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Theory of Supply Chain Finance: Implementation and an Organisation's Benefits

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Abstract

The concept of Supply Chain Finance has emerged through the globalization of trade. The common sense within a supply chain is that suppliers are trying to receive their payments as early as possible while buyers are increasing their payment terms. Supply Chain Finance attempts to cope with this problem and creates opportunities for all parties.

With the development of Supply Chain Management, two approaches gained the most recognition; Working Capital Management and Supply Chain Finance. Both are considered drivers for a financially stable supply chain. A Supply Chain Finance solution is able to create a 'win – win' situation for both buyer and supplier by giving the buyer the opportunity to extend payment terms and pay the supplier in advance. This process allows all parties to free up operating working capital and provide financing in favour of the supplier. A Supply Chain Finance solution implementation includes three factors: First, a company must be internally in line with the solution. Secondly, the right financial provider (bank) must be identified. Lastly, there has to be the opportunity for open account trade.

Recent papers confirm that the credit crunch of 2009 was a main driver for Supply Chain Finance. Financial providers and organizations have become aware that it is of great importance to manage their capital and especially the part tied to the supply chain. This phenomenon enhanced the popularity of SCF. Supply Chain Finance attempts to cope with this problem and creates opportunities for both parties. SCF has matured yet, there are still some gaps when it comes to a single definition. Furthermore, it appears that suppliers are hesitant to adopt Supply Chain Finance because there is little evidence of the actual cost savings and its benefits. This thesis aims to provide a single definition by reviewing the theory of Supply Chain Finance and provide the reader with an implementation checklist and the benefits of it. The theory will then be backed up by expert interviews.

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Abbreviations

KPIs	=	Key Performance Indicators
RF	=	Reverse Factoring
SCF	=	Supply Chain Finance
SCM	=	Supply Chain Management
SMEs	=	Small-Medium Enterprises
WC	=	Working Capital
WCM	=	Working Capital Management

1 Introduction

This chapter will provide the reader with the main idea and context of the thesis. In the beginning of this chapter a general overview of financial concerns within a supply chain will need to be explained, followed by the problem description. Next, the delimitations will be presented, followed by the thesis main purpose and the research questions. To round off this introduction the target audience will be examined, and a general overview will be given.

1.1 Background

Global trade has increased enormously in recent decades. Organisations and institutions have increased their sharing of knowledge, capital and trade in a rapid manner. The Internet and new technology innovations have made it possible to execute business all over the world. Furthermore, trade has increased greatly over the last three decades¹. This trend incorporates many factors but most importantly is the significant reduction of trade barriers (WTO 2013). All these circumstances have led to more open trade between organisations and an increase in concentration on supply chains aimed to compete in the global market. Organizations have realized that the flow of information and materials deserves more attention and has to be optimized. This has led to new research in Supply Chain Management (SCM) where the general focus of companies has relied not only on management but traditional logistic tasks such as the control of quality, inventory and transportation within the supply chain. Yet, there seems to be the need to address more economical and financial problems as SCM has expanded its scope to cash flows and financial business activities. This development has changed the role of supply chain actors and their relationships as new financial opportunities within the supply chain have opened up.

¹ The value of world merchandise exports rose from US\$ 2.03 trillion in 1980 to US\$ 18.26 trillion in 2011 and commercial services trade grew from US\$ 367 billion to US\$ 4.17 trillion in the same period (WTO, 2013).

The credit crunch of 2009 has led to an increase in attractiveness of new financial management solutions and especially Supply Chain Finance (SCF). The crisis exposed the scarcity in cash available for companies (especially SMEs) as it was tied up in working capital. This scarcity of cash has led to reduced cash available to obtain capital. At the same time, demand volatility increased, resulting in higher investments in safety stock and holding more precautionary cash (Pezza 2011). On the other side, multinationals were able to remain fairly stable. Also, banks were not able to provide suppliers (usually SMEs) with further loan facilities. For example, within the European Union the problem of obtaining bank loans has aggravated for SMEs especially in weaker economies. This, to some degree, was overcome by introducing new policies facing those constraints for SMEs. Yet, financing cost for SMEs are still troubled by sovereign spreads, macrocosmic weaknesses and the borrowers' risk. In addition, spreads between bank lending rates on loans to non-financial corporation continued to be higher for SMEs in countries like Italy and Spain than before the crisis (Wehinger 2014). This forced organisations to identify new and different solutions to safeguard their working capital but rule out the potential of new risk and possible damages at the same time. One solution, which was adopted by many companies, was an aggressive cash management strategy in order to secure steady cash levels while credits were declining from financial institutions (Steeman 2014). More importantly, large international buyers realized supporting their suppliers financially would secure business continuity and flows of supplies as well as financing sales growth on the side of the supplier (EBA 2014). The market of SCF is expected to grow rapidly to revenues of \$4 billion by the year of 2019 (McKinsey 2015).

Even though the SCF market is still evolving there is some showable literature available in the form of reports, working papers, articles, guidelines and other readable information. Across these different types of literature and information, the definition of SCF differs. SCF is worth research as supply chains are an integral part of most business and is highly essential to an organizations success.

This thesis provides an overview of the SCF landscape, especially reverse factoring and its definition. Since the financial crisis, it has become one of the most popular and widely used instruments (Aite Group 2014).

1.2 Problem Statement

As supply chains developed along with the growth of globalization, the involvement of more than two companies within a supply chain became common, resulting in a predicament. Each supply chain network finds itself in a dilemma where all actors try to obtain financial improvement at the same time (Hofmann & Kotzab 2010). This can be done, for example, if the buyer decides to expand payment terms to the suppliers and transfers capital costs and risks to the supplier. By doing so, the buyer will experience lower credit risk, increased liquidity until payment day and a balance sheet extension. The downside of lengthening the payment terms will be on the supplier's side as they will have additional financing costs to cover the period with additional loans and debts. Furthermore, these disadvantages for the supplier will affect the buyer and cause him serious negative effects in the long term. Not only will it hurt the buyer, but also the buyer – supplier relationship. In addition, it also causes suppliers to become unstable and increases risk within the entire supplier platform. This might force the suppliers to cut back on inventory, increase selling prices for goods and services or decrease its focus on quality performance.

For this dilemma, a solution has been up and coming in the last decade called SCF and more specific reverse factoring (Tanrisever et al. 2012). For practitioners this solution has already been a reliable source of funding supply chains as it provides an alternative source to bank facilities and working capital management (WCM). Currently, practitioners see SCF as an agreement between the initiating buyer (usually multinationals) and its financial provider, affirming that a supplier (typically SMEs) whose invoice has been approved and accepted by the buyer can take advantage of a credit from the bank for extended payment terms based on the credit rating from the buyer. This process is backed up by a platform including all parties (buyer, supplier and financial provider) which equips all with real-time visibility into the relevant financial transactions (Wuttke et al. 2013).

Yet, this field is still in its infancy when looking at SCF from an academic point of view. Another phenomenon is that the definition of SCF still differs among

practitioners and researchers. This being said, there is a need to find a clear definition which suits both parties.

1.3 Delimitation

As this thesis deals with a specific field of SCF it is important to cover the most important definitions and narrow them down towards the end. SCF is rather new in academia and the definition is still in its defining phase. It builds upon assets which can be turned into liquid assets in a short time. These assets are a company's inventory, its account receivables and payables (Chen & Hu 2011). Given the variety of financial programs within SCF (Figure 1) this thesis predominantly focuses on the popular RF. Yet, some other programs will be explained shortly as it will help with the overall understanding. For example, programs like dynamic discounting, bank payment obligation or account receivable finance.

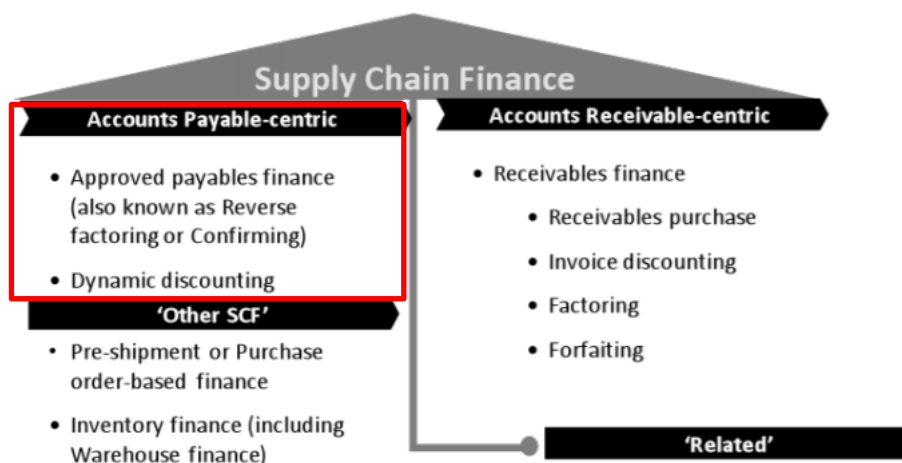


Figure 1: The variety of the SCF scope (EBA 2014)

It was already mentioned that in order to explain why SCF emerged, the definition of SCM will be explained. Here we will predominantly use literature by Mentzer et al. (2001) and literature published by Ellram (2002). In this section we will review the connection between SCM and finance.

The empirical part will consist of interviews with practitioners and people from academia (interview setup will be explained later on). The focus and target is the overall understanding of SCF as there is no need for any actual financial data from companies. More importantly, financial data is of high importance for a

company and specific inside information. Due to the sensitivity of this data, companies are not eager to publish such data.

1.4 Research Questions

1. Do the theory of SCF and its implementation process and benefits tally with my findings of the interviews?
 - a. Will the findings from question 1 give a better understanding of an actual definition of Supply Chain Finance?
2. What are the reasons for a buying firm to implement SCF?
3. How does a SCF implementation work and what affects will it have?
 - a. What aspects must be considered before implementing it?
 - b. What are general guidelines and how is the process be managed?

1.5 Target Audience and Purpose

The target audience for this thesis are likeminded people who are interested in the topic of SCF. This thesis aims to serve multiple interest groups. First, it should serve people with little to no understanding of SCF as a guideline to understand its framework. Secondly, it targets practitioners (CFOs, Treasures and Bankers) and academics as it serves the purpose of guiding the way to an overall definition which can be used in academics as well as within business.

2 Literature Review

Prior literature has been focusing on SCF, financing supply chains and supply chain management.

Creating a holistic framework for the theory of SCF and giving a well-rounded overview about the implementation process and the benefits that with it, is the prospective of this research process. For the framework to be comprehensive to a certain degree, the researched literature and case studies should account for representatively and validity. By using a good range of sources of literature and case study data it is ensured that the key propositions of this thesis are consistent with the common understanding of SCF.

The main sources of data are the following:

- academic literature
- reports from SCF providers
- case studies
- interviews with SCF practitioners
- interviews with SCF academics

The cooperation between academic theory and practice in this thesis is suitable. The literature used in this thesis is either theoretic (e.g. Hofmann (2005), Hofmann & Belin (2011), Pfohl & Gomm (2009)), company specific analysis (e.g. Wuttke (2013)), evaluations of SCF (PWC (2009, 2017)), or examine SCF aspects without a specific approach (Aite Group (2014), Seifert & Seifert (2011)). Ergo, the literature basis is large enough to write this thesis regarding SCF. In order to have practical application, expert interviews will be incorporated.

Hofmann (2005) investigates new tasks at the intersection of finance and logistics/supply chain management and how it opens new business areas for financial providers as well as for logistics service providers. Another paper by Pfohl & Gomm (2009) reviews the state-of-the-art research regarding financial flows in supply chains and Hofmann & Belin (2011) wrote a book about the background on the growing importance of SCF. Wuttke et al. (2013) provides inside into the adoption process of SCF on the bases of six European case studies while PwC (2017) provides a survey to understand the current position and awareness of SCF and implementation drivers as well as critical factors. Aite Group (2014) and Seifert & Seifert (2011) also provide more practical inside into the understanding of SCF.

3 Methodology

This chapter introduces the research methodology chosen for studying the theory of SCF and its accompanying topics. There are different research methodology approaches which qualify for this thesis: Quantitative analysis aims to test hypotheses, look at cause and effect or make predictions by using large quantity of numerical data whereas qualitative analysis aims to understand and interpret different phenomena. When collecting quantitative data, it is based on precise measurements using structured and validated data - collection instruments. Qualitative research on the other hand is data collected from interviews, field or case studies, observations or open – ended responses. Since this thesis aims in understanding and explaining the phenomenon of SCF an RF, a qualitative analysis is a natural choice as the fitting research method. Besides the existing research provided for this topic it seems logical to include an empirical section. The empirical section consists of expert interviews and aim to provide a deeper understanding of the phenomenon of SCF (Johnson & Christensen, 2014).

The goal for each research is to conduct accurate and reliable results. Reliability can be measured by which extent the thesis offers reliable and objective results and if the results are established independently by the researcher. Furthermore, the validity of the qualitative data found is a vital measurement. This is because qualitative data analysis in this thesis is based on interviewees subjective opinions on the matter and their answers could easily vary. Additionally, qualitative research is sometimes criticized by the fact that it involves some risks related to the interpretation of the researcher and subjective. That being said, problems may arise when the interviewee is not sharing honest opinions or when the question is not understood clearly and thus the reliability may suffer. However, qualitative research offers the possibility of in-depth motivations and it allows the interviewees to share their feelings. To conclude, qualitative research serves a very different purpose than quantitative research (McDaniel & Gates, 2012)

4 Supply Chain Management and Financial Aspects

This thesis covers the theory of SCF, its implementation and an organisation's benefits. In order to provide the reader with the theory of SCF it is necessary to give a profound explanation of SCM. Organisations realized that managing its supply chain and especially its financial stability are vital for an organisations success.

4.1 Literature Review on SCM

It is more common among researches to define a "supply chain" than SCM (Mentzer, et al., 2001). Mentzer defined a "supply chain" as a set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flows of products, services, finances, and/or information from a source to a customer. As "supply chains" evolved into more complex structures over the decades he defined three degrees of supply chain complexity.

The three stages of complexity:

1. Direct supply chain

A direct supply chain involves a company, a supplier, and a customer all participating in the flow of products, services, finances, and/or information either upstream or downstream.

2. Extended supply chain

The next stage of complexity, an extended supply chain, embodies the suppliers of the immediate supplier mentioned in the direct supply chain. The same stands for the customer and her customers.

3. Ultimate supply chain

The ultimate supply chain includes all participants within a supply chain with all upstream and downstream flows of products, services, finances, and information from the ultimate supplier to the ultimate customers (Figure 2).

Figure 2 illustrates an “ultimate supply chain” which involves at least 2 suppliers and more than one customer. Not only does it show the complexity of such a chain it also includes the connections important for a SCF solution. We will discuss the triangle of Supplier, Organization and Financial Institution later on. This clearly states that SCF relies within SCM scope.

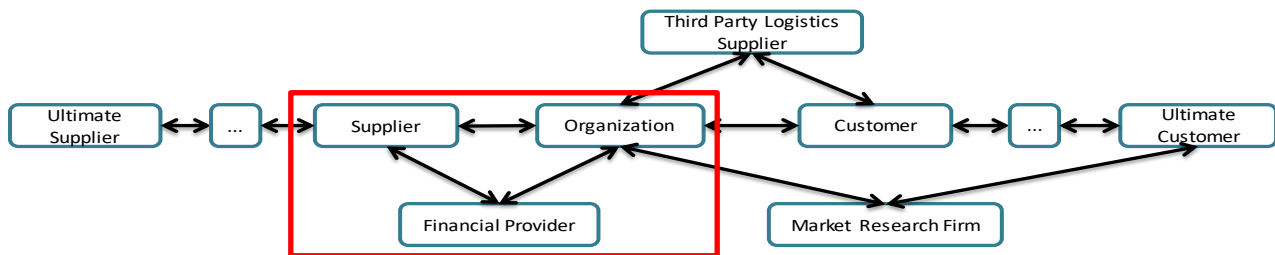


Figure 2: Supply Chain Network

Another important aspect about a supply chain is that it is considered a network of different organizations (Christopher, 1992). The understanding of a network is that a group of people or organisations are connected both upstream and downstream. Christopher (1992) found out that companies recognized a competition of supply chain versus supply chain, rather than company against competitors. Furthermore, organisations realize that working together within a supply chain and act as a network can link the success of each organisation to the supply chain network. This can improve the overall relationship and financial aspects such as return of investment or costs of establishing a supply chain.

In order to have a smooth transition into the main topic of SCF it seems logical to deeper discuss the development of SCM and its connection to financial aspects which moved within the frame of managing a supply chain. Mentzer et al. (2001) discussed the problem of defining SCM and called it “confusion between researchers and those attempting to establish a supply chain approach in management.” When reviewing the definitions of SCM over the last decades it is recognizable that the definition evolved towards a single definition which can be adapted in research and practice.

Jones and Riley (1985) released a paper in the 80’s and kept it simple as they defined SCM as the management of the total flow of materials from suppliers

through end-users. Christopher (1992), as mentioned earlier, explored the management of supply chains in the 90's and defined supply chains as a network of organizations, both upstream and downstream, that are involved in distinctive processes and activities which produce value in form of services and products by being delivered to the final customer. Christopher (1992) first described a supply chain as a network of organizations creating some sort of value. More recent progress from Cooper et al. (1998) compromised that the supply chain is a network of multiple businesses and relationships, rather than being a chain from the supplier to the end-customer. He goes on by saying that the focus relies on 'reverse' supply chain from the point of consumption to the point of origin. Overall, the spotlight in SCM relied traditionally on basic logistical activities, such as, transportation, warehousing, inventory, and quality management (Mentzer, et al., 2001).

In literature SCM is a concept based on the idea of optimising various flows constituting a supply chain. There are numerous flows within a chain as explained above. Mentzer et al (2001) proposed a new definition, including the financial flow within a supply chain. He defined SCM as "the collaboration and coordination of several stakeholders to optimize the flow of goods, information, and finance along the entire supply chain."

In the prior years, SCM only dealt with the design and optimization of the flows of goods and information. Furthermore, the field of SCM has a wide range and activities such as logistics and marketing are usually considered. By including the financial aspect into the definition, the prospective about SCM has changed. The impact of financial flows within a supply chain were starting to be recognized and how it effects the financial performances and capital cost when looked at as a part of the entire supply chain rather than a separated part (Pfohl & Gomm, 2009).

4.2 Financial Impact

As mentioned in the previous section, SCM was considered to be established out of the functions logistics, transportation, purchasing and suppliers but not finance in particular. Without regards, all these functions are still vital parts when managing a supply chain. Yet, due to the increasing global trade and information flow the focus moved onto the integration of additional functions, such as, visibility, cycle time reduction, streamlined channels and especially finance (Hofmann, 2005). Also, the trend shows the efficient cooperation of before independent functions or departments such as logistics, marketing or sales (Vousinas & Ponis, 2017). After all, SCM can significantly affect a company's financial performance – both positively and negatively (Ellram & Liu, 2002). As a result of globalization, the competitive levels in all industries grew and forced organisations to react quicker. Furthermore, financial downturns over the last years and stricter financial regulations compel industries to focus on cost cutting and find new opportunities to apply for funds in order to reach their goals. These events led to the growing interest in Supply Chain Finance.

5 Supply Chain Finance (SCF)

Throughout the years practitioners and academics came closer to a single definition for SCM. With financing moving into the scope of SCM and being recognized as a driver for value creation of a supply chain the definition narrowed down to a single definition. This being said, the same problem seems to reoccur within the scope of SCF as there are around 30 definitions from different researchers and practitioners (de Boer, 2017). The reason for that is that the framework of SCF is a broad field of solutions and techniques and research is still in its infancy. This section is devoted to reviewing, classifying, and synthesizing the most widely-used definitions of SCF in both academia and practice. The aim of this discussion is the development of one, comprehensive definition upon which practitioners and future researchers can build on.

5.1 Definition of Supply Chain Finance

SCF gives the opportunity to reduce operational working capital. It's most popular mechanism is reverse factoring (RF) and also known as buyer-centric approach, approved payables finance or simply SCF. In this thesis the terms SCF and RF will be predominantly used when it is needed. Since the economic crisis in 2009 SCF experienced a rapid growth because SCF offers a different approach financing an organisations' supply chain². In the same breath a good amount of papers, articles, guidelines and data has been released about how SCF can positively affect an entire supply chain. This being said, SCF is still in its development phase, both in literature and in its implementation process for business.

Table 1: Overview SCF definitions

(EBA, 2014)	"Supply Chain Finance can be defined as the use of financial instruments, practices, and technologies for optimizing the management of the working capital liquidity tied up in supply chain processes for collaborating business partners. The development of advanced technologies to track and control events in the physical supply chain creates opportunities to automate the initiation of SCF interventions."
(Wuttke, et al., 2013)	"Our definition takes an upstream supply chain perspective and focuses on the organizational structure to be implemented between the involved parties to achieve visibility and control and to recurrently take cash flow optimizing actions as outlined by the definitions presented above."
(Hofmann, 2005)	"SCF is an approach for two or more organisations in a supply chain, including external service providers, to jointly create value through the means of planning, steering, and controlling the flow of financial resources on an inter-organisational level."
(Hofmann & Belin, 2011)	"This study views SCF...namely that financial flows are in contrast to physical flows and their related information flow along the C2C cycle. Thus, the optimization of company's SCF can be considered equivalent to working capital optimization."
(PWC, 2009)	"SCF boils down to a balanced approach for enhancing working capital for both buyers and sellers in a transaction – using an intermediary tool to

² Financing rates are very attractive within Supply Chain finance – about 10 times lower than factoring or other traditional financing solutions (PrimeRevenue 2018).

link buyers, sellers, and third-party financing entities – thereby reducing supply chain risk/costs and strengthen business relationships.”

(Seifert & Seifert, 2009) “Supply Chain Finance (SCF) represents an innovative opportunity to reduce working capital. Its underlying mechanism is reverse factoring making the technique buyer – rather than supplier – centric.”

(Steeman, 2014) “Financial used in collaboration by at least two supply chain partners and facilitated by the focal company with the aim of improving the overall financial performance and mitigating the overall risk of the supply chain.”

(Pfohl & Gomm, 2009) “Supply Chain Finance (SCF) is the inter-company optimisation of financing as well as the integration of financing processes with customers, suppliers, and service providers in order to increase value of all participating companies.”

Camerinelli (2011)³ “SCF is the name attached to the collection of products and services that financial institutions offer to facilitate the physical and information flow of a supply chain.”

When reviewing these definitions of SCF it becomes clear that the problem originates from a more difficult standpoint than just the definition (Table 1). Templar et al. (2012) argue that “defining the true nature of SCF in itself appears to be difficult, considering it is not defined as a model, discipline, technique, product or programme.”

EBA (2014) shares Templar et al. thought that SCF comprises all financial activities within SCM. Both come up with a similar solution that SCF must be implemented in the entire end-to-end supply chain. Hofmann (2005) and Hofmann & Belin (2011) specify that the flow of financials moves into the opposite direction of the physical supply chain. They illustrate the flow of materials from the supplier to the buyer and the flow of funds from the buyer to the supplier. Furthermore, Hoffmann (2005) is right by including the flow of technology, information, documents and data management, order processing, etc. into the scope of SCF, as he writes in his paper.

³ taken from (Steeman 2014)

To justify the different definitions, Templar et al. (2012) established an overview with SCF being a part of the broader SCM scope (Figure 1). The different levels are explained in table 2.

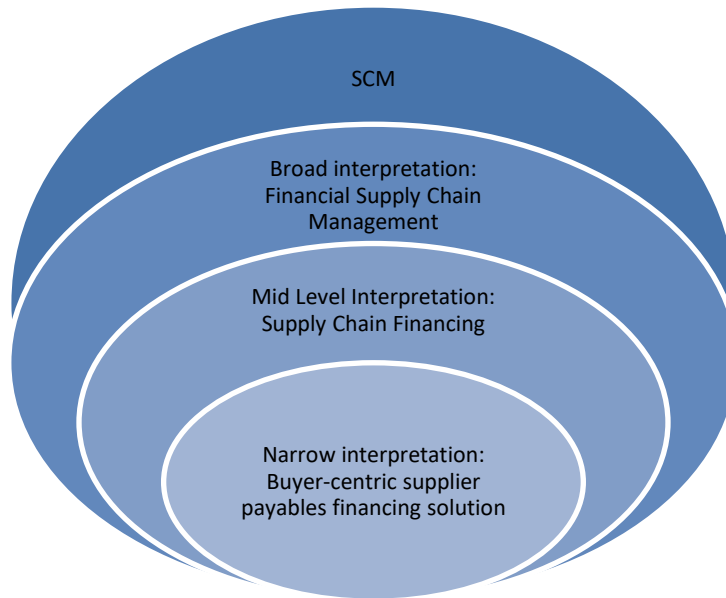


Figure 3: SCF within SCM

Table 2: SCF within SCM

Interpretation of SCF			Description	References
Financial	Supply	Chain	SCF is broadly described as the management of the financial flows in the supply chain: financial processes (transaction processes, data processing, invoice matching, etc.) and SC financing techniques.	Hofmann and Belin (2011) Hofmann (2005) Pfohl and Gomm (2009) Gomm (2010)
	Supply Chain	Financing	SCF is a set of supply chain financing instruments, then included in financial SC management. Different fields can be encompassed in this definition mainly: <ul style="list-style-type: none"> • Trade financing • Fixed asset financing • Working capital financing • Supplier financing 	Aberdeen Group (2006) Sunshine (2007) Atkinson (2008) Camerinelli (2009b) Keifer (2008) Camerinelli (2010a) BAFT-IFSA (2010) ACT (2010) Camerinelli (2011)

Buyer-centric supplier payables financing solution	SCF or supplier financing is described as a buyer-driven payables solution, mainly referring to all types of reverse factoring solutions, supported by the appropriate IT technology. This is an invoice settlement option at the very end of the financial supply chain.	Hartley-Urquhart (2000) Demica (2009) Dyckman (2009) Kerle (2009) PWC (2009) Sugirin (2009) Kramer (2010) McKinsey (2010) Moran (2010) Jacquot (2011)
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5.2 Framework

To further investigate the definitions of SCF summarized above, the different objects financed by actors and their terms need to be examined. It begs the question of which assets within a supply chain are financed by whom and what are the main levers (Pfohl & Gomm, 2009). These three dimensions are the cornerstones for the framework of SCF (Figure 2) and will be examined further on.

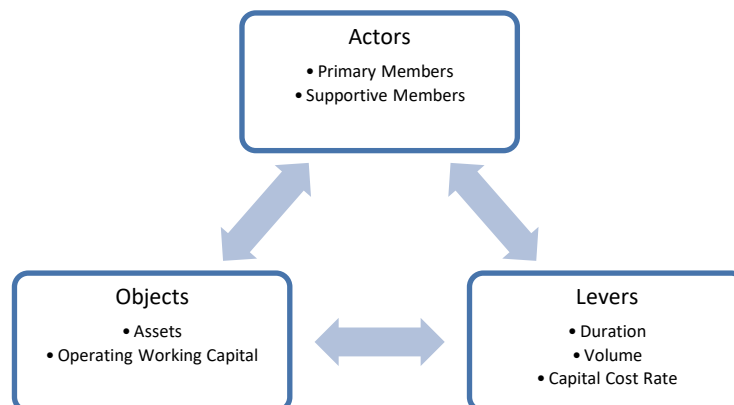


Figure 4: SCF framework

5.2.1 Actors

First, the actors within a supply chain that collaborate in SCF need to be clarified. Figure 4 shows a triangle of all three dimensions with the actors as primary and supportive members. Before identifying the different actors, it should be mentioned that a financial agreement within a SCF program needs at least two primary members of a supply chain in order to be set up. This means that an investment grade focal company can leverage its creditworthiness to help a direct supplier to access cheaper financing (de Boer et al. 2015).

Furthermore, as we already know by now today's supply chains are a network of organisations rather than a string with direct organisation to supplier relationships. By considering it a network of organisations, it can be assumed that there are multiple suppliers and customers in connection with the focal company. The main supplier of the focal company is considered a tier 1 supplier (direct supplier), who have their own tier 2 (indirect) supplier. These tier 2 suppliers then go on to have tier 3 suppliers and so on (de Boer et al. 2015).

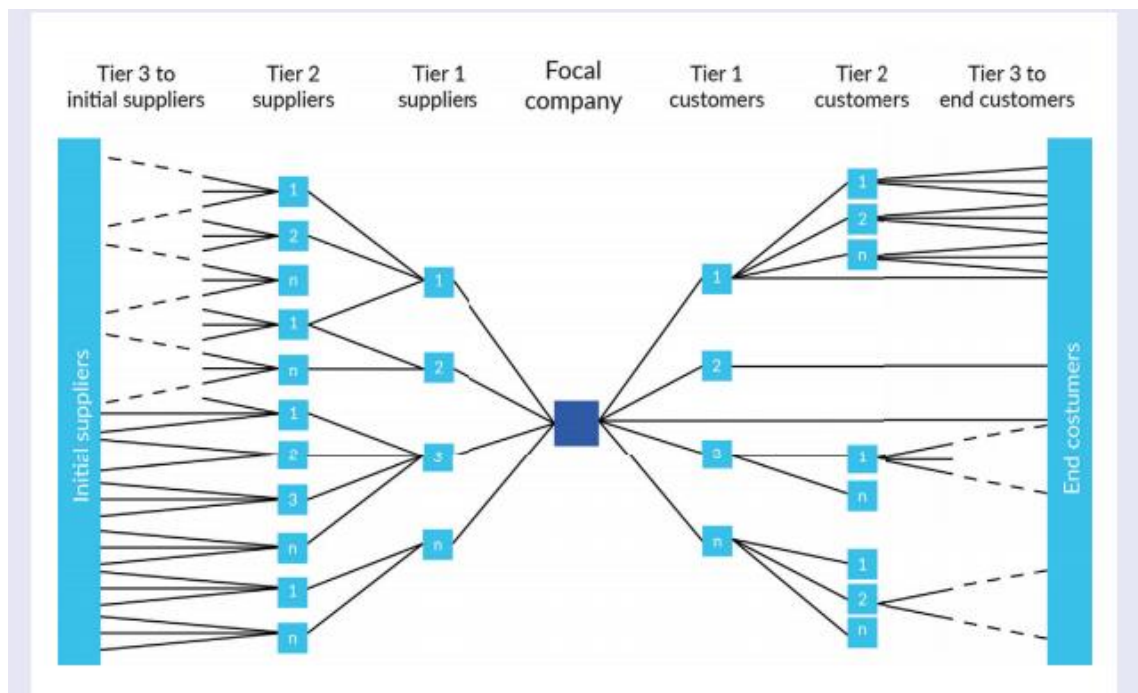


Figure 5: Supply Chain Network Structure - Adopted from de Boer (2015)

Here it suits to cite de Boer (2015) as the description used explains it perfectly: “This supply network consists of two categories of organisations: primary members and supportive members. Primary members are the focal company and all its direct and indirect suppliers and buyers. Supportive members of a supply chain are LPs (logistic service providers) that provide assets, knowledge and services.”

Furthermore, it needs to be mentioned that SCF is not restricted to only tier 1 supplier. Thus, if tier 2 suppliers can take advantage from the creditworthiness of the focal company it makes sense to expand SCF solution. On the other hand, it might be possible to use SCF solution and take it upstream, meaning that a focal company can help their customers to be eligible for better financing if the focal company has a good enough credit rating. This could be the case if the focal company is considered a multi-national company and has, for example, SMEs as customers.

5.2.2 Objects

SCF is a solution to finance fixed assets, such as assets that form the basis for any business operation, but also working capital. Here working capital comprises all assets that can be transformed into liquidity within one production cycle, also called short-term assets (Pfohl & Gomm 2009). Working Capital plays an important part of an organisation’s overall corporate strategy and thus plays a significant role within financial management. The management of short-term assets and liabilities is considered WCM. The goal of it is to maintain enough cash to continue its operations and have the ability to pay both upcoming short-term debt and upcoming operational expenses. Working Capital involves the management of cash, inventories and accounts receivable and payables.

Working capital formula:

$$\textit{Working Capital} = \textit{Current Assets} - \textit{Current Liabilities}$$

As of now, it seems that working capital improvements were the number one priority for the organisation implementing SCF. This is valid, for the reason that profits are generated by investing capital in everyday operations, such as selling

and buying. The needed liquidity used for these operations cannot be invested or used for other purposes. On the other hand, reducing operating working capital will free up additional liquidity in form of cash, the company can assign to new investments or distribute it to its shareholders. Working capital includes all assets which will be transformed into liquid assets within the production cycle, either sooner or later. Working capital is measured by analysing the balancing sheet of a company and therefore a static measurement, providing little inside in the actual time period when the investment turns into cash. That being said, it is only logical to introduce the next objective of SCF: The cash conversion cycle (CCC)

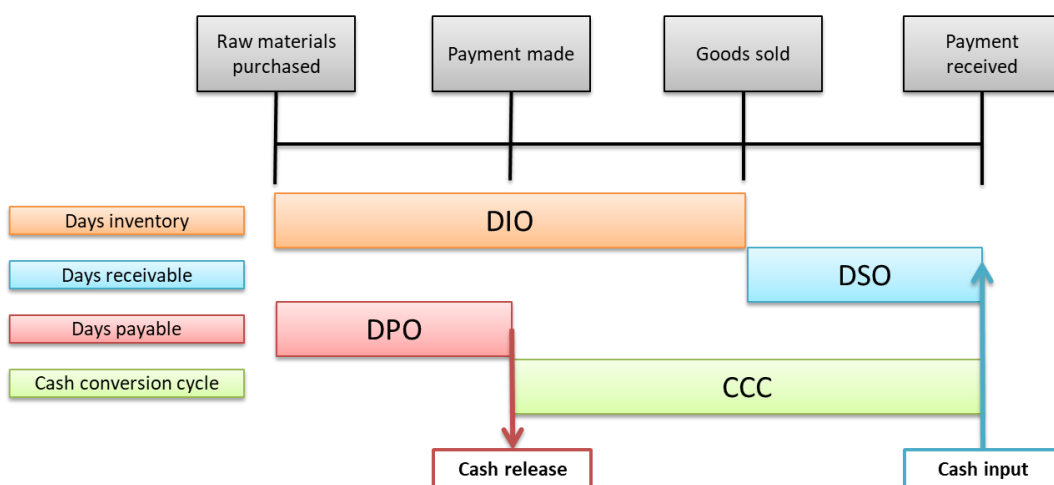


Figure 6: Cash-Conversion-Cycle

The CCC indicates how fast cash returns into the accounts of a company again. More specifically, is a measure of to what time extend cash is tied up in operating working capital. It calculates the number of days it takes an organisation to turn cash outflows into cash inflows and, furthermore, indicates how long an organisation has to find other ways to fund other and current operation duties to stay in business.

The Cash Conversion Cycle formula:

$$CCC = DIO + DSO - DPO$$

Table 3: CCC Overview

Component	Calculation	Description
DIO	$\frac{\text{average inventory}}{\text{cost of goods sold}} * 365$	A lower number of DIO is desirable while making sure sales demand can be ensured
DSO	$\frac{\text{average accounts receivable}}{\text{net credit saels}} * 365$	A lower number is desirable. But a company needs to make sure that it does not expose itself to any risk and stay competitive by not forcing suppliers to any aggressive settlement terms.
DPO	$\frac{\text{average accounts payable}}{\text{cost of goods sold}} * 365$	A higher number is desirable. But a healthy balance between delaying payments and ensuring the goodwill of the supplier should be maintained, while taking advantage of early payment terms.

The CCC formula is rather simple to calculate. Yet, it shows how a single firm can optimize its working capital by reducing its DIO or DSO and/or increasing DPO. A focal company can use its power over its suppliers to increase payment terms and decrease payment terms of its customers and in so doing decrease the CCC thus freeing up liquidity that is looked up in operating working capital.

Be that as it may, applying those terms to its suppliers and buyers the focal company might increase their value within its own supply chain for a moment. For the long term it might be damaging, due to the fact that extending payment terms towards suppliers will worsen their CCC and working capital. Furthermore, if the suppliers have a lower creditworthiness, it will be problematic to receive access

to capital (Hofmann & Kotzab 2010). It is also plausible, because of the unequal capital cost resulting from the different creditworthiness for companies, that an increase in payment terms for suppliers or a decrease in payment terms for customers will have a zero return for the focal company after all. To use the game-theory expression: For the focal company it will be a non-zero sum game.

Taking the prospective of a supply chain network, as previously explained. It is possible to determine an optimal combination of member CCCs that outperforms a single-company perspective by leveraging the differences in capital cost between members in the chain (de Boer et al. 2015).

5.2.3 Levers

Pfohl and Gomm (2009) present the “Supply Chain Finance cube”. The cube has three dimensions of financing which determine the cost of capital.

The formula:

$$\text{Capital costs (€)} = \text{Volume (€)} * \text{duration time} * \text{capital cost rate} \left(\frac{\%}{\text{time}} \right)$$

Explanation of the formula:

The volume is the number of invoices a company has that need to be financed. Secondly, duration is the time period that needs to be financed. Lastly, the capital cost rate indicates the total cost of financing a specific object.

It is not entirely clear what capital cost rate should be used. Hofmann & Kotzab (2010) suggest the weighted average cost of capital (WACC). De Boer (2015) writes that WACC does not always represent the actual situation and needs to be determined on a case-by-case basis.

Furthermore, in the supply chain field it is unusual to share specific ratios about the cost of capital. This leads to risk estimations and shows how SCF is still not fully matured because some members within a supply chain are not sensitized with the fact that ratios need to be shared.

5.3 Reverse Factoring (RF)

Within the trade financing industry, RF is often referred to as SCF as the overall term. Established as a solution where the focal company (buyer), functioning as the centric piece, agrees with a financial provider that its suppliers are allowed to obtain credit for approved invoices by the focal company during a payment term period based on the credit rating of the focal company (Wuttke et al. 2013). Often suppliers have difficult relationships with focal companies because these buyers are able to dictate their payment terms down to them. The main idea behind RF is that suppliers are able to sell their receivables as ‘true sales’ meaning that it is considered an off-balance sheet financing. The focal company then pays the invoice to the financial provider and/or service provider on due date which is usually extended from the previous payment term. The indicator for the financial provider is the credit rating of the buyer and the advantage for the supplier is based on an ‘arbitrage’ between the higher credit rating of the buyer. Figure 7 illustrates the difference between a transaction with SCF and without it.

Agreement without SCF

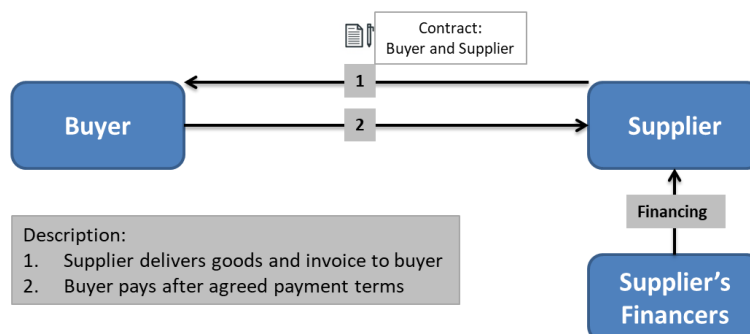


Figure 7: Agreement without SCF

In a situation where SCF is non-existent, both parties (buyer and supplier) have to find ways to finance its supply chain operations and the duration between payment and sales on their own. Without a mutual agreement, there is no possibility to leverage from the better creditworthiness of the buyer. The financial provider bases its credit decision on the supplier's or buyer's information given to them. The risk associated stays with each single party.

Agreement with SCF

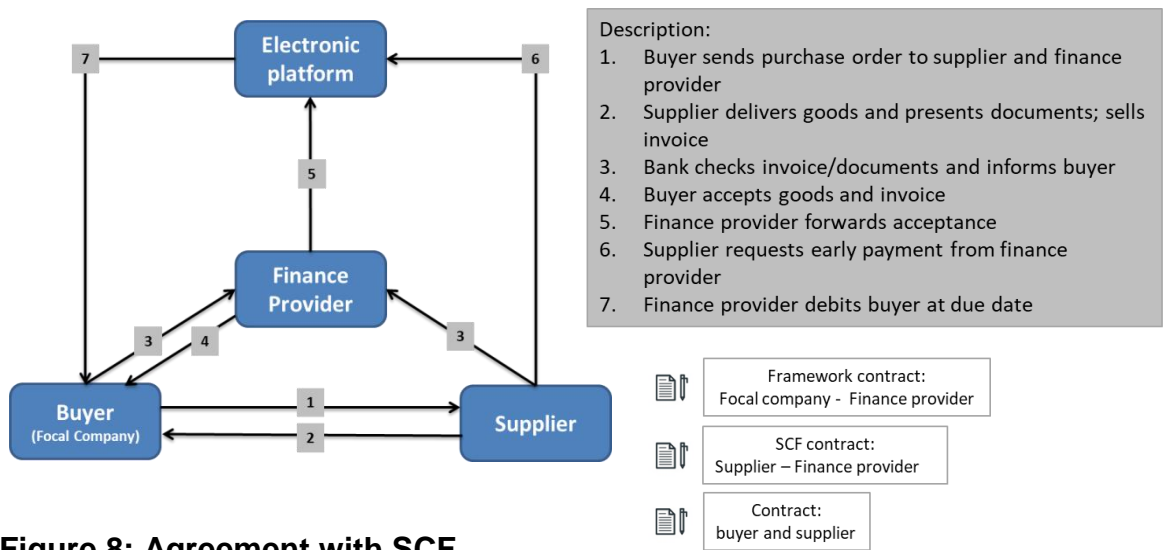


Figure 8: Agreement with SCF

Seifert & Seifert (2009) established three main pillars when using SCF/RF:

1. By using SCF financial providers do not have to evaluate the portfolio of the focal company and are able to charge lower fees.
2. Less risks for the financial provider since the focal company is usually an investment grade company.
3. Better information flow because the focal company actively participates in the process by approving the invoice. This enables the financial provider to release funds earlier and mitigate the risk of non-payment because the focal company takes full responsibility.

SCF model description (Figure 8)⁴

1. The focal company sends its purchase order to the supplier and sends word to the FP

Note: The buyer – supplier contract remains unchanged. SCF is not mentioned in the agreement in order to avoid the implementation of SCF to be considered a financial settlement from an accounting point of view.

2. The supplier delivers the ordered goods to the focal company

Note: The supplier notifies the FP by uploading the invoice to the online platform.

3. The FP checks the invoice and notifies the buyer

Note: Here a framework contract between buyer and FP has to be in place

4. The buyer accepts the invoice

Note: By accepting the invoice and the purchased goods, the focal company takes full responsibility

5. The FP notifies the supplier about the acceptance of the invoice by the focal company

6. The supplier can request early payment from the FP

Note: If the supplier requests early payment, the bank usually credits the supplier's account within the next 10 days.

7. The FP debits the focal company's account after maturity date

Note: The contract which is agreed upon determines the payment terms after which the bank debits the focal company's account.

⁴ For the sake of simplicity, we will use the abbreviation "FP" for finance provider only in this description

Usually the payment terms are around 30 – 90 days, depending on the industry and country.

Figure 9 shows the financial effect of increased payment terms and SCF:

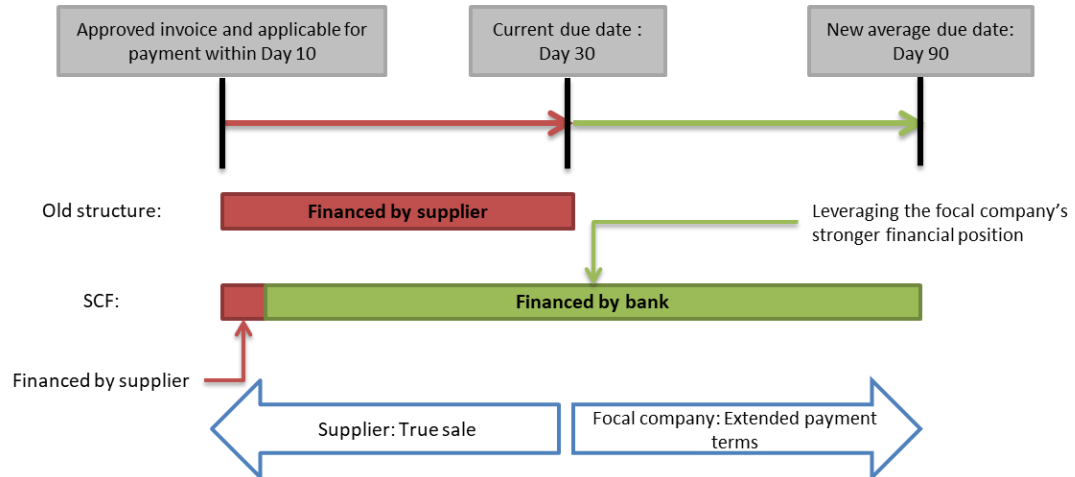


Figure 9: Payment terms

5.4 Factoring

Before RF became popular, factoring was already a common instrument in the trade market. Suppliers used factoring to react to long payment setback by factoring their receivables when they needed cash (EBA 2014).

Factoring is a type of Receivables Purchase, in which suppliers of goods and services sell their discounted receivables to a financial provider. A key difference of factoring is that typically the financial provider becomes accountable for managing the portfolio of the borrower and gathering the payment of the underlying receivables (Global Supply Chain Finance Forum 2016).

When factoring is applied, suppliers sell receivables to collect fast cash. Thus, factors have to evaluate the buyer portfolio before gain entrée an agreement. This made factoring an expansive source of finance in emerging markets. Shortcomings in historic credit information or credit bureaus and weak legal environment has caused high operation costs (Seifert & Seifert 2009).

5.5 Dynamic discounting (DD)

DD is another form of financing a supply chain and implies a solution in which the buyer pays the supplier early using excess cash. In return the supplier reduces the overall cost or provides the goods and services paid for at a discounted price. Yet, the buyer depends on the supplier if he grants the discount meaning the discount is not static. This being said, there is little flexibility for the buyer. On the other side if the buyer does not pay right away the supplier loses flexibility. Clearly, the supplier has an advantage here as he benefits from an operating working capital reduction while the buyer suffers an increase in his (Luca M. et al. 2016).

5.6 Implementation of Supply Chain Finance

When a company attempts to implement SCF it is important to analyse certain factors. Companies should take precautions and examine certain aspects in order to have a positive effect in the long run. SCF implementation requires careful planning in advance.

It all starts with the focal company initiating a SCF solution and approaching a bank and/or technology provider.⁵ When the focal company has decided on a suitable bank and technology provider, the next step is to on-board suppliers. Here it is important to follow certain steps. The following are important for the focal company and the supplier as well.

1. Supplier base

If a company considers implementing SCF it should evaluate its supplier base and determine those who meet the requirements to be on boarded. Here, the biggest suppliers should be the first to be contacted. A powerful tool that can be applied here is the 80/20 rule or Pareto Principle. The rule states that 80% of the output comes from 20% of the input. If you transfer this to suppliers, it means that 80% of goods come from 20% of suppliers. The Pareto Principle is a great way to prioritize. Furthermore, focal companies need to assess the

⁵ If the finance provider offers the online platform, there is no need for a technology provider.

contribution of each supplier and the impact of discounting the contributing supplier. At last, the focal company should keep in mind that SCF needs to bring as much value to the supplier as possible in order to increase their interest. This can be done by analysing the potential value based on the difference in credit rating between focal company and supplier. Figure 10 illustrates the core principles of such an analysis. The horizontal axis of the graph shows the credit rating of the suppliers while the left side indicates the capital cost rate of the suppliers. The right axis gives information about the total spend with all suppliers of that credit rating (de Boer 2015)

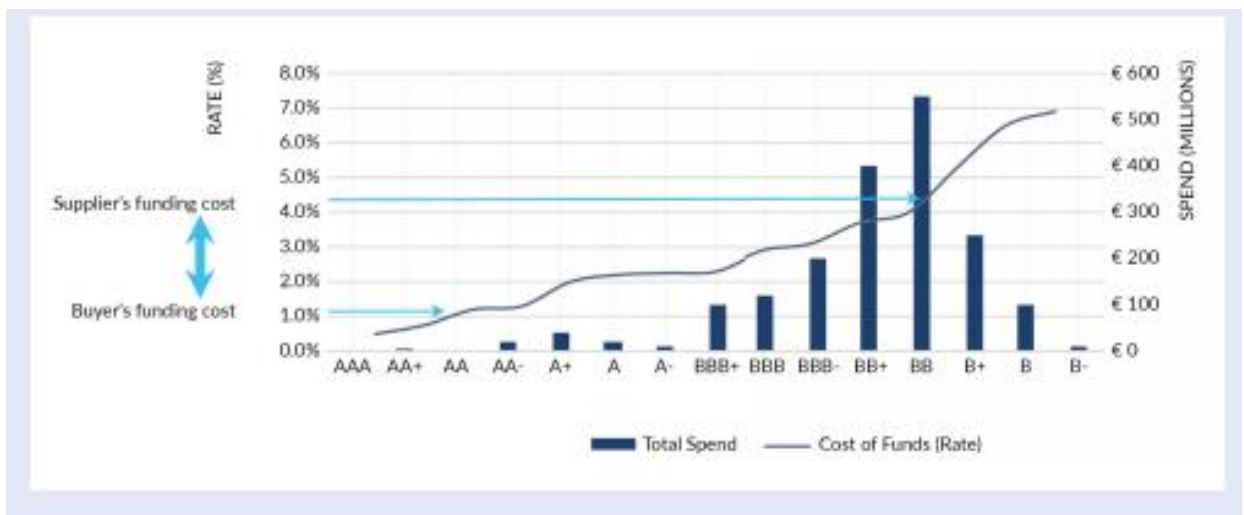


Figure 10: SCF Supplier Base Value Analysis (de Boer 2015)

2. Inter-company collaboration

In order to successfully implement SCF the collaboration of procurement, logistics, finance and treasury departments needs to be ensured. Collaboration encourages companies to connect with internal and external partners within a supply chain (Hofmann & Belin 2011).

3. Fee structure

The funding fee is important to consider and is made up of two elements. Firstly, the interest rate which varies from country to country. The three most well-known are Libor, Euribor and the Federal Discount Rate but there are also other country specific rates.

4. Limitations

The focal company should be in the clear about limits regarding the transactions to be financed. Banks set certain limitations that are binding when setting up a SCF.

The following need to be considered in the scope of limits:

- ✓ Payables must be free from off charge or security interest.
- ✓ Payables may not be sold, pledged or transferred and need to be applicable to be assigned to the supplier.
- ✓ There may not be any dispute, i.e. commercially, between the supplier and the focal company.
- ✓ A minimal value of payables to be financed needs to be established for the SCF contract.
- ✓ A minimum period of days before the payables are financed must be agreed upon.
- ✓ The bank may appoint a facility limit.
- ✓ Focal company and supplier should agree on a maximum number of payables submitted each month or each quarter.

This being said, it is important to choose the right bank with limits that fit the requirements of the focal bank.

5. Payments

When negotiating payments certain conditions have to be considered to make sure swift payments are verified.

The focal company and its supplier have to verify if an online-platform, they use to upload the invoices for discounting, is needed.

The partnering bank has to clarify if the facility is committed or uncommitted. In order to have committed facility terms and conditions must be clearly defined by the bank (lending institution) and communicated to the borrowing company (focal company or supplier).

If the facility is uncommitted the bank will agree to make funding in general available for the borrower, but it does not obligate her to a clear amount of money to be borrowed.

Furthermore, since trade is made globally, the currencies allowed for funding must be negotiated as well as the number of currencies available for funding. Aite Group (2014) provides a view question a company should consider when implementing SCF. In their case study they state that depending on the chosen legal instrument for collateral the supplier may have to act as a collection agent for the bank. That being said, some question need to be answered before going further with the implementation of SCF.

- Is there an allowance to the supplier for such a service?
- Is any such eventual allowance part of the discount rate applied by the bank or accounted separately?
- Does the collection agent have to open a separate bank account?
- With what frequency do the collection agent transfer receipts to the bank?

At last, the supplier must communicate if there is the need to open up a special bank account in order to receive financing by the bank.

6. Dates

As already clarified before SCF can be set up with multiple suppliers and each supplier might have different payment terms. The focal company needs to analyse which supplier's payment terms can be extent the most. Furthermore, within the SCF process there are multiple steps and each step will trigger the next. It is important to determine the time needed for a supplier to access finance and how long a single SCF process, until the bank debit, takes. During this process there are dates to be adhered to by all parties involved.

The following dates need to be considered in this order:

- Original invoice date: Suppliers send original invoice to the focal company date (including grace period for the supplier).
- Approval date: The focal company approves the invoice received by the supplier.
- Request date: The supplier requests the discount on the invoice to receive early payment.
- Decision date: Bank approves or refuses the discount based on the information given to them.
- Response date: Suppliers accepts discount payment.
- Fee payment date: Supplier might have to pay fees to the bank.
- Refund date: At maturity the buyer refunds discounted amount to the bank. At this time, it is advisable also to verify whether there is a limit of days from this refunding date after which the focal company becomes delinquent (Aite Group 2014).

7. Costs

The cost structure is important for both the focal company and the supplier to calculate the investment and build up a business case for SCF. The costs will differ considering the bank, the platform provider and the credit rating of the focal company. Citing Aite Group (2014) and the expert interview with Volvo: “Some of the costs associated with the implementation and management of an SCF programme are not always easy to quantify in a large organisation.” On the other hand, the structure of costs will mostly be the same. The four main categories of cost are:

- monetised costs: costs installed within the fee structure itself.
- employee time: time spent by employee to set up SCF.
- one-off costs: start-up costs.
- recurring costs: repeating costs – monthly or annually.

A more detailed view on the different costs to be considered is provided in the appendix (Table 4: SCF cost overview).

On the other hand, both parties have to expect additional costs for legal assistance such as auditors' fees for accounting analysis and advisory services to be applicable for different country laws if SCF programmes expand globally. Along with these both parties should consider advisory and legal assistance to establish a common ground on issues such as tax withholdings, VAT, deductions, charges, translations of documents and fees (Aite Group 2014).

6 Supply Chain Finance Benefits and Risks

6.1 Benefits

SCF solution and its RF scheme are widely promoted as a 'win-win' opportunity for both the focal company and its suppliers; a 'win-win' situation because the focal company uses its superior credit rating to lower the overall financing cost for the supplier and extend his payment terms. There are multiple benefits for focal company, supplier and the financial provider. If SCF is implemented properly, each party should have the following benefits:

Focal company benefits: Since the focal company is using SCF to mitigate the costs for the supplier, he will be well positioned to negotiate better payment terms (DPO). This extension of days payable outstanding will free up operating working capital leading to improved WC metrics and to additional liquidity. Liquidity can then be used for strategic investments and free up credit lines. Furthermore, because SCF is combined with an online platform all invoices are managed electronically reducing the staff hours calculated to handle it manually. The focal company also has to be less concerned about non-innovation by the supplier because SCF leads to a reduced time-to-market responsiveness (Aite Group 2014).

Supplier Benefits: By agreeing to SCF solution the supplier will obtain access to lower cost for capital for the entire supply chain because it benefits from the credit rating of focal company. On top of that DSO will be shortened, which generates more cash flow and allows the supplier to improve its cash forecasting as well. The supplier is able to use the new liquidity for new investments and a SCF is

considered to be an off-balance sheet transaction. Taking all this into account, the need for emergency liquidity will decrease, because payments are standardised and the risk of non-payment by the focal company is transferred to the financial provider (bank).

Financial provider: The bank is the middle part of the entire solution providing the funds that allow the focal company and the supplier to earn on the capital invested in the agreement. SCF is considered to be low risk meaning the bank has to hold only small amounts of capital. In the light of Basel III, the strategy of mitigating risk with SCF suits financial institutions.

Overall: Because of the availability of information and financial visibility at all times the collaboration of the focal company and the supplier can be increased, leading to a better buyer – supplier relationship. This stabilizes the entire supply chain network.

6.2 Risks

SCF solution is usually in place to mitigate risks for all parties. By implementing SCF uncertainties such as carrying costs during delays, high capital costs, seasonal pressures and cyclicity (CCC) are mostly reduced to a minimum. However, there are some risks that need to be considered when SCF is in place. One downside for the suppliers might be that they have to repurchase a recourse payment if it is not eligible, but this can be prevented as described in the following. Furthermore, as already mentioned in the implementation process, legal costs could arise for the supplier. Adding to this, some suppliers do not have the needed knowhow about WCM which might harm them after they agreed to implement SCF. Once implemented, the supplier can become dependent on the SCF agreement.

At last, the suppliers must make sure that all receivables within a SCF solution program are under no risk to be transferred back. Some banks recourse to the supplier if the invoice is not eligible:

- Payables are connected to fraud or the focal company has a commercial dispute with the supplier,
- Payables are not eligible,
- Supplier bypasses the payment of taxes or fees due.

7 Research: Empirical Findings

This chapter provides all empirical findings gathered by qualitative interviews with practitioners and researchers. Before turning over to the evaluation of the interviews, the process of information collection and the evaluation process are explained. Furthermore, the interviewees will be introduced and the shortcomings of the interviews will be assessed.

7.1 Interview Setup

The surface of SCF is yet to be fully researched in order to reach a maturity status. Taking this into account, the proper approach to accumulate empirical input for this thesis are in-depth interviews. In-depth interviews are useful when detailed information about a certain topic is needed or it is needed to explore a certain topic in depth (Boyce & Neal 2006).

With respect to the aim of these interviews it was vital for the interview process to set up the right approach. There are different approaches to execute such qualitative interviews: structured, unstructured and semi-structured. Unstructured interviews were ruled out at first as no questions were prepared prior to the actual interview. This approach would have not given any reliable and comparable data after all. Another approach which was shortly considered was the semi-structured interview approach. In this approach some questions are prepared prior to the interview but there is room for questions arising while the interview goes on. Taking this into account, the structured interview approach suited best as all questions are pre-determined and handed to the interviewees beforehand,

assuming the chosen subjects will prepare for the interview date in advance. Some other questions might have been asked as the interviews went on, but these findings will not be presented in this thesis if not comparable to other findings (Dudovski 2017). Since SCF has not matured this serves the goal of the thesis to include different inputs and attempt to conclude these findings into a well-rounded definition and give a productive input for both academia and practitioners.

7.2 Participants

The five participants for these interviews were carefully selected by the following criteria developed in order to accumulate quality interviews. The internet served as a basis in order to research certain websites such as Prime Revenue and Supply Chain Finance Forum. The main source here was the Supply Chain Finance Forum and its past events. People from the academic and business side meet up to share their knowledge and innovation about the SCF landscape.

All interviewees were either practitioners who worked within a company applying SCF and RF solutions or academics who research the field of SCF and RF. All practitioners chosen for the interview were at least in a managing position within their company. The interviewees were chosen so that different point of views would be covered but most importantly the interviewees needed to be experts in the field of SCF to secure the reliability of the findings. All interviews were held in English via Skype call and took about 50 minutes.

The interviewees

Practitioners		Academics	
Role	Company	Role	University
Treasury Manager	International Brewery Company	Roland de Boer (Associate Professor)	Windesheim University of Applied Sciences
Commercial Finance Manager	Telecommunication Company	Luca Gelsomino (Senior Researcher)	Windesheim University of Applied Sciences
Global Supplier Risk Manager	Consumer electronic		

7.3 Analysis of Interview findings

Interviews revealed that there are still different views on SCF when comparing the understanding of practitioners and academics. Some of these could be explained by the fact that the academic side looks at SCF from a more rational point of view while practitioners always place their company first. Practitioners answered questions more precise while academics had broader answers to questions. It is not unusual that academic-practitioner relationships experience gaps between theory and practice or similar terms (Jean & Sara L. 2014).

First, asked about the definition of SCF reverse factoring scheme, most practitioners (2/3) defined SCF more as a tool that is provided, and it is up to the company how to use this tool effectively. Academics consider it more of a solution that can optimize flows and the allocation of financial resources as well as ratios (operating working capital, cash flow, CCC) and the collaboration of supply chain members to increase efficiency, effectiveness and the sustainability of the entire supply chain network. One of the practitioners interviewed agreed that SCF and reverse factoring can be seen as a solution. As a matter of fact, all interviewees agreed that SCF can be a factor for increased sustainability. Yet, academics administer the factor sustainability at a higher degree of importance. Before turning over to the next question, it is necessary to examine the difference between a tool and a solution. A tool is a singularly-focused application that does one thing while a solution attempts to solve multiple problems within an organisation. That being said, SCF and RF must be considered a solution as it directly solves problems that affect an organization's goals. More specifically, it optimizes financial resources and ratios within a supply chain network. Implementing a solution follows a path that should be guided by best practices. Solutions, once developed, should be reusable and applied to reduce work and maintain consistency in future projects.

Next, the interviewees were asked why the SCF reverse factoring scheme has gained such popularity over the last years. Here, it seemed that all interviewees agreed on the same reasons (scarcity of liquidity, financing problems for SMEs).

The most popular reason among the interviewees was that it is a great way for multi-national companies to access funding for its suppliers, including SMEs which have restricted access to financing since the credit crunch in Europe. Furthermore, the interviewees think that SCF reached a maturity stage where all parties (Focal Company, supplier, and financial providers) realized that it can help each actor in the process, making it a “win-win-win” situation. One practitioner pointed out that another reason can be the increased visibility of transactions when implementing SCF which is in line with the academic point of view. A result of the visibility effect is that financial providers are under more pressure to price correctly and not charge suppliers higher margins.

When asked about the industries where SCF is most effective answers differed. Some interviewees said that companies within the consumer goods and telecommunication industry have a high potential to implement SCF. Others have only focused on the country where SCF can be implemented. This led to another great observation which was not included in the questionnaire before that not only the industry but also the country has to be a requirement if SCF can be considered. Here the argument was brought up that countries with different currencies and/or high inflation rates are less interested in SCF because it leads to higher interest rates followed by higher costs.

Next, people were asked what the main benefits for buyers and suppliers are. Here, both sides agreed on the benefits mentioned in the chapter “*Supply Chain Finance Benefits and Risk*”. Especially visibility was of great importance for all interviewees. A supply chain which is totally visible can be tracked perfectly. The flows of finance and goods can be traced back to its origin and each supply chain member would have all information at any point of time.

When asked about the risk and challenges both parties replied and covered what is already mentioned under “Risk”. Furthermore, interviewees added the risk of payment if invoices are not approved within a certain time period (10-14 days). The supplier will not be able to take advantage of the discount payment after all.

A question which received some different answers was if SCF can mitigate the risk of foreign exchange. Overall, the answer was common that it does not

mitigate the risk of foreign exchange. However, one practitioner saw a slight possibility and argued: “Forward positions could be shortened and rather than hedging for six or twelve months waiting a shorter time period to reduce the currency risk.”

When asked for the reasons why SCF and RF are implemented all participants had mostly the same answers but different priorities. Everyone mentioned that companies agreed on the facts that companies implement SCF to improve operating working capital, decrease CCC, increase DPOs for the focal company and decrease DSO for the supplier. Both parties highlighted that SCF could be a regulatory requirement in order to continue business while academics emphasized social responsibility. The social responsibility argument is especially interesting. Companies might implement SCF with certain requirements the supplier has to fulfil, such as meeting certain work condition standards. This is especially important for suppliers in developing countries where some standards are underdeveloped. One practitioner raised the thought that there is actually no reason at all to implement SCF and it is rather a question of what a company's objectives are and do these objectives fit to the SCF as a tool.

Interviewees had different thoughts about a benchmark to be met when a company wants to implement SCF. On the one hand, some interviews gave importance to the financial provider a company chooses as a partner (e.g. some financial providers require at least \$1 billion purchase value or at least \$5 million turnover). Others mentioned the actual take up from the supplier and if the supplier base is big enough. Everyone agreed that the implementation process until the first supplier is on-boarded takes around 6 months. After the first supplier is on board it usually shows a good example which makes the on-boarding of further supplier to the SCF scheme easier.

Also, participants were asked what they thought were their top three key performance indicators (KPIs). Here it was quite interesting that the answers from practitioners differed within. One practitioner mentioned the portion of sales taken early and the level of profit. While the others focused more on reputation, CCC and the relationship between focal company and supplier. Academics on the

other hand prioritized the number of suppliers eligible for a SCF reverse factoring scheme, CCC and cash covered.

At last, interviewees were asked about future trends they see evolving in the next years. In the short-term, SCF will become more popular in developing countries as multi-national companies provide RF to suppliers but only if they respect social and environmental practices. What was interesting to find out, all of them joined the thought that working capital optimization will not be a considerable growth factor rather than how SCF can be optimized to make a supply chain more sustainable. Furthermore, everyone agreed that blockchain will play a big part in order to track the product flow and make trade even more visible for all parties involved. An interesting thought by academics was a so called 'SCF House' where a financial provider does not finance a specific company but instead develops and takes control over the entire supply chain. This is motivated on the idea of moving a company (e.g. company XY) further down the supply chain. Based on the order of XY, it may move down to a 3tier or 4tier supplier. The financial provider functions as the buyer of material and goes upstream the supply chain (paying value added for each supplier) until it sells the product to XY. Company XY will then pay the financial provider for the financing service. Overall it can be said that the financial provider turns into the owner of goods within the supply chain network if total visibility is given (Gelsomino 2017).

7.4 Limitations of the empirical results

The empirical part of the thesis was supposed to include seven interviewees from practice and academia. That would have secured perfect reliability by having a good sample size. However, even though all seven interviews were scheduled by the beginning of December 2017, two participants did not respond to a reminder email and did not participate at the interview. Since the interviews were not able to be held as originally planned, the thesis ended up with a smaller group of interviewees. Yet, it is assured that the data provided from five interviews had significant quality input and that the attention given was even greater. Furthermore, the sources for my interviews were either an expert in the field of research or managers who are experts in practice. Due to the fact that the data

consists of the interviewees' experience with SCF and that all managers have had close encounters with SCF the empirical research is valid.

8 Conclusion and Discussion

This chapter ties up the introduced theory part and connects it with the empirical findings. Subjects that might be worth researching in the future will be discussed. Finally, the thesis attempts to define the SCF in a way that can be adopted by the industry and academia.

This thesis introduced the different definitions of Supply Chain Finance. It gave an understanding on how researchers look differently on the topic of SCF and RF. The thesis evaluated the development of SCF within SCM, its structure and model, implementation process and the benefits and risks.

The main focus was to find an overall definition which can be adopted by practitioners as well as academics. Having studied the scope of SCF it is clear that this approach is an integral approach to finance a supply chain. As the financial crisis erupted and providers of online platform expanded their services to such approaches, SCF has gained recognisable interest from all types of industries. As deeply investigated throughout this thesis, RF is one of these services and the most popular. SCF and its accompanying RF solution is an arrangement between the focal company (buyer), its supplier (or multiple suppliers) and a financial provider serving as a middle man. The financially stronger buyer facilitates low cost capital (credit rating) by accepting and transferring the receivables of his supplier to a financial provider. The gap within SCF is the missing definition suitable for both the academic and practice side. This thesis aims to contribute to filling the gap.

To approach this issue the thesis was set up as follows. First, a historical background of how SCF became popular in the age of global trade and the financial crisis 2009 was provided. Secondly, it was stated how financial flows became a vital point for organisation to integrate these flows and metrics in their SCM. Subsequently, it was narrowed down to SCF and investigated the scope in depth by examining the process, its implementation process, its benefits and risk.

This was done by developing figures and models to illustrate SCF and RF solution. In order to compare the theoretical findings and definitions with the industry understanding of SCF, qualitative interviews were conducted. In specific, 3 interviews were conducted with managers from the industry while 2 interviews were done with academics.

In order to develop a definition, the research questions have to be answered. The main question to answer is if the theory of SCF and its implementation process and benefits tally with the findings of the interviews and if those helped develop a definition suitable for both parties. To support the main question, answer will be given to the other questions (1.4 Research Questions) which will lead up to the first question asked. This way, it can be narrowed down to a definition attempt which supports academics and practitioners.

What are reasons for a buying firm to implement SCF?

Having analysed the definitions (5.1 Definitions of Supply Chain Finance) it can be understood that SCF is mainly a solution to optimize working capital (more specifically operating working capital). Yet, in the interviews participants did emphasize the fact that working capital optimization is an effect of SCF solution but not the only reason by far (see 7.3 Analysis of Interview findings). There are various reasons for a buyer (focal company) to implement SCF. PWC's Barometer shows that supply chain stability, liquidity needs for suppliers and enhancing the buyer-supplier relationship are among the top reasons to implement SCF as well (PWC, 2017). This confirms is confirming the observations made in the interviews. Taking this into account, it is to conclude that definitions simply including working capital optimisation are incomplete. Furthermore, definitions that define SCF as a solution to optimise financial flows are more appropriate but are still incomplete to a certain degree.

How does a SCF implementation work and what affects will it have?

What aspects must be considered before implementing it?

What are general guidelines and how must the process be managed?

The purpose of this research question including its sub-questions was to support the second question and the main question. The implementation process is clearly defined in this thesis (5.6 Implementation of Supply Chain Finance). Furthermore, specific KPIs were suggested by all interviewees. Lastly, by analysing risks and challenges in both sections (theoretical and empirical part) this thesis illustrates a good overview on how to manage a SCF process.

All these questions led up to the question if the theory connects with the practical experience. After evaluating SCF from multiple angles it can be said with certainty that both have a similar view on SCF and how to implement it. But it may be argued, that the overall definition still has differences. For this analysis the focus needs to turn over to the final conclusion.

8.1 Final Conclusion

All definitions presented in this thesis helped finalizing the definition presented in this thesis. Especially Wuttke et al. (2013) and de Boer (2015) definitions were close to a definition that can be adopted by both practitioners and academics. Wuttke et al mentions the upstream perspective and that SCF improves visibility and control. De Boer includes the involvement of at least two primary supply chain members as well as the sustainability improvement through SCF.

Including the explicit term “supply chain network” and that SCF is a solution to be implemented is vital. Including the term “supply chain network” emphasises the collaboration of all members (focal company, supplier and the bank). Finally, this thesis presents a definition that takes into account the feedback from practitioners and academics but also the evolved supply chain understanding that a supply chain must be seen as a network.

SCF is a solution that attempts to optimise financial flows and recourses within a supply chain network by improving financial performance, sustainability and the effectiveness.

8.2 Future research

This thesis focused on investigating the theory of Supply Chain Finance and Reverse Factoring while comparing it to qualitative data based on expert interviews. However, further research on the topic by involving a broader base of interviews including company data should be encouraged. This is because we still see a gap between academia and practice. If interviews in a broader range including company data would provide large-scale and interesting data that can be analysed in the future.

Another interesting topic would certainly be to investigate the options of the cooperation of sustainability versus Supply Chain Finance within the supply chain network. Here it would be interesting to examine the actual input in the long run; Supply Chain Finance can have on the sustainability of a supply chain network.

Future researcher could also study the impact blockchain can have on supply chain networks considering the tracking of products through the entire end-to-end chain.

At last, it could be investigated if SCF and the fact that it can improve working capital ratios are beneficial for companies in a world of zero or even negative interest rates. Here it could be researched how companies would adjust to this kind of issues and how cash flows could be changed.

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Appendix

Table 4: SCF cost overview (Aite Group, 2014)

Cost element	One-off / recurring	Party accountable*	Comments
Monetised: software to access and integrate the SCF platform to the party's back office	One-off	Buyer	If the SCF platform is bank-proprietary the bank tends not to charge the cost. If the SCF platform is provided by a service provider the cost is often embedded in the total cost of implementing the SCF programme (approx. US\$2,500 one-time cost).
		Supplier	Banks tend not to charge the cost. Platform providers charge approx. US\$200.
Monetised: hardware and equipment needed to use SSL (Secure Socket Layer) technology or equivalent for secure access to the SCF platform	One-off	Buyer/ Supplier	A bank could require such a facility depending on its access system and on the bank's security policy. For a platform provider this cost is part of implementation cost and embedded in the cost for the portal solution.
Monetised: SCF platform (ie, portal) software licence fee	One-off	Buyer	The buyer can purchase the software directly from a SCF platform vendor, or decide to use the bank's, or, finally, to pay a pay-per-use licence to a SCF portal service provider. If the buyer decides to purchase the software, the cost may be around US\$600,000. If the SCF platform belongs to the bank, the fee is normally embedded in the risk margin. If the SCF portal is operated through a service provider, the pay-per-use fee is normally tiered: the annual order spend is multiplied by transaction fees, and paid as an annual subscription. The fee can be as low as US\$2,000 for an annual spend of US\$1,000,000, up to US\$600,000 for US\$10,000,000 of annual spend.
Monetised: Platform software Implementation and integration fee	One-off	Buyer	Banks tend not to charge this cost. Portal service providers charge this as a professional service fee. It is a one-off cost and usually ranges from US\$300,000 up to US\$1 million.
Monetised: IT maintenance costs	Recurring	Buyer	Banks do not charge this cost. Portal service providers charge this cost. It is a fraction (usually 18-20%) of the initial licence fee, and is based on volumes transacted. If the software is in pay-per-use mode, the cost is embedded in the subscription fee.
Monetised: Due diligence costs	One-off	Buyer	Costs to bank for assessing buyer's credit worthiness. Between US\$300 and US\$400 in Europe Whether or not to charge the buyer is the bank's commercial decision
		Supplier	Bank KYC 6 assessment.

Cost element	One-off / recurring	Party accountable*	Comments
Monetised: Training and Education costs	Recurring	Buyer	<p>Banks do not charge this cost.</p> <p>For SCF portal service providers it is normally embedded with the licence fee.</p> <p>It is very important to educate the internal staff (eg procurement, accounts payables) on the changes to the supplier relationship procedures.</p> <p>The amount of the cost depends on the number of subsidiaries to train. The average training time is five days/year.</p> <p>In some cases these costs are quoted as part of a professional services fee.</p>
Monetised: Legal costs	One-off	Buyer	Costs for formalising the SCF agreement. On average US\$15,000
FTEs: IT staff for startup	One-off	Buyer	Between 1 and 2
		Supplier	Not very significant. Less than 1
FTEs: On-boarding	Recurring	Bank/ Buyer	<p>Between 1 and 2</p> <p>A rough figure is 1 FTE for every 100–150 suppliers to on-board</p>
FTEs: Internal operations	Recurring	Bank	<p>Between 0.5 and 2</p> <p>On average 20% of on-boarded suppliers tend not to use the platform for financing, so there is the need to keep a constant eye on them and follow up</p>
FTEs: Assistance to buyer/supplier/bank/ fund provider	Recurring	SCF platform provider	0.5 on average
FTEs: Staff of procurement department to discuss contractual details as part of supplier relationship management	Recurring	Buyer	Between 1 and 2 for internal coordination
FTEs: Staff of Legal department.	Recurring	Buyer	<p>0.5 FTEs on average to work with bank and suppliers to ensure proper on-boarding procedures.</p> <p>Large corporations have their own contract ready to hand over to banks and this reduces the FTE time.</p>
FTEs: Staff of Legal department	One-off	Supplier	<p>On average 0.1, to max 1 FTE.</p> <p>This cost often represents a potential barrier to enter SCF programs for small companies.</p>
FTEs: SCF Program leader	Recurring	Buyer	<p>Between 0.5 and 3 FTEs.</p> <p>The number depends very much on the size of the company.</p>