

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1. Introduction

1.1 Problem statement

The transfer of financial resources in supply chains is becoming increasingly prominent (1). Creating an effective supply chain is critical in today's highly competitive and fast-changing corporate climate, where the organization of all resources is critical. Earlier supply chain research has concentrated on harmonizing product/services and information flows while ignoring financial consideration (2). Supply chain finance (SCF) became increasingly significant after the financial crisis of September 2008, when the bank and financial institution loans were drastically reduced. As businesses sought to maintain liquidity and their competitive edge, demand for supply chain financing surged (3). Alternative financing, especially trade credit from suppliers, became more difficult to come by. An extension trade credit, on the other hand, is subject to bargaining strength, with weaker suppliers being obliged to extend the payment period or forcibly delay repayment (4). This can put the supply chain at risk or cause interruption (5)

MSMEs and enterprises benefit from SCF's working capital efficiency and cash conversion cycle. Long-term agreements and cross-selling products are also possible. SCF encompasses a wide range of goods that can be divided into two categories: receivables-based SCF products and loan-based SCF products (6). The ultimate goal is to better align financial flows with product and information movements within the supply chain, resulting in better cash flow management.

1.2 Research Questions

The main objective of the study is to evaluate the current state of development of SCF in Mongolia and the economic situation related to the loans from banks, NBFI, and other financial institutions.

Based on the information gathered and the challenges faced following research questions were developed:

1. What is the international experience of SCF, especially similar country to Mongolia?
2. What is the current financial structure of Mongolia and is there any opportunity to develop SCF?
3. What are the financial and social benefits of SCF?

1.3 Basic concepts and definitions of SCF

1.3.1 Supply Chain

A supply chain involves of all parties involved in fulfilling a client request, whether directly or indirectly. Not only the producer and suppliers are part of the supply chain, but so are transporters, warehouses, retailers, and even customers (7). Inside each organization, such as a manufacturing, the supply chain covers all actions involved in receiving and fulfilling a client. These functions include new product development, marketing, operations, distribution, financing, and customer service, to name a few. The flow of information, products, and cash between phases of a supply chain are dynamic. The customer is an important component of every supply chain. The company's constitutional goal is to provide for consumer wants while also making money. The following stages can be found in a traditional supply chain:

- Customers
- Retailers
- Wholesalers/distributors
- Manufacturers
- Component/raw material suppliers

An Objective of every supply chain should be to maximize the overall value generated. The value (also known as supply chain surplus) a supply chain generates is the difference between the value of the final product to the customer and the costs the entire supply chain incurs in filling the customer's request.

Supply chain surplus = *Customer value* – *Supply chain cost* (7)

1.3.2 Supply Chain Finance

SCF is a large and growing industry. Supply chain management should also bear in mind cash flows as well as the implications of the financial side of business activities (1). The physical supply chain and the financial supply chain are two types of business activity that each organization can engage in (8). The physical SC is the flow of goods and services toward the end customer. The financial SC, on the other hand, is the flow of money from the client to the supplier. The management of the working capital and financial flows is at the heart of the SCF, but so is the management of relevant information across the SC, as well as the documents and data that support these flows, such as POs, invoices, and payment approval processes. Financial flows contrast with physical flows and the C2C cycle, as shown in figure 1.

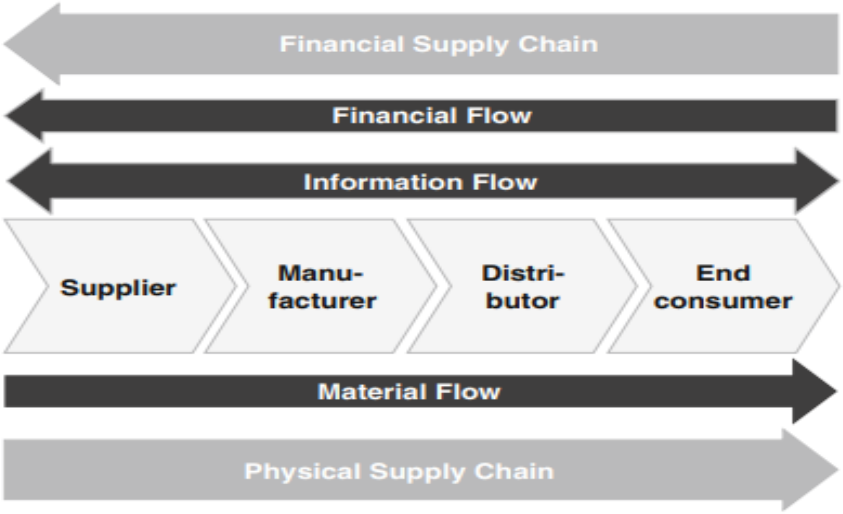

Figure 1 The physical and financial supply chain (9)

As a result, optimizing a company's SCF is comparable to optimizing working capital. In summary, the following key aspects characterize SCF solutions:

- Dematerialization and automation – Eliminating paper and automating processes are essential for accelerating financial and data flows and delivering timely solutions
- Transparency – Automation assimilates a multitude of information by allowing internal and external sources to communicate data, resulting in transparency. As more information becomes available, the risk is mitigated due to improved shared awareness of SC events. Better forecasting and transparency increase certainty, hence the risk is mitigated.
- Predictability – Whereas paper-based processes make it difficult to predict outcomes. Automation makes it easier by allowing access to a variety of data sources.
- Control – control comes from the factors listed above: transparency and predictability are required to identify exceptions and confirm activities, as well as proper control systems and results that meet both internal and external standards.
- Collaboration – The objective of inter-company optimization is to foster coordination across procurement, logistics, finance, and treasury departments, as well as to develop trust-based win-win situations that consider the end-to-end SC and solid trading relationships. Within an SC, collaboration promotes enterprises to connect with internal and external partners.

SCF alludes to the procedures and hones utilized by banks and other money-related teach to oversee the capital contributed to the supply chain and decrease the chance for the parties included. Each financial invention in the SC is driven by an event or 'trigger' in the physical supply chain. SCF is commonly used in open account trading, in which products are sent and delivered before payment is due. In conjunction with all the fundamental reports, the merchandise is dispatched specifically to the merchant who has concurred to pay the receipt on a specified date. In terms of cash stream and taking a toll, this is often the most excellent elective for the merchant.

In terms of cash stream and fetched, usually the finest elective for the merchant. The exporter acknowledges the potential fetched, critical chance, and the plausibility of non-payment for an assortment of reasons – a few of which might not indeed be within the exporter's control. Exporters can utilize one or more satisfactory exchange financing arrangements to constrain the chance of plausibl e non-payment through open account commerce. SCF refers to more recently established financing and risk mitigation measures that are significantly more likely to be used in open account trades where the buyer and seller have already done business together (8)

1.3.3 Timing-based classification of SCF

From several viewpoints, supply chain finance solutions can be classified in terms of the timing of the trigger event, the focal point of credit risk, collateral availability, and financed balance sheet aspects (10). SCF instruments can be divided into three groups based on the timing of trigger events, as shown in figure 2.

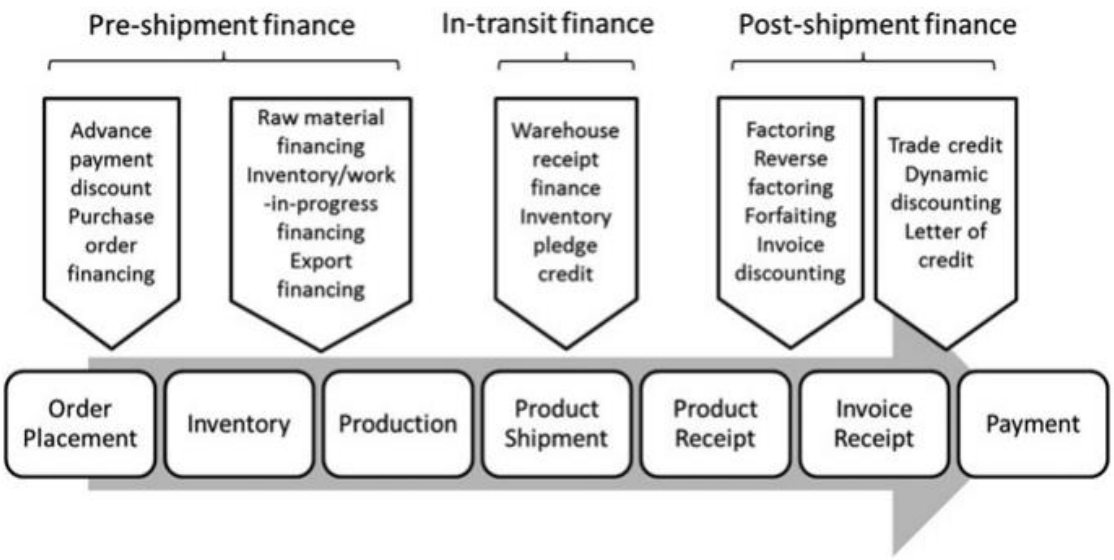

Figure 2 Timing-based classification of supply chain finance (10)

Pre-shipment finance allows a supplier to acquire funding from a financier for working capital needs to prior product delivery, based on the buyer's purchase order. The credit risk is quite high because the collateral for pre-shipment finance is a PO rather than an invoice; thus, the interest rate for providing liquidity to the suppliers is normally high, though it could be reduced in light of a well-established buyer's creditworthiness.

In-transit finance is when a monetary institution gives a borrower an advance based on an item or stock (of an indicated amount and quality) that's right now being transported or snared in other logistical methods. Because the product deposit in shipping serves as portable collateral, the credit risk associated with in-transit finance is lower than in pre-shipment finance; as a result, the loan's interest rate is lower.

Post-shipment finance sets up a line of credit for a borrower based on (ordinarily discounted) accounts receivables from a lender. The receipt, shipping report, or charge is drawn on the client and serves as collateral in this situation. As a result, credit risk is reduced, and the financing rate is attractive.

1.3.4 Tangible benefits of SCF to each party involved

Seller /Exporter/ - SCF offers a small supplier a variety of choices for obtaining reasonable financing, perhaps shortening the time it takes to collect payment and thus greatly boosting the company's cash flow, which can be put to better use. Also, it eliminates a company's outstanding debts from its balance sheets. Allows them to delegate the payment risk to another party.

Buyer /Importer/ - SCF enables a buyer to take advantage of their frequently superior credit rating to secure better payment terms, and it allows an importer to ensure the financial health of their supplier and service providers who support a specific SC, ensuring continued operations, and timely production, and sales activity. Importers can also persuade banks and financing institutions to take on the risk on their behalf.

Banks – SCF offers a variety of potential solutions to individuals interested in international trade, each of which was designed to suit different markets and client segments in the past.

1.3.5 Characteristics of SCF

While the research fields of logistics, SCM, collaboration, and finance have all been explored throughout the years, SCF is a newer discipline. The SCF strategy for a firm and its tier-one supply chain environment, including potential service providers, is illustrated in figure 3. As shown at the bottom of the figure, collaboration should be extended to include tier two SC participants, and if necessary, the entire SC. An organization's financial and operational activities are inextricably linked and interconnected. Collaborating in the upper half of the arrow ("financial side") or the bottom half ("operational side") thus reflects a sub-optimization, possibly obviating benefits that can be realized through a comprehensive collaboration approach. As a result, although collaboration is limited to financial functions, institutions, and SC instruments, it should not be considered as a stand-alone idea but rather as part of a bigger system.

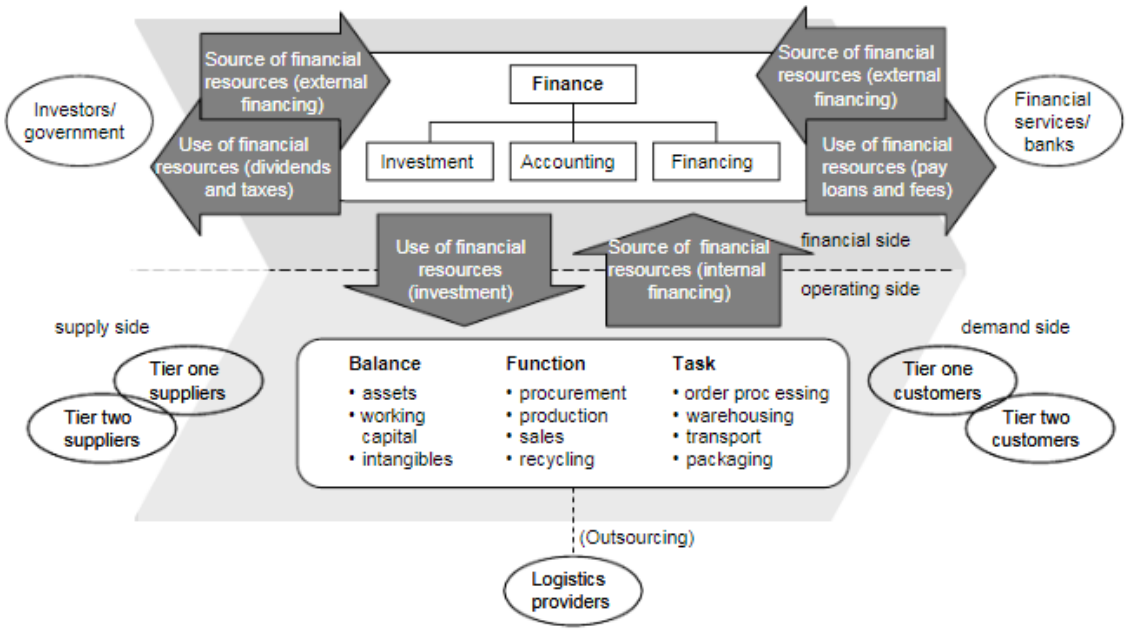

Figure 3 The Supply chain finance approach (10)

A financial services or logistical services provider is not a loyal member of an SC, as can also be observed in the figure. He only gets involved by assisting one of the supply chain's participants. SCF thus encompasses more than just collaborations between two or more organizations' finance departments. Instead, SCF is distinguished by an emphasis on financial concerns or the use of financial instruments, which can apply to any department of the organization.

A working definition of Supply Chain Finance can be phrased as follows, based on the characterization offered here: Supply Chain Finance is a method for two or more organizations in a supply chain, including external service providers, to jointly create value by planning, steering, and controlling the flow of financial resources on an inter-organizational level. It is located at the intersection of logistics, supply chain management, collaboration, and finance (1). The collaboration partners are committed to sharing relational resources, capabilities, information, and risk on a medium to long-term contractual basis while maintaining their legal and economic independence.

1.3.6 Different SCF instruments

The time of the trigger event, the focus of credit risk, collateral availability, and financed balance sheet features are all approaches to categorize supply chain finance solutions (11). Parameters like the amount of available financing have a clear impact on single-scheme adoption, but they are less likely to have a significant impact when considering numerous schemes at the same time (12).

In this area, the supply chain finance instruments which are the most common and relevant to the SCF are surveyed as often as possible employed in practice. These instruments can be recognized by the timing of funding, collateral, recipient, and credit ensure supplier.

Reverse factoring (RF)

A reputed buyer initiates a funding program to provide a guarantee for the transfer of a supplier's accounts receivable to a financial institution. RF allows SME suppliers to acquire financing at a lower interest rate since they are backed by a credible buyer's consolidated invoice. Factoring is more common in developed economies because suppliers often have stronger credit ratings.

Dynamic discounting (DD)

DD is based on trade credit, and it entails a steady reduction in the wholesale price, as opposed to a preset discount rate for a set number of days followed by no discount. After an early payment period set in a trade credit contract, the buyer might use this SCF instrument to get a little reduced discount rate.

Inventory Financing (IF)

IF is a closely comparable type of financing in which a financial institution lends money to a borrower in exchange for secured inventory as security. Working capital requirements for capacity expansion, equipment replacement, or a material supply can all be met with this type of financing. Pledged inventory can be used as collateral to get a loan when other types of corporate assets have already been leveraged.

Purchase order Financing (POF)

POF is a scheme in which a financial institution funds and SME supplier before product delivery based on a credible buyer's (discounted) purchase order. Interest rates for this sort of financing are determined by the supplier's credit rating in the absence of a guarantee from the customer. When a reputable buyer secures a POF loan. The supplier's financing rate is determined by the buyer's creditworthiness; this is known as buyer-backed POF. This variation allows an SME supplier to contract for a greater order quantity because the buyer's credit rating allows a bank to provide external funding.

In this scheme, the letter of credit will be useful, which is a letter from a bank to a provider ensuring that a buyer's installment takes after, in an indicated amount and on a certain date, upon the delivery of the certain documents. A letter of credit may be transferable, meaning that the recipient (supply) can delegate the right to draw on the credit to another entity upon mutual consent (13).

1.3.7 SCF Risks

From the conclusion of a contract or the start of production to the after-clearance process of a transaction, there are various trade-related risks a company is exposed to. These can be divided into four main supply chain risk categories. As shown in Figure 4, these include country risks, exchange risks, transportation risks, and commercial risks. Two scenarios are differentiated:

- The risk can be a constraint to the implementation of an SCF solution.
- Because the solution is a risk mitigation lever, risk can be an extra (favorable) reason to employ a SCF model.

Figure 4 SCF Risks (9)

Country risks

International cross-border trading is characterized by country risks. Economic risks, political risks, and financial risks can all be identified. The legal side of poor or missing invoice enforcement is likely to have the most influence on commerce. Because this risk is difficult to eliminate, an SCF solution is unlikely to reduce a transaction's country risk. However, because a SCF solution requires a steady and trustworthy trading relationship, a high-risk environment is a barrier to implementation.

Exchange risks

When a payment is received or a purchase price is paid in a currency different than the one in which a party ordinarily accounts, exchange risk exists. The inherent risk is the chance of the exchange rate deteriorating.

Commercial risks

The commercial actions of a company cause these types of risks. They account for the possibility that one of the parties (supplier/buyer) in a trade transaction would fail to meet their obligations.

Transportation risks

These dangers include the likelihood of cargo damage, loss, or theft while it is being stored or transported. Transportation risks often affect the person who owns the products, which can be the importer, exporter, or a third party, depending on delivery terms. Insurance is a classic method of reducing transportation risk. A transportation risk manager offers specific information on a good's physical movements and shipping status to SCF parties (the focus firm and its suppliers/buyers). As a result, transportation hazards can be reduced, and triggers for SCF solutions can be found.

Furthermore, transportation risk is influenced by fuel prices. When the price of fuel rises, transporters must raise their prices or risk losing money (14). Fuel price increases influence the entire industry because if it costs more for the freight carrier to move products, the shipper gets paid more to compensate for the higher costs.

1.3.8 Value chain

The value chain encompasses the whole collection of actions carried out by firms and people to transport a product from conception through end-use and beyond. Design, production, marketing, distribution, and customer service are all included in this category. A value chain's activities can be contained inside a single firm or spread across several. Value chain activities can create commodities or services, and they can be concentrated in one site or dispersed across a larger area.

"International production, trade, and investments are increasingly organized with so-called 'global value chains (GVCs) where the different stages of the production process are located across different countries. Global value chains have become a dominant feature of world trade, encompassing eloping, emerging, and developed economies. The whole process of producing goods, from raw materials to finished products, is increasingly carried out wherever the necessary skills and materials are available at competitive cost and quality. Similarly, trade in services is essential for the efficient functioning of GVCs, not only because services link activities across countries but also because they help companies to increase the value of their products" (15).

2 International experience of SCF

2.1 SCF in Kazakhstan

Kazakhstan has been successfully building its market economy since gaining independence in 1991 (16). Private property rights have been entrenched in the constitution, and the development of small businesses has been declared a priority for economic policy. Kazakhstan was able to build the oil and gas and mining industries thanks to its abundant mineral resources. This was accomplished by privatizing significant industrial businesses on a massive scale and attracting international investment. Kazakhstan is an oil-based economy, with more than 3% of global oil reserves. From 1 million barrels per day in 1993 to 1.7 million barrels per day in 2016, the country boosted crude oil and gas condensate output, with oil exports exceeding 70 million tons (17).

There are 12 SMEs per 1,000 citizens in Kazakhstan. This number is comparable to the Russian Federation. However, developed countries on average have 30 SMEs per 1,000 citizens (18). In Kazakhstan, banks remain the primary source of funding for SMEs. SMEs, on the other hand, are the most common bank borrowers, accounting for more than 80% of their business loan portfolio (19). This is due in part to large enterprises' capacity to access equity and debt financing in both foreign and domestic markets, which allows them to obtain capital at a lower cost than local banks.

2.2 The financial situation

Since 2014, Kazakhstan has seen an increase in lending to SMEs. The SME loan portfolio has expanded by 73.7 percent in the last three years, while fresh lending to SMEs has climbed by 65.5 percent. In this regard, the proportion of loans to SMEs in total commercial loans increased to 33.6 percent, with new loans increasing by 25.7 percent (16). The European Bank for Reconstruction and Development (EBRD) claims that there is a strong link between a company's size and its capacity to obtain bank loans. As a result, SMEs, which account for the vast majority of businesses in both emerging and developed markets, are more likely to experience a loan shortfall. Small businesses typically lack sufficient collateral for lenders and are unable to demonstrate the appropriate level of openness in their operations.

Kazakhstan's SMEs rely heavily on the banking sector to meet their funding needs. Microfinance, on the other hand, is an alternative source of funding that is growing increasingly important in the country. As of January 2019, 157 microfinance organizations (MFOs) were registered in Kazakhstan (16). One of the reasons for MFOs' rapid expansion is that their regulations are less stringent than those governing commercial banks. MFOs that do not solicit deposits from the general public, for example, do not require licensure. Microfinance firms in Kazakhstan primarily serve non-bankable micro- and small companies, as well as retail borrowers. Leasing has the largest market and is steadily growing among non-banking types of financing. Since 2010, leasing and renting have increased by 2.8 times (20).

SMEs and entrepreneurs, particularly in the early phases of their development, require local access to money through equity financing, microfinance, and local financial institutions such as credit cooperatives. Credit cooperatives and microcredit institutions are important local players with the ability to offer financing to businesses, and they should have ties to local banks and institutions. In some sectors, such as agriculture, Kazakhstan has credit cooperatives, but their financial influence is modest when compared to bank financing and government-sponsored initiatives.

2.3 Barriers to SMEs finance

In the case of freshly founded enterprises, SMEs frequently have little or no collateral to secure the loan. Local banks in Kazakhstan have increased collateral requirements for SMEs, particularly for newly founded enterprises, due to rising loan provisioning requirements. The banking sector's inadequate reach remains a barrier, particularly for SMEs, who report having more difficulties obtaining loans from banks than major corporations. Larger commercial clients are preferred by banks since they are more profitable and can provide greater guarantees.

When it comes to commercial bank financing for farmers, there are various obstacles to overcome:

- Long commutes for rural farmers and SMEs to their nearest bank branch, as well as repeated trips to gather information, sign paperwork, and go through the general loan approval process, are common. The lack of a regional and local network of institutions, such as extension centers or local financial agencies, also impedes the transfer of information and expertise about financial instruments and offerings.
- Banks are also affected by high transaction costs, as they must spend more on marketing and sales to reach their target customers. As a result, many banks

choose to concentrate their limited resources on cities and larger businesses that need larger loans. In comparison to larger companies, SMEs and individual farmers face disproportionately high transaction costs when seeking funding.

- Agribusiness is a risky industry since outputs are very changeable due to weather, seasonal swings, and volatile commodity prices. As a result, risk default lowers investment levels: deliquescent loans are substantially greater in agriculture than in other industries.
- Because the agricultural sector has a low return on investment (ROI), private banks do not consider it as appealing as other industrial sectors in the economy. The low agricultural productivity in Kazakhstan exacerbates the low agribusiness ROI (16).

The lack of incentives for banks to lend to SMEs is the last but not least factor. Banks are currently in a scenario where they have sufficient cash, but post-financial-crisis regulation regarding provisioning is much stricter. Working with SMEs has become too costly for banks.

2.4 SME Participation in SC

Kazakhstan's SMEs mostly target the domestic market. As a result, they are extremely reliant on the local economy and population's income. Large businesses use a lot of imported high-tech services and goods. Medium-sized businesses make up a minor percentage of the economy. As a result, SMEs concentrate mostly on government contracts and retail sales. Limited access to capital prevents SMEs from investing in technological growth and competing in foreign markets.

Imports are well-represented in SME participation in international trade operations, whereas exports are underrepresented. SME exports make up around a fifth of total exports ($6 billion in 2016) and are heavily reliant on total export volume (16).

SME exports are primarily concentrated in oil and grain producing countries because SMEs serve as commodity intermediaries. SMEs, on the other hand, account for over 60% of all items imported. SMEs, on the other hand, mostly import completed goods for internal consumption and a small number of intermediate items for further manufacturing and sale of finished goods. One opportunity for local businesses would be to join global supply chains aimed at the Russian Federation and the People's Republic of China's neighboring markets, not only in terms of logistics and raw material supply but also in terms of establishing an export-oriented manufacturing base in Kazakhstan. Due to market inefficiencies, however, forging such ties in poor nations might take a long period.

3 SCF in Mongolia

3.1 Current economic situation in Mongolia

Mongolia switched to a market economy in 1990, and after three years of double-digit development in early 2010, it became one of the world's fastest-growing economies. The cashmere, tourist, fruit, and berry value chains have the ability to grow even more. The importance of key factors in the development of SMEs in Mongolia, as well as barriers to their growth, are examined. There are no centralized databases on SMEs, and data collection is handled by several entities. As a result, data on SMEs is unreliable and fragmented.

As a result, it is difficult to offer a comprehensive picture of SMEs and formulate solid policies in their favor based on trustworthy, consistent analysis and data. Due to Mongolia's underdeveloped financial sectors, insufficient government assistance, and lack of a regulatory framework, financial institutions only offer a limited number of financial products. Mongolia's economy grew rapidly between 2010 and 2014 as a result of a massive mining and infrastructural developments. Mining and quarrying are the most important driver of economic growth, followed by wholesale and retail, agriculture and manufacturing.

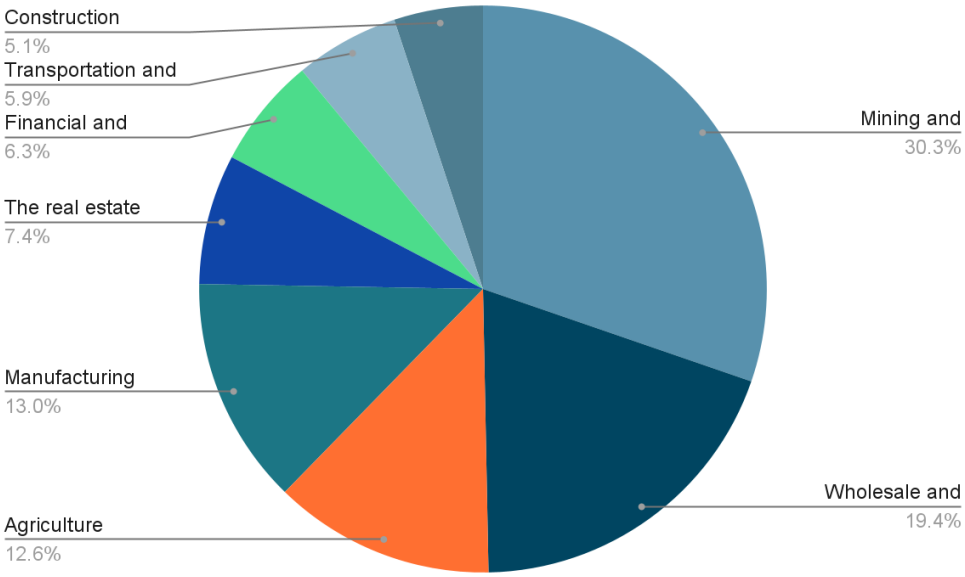

Figure 5 GDP Breakdown by Sectors

The main driver of economic growth is mining and quarrying (30.3% of GDP as of 2017), while the second-largest sector is wholesale and retail (19.4% of GDP as of 2017), followed by agriculture (12.6% of GDP as of 2017) and manufacturing (13.0% of GDP as of 2017). The real estate sector makes up 7.4% of GDP, financial and insurance activities 6.3%, transportation and storage 5.9%, and construction 5.1% as of 2017 in figure 5. Mongolia has 78,585 legal entities operating, according to the statistics from the General Taxation Department. Ulaanbaatar is home to about 70% of businesses, with SMEs accounting for roughly 86% or 67,612.

3.2 The financial infrastructure of Mongolia

Mongolia is one of the world's least populated countries, making traditional banking difficult and expensive outside major settlements. Mongolia's financial industry is dominated by banks, which account for 96% of the total. At current prices, financial and insurance operations (MNT 1.67 trillion) accounted for 5.2%% (MNT 32.2 trillion) of GDP in 2018. In the last three years, banks have issued between MNT2.01 trillion and MNT3 trillion in outstanding loans to SMEs, accounting for around 17 percent to 19 percent of overall loans (21). As a result, the number of SME loans hasn't increased significantly in the last three years. Also, the average interest rate was between 17.9% and 19.9%. Individual loans given in various sectors for commercial purposes are depicted in figure 6. Individuals took out the most loans in the wholesale and retail sector, followed by others.

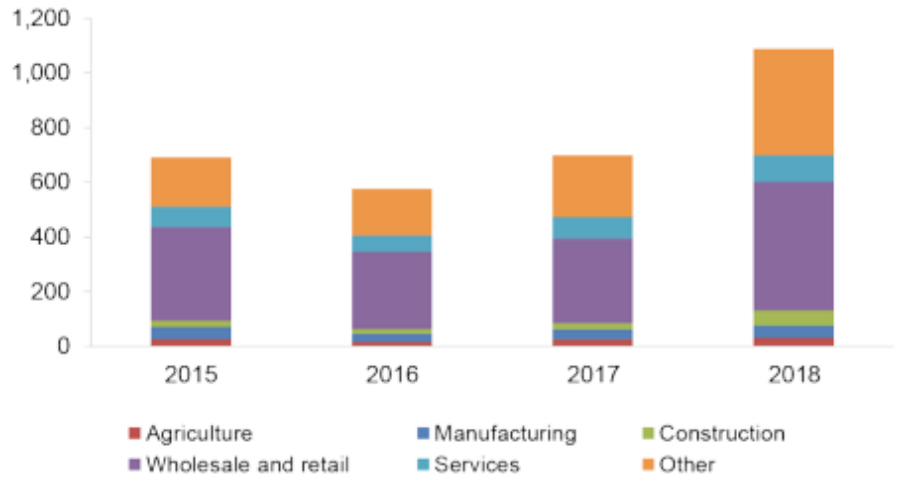

Figure 6 Outstanding SME Individual Business Loans (billion MNT) (21)

The sharp slowdown of growth occurred when commodity prices fell in 2016, which highlighted again the need for economic diversification and high dependency on mining (21). Figure 7 illustrates the data on outstanding SME business loans, with the processing industry taking the most loans, followed by the wholesale and retail sector, and then the manufacturing sector.

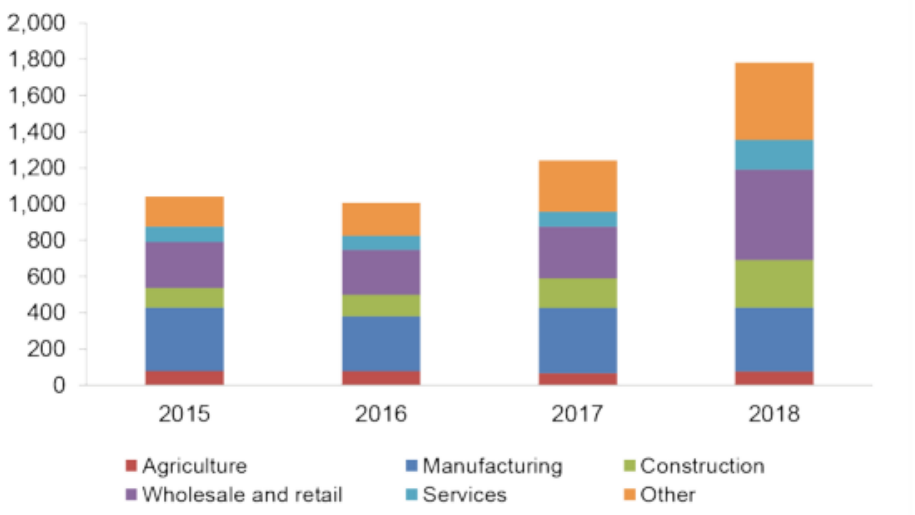

Figure 7 Outstanding SME Business Loans (billion MNT) (22)

The weekly interest rates range from 3.5 percent to 15 percent. Because pawnshop activities are not adequately regulated, several issues arise with lending. When pawnshops sell personal property that was used as security for a greater price, they do not give the difference back to lenders. Therefore, pawnshops' responsibilities should be expanded, necessitating greater laws and a centralized database for registering movable property. Microlending options via mobile phones have improved and grown more accessible in recent years. SMEs do not have access to a variety of financing options.

3.3 The status of financial inclusion for SMEs

The number of mobile phone users has exploded in recent years, propelling Internet banking, particularly mobile banking, to new heights. From 2015 to 2017, the number of Internet banking users nearly tripled, while the number of mobile banking users nearly doubled, as shown in figure 8. Banks are the most common source of funding, but the government and international financial institutions also offer assistance.

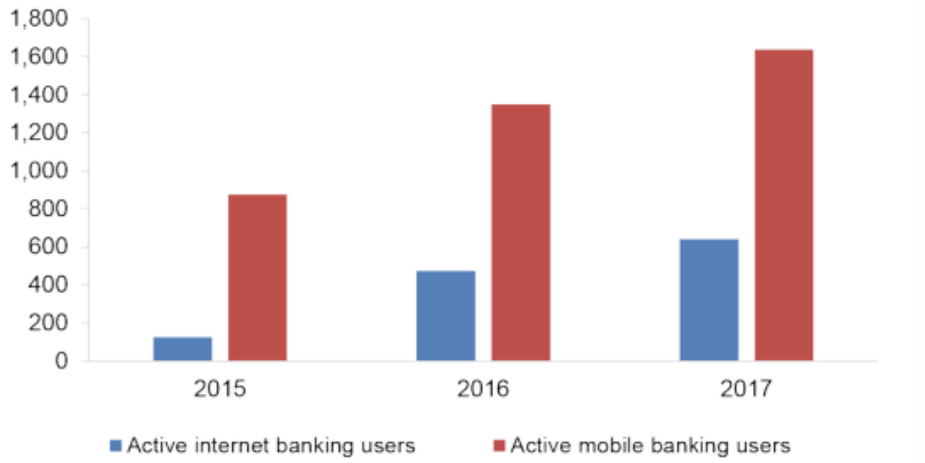

Figure 8 Active Internet and Mobile Banking Users (22)

Mongolia has 80,000 registered businesses, with 86 percent of them being small and medium-sized enterprises (SMEs). SMEs employ 800,000 people in Mongolia, or 57 percent of the overall employment (23). Around 50,000 SMEs are in Ulaanbaatar and the rest of them are in other provinces. According to the Bank of Mongolia, 56 percent of SMEs have used a kind of external financing to expand their operations. Commercial banks were used by 81 percent of those businesses, while NBFI loans and subsidizing loans were used by only 7 percent and 6 percent of those businesses, respectively (Figure 9). In addition, 4 percent of SMEs rely on unofficial funding sources such as borrowing from family and friends.

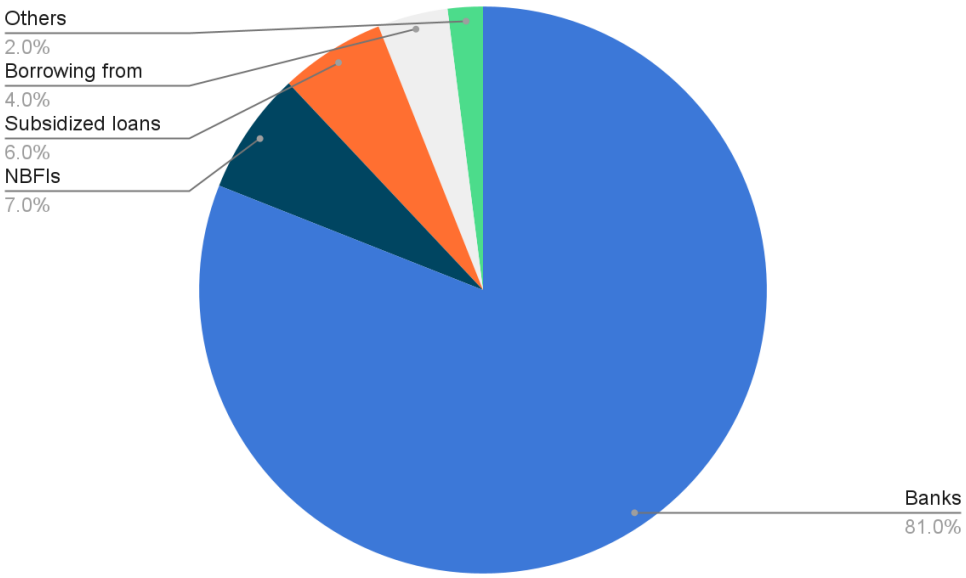

Figure 9 SME Financing Sources

According to the report of 2017, SMEs receive 53.7 percent of their funding from banks, 32.8 percent from other sources of funding, 15.3 percent from local government or provincial administration, 13.5 percent from the government, 12.7 percent from trade unions, 10% from other financial institutions, 9.5 percent from NGOs, 7.9 percent from the Chamber of Commerce and Industry, 7.2 percent from industry associations, and 6.0 percent from international organizations.

There are 13 commercial banks in Mongolia, 12 of which are privately owned and one of which is state-owned, as well as 534 nonbank financial institutions (NBFIs) and 207 savings and credit cooperatives. Banks are supervised by the Bank of Mongolia (BOM), whereas NBFIs such as insurance companies, security firms, and savings and credit cooperatives are supervised by the Financial Regulatory Commission. In 2018, commercial banks provided 97.0 percent of loans. 10 In 2018, the banking sector's total assets increased by 14.8% to MNT33.1 trillion.

3.4 Barriers to SME Finance

The biggest challenge SMEs are facing is that financial institutions that offer finance to SMEs cannot offer long-term financing and the interest rate are very high. The maximum term is 48 months, with an average monthly interest rate of 1.5 percent to 2.5 percent (21). When an entrepreneur applies for a loan for the first time, the maximum maturity time is 24 months and the interest rate is the highest, as is customary. If they repay the first loan on time and request a second, they will be offered more advantageous terms. For SMEs, having access to capital is insufficient. In terms of financial access, the existing financial products are similarly insufficient. Commercial banks are the primary source of funding for SMEs, but there is no competition among them. The amount of the loan, collateral, maturity time and interest rate offered to SMEs by banks are all identical and do not differ much.

The main source of funding for SMEs is commercial banks. Loan guarantees are used by the government to ease SMEs' access to finance. Some funds have been established to support the development of SMEs. Access to finance and a lack of collateral are important issues for SMEs. The cost of financing is very high and there are insufficient support and subsidies from government agencies. The banking system offers very basic and traditional financing mechanisms, a lack of value chain financing, and other risk mechanisms for the exchange rate.

3.5 Brief introduction to SCOPA Alliance LLC

"TVT Business Consulting" LLC, which specializes in banking, finance, and fintech consulting services, and "Grape City Mongolia" LLC, a supplier of basic banking and financial systems with more than 20 years of experience in the industry, jointly launched "SCOPA Alliance" LLC to introduce a supply chain open platform in January 2021. "Intelmind Group", a developer of technology-based businesses, has become the company's official third investor starting in 2022. This digital ecosystem is the largest business platform in Mongolia, offering new opportunities and new solutions to the Mongolian business sector.

Through its GOOD platform, SCOPA Alliance LLC aims to create a supply chain financing platform that connects end users, merchants, suppliers, and financial institutions to develop a trading ecosystem that provides mutually beneficial and advantageous services to all parties. The main goal is to provide affordable and cost-effective financial services to businesses by comprehensively addressing the ordering

and receipt of goods and services of trade and service organizations and the accounting issues associated with those activities. The GOOD platform-based ecosystem has the advantage of being loyal to reduce recurrent costs, increase sales, improve marketing optimization, get rid of receivables, and increase real business returns by choosing from low-cost financing options.

3.6 Case of Mongolian SCF

Mind Tech LLC is an oilseed processing plant owned by Delta Holding LLC and launched a project to process rapeseed and vegetable oil in 2012. The plant imports about 70 percent of the country's vegetable oil and have a processing capacity of 30,000 tons of vegetable oil per year. Based on its extensive experience, Mind Tech has built and commissioned the company, with the company allocating more than 10 billion MNT from its reserves and financing the 22,000 MNT government Chinggis bond.

Our country's demand for cooking oil is 26,000-30,000 tons per year, or this amount of oil is imported. A total capacity, the plant will process 100 tons of oilseeds per day, of which 35 percent will be used to produce pure oil and 65 percent to create the compressed animal feed, and will process 30,000 tons of oilseeds per year shown in the figure 10. They import rapeseed seeds from 92 brands in Germany and Russia and cultivate and purchase them from local farmers.

Rapeseed oil has plenty of advantages because it is grown in Mongolian soil and made in. Also, which is:

- 100% ecologically pure product
- No chemical impurities
- GMO-free
- The saturated oil content is minimal
- Rich in Vitamin E, K, and A

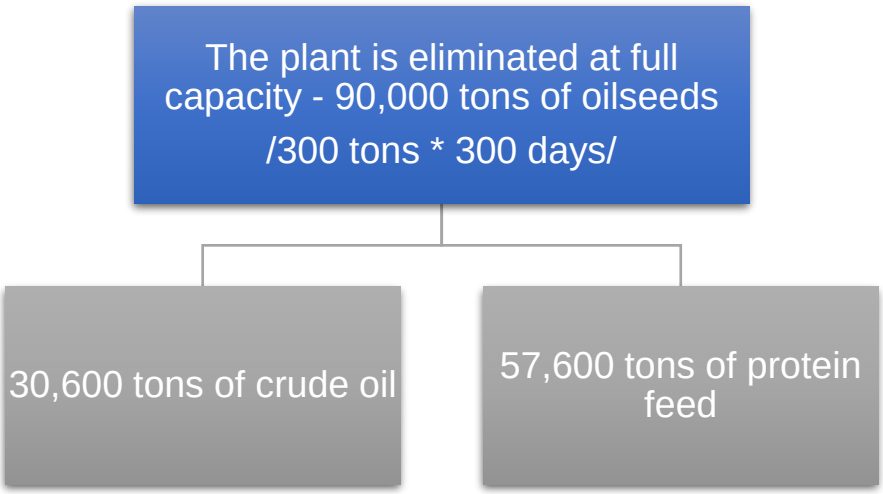

Figure 10 Production plan at full capacity

Simply describing the process of SC which is working in Mind Tech LLC as shown in figure 11, they order raw materials/ raw rapeseed from agricultures and deliver the final products to retailers and merchants by product shipment process after the manufacturing process which includes compressing rapeseed, following refinement of oil and packaging. This process will be connected to the pre-shipment process of timing-based classification of SCF, see figure 2, and the POF scheme is useful there. In case of financial problems in purchasing raw materials and operating sustainably, they can easily find their way through the “GOOD” platform. This platform is the one example of the development of mobile phones and increasing number of users of the digital platforms, further supporter of the optimal use and implementation of SCF, and it is the connector of the supplier, buyer, and investors. As a result, both parties will continue to operate successfully by liaising with suppliers who have financial problems and supplying raw materials.

The company buys raw rapeseed for MNT 1,800,000 from suppliers, of which 65 percent will be included in the cost of oil production and 35 percent to produce protein feed.

Table 1 Volumes needed in calculation of cost and production

№		Rapeseed oil	Protein feed
1	Volume of product	**35%**	**65%**
2	Volume of cost	**65%**	**35%**

Calculation 1:

The cost of producing 1 ton of oil without any loans will be calculated as follows:

№	Raw materials and costs	Monthly rapeseed cost /MNT/	65% oil /MNT/	35% compressed /MNT/
1	Raw materials/ Rapeseed	5,400,000,000	3,510,000,000	1,890,000,000
2	Pay costs	210,000,000	136,500,000	73,500,000
3	Social insurance costs			
4	Electricity costs			
5	Steam and water costs			
6	Depreciation			
7	Sack/ wire			
8	Fuel	3,000,000	1,950,000	1,050,000
Total		**5,613,000,000**	**3,648,450,000**	**1,964,550,000**
Gross output /ton/			1050	1950
Cost of 1 ton of product			**3,474,714.29**	**1,007,461.54**
Cost per 1 kg			**3,474.71**	**1,007.46**
Cost of 1 sack				**40,298.46**

Table 2 Cost of compressing rapeseed

№	Types	Cost /to refine 1 ton of oil/ MNT
1	Required ingredients	55,000
2	Fuel	15,000
3	Other activities	65,000
4	Equipment depreciation	21,000
5	Cost of raw materials	3,474,714,29
6	Cost per lost /2.67%/	92,774,87
Refinement cost		**156,000**
Total cost		**3,723,489.16**
Cost per 1kg /0.92l/		**3,519.37**

Table 3 Cost of refinement of compressed oil

№	Types	Cost of 1 ton of product
1	Cost of raw materials/ crude oil	3,723,489.16
2	Preparation	480,000
3	Stationery	340,000
4	Salary expenses	17,500
5	Transport	32,000
6	Others	35,000
Cost of per oil packaging		**904,500**
Total cost		**4,627,989.16**
Number of packaged oil		**1,087**
Cost per oil		**4,258**

Table 4 Cost of oil packaging

№	Rapse 1 ton			
	Product	**Cost /MNT/**	**Selling price /MNT/**	**Percentage of profit %**
1	Oil	3,474,714	3,800,000	9%
2	Packaged oil /1L	4,258	4,500	5%

Table 5 Selling price of final product

Calculation 2:

The cost of producing 1 ton of oil with one-year bank loan at the interest rate of 17% will be calculated as follows:

Monthly pay will be MNT 403,576,084.08 to allow businesses to absorb the loan

№	Raw materials and costs	Monthly rapeseed cost /MNT/	65% Oil /MNT/	35% compressed /MNT/
1	Raw materials/ Rapeseed	5,400,000,000	3,510,000,000	1,890,000,000
2	Pay costs	210,000,000	136,500,000	73,500,000
3	Social insurance costs			
4	Electricity costs			
5	Steam and water costs			
6	Depreciation			
7	Sack/ wire			
8	Fuel	3,000,000	1,950,000	1,050,000
9	Bank loan	403,576,084.08	262,324,455.00	141,251,629.62
Total		**6,016,576,084.08**	**3,910,774,455**	**2,105,801,629.62**
Gross output /ton/			1050	1950
Cost of 1 ton of product			**3,724,547.10**	**1,155,994.08**
Cost per 1 kg			**3,725**	**1,155.99**
Cost of 1 sack				**46,239.76**

Table 6 Loan included cost of compressing the rapeseed

№	Types	Cost /to refine 1 ton of oil/ MNT
1	Required ingredients	55,000
2	Fuel	15,000
3	Other activities	65,000
4	Equipment depreciation	21,000
5	Cost of raw materials	3,724,547.10
6	Cost per lost /2.67%/	99,445.41
Refinement cost		**156,000**
Total cost		**3,979,992.51**

Table 7 Loan included cost of compressed oil

№	Types	Cost of 1 ton of product
1	Cost of raw materials/ Oil	3,979,992.51
2	Preparation	480,000
3	Stationery	340,000
4	Salary expenses	17,500
5	Transport	32,000
6	Others	35,000
Cost of per oil packaging		**904,500**
Total cost		**4,884,492.51**
Number of packaged oil		**1,087**
Cost per oil		**4494**

Table 8 Loan included cost of oil packaging

№	Rapse 1 ton			
	Product	**Cost /MNT/**	**Selling price /MNT/**	**Percentage of profit %**
1	Oil	**3,724,547.10**	3,800,000	2%
2	Packaged oil /1L	**4494**	4,500	0%

Table 9 Loan included selling price of final product

The current selling price of a product is equal to the cost of borrowing, which is the starting point for the company's unprofitable operations (shown in figure 11). Therefore, when borrowing from banks, NBFI, and other financial sources, the product's cost should always be lower than the non-loan period's selling price, allowing businesses to absorb the loan.

4 Result and discussion

Assuming a one-year loan from a bank with an interest rate of 17 percent, the cost of one package of oil is equal to the selling price of the time when the company is operating without a loan. This will require them to sell the products at a higher price than before in order to make a profit. Rising sales prices may reduce the purchasing potential of consumers, further which can lead to a variety of risks, including the inability to repay the loans.

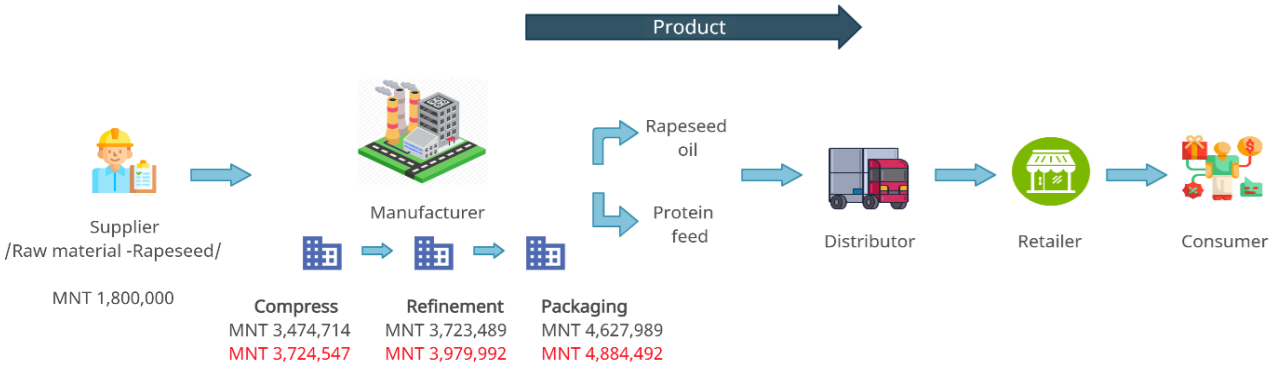

Figure 11 SCF process of Mind Tech LLC

The SME stipulates that the annual interest rate on a bank loan is high and that the documents required to obtain loan must meet a variety of criteria, which requires the bank to guarantee more than the loan customers need. In contrast, NBFI and other financial institutions have lower requirements and guarantees but set higher interest rates, and these are a big problem in our country today.

“GOOD” SCF platform has a low-interest rate compared to these, and if the loan interest rate is considered to be the same as the bank’s, the requirements for their customers are relatively low, and most importantly, they are financed based on the sales revenue and quality. This allows the raw material supplier and the manufacturing company to interact in win-win situations. Furthermore, SCOPA Alliance LLC has the potential to compete in the investment market with the banks and NBFIs, which account for the majority of funding sources (as shown in figure 9), through the sustainable and continuous development of SCF in Mongolia.

5 Conclusion

This paper is intended to evaluate the current development of SCF in Mongolia and define the major issue for improvements in access to finance. The study was conducted based on the operating processes and costs of the “Mind Tech” LLC which is the partner of “SCOPA Alliance” LLC which is a start-up company aiming to develop the trading ecosystem, especially SCF.

Kazakhstan was chosen as an international example to study the country’s economic development and financing challenges. Kazakhstan is a landlocked country like Mongolia, which is a key issue for the transportation process, and similar to Mongolia in that clusters and SC are not highly developed. Their agricultural supply chain, as well as agriculture and farming, are undeveloped. Farmers occasionally deliver their goods directly to open markets (bazaars) where customers can purchase them. Farmers sell their produce to stores in other circumstances. One of the primary hurdles to boosting the sector's competitiveness is a lack of access to funding for agricultural enterprises. Agribusiness funding is currently primarily provided by commercial banks and rural credit cooperatives. Despite a tiny share of loans, microcredit financial institutions in Kazakhstan are important complements to other sources of microfinance and capacity for small farms.

Moreover, this article examines the financial status and funding mechanisms of Mongolian SMEs, the business environment, as well as the development of SCF. In Mongolia, the SCF is still in its infancy and is just beginning to be implemented, and the lack of publications and documents about the national SC was a major challenge. Traditional banking services are expensive, especially outside of residential areas, due to the small population. The key issues in the lending market for SMEs are a lack of good credit infrastructure and government rules. Due to Mongolia's underdeveloped financial sectors, insufficient government assistance, and lack of a regulatory framework, financial institutions only offer a limited number of financial products.

Mongolian SMEs have limited access to the capital they require, which makes it difficult for them to create jobs, build their businesses, and expand. There are no finance mechanisms for the supply chain. The bank-dominated financial sector of Mongolia provides loans, as well as deposit and savings products. Venture capital, factoring, leasing, overdraft facilities, start-up finance, and other financing techniques are all needed. Exporters receive no financial incentives.

Lastly, digital trade is getting more prevalent. Digital procurement tools and electronic invoice systems are expanding their capabilities. E-commerce platforms are quickly expanding and delivering integrated solutions that help businesses buy and sell more easily. Data and analytics are also making rapid progress. This "SCOPA Alliance" LLC allows for the convergence of buyer and supplier solutions, opening up potential in supply chain finance's third wave of expansion. Banks can discover chances to grow revenues and improve returns within each of the three parties of supply chain finance at a time when traditional trade finance revenues are stagnant.

6 Recommendation

Based on the research conducted , a set of recommendations has been developed:

- Exploring the potential for establishing alternatives to bank lending, including venture capital, business angel investment, mezzanine financing, crowdsourcing, leasing, factoring, and green finance, and in particular diversifying the financial sector. The creation of a regulatory framework that will allow them to function.
- Developing supply chain development and financing strategies based on supply chain research
- Research on SMEs' financial literacy is essential to determine their true needs, and a national financial literacy policy should be devised. Such studies should be conducted on a regular basis in order to track their progress and design targeted products for them.
- Diversify SME funding channels by collaborating with microfinance organizations (expanding the practice) and private equity funds, as well as supporting the growth of crowdfunding platforms and the crowd-sourced equity funding sector.
- The supply chain has no financing mechanisms. Mongolia's financial sector, which is dominated by banks, offers loans as well as deposit and savings products. Venture capital, factoring, leasing, overdraft facilities, start-up financing, and other types of financing are all required.
- Studies on the current situation and development of SCF haven’t been conducted yet. Therefore, it is difficult to access the working mechanisms of SC in Mongolia.
- Improve the quality of data on SMEs and increase the number of literature, journals on the relevance of the in-depth study of SCF in Mongolia to obtain a clear picture of them and develop effective solutions

References

1. Hofmann E. Supply Chain Finance — some conceptual insights. In: Logistik Management. Deutscher Universitätsverlag; 2005. p. 203–14.
2. Marak Z, Pillai D. Factors, Outcome, and the Solutions of Supply Chain Finance: Review and the Future Directions. Journal of Risk and Financial Management. 2018 Dec 21;12(1):3.
3. Supply chain finance: a literature review.
4. Fabbri D, Klapper LF. Bargaining power and trade credit. Journal of Corporate Finance. 2016 Dec;41:66–80.
5. Boissay F, Gropp R. Trade Credit Defaults and Liquidity Provision by Firms. SSRN Electronic Journal. 2007;
6. Supply Chain Finance Knowledge Guide [Internet]. 2014. Available from: www.ifc.org
7. Chopra S, Meindl P. Supply chain management : strategy, planning, and operation. 516 p.
8. Supply Chain Finance: An Introductory Guide - ICC Academy [Internet]. [cited 2022 May 15]. Available from: https://icc.academy/supply-chain-finance-an-introductory-guide/
9. Hofmann E, Belin O. Supply Chain Finance Solutions [Internet]. Berlin, Heidelberg: Springer Berlin Heidelberg; 2011. (SpringerBriefs in Business). Available from: http://link.springer.com/10.1007/978-3-642-17566-4
10. Zhao L, Huchzermeier A. Series Editors: M. Grazia Speranza · José Fernando Oliveira EURO Advanced Tutorials on Operational Research Supply Chain Finance Integrating Operations and Finance in Global Supply Chains [Internet]. Available from: http://www.springer.com/series/13840
11. Pfohl HC, Gomm M. Supply Chain Finance— Optimizing Financial Flows in Supply Chains. Logistics Research. 2009 Dec 1;1:149–61.
12. Gelsomino LM, de Boer R, Steeman M, Perego A. An optimisation strategy for concurrent Supply Chain Finance schemes. Journal of Purchasing and Supply Management. 2019 Mar 1;25(2):185–96.
13. Zhao L, Huchzermeier A. Series Editors: M. Grazia Speranza · José Fernando Oliveira EURO Advanced Tutorials on Operational Research Supply Chain Finance Integrating Operations and Finance in Global Supply Chains [Internet]. Available from: http://www.springer.com/series/13840
14. 4 Implications of Rising Fuel Costs to Freight Transportation [Internet]. [cited 2022 May 15]. Available from: https://www.ddcfpo.com/freight-process-insights/4-implications-of-rising-fuel-costs-to-freight-transportation
15. Global Value Chains (GVCs) - OECD [Internet]. [cited 2022 May 15]. Available from: https://www.oecd.org/industry/ind/global-value-chains.htm

16. Kapparov K. ADBI Working Paper Series LEVERAGING SME FINANCE THROUGH VALUE CHAINS IN KAZAKHSTAN Asian Development Bank Institute [Internet]. 2019. Available from: https://www.adb.org/publications/leveraging-sme-finance-through-value-chains-kazakhstan

17. Country Analysis Brief: Kazakhstan. United States Energy Information Agency (USEIA) 2017.

18. Statistical Business Register in the Republic of Kazakhstan.

19. INTERACTIVE DATA DYNAMIC DATA FULLY RESPONSIVE SHARE CONTENT DUAL-LANGUAGE EASY DOWNLOADS EASILY ACCESSIBLE INFORMATION ONLINE AND IN PRINT.

20. Financing SMEs and Entrepreneurs 2020. 2020 Apr 22 [cited 2022 May 15]; Available from: https://www.oecd-ilibrary.org/finance-and-investment/financing-smes-and-entrepreneurs-2020_061fe03d-en

21. Boojoo L. ADBI Working Paper Series LEVERAGING SME FINANCE THROUGH VALUE CHAINS IN THE CAREC LANDLOCKED ECONOMIES Asian Development Bank Institute [Internet]. 2019. Available from: https://www.adb.org/publications/leveraging-sme-finance-through-value-chains-carec-

22. FINANCIAL INFORMATION UNIT [Internet]. Available from: https://fiu.mongolbank.mn/.

23. COVID-19 IMPACT ASSESSMENT ON MICRO AND SMALL-SCALE WOMEN BUSINESS ENTERPRISES IN MONGOLIA FINAL REPORT Ulaanbaatar 2021 0 Final report Final report Final report.