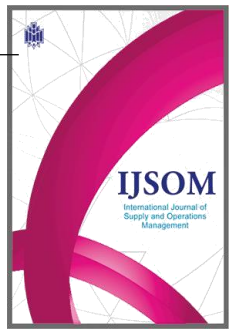
International Journal of Supply and Operations Management

IJSOM

November 2018, Volume 5, Issue 4, pp. 298-318
ISSN-Print: 2383-1359
ISSN-Online: 2383-2525
www.ijsom.com



Bank Mediated Financial Supply Chains: Implications for Supply Chain Strategy and Operations

Somendra Pant*, [a], Santosh Mahapatra [a]

[a] *The David D. Reh School of Business, Clarkson University, Potsdam, New York, USA*

Abstract
The purpose of this paper is to examine how bank-enabled electronic financial supply chain management (FSCM) systems influence the relationship between business partners in dyadic supply chains in emerging economies such as India. Specifically, we utilized transaction cost theoretic lens to: (1) explore how banks, via FSCM, influence the financial and material flows in supply chains (2) detail the changes to exchange characteristics between supply chain partners and (3) evaluate the performance outcomes of changes to the exchanges' characteristics. We utilized inductive, multiple case study as the methodological approach. We collected data via semi-structured interviews from seven firms. In all, we conducted 20 in-depth interviews lasting over 20 hours. Our findings are that Supply chain members would adopt FSCM to make transactions cost efficient. Banks would motivate their clients to encourage the adoption of FSCM system to expand market and reduce business uncertainty. Adoption of FSCM system would increase when the focal supply chain member gives assurance about the business prospects and creditworthiness of their trading partners. Adoption of FSCM system is more likely when they build on prior e-enabled exchange systems with their clients. Trustworthy, cooperative and disciplined behavior among the firms is crucial for a FSCM system to function well. We identified several important constructs and relationships that help to understand the exchange dynamics in financial supply chains.

Keywords: Financial Supply Chain Management; Coordination and Control; Banks; Buyer Behavior; Supplier Behavior; Transaction Cost**.**

1. Introduction

Supply chain management (SCM) involves management of the flow of material, information, and finance between suppliers and customers (Bowersox et al, 2002). Traditionally, firms have focused on managing the flows of material and information in supply chains. The attention to managing the flow of finance to gain benefits beyond the optimization of information and material flows has increased with the successful experience of firms like Ford, Toyota, PepsiCo, Walmart and Boeing (Blanchard, 2013). The efforts to improve financial flows in the supply chain through the help of banks have come to be known as Financial Supply Chain Management (FSCM).

Financial supply chain refers to interlinked financial flows that facilitate the purchase of, and payment for goods and services between trading partners (Blanchard, 2013; Robinson, 2007). FSCM helps meet the liquidity requirement for day-to-day operations and the long term financial goals in supply chains cost.

Corresponding author email address: spant@clarkson.edu

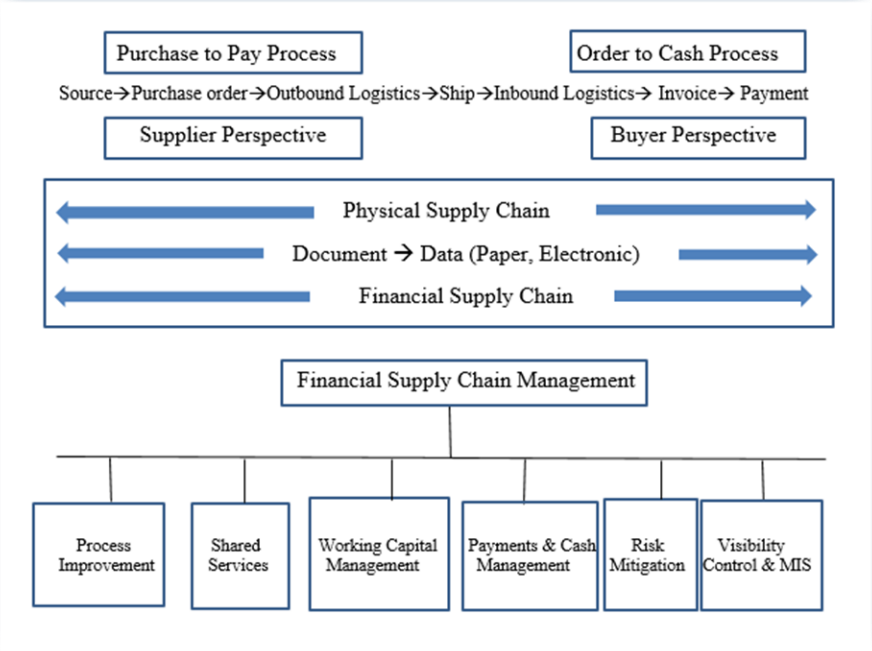


Figure 1. Key elements of financial supply chain

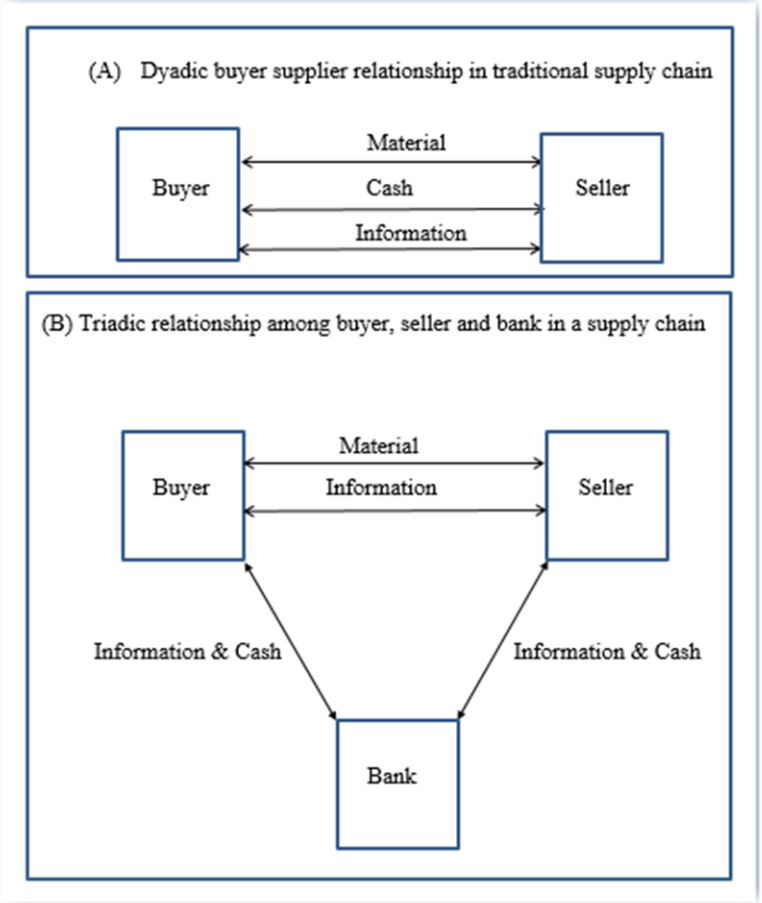


Figure 2. Relationships in financial supply chains

Banks through FSCM are able to influence the exchange relationship and supply chain structure for greater efficiency and effectiveness. The above perspective is resonated by HSBC, a prominent international bank (refer to Figure 1). Apparently, the IT-enabled financial and physical flows aids in Supply Chain Process Improvement, Working Capital Management, Risk Mitigation, and other similar cases. The close relationship between physical flows and financial flows allows banks to play an active role in influencing the exchanges between the buyer and seller (refer to Figure 2).

Routing information through banks increases the volume and velocity of business as compared to traditional supply chains because banks are able to infuse higher liquidity into the system. To illustrate, in the traditional arrangement, banks selectively finance a manufacturer's distributors by way of short term (working capital) financing. Banks would assess the risk of each distributor and thereby make a decision on whether to finance or not finance them. What changes under FSCM is that banks finance working capital requirement of a manufacturer's distributor on the strength of the bank's relationship with the manufacturer. This results in bank's financing smaller distributors, which in turn increases liquidity in their supply chain, and consequently results in higher production and sales for the manufacturer. Also due to the digitization of documents, there is an increase in the volume of finance in supply chains, and the speed of transactions.

Despite the increased adoption of FSCM, not much empirical investigation has been done to understand its strategic and operational implications. Our study aims to address this shortfall. Given the novelty of the topic, and difficulty in disentangling the boundaries between the FSCM operations (i.e., the phenomenon) and their operational context (Yin, 2013, p. 13), we adopted exploratory case research as the methodological approach. We conducted our investigation in light of the FSCM experience of multiple Indian firms. Our selection of the Indian context was motivated by: a) India is a highly populous, fast growing economy (the growth rate of GDP has been over 7% in the last few years) with a big, diverse market that requires both domestic and international corporates such as Toyota, Suzuki, Nissan, BMW, Walmart, Tata and P&G to transact with both large and small size businesses; b) India is world's largest democracy with a highly decontrolled economic system; c) Indian banks play an important role in facilitating this fast growth in economy; and d) the emerging nature of Indian economy presents opportunities to understand the transformational dynamic in supply chains in terms of how FSCM structures, arrangements, and strategies affect buyer supplier relationships.

Given the fact that the direct effects of FSCM are on exchanges between buyers, sellers, and the bank, we utilize a transaction cost theoretic (TCT) lens to interpret, understand and explain the strategic and operational implications of FSCM. Further, we analyse and theorize how FSCM could impact the strategic competitive advantages of supplier, customer and banks. Thus, our research endeavours to answer the following questions:

RQ1: How are the costs, benefits, and risks in buyer-supplier exchanges affected by the implementation of FSCM?
RQ2: What roles do banks play in altering traditional dyadic buyer-seller relationships in supply chains?

These questions are important because banks, through FSCM, do much more than facilitating financial flows in the supply chains. In some cases, they alter the very basis on which buyers and sellers use to conduct business by providing finances to smaller partners while assuming the business risks that large companies in a dyadic supply chain traditionally bear. It is important to assess the implications of such triadic interactions among bank, buyer and supplier in varied types of operating and business contexts.

To address the research questions identified above, we use the research framework depicted in Figure 3 that considers transaction cost theoretic (TCT) perspective. The framework allows us to explore how bank-initiated FSCM practices influence the material, information and financial flows and exchange coordination practices that in turn affect the operational, financial and relational outcomes and buyer and supplier side market structure.

The rest of the paper is organized as follows: in the next section we review literature related to FSCM. This is followed by a discussion of research and data collection methodologies. In the subsequent sections, we analyze and compare our case studies and offer testable propositions for theory building. We conclude the paper with a discussion of our main findings, limitations and directions for future research.

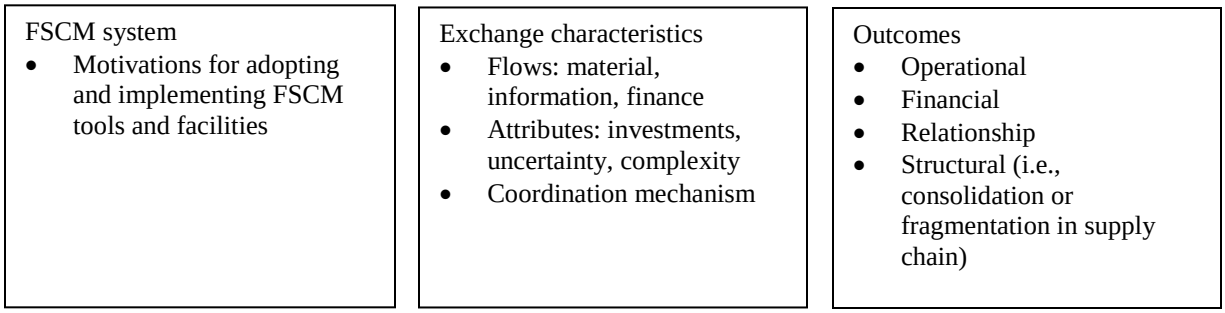


Figure 3. The research framework

2. Literature review

FSCM deals with the management of financial flows in supply chains. We therefore build on the supply chain finance (SCF) literature that relates to this study. This stream of literature has had its main focus on financial implications of inventory management in supply chains (e.g., Pfohl & Gomm, 2009; Gelsomino, et al., 2016). The dynamics of bank-intervened financial flows in supply chains is relatively less studied (Gelsomino et al., 2016). Out of total 119 papers published on SCF in peer reviewed journals between 2000 and 2014, only 5 consider the role of a financial institution in enabling and facilitating financial supply chains (Gelsomino et al., 2016). Our study contributes to the latter stream of research by investigating how banks influence the flows, exchange characteristics, and structure and performance in supply chains.

Past studies (e.g., Wuttke et al 2013b; More & Basu 2013; Lorentz et al, 2016, Nobanee et al, 2017, Hugos, 2018) have defined SCF in varied ways although there is much similarity across the definitions. Based on these past definitions, we use the following definition throughout the course of the paper: "SCF is a bank-initiated innovative MIS (management information system) that bridges the bank and capital constrained firms in the supply chain, reduces the supply and demand mismatch risk in the financial flow, and creates value for capital constrained supply chain partners".

Among the few studies that examined bank's influence on supply chain relationships, Fairchild (2005) explored the role of matching financial flows with information and material flows in improving efficiency in financial services industry. Silvestro and Lustrato (2014) explored the role of banks in enabling financial and physical supply chain integration. The authors observed that banks facilitate coordination, collaboration, information sharing, and information visibility. However, this study is largely exploratory and focused on the benefits to buyers and sellers of a bank-mediated FSCM system. Our study takes a step further and provides theoretical insights into why the banks' role is critical in FSCM. Wuttke et al (2013a, 2013b) explored the FSCM adoption dynamic in firms. Blackman et al (2013) explored how the financial performance in the global supply chain of a focal firm can be improved by integrating the information, material and financial flows. While the aforementioned studies examined the FSCM issues from a focal firm's perspective, our study focuses on how banks through FSCM transform the dyadic exchange dynamic in supply chains.

FSCM brings in several benefits in the supply chain: lower cost of capital between different players in the supply chain (Lamoureux & Evans, 2011); adequate access to working capital (Pfol & Gomm, 2009); decreased inventories and improved inventory accuracy (Dong et al., 2007; Sari, 2007); decrease in the cash-to-cash cycle for supply chain partners (Grosse-Ruyken et al., 2011); better allocation of risk among the supply chain members (Wuttke et al., 2013a); improved supply chain visibility (Caridi et al., 2010); lower cost of information (Pfohl & Gomm, 2009); accuracy of information on clients (Hofmann, 2005); better risk assessment (Hofmann, 2005); reduced risk of bankruptcy (Klapper, 2006); lower credit risk (Klapper, 2006); better collaboration (Hofmann & Kotzab, 2010); improved collection of receivables (Tanriserver et al., 2012) etc. Apparently, past studies have identified multiple operational and financial benefits that can be realized through FSCM. However, the paths to realize these benefits and the impacts on buyer-supplier relationship have not been analyzed adequately.

Inter-organizational information systems have been noted to be useful to reduce transactions costs by enhancing visibility, communication and trust (Rai et al 2006, Gunasekran et al 2017). FSCM provides an integrated information

system to provide the necessary visibility to coordinate and communicate among bank and supply chain partners. While FSCM's contribution as an enabler of greater objectivity and transparency in the exchanges is understandable, it is difficult to assess if this capability strengthens or weakens the significance of a specific exchange partner. Further, banks' offer of IT-enabled communication and information system could alter the needs for partner specific investments thereby changing the dependence structure. Our study addresses these complex issues by analyzing how the dyadic supply chain relationships are transformed by the banks through FSCM.

We employed the Transaction Cost Theoretic (TCT) lens in our analysis. TCT suggests that organizations can reduce various types of transaction costs (e.g., search costs, price bargaining/negotiation costs and monitoring) by implementing appropriate coordination and control mechanisms that account for frequency and uncertainty of transactions, asset specificity, bounded rationality and opportunism in exchanges (Malone et al, 1987; Konsynski 1993; Gulati & Singh 1998; Kumar & Crook 1999).

3. Research methodology and study design

Adoption of FSCM practices by corporates is still in a nascent stage in India. Given the fact that manufacturers, suppliers, distributors and banks are still trying to grasp the implications of bank intervened transactions, survey research design would not be as effective as interactive interviews to collect the rich information that is required for our analysis. Accordingly, we utilized inductive, multiple case study as the methodological approach. Although FSCM is subject to triadic influences that are not considered in the TCT framework, consistent with past case methodologists (e.g., Eisenhardt, 1989, p.536; Ketokivi & Choi, year?) recommendation to utilize related theories while conducting case research, we used TCT as a frame of reference while inquiring, analyzing and interpreting the case data.

3.1 Case selection

In our research team, one of the researchers is an ex-banker from India. He has personal knowledge of the banking operations in India. We selected seven firms, out of which three were banks, which offered the FSCM platforms to the members in the supply chain. We refer to these firms anonymously to maintain confidentiality. With previous banking sector experience, the researcher identified the three banks that represent variations in the FSCM adopting banking sector in India well. We had the largest public sector bank in India (i.e., Alpha), the largest private sector bank in India (i.e., Beta), and a large international bank with operations in India (i.e., Gamma). The banks are distinct in terms of years of operations in India. The diversity among the banks allowed us to account for the likely variations in FSCM arrangements due to banks ownership, age, and business priorities (or client base). With the help of senior level contacts that our ex-banker researcher had, we approached the three banks and explained our research objective via email. We followed this up with a few phone calls. All three banks agreed to participate in the study. One of the banks also agreed to help us connect with their FSCM partners who can represent the buyer and supplier in a supply chain. The organizational units they chose were in the automotive (i.e., A, B, and C) and the textile sectors (i.e., D). This choice was also purposive. The automotive sector is characterized by a high value product and high investment, by both the OEMs and their distributors. The textile sector, on the other hand, is characterized by lower value products and low investment on the part of the distributor. Additionally, the automotive sector in India is concentrated and is characterized by a few dominant sellers who wield considerable influence over distributors. The textile sector, on the other hand, is fragmented. Also, the manufacturer's reliance on distributors is more in the automotive sector and therefore they wield less power. This purposive segmentation of the effect of FSCM on supply chains allowed us to look at FSCM relationships across two very divergent industry segments and their financial and supply chain dynamics. Thus, our research design allows the findings to be generalizable to the broad business contexts of an emerging economy.

3.2 Data collection and analysis

Open-ended interviews were the primary mode of data collection. The interview protocol used in our investigation is presented in Appendix 1. We complemented interviews with archival data and data from public sources. After obtaining the support of the senior level management personnel in the three banks, we contacted them through a formal email that detailed the purpose of our study. Our initial contacts at the three banks forwarded that email to appropriate personnel in their organizations, with a personal request to help in the study. This resulted in conducting a total of 15 interviews at the three banks that lasted over 15 hours. Alpha, too, connected us with their regional office through which they implement FSCM in one large Indian state. Through this contact, we gathered data at three levels of the

bank's FSCM operations and from two of their dealers. The same bank also connected us with two OEMs – both large automotive manufacturers (A and B) so that we could understand their perspective of FSCM. Besides, this bank gave us access to the material used in their presentations to motivate companies to join their FSCM.

Our contacts at Beta allowed us to interview a team of their middle level managers who are overseeing their FSCM practices in India. We were also able to get a detailed white paper on the bank's FSCM. At Gamma, we conducted detailed interview with the person who heads the FSCM in India, and his team, and we were able to study their documentation of FSCM. At the two OEMs, we had detailed interviews with key middle level managers who are in charge of the FSCM at the national level. At the two dealerships, we had detailed interviews with the dealers. Furthermore, they showed us the actual working of the FSCM as it is used to connect to the bank and to OEM's ERP system. In all, we conducted 20 in-depth interviews lasting over 36 hours (refer to Appendix 2 for characteristics of informants and participating firms). Each interview was conducted in English, and, where necessary, in Hindi, which was duly audio taped, transcribed, verified for accuracy, translated into English, analyzed independently by each researcher and then collectively by all members in the research team. Where necessary, further clarifications were obtained through phone calls and e-mails. Involvement of *multiple researchers, multiple informants at multiple levels of FSCM and multiple sources of information* enhanced richness of information and facilitated data triangulation, a key step for eliminating bias in case studies (Barratt et al. 2011). Specifically, having members in the research team with banking experience in India and with no banking experience helped develop a richer understanding of the operational dynamic of FSCM while safeguarding against the bias by the researchers. An overview of the measures undertaken to enhance validity and reliability of research is presented in Table 1.

Table 1. Validity and reliability measures

Reliability and validity criterion	**Research phase**			
	Design	**Case selection**	**Data gathering**	**Data analysis**
Reliability (repeatability of results)	Develop a case study protocol	Based on the significance in the financial and manufacturing sector and the need to capture contrasts	A common questionnaire for all informants representing similar functions Data coding or quotes recording	Involvement of researchers who have not been involved in data collection. Coding checking
Internal validity (logical causal relationship)	A tentative conceptual model based on past literature and TCT perspective	Multiple cases that are designed to offer theoretical contrasts	Multiple informants Controlling for contingent factors (e.g., demographics etc.) that might confound the findings	Pattern matching Data and methods triangulation Use of secondary data Control for bias by involving multiple researchers
Construct validity (appropriateness of measures for the constructs)	Adaptation of variables from TCT frameworks	NA	Multiple sources of information	TCT framework based interpretation of case data
External validity (Generalizability)	Representative sampling	Specifying the rationale for research context and case selection	Secondary data Academic literature or practitioner reports (e.g., white paper)	Comparing the findings with extant literature or anecdotal international experience

Consistent with inductive case research methodology (e.g., Eisenhardt, 1989; Barratt et al. 2011), we *iterated* between data collection and analysis to ensure relevance and sufficiency of data to describe and understand the variables, constructs, and relationships of interest. This helped us sharpen the constructs and analysis of the FSCM implications. Consistent with Pratt (2008), we relied on the exact description of informants (e.g., verbatim quotes) to understand the logical linkages among variables. We decided to reach a closure on data collection when the information and viewpoints advanced by the informants seemed to saturate (Eisenhardt, 1989).

4. Case analysis

In the interest of cumulative sense making and construct refinement, we analyzed the data in multiple phases after every round of interviews and transcriptions. In each stage, the interpretations and inferences of each researcher were compared, discussed and analyzed to control for investigator bias and enhance reliability. Overall cases were analyzed in two stages: in the first stage, within-case analysis for deep understanding and development of individual profiles, and in the second stage cross-case analysis to identify patterns and differences among FSCM processes and outcomes across the cases. All four firms - manufacturers (A and B) and dealers (C and D) are the clients of Alpha, and the dealer (C) is associated with the manufacturer, A. Thus our analysis is based on three types of interview data: the first type, involving the bank and both the seller and buyer (i.e., Alpha, A and C), the second type, involving the bank and either a seller or a buyer (i.e., Alpha and B, and Alpha and D), and the third type, just the banks (i.e., Beta and Gamma). We elucidate our findings according to the previously introduced research framework in Figure 3 in the flowing subsections and provide a tabulated summary in Appendix 3. In the ensuing discussion we highlight the common and distinguishing features of FSCM dynamic. To illuminate the pattern of interactions among the supply chain members, we structure our analysis with respect to the three banks. For the cases for which we do not have direct interviews from the buyer and/or the seller, we evaluate the FSCM experience based on the interviews of the available informants.

4.1 Motivations for the adoption of FSCM systems

We now elaborate the motivations for adopting FSCM systems and the FSCM's impact on the exchange dynamic and performance in the supply chains. FSCM systems, designed and offered by the banks have a great deal of similarity across banks. However, there are differences in terms of the years of operation, scope, technological antecedents and adoption motivations. Technologically speaking, FSCM system is an extension of the internet enabled payment system which has been adopted by firms for a long time. For example, about 15 years ago Alpha, the largest public sector Indian bank started using an earlier version of the current FSCM system to make automated payments to the (large size) suppliers on behalf of its corporate (manufacturer) clients. Due to the success of this system, the corporate clients expected Alpha to expand the automated supply chain finance (SCF) capability to more ubiquitous and much smaller dealers that are more widely dispersed in India. Since Alpha has had the largest banking network in India, many of its dealers are individual account holders and have been able to access internet in past 10-15 years, Alpha recognized the benefit of linking the dealers with FSCM system about 7 years ago. This FSCM system is known as e-DFS (i.e., electronic dealer financing system) and its operational process is presented in Figure 4. Alpha has outsourced the FSCM technology to an external IT vendor so that it can focus on its core banking activities.

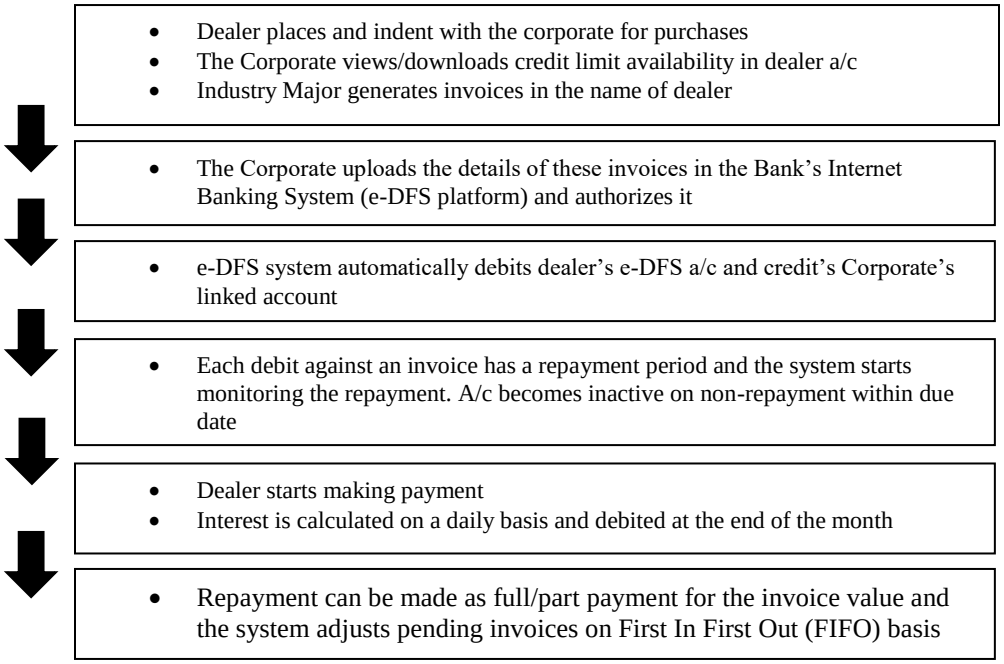


Figure 4. Generic Process Flow of e-DFS implemented by Alpha

The FSCM system implemented by Beta is somewhat similar to the e-DFS of Alpha although there are some differences due to its unique business context. Beta is the largest private sector bank in India with fewer but some of the largest corporate clients (e.g., Tata, Reliance.). Its operation is much younger than Alpha and therefore began its core banking operations with a strong IT infrastructure unlike that in Alpha that has a long history of manual, paper-based operations. The FSCM in Beta is one of the earliest in India and is well integrated with its core banking system that is owned and operated by its in house IT department. By virtue of the FSCM system, Beta serves as a financial intermediary between the large corporate clients and their small-to-medium business partners comprising of distributors and suppliers. The strategy is to tap in to the Small and Medium Enterprise (SME) segment of the India economy. While Alpha has its e-DFS arrangement with around 30 corporate clients, Beta has SCF arrangement with 8-10 large corporates.

The Indian FSCM system of Gamma, one of the world's largest banks with operations in 85 countries serving around 89 million customers resembles the e-DFS of Alpha well. However, given the size of the bank and internationally-distributed client base, the scope of FSCM operations is wider in range and global. Its FSCM system's operations are illustrated in Figure 1. Apparently, Gamma's operations pertain to financial transactions in the entire supply chain that includes suppliers and logistics service providers. For example, Gamma extends finances to its major corporate client's (Wal-Mart) suppliers based on the client's purchase order after making independent assessment of the supplier capabilities. Gamma funds these suppliers even when they are not very large and are not as well-known.

In a buyer-supplier context, the focal firm typically recommends its trading partners (e.g., dealers) to the bank to offer FSCM systems. Such recommendation enhances a dealer's creditworthiness and reduces bank's risk concerns thereby making them more comfortable about including the dealers in the FSCM. In our sample, both A and B suggested Alpha and Beta to provide the FSCM system (e.g., e-DFS) to the dealers chosen by them. For A, 65% of all the dealers who have 2-3 years of relationship are part of the e-DFS run by Alpha. Our informant at B mentioned,
"We tell almost all our dealers that they have to come to us through e-DFS – that is the company policy".

Our case data suggests that certain types of business are more suitable for adoption of e-DFS. A's dealer, C conducts two types of business: steel and automobiles and has Alpha as the banker for both business. However, C uses e-DFS only for its automotive business because steel, unlike, automobiles includes value-added activities like cutting steel to customer requirements. In commodity products like steel that necessitate value-adding activities, the prices and actual volumes of different finished products being more difficult to predict, the transaction prices and credit limits are difficult to decide.

Running the textile business, Dealer D also suggests that all products may not be quite suitable for FSCM system. In textile business, the dealer's unique value comes from deep knowledge of the retail business and their ability to recruit sub-dealers. The dealer represents the textile producer's typical distribution chain that consists of 600-plus exclusive dealers spread all over the country. Indian customers of textile products are price sensitive and demand for different products can be highly seasonal. These conditions necessitate the bank to be more flexible in offering customized services. To illustrate, company D was initially part of the FSCM system of another bank, but switched a good part of their business to Alpha because of Alpha's more personalized service.

In light of the motivations for adoption of FSCM systems in our cases, we make the following propositions:
P1a. Supply chain members would adopt FSCM to make transactions cost efficient.
P1b: Banks would motivate their clients to encourage adoption of FSCM system to expand market and reduce business uncertainty.
P1c: Adoption of FSCM system would increase when the focal supply chain member gives assurance about the business prospects and creditworthiness of their trading partners.
P1d: Adoption of FSCM system is more likely when it builds on prior e-enabled exchange systems.

4.2 The exchange process dynamic

We now elaborate the trilateral exchange dynamic among the seller, buyer and the bank that emerges with the implementation of FSCM system that significantly impacts the information, material and financial flows among all in the supply chain. It is apparent from the e-DFS flow diagram in Figure 4 that when FSCM system is operational, transactions in a supply chain are based on preapproved credit limits, payment is automated to concerned parties, there is continuous (re)adjustment of the credit/borrowing limits based on payments within the allowed credit period, there is constant tracking of repayment period, interest owed and inventory, and the allowed credit is only available for the

approved purpose. Unlike the traditional exchange system where payments are based on checks that are cleared through an inter-bank check clearing systems, in the FSCM system, there is elimination of paper trail because of automated information flow.

Our informant (General Manager) at Alpha remarked:
"This system eliminates the need for our customers to either go to a branch of the bank [to carry out transactions] or to write a check."
"Because of seamless integration of e-DFS with the backend system of our customers, transactions are completed speedily, duplication of processes is eliminated and errors are reduced considerably."
The corporates acknowledge the above benefits. Our informant at A (Assistant General Manager) noted:
"With the 65% of our dealers being part of e-DFS, we have seen higher speed of transaction, better reporting, and better Management Information System (MIS)."
Automated information flow leads to several other benefits because of higher visibility of the state of material and financial flows. It allows the bank to monitor the loans to ensure that the loaned money is spent on the designated purpose. According to informant at Alpha (Assistant General Manager):

"The loaned money cannot flow to normal current account of the dealer. This is a specific product for a specific corporate. … This money cannot be used anywhere else; the dealer is not given a checkbook for this account so that the end use of funds is identified and assured."

The borrowers receive periodic reminders to repay the loan on time and if they fail to meet the repayment deadline, they are charged a penal interest. According to our informant (Deputy General Manager, Supply Chain Finance) at Alpha:
"Bank-intervened financial supply chain management brings more discipline to the dealers and also to the corporate clients. The net result is overall improvement of the financial supply chain as well as of the physical supply chain."
Both Beta and Gamma provide similar informational services to their member loaners. According to our informant (Chief Manager) at Beta:

"MIS we provide to the dealer is very important. MIS means what the outstanding is, when their amount is getting mature, etc. Regular reminders are sent to these guys, we send them the data at the end of every day. So they can know what the balance in their account is and when the payment due is."

The disciplinary mechanism imposed by banks in FSCM system may extend beyond interest penalty. To avoid unproductive engagement with a partner, banks need the corporates to give commitment about the business. To illustrate, in Beta, its corporate clients give two types of commitment to the bank – a) to give business or support to the distributors/dealers, and b) if a distributor defaults in making payment, the distributor/dealer is dropped by the corporate client and some of the money that the corporate client would pay to the distributor/dealer are given to the bank. In light of these commitments by the corporate, Beta does not require any collateral security to advance loan (or make payment to the corporate seller) to the dealers and charges a lower interest rate. Beta offers these benefits because they incur lower search costs for the new customers. Absence of collateral security reduces dealer's cost of business and working capital burden making them more efficient for the corporates. According to our informant (Deputy Vice President) at Beta:

"The manufacturer has to give some commitment to the distributors. If this commitment is there, then we are comfortable. We expect manufacturers to recommend only those distributors for dealer financing whom they are confident enough with."
"The manufacturer has a long-term contract to sell X tons of certain products to these distributors. That adds another layer of comfort for us."

Apparently, in the FSCM system, the corporates, banks, suppliers and dealers share risks, responsibility and benefits. Corporate's ability and willingness to share the business risk is critical for the bank to offer the FSCM system. At present, FSCM system-based business is only about 10% - 20% of Beta's total credit business; the rest of it is regular credit which has a higher rate of interest. Lower share of SCF business is primarily due to the fact that Beta still considers SCF to be high risk in the absence of collateral security by the dealer.

The significance of shared management of financial risk increases in Global Supply Chains, because, the credit worthiness of some of the clients would be difficult for a bank to assess by itself. In such scenarios, credit-worthiness of an established client who might be a business partner to not-so-creditworthy business partners can moderate the risk to some extent. Our informant explained how Gamma adopts this approach with respect to Wal-Mart that sources from Indian suppliers. Both Wal-Mart and Gamma assess the suppliers' capability in their respective areas of expertise to reduce the business risks for all. Two types of risk are considered: credit risk and performance risk. Performance risk is what Wal-Mart takes care of with their due-diligence on a particular supplier – their products are of sufficient quality and will be available as expected by Wal-Mart. There are two types of credit risks: pre-shipment risk and post-shipment risk. Pre-shipment risk refers to the risk prior to the shipment and post-shipment risk refers to the risk following the shipment. Post-shipment risk is lower than pre-shipment risk because the supplier has already shipped the goods. Typically, the amount of finance is driven by the extent of credit risk that Gamma is able to bear on the purchase orders. The financing limits that they grant to particular supplier are adjusted based upon the length of the relationship. When a supplier defaults on a payment, they risk being black-listed by Wal-Mart. The business risk in supplier finance is high until the goods are dispatched. Our informant at Gamma (Senior Vice President) said:

"Pre-shipment is a high risk, so we lend it only to well-known players such as Reliance Ltd. because of their reputation. Post-shipment is low risk - although these goods may not sell, and may stay in factory premises for supposedly 30 days or 40 days or 50 days, but due to possession of goods by the OEM, our risk is low.

Gamma would not finance a supplier of Wal-Mart if it is blacklisted by Gamma somewhere else due to some past issues such as credit default."

In this scenario, Wal-Mart and Gamma help each other. Wal-Mart gives confidence regarding the operational capability while dealing with a particular supplier. Gamma becomes "eyes and ears" of Wal-Mart, because Gamma being a financial company understands the supplier's balance sheet much better. They will have information on supplier's financial capability, the kind of company they are, and therefore, Wal-Mart obtains a level of comfort. So, Gamma is helping Wal-Mart not only in terms of finance but also in terms of quality. Thus the level of comfort issue works mutually. Another, interesting practice is that Wal-Mart signs an agreement with Gamma, which holds that Gamma will be committed to various payments on the behalf of Wal-Mart to suppliers all over the world. Thus, a particular supplier may not be part of the existing client base of Gamma, but still they would pay them. In this way, Gamma provides additional value-added services to their FSCM system customers.

In addition to proactive risk management, Gamma also helps in risk mitigation of the customers by sharing the loss. Our informant (Director) explained Gamma's risk mitigation approach with reference to the following example of Chevron:

"In the case of dealer's default in trade financing or dealer financing, we will step in and Chevron accepts first 10 percent of the risk (known as first loss default guarantee or FLDG). The Rest of the risk will be borne by us based on the dealer's credit worthiness, which increases the amount of finance. So if a dealer previously was able to buy a hundred thousand dollars' worth from Chevron, that dealer is now able to buy five hundred thousand dollars' worth of lubricant. This increases overall supply and increases overall turnover for Chevron. This is how it benefits all of them: the industry major (Chevron), their dealers, and the overall supply chain and us."

In light of the significance of a responsible behavior by the highly-dispersed and small-sized, suppliers or dealers in the supply chain banks tend to pick those who have an ongoing, independent relationship with the bank, or, whose financial soundness is independently evaluated by the bank. This reduces the chances of selecting weak or unknown suppliers/dealers – this translates into smoother transactions.

In addition to the smooth and quick physical flows between buyer and supplier, FSCM systems have a cascading effect on the internal operations of a firm when the operational information system (e.g., ERP) and FSCM system are integrated. For example, in the case of A, the automotive manufacturer, ERP and e-DFS integration helps minimize the manual transactional operations, data duplication, errors, waiting for data, and improves demand visibility through dealer's stocks. Real-time stock information helps synchronize production and demand. Dealers' purchases without any collateral security encourage them to stock more vehicles leading to higher overall sales. When the stock goes below the recommended norm, dealers can log in to the A's portal to generate a purchase order. Higher stock visibility

allows A to transship vehicles across dealers and thus match demand more effectively without having to produce a new lot.

To summarize, consistent with TCT perspective, FSCM system leads to reduced uncertainty and transaction costs due to higher trust and stronger coordination. Higher trust and stronger coordination result from better integration of the financial supply chain and physical supply chain through higher transparency. Stronger coordination among supply chain members results in synchronous operation in the supply chain. Greater integration enables: a) better working capital management, b) higher financial liquidity, c) better visibility in cash and inventory flows, d) lower working capital cost due to higher creditworthiness e) reduced financial risks because of elimination/reduction of non-payments, delayed payments, or misappropriation of assets, f) higher creditworthiness of the dealers/vendors, g) better inventory monitoring by bank reducing the potential for inventory theft and pilferage, h) lower asset investments due to lesser need for collateral security, i) greater operational coordination leading to better demand and supply balance, j) expansion of market through higher volume of sales and transshipment, etc.

In light of above experience, we advance the following propositions:

2a) Trustworthy, cooperative and disciplined behavior of firms is crucial for a FSCM system to function well.
2b) A well-functioning FSCM system promotes trilateral coordination among the bank, suppliers and customers leading to risk sharing, reduction in (transaction specific) asset investments, decrease in operational and behavioral uncertainty, and increase in operational alignment.
2c) Increase in operational alignment among the members of an FSCM system increases velocity, volume, visibility and vigilance of material and financial flows in the supply chain.
2d) Integration of FSCM system with the operational information systems improves the ability to match demand and supply.

4.3 Exchange outcomes: operational, financial, relational and structural

One of the main benefits of well-operating FSCM systems is the improvement in information, material and financial flows in the supply chain. The improvement in flows is a result of higher visibility and lowers transaction uncertainty for all. The benefits of improved flows include faster and smoother flows, lower investment in inventory, lower needs for working capital, elimination of collateral security, lower monitoring and search costs and lower cash-to-cash cycle time all contributing to lower transaction cost, expanded market, higher operational efficiency and greater supply chain capability. Our informant at Alpha (Deputy General Manager Supply Chain Finance) said:

"We are able to help the businesses to better manage their working capital because e-DFS provides them with real-time visibility into their inventory."
"Lower working capital results in lower transaction cost for the buyer, seller and bank - the bank charges a lower interest rate (around 11% – 12% as opposed to the traditional 14%-15%) on loans for e-DFS clients; the cost of electronic transaction for banks is about 10% of the cost of a manual transaction."
The experience of Beta and Gamma is similar. For example, our informant at Beta (Vice President) commented:

"We rely on corporate ratings of their suppliers and distributors and offer credit to them at lower rates of interest without taking collateral security. Our interest rate for SCF which is 1-2% lower than their normal interest rate for the distributors of a large Indian steel conglomerate."

"We have leveraged the FSCM to tap in to the SME segment of the Indian market with the help of our large number of corporate customers.

Our informant (Senior Vice President) at Gamma observed:

"With FSCM in place, in addition to the faster movement of cash flows and better visibility of inventory, we are seeing revenue growth from supplier financing, we expect its current share of 4-5% in total revenue to grow three times in two-three years."

Manufacturers and dealers also acknowledge the financial benefits with improved flows. Because of quick payment, the shrinkage in cash-to-cash cycle reduces the working capital requirement; as a result, they have more liquid capital in hand to reinvest in business. Our informant at B noted:

"My working capital has increased without additional financial costs. You get a channel funding (e-DFS) on the dealer in a much shorter amount of time and then you have money to play with."

"We give 1% cash discounts to dealers who do not want to buy on credit. Through e-DFS, we get immediate payments, so we give cash discounts to dealers who use e-DFS. So, dealers enjoy dual benefits: take 1% cash discount up front and also pay a lower interest. The end result is higher sales for the dealer and for us."

C, the dealer recounted:

"We are paying 3-4% extra interest for our working capital in steel which is not part of FSCM system. The rate of interest is the most important part of e-DFS - unless you get very good rate of interest, your margins will be low. Alpha is offering us 11.85% interest rate, which is very good. The lower interest for working capital due to e-DFS has contributed to financial cost reduction."

"Because of the convenience of credit, our stock levels tend to go up – we are able to stock more variants of models and colors and that increases sales".
D explained:
"Alpha provides us credit without any mortgage and the rate of interest is 1 to 1.25% lower than the normal lending rate of the bank. We are able to get credit from the bank because of their tie-up with this reputed manufacturer Bombay Dyeing. This arrangement increases our financial liquidity position. About 70-80% of our financing needs are met through e-DFS and improved liquidity has increased our annual turnover by about 30%.

Operational and relational benefits complement the aforesaid financial benefits. Receiving purchase orders through FSCM system reduces order lead time which allows the manufacturers to schedule production more accurately. Visibility into dealers' inventory, allows the manufacturer to advise and signal the dealer to schedule ordering and stocking so that the risk of stock outs is minimized. Such operational coordination between the manufacturer and the dealers is very useful, because, the dealers, specifically in the Indian context do not generally have systems for sophisticated operational planning.

While the FSCM system allows a bank and manufacturer to expand the number of exchange partners without much complexity, it facilitates virtuous relation building and disciplining to safeguard the business interests. Exchange partners can be penalized for non-conforming behaviors. Penalties include removal from the business relationship, recovery of monetary loss and sanctions in terms of black listing or exposing the dysfunctional behaviors. While manufacturers bring in more business to banks by recommending their trading partners, they support disciplinary action when necessary. Banks, on the other hand, contribute by reducing the strategic business risks by sharing their critical assessment of the financial history of exchange partners. Thus, the exchange partners engage in a symbiotic relationship through the FSCM system. Our informant at B observed:

"When a dealer defaults on payment to bank, we stop dealing with them. We have to stop any transaction with them. If there is any due to a dealer, then we will try and give it to the bank. That is already a well-protected thing. Banks' interests have been taken care of; banks will not advance channel funding unless they have good protection."

Dealer C noted:
"e-DFS has helped contain the high-handedness of A. Prior to e-DFS adoption, the automobile inventory information being known to A through its ERP system, was compelling us sometimes to stock excess inventory. With the introduction of e-DFS, the issue has not been a concern any longer because of the potential intervention by Alpha in case of a pressure from A."

Apparently, the relationships between the manufacturer and its suppliers or dealers become more trustworthy as the latter perceive themselves as being preferred the exchange partners of the manufacturer who was selected to be part of the FSCM. Thus, it is apparent that firms not only derive financial and operational gains from FSCM system, they also leverage the FSCM system to expand the number of partners and strengthen their relationships with the existing partners. To illustrate, by expanding the scope of services to make payments to any supplier of Wal-Mart who is not currently a customer, Gamma is trying to engage with the existing and new customers in deep and intense ways. In light of above experiences, banks' efforts for building the FSCM infrastructure and recurring expenses for maintaining and securing the system are not considered a burden. Banks charge a small one-time fee (e.g., typically about USD

1000) from all the users when they join the system. However, the users of the system realize the overall benefits of FSCM in terms of lower supply chain costs. Keeping our case findings in view, we formulate the following propositions.

FSCM systems with well-aligned firms:
3a) experience lower transaction costs, better business prospects, stronger inter-firm relationships,
3b) have mutually supportive yet disciplining interactions, and
3c) have the number of exchange partners increase over time.

5. Discussion and conclusions

Our analysis reveals that the FSCM system influences the buyer-supplier exchanges in significant ways. The main observations from our cases are: a) companies adopt FSCM system with reliable, established exchange partners to reduce transaction costs and uncertainty, b) successful operation of FSCM system promotes behavioral and operational alignment among the bank and supply chain exchange partners, c) alignment among firms in an FSCM system yields lower transaction costs, greater business prospects, self-enforced discipline and the opportunity to exchange with higher number of exchange partners over time. However, business contingencies (e.g., exchange priorities, product characteristics, existence of prior IT-enabled inter-organizational systems etc.) impact the likelihood of *FSCM system adoption and its success*. Our findings concerning the reduction in transaction costs and stronger relationships with supply chain partners are consistent with international experiences documented in white papers[1] and news reports.

Based on Our observations the FSCM system's adoption and operation are *context- and exchange-specific* and its effects in terms of transforming the dyadic relationship in supply chain to a triadic relationship are novel. They clarify factors contributing to FSCM system dynamic and provide a detailed understanding of the applicability of TCT tenets. We compare our main findings with the literature on buyer-supplier exchanges below.

In general, TCT recommends short-term, competitive market-based mechanisms to improve efficiency and reduce uncertainty in exchanges by reducing the chances of supplier opportunism and high transaction-specific investments. Our study finds that the adoption of FSCM system makes the exchange relationships long-term especially when the transaction-specific (inventory investments) investments are high. Extant literature suggests that long-term exchange relationships are mainly useful in operationally-interdependent and integrated relationships (Holcomb & Hitt, 2006; Jacobides & Winter 2005).

Argyres and Leibeskind (1999) noted that an exchange governance mechanism presents the risks of "governance inseparability", i.e., difficulty to switch to a new governance mechanism because of prior 'commitments' and 'investments' in the selected mechanism. TCT suggests the adoption of 'quasi- relational' contracts and its continual 'modification' based on competitive market conditions (Williamson, 1996). We noticed that FSCM systems do not seem to permit continual readjustment of contracts. Rather, to reduce the risks of lock-in, they allow specification of a range of contingencies and the rules of exchange under those contingencies. However, consistent with TCT, in FSCM systems, partners are dropped when they default, and the threats of being dropped are more evident because of higher transparency and oversight with the bank's involvement.

Past studies (e.g., Gupta & Govindarajan, 2000) have suggested, a firm's selection of an exchange arrangement is motivated by a variety of objectives: (1) transaction cost minimization, (2) uncertainty reduction, (3) equitable distribution of risks and rewards, (4) unique resource creation, (5) minimization of overdependence, and (6) opportunism reduction. Our study supports these perspectives; however, we find that the bank, an outsider to the original dyadic exchange, plays an active role in designing the exchange structure for the supply chain members. Thus, the bank appears to act like a coordinator – while this might be a good thing in general, it could potentially reduce the unique significance of a partner, which could result in a stronger and more valuable future relationship.
Firms typically try to safeguard against two main types of uncertainties, while adopting an exchange arrangement: performance uncertainty and behavioral uncertainty: performance uncertainty relates to the future nature of relationship or operational performance (McCutcheon & Stuart, 2000); behavioral uncertainty refers to shirking and

[1]https://www.53.com/content/fifth-third/en/commercial-banking/resource-center/executive-insights/dontmakefinancialsupplycha0.html
http://www.qfinance.com/cash-flow-management-best-practice/how-to-better-manage-your-financial-supply-chain?full

cheating (Hennart, 1993). Our analysis reveals, FSCM system helps transform the nature of uncertainty in exchanges – specifically, the behavioral uncertainties (e.g., shirking and cheating) are modified into outcome uncertainties by making operational and behavioral performance expectations more explicit.

To summarize, our analysis suggests that through the implementation of FSCM system and with the cooperation of the focal manufacturer, banks have assumed an expanded role - in addition to serving as financiers, they help identify and qualify capable suppliers and customers, assess the needs and monitor the performance of the exchange partners, help formulate the ordering, dispatch and payment rules and enforce those rules to the benefit of all. Thus, they act as an intermediary to make the exchanges rule-based, equitable and long-term. In the process, banks reduce the exchange costs and uncertainties, make trading partners responsible, and control the power imbalance in the exchanges. We estimate that these changes-to-exchanges would affect the exchange partners differently. Potentially, a formerly responsible or important exchange partner might become less unique and less important. As a consequence, the dominant exchange partner may consider expanding the number of exchange partners. To minimize the chances of these possibilities, the affected exchange partner might need to enhance the range of capabilities (e.g., offering more/attractive business opportunities) to a higher level. Eventually, FSCM systems are likely to present two types of outcomes – reduction of transaction cost/uncertainty and increase in exchange partner's efforts to regain importance and uniqueness. These outcomes could potentially impact the volume of business that are carried out through FSCM and the significance of banks. Since the FSCM system is in the nascent stage of development, we did not have an opportunity to explore the impact of loss uniqueness and importance in exchanges; this area is worth investigation in further research.

References

Argyres, N. S., and Liebeskind, J. P. (1999). Contractual commitments, bargaining power, and governance inseparability: Incorporating history into transaction cost theory, *Academy of Management Review*, Vol. 24(1), pp. 49-63.

Barratt, M., Choi, T. Y., and Li, M. (2011). Qualitative case studies in operations management: Trends, research outcomes, and future research implications, *Journal of Operations Management*, Vol. 29(4), pp. 329-342.

Blackman, I.D., Christopher P. Holland, C. P, and Westcott, T. (2013), Motorola's global financial supply chain strategy, *Supply Chain Management: An International Journal*, Vol. 18(2), pp.132-147.

Blanchard, D (2013). Managing the Financial Supply Chain, *IndustryWeek*, April 8, 2013.

Bowersox, D. J., Closs, D. J., and Cooper, M. B. (2002). *Supply chain logistics management (Vol. 2)*. New York, NY: McGraw-Hill.

Caridi, M., Crippa, L., Perego, A., Sianesi, A., and Tumino, A. (2010). Do virtuality and complexity affect supply chain visibility?, *International Journal of Production Economics*, Vol. 127(2), pp. 372-383.

Dong, Y., Xu, K., and Dresner, M. (2007). Environmental determinants of VMI adoption: An exploratory analysis", *Transportation Research Part E: Logistics and Transportation Review*, Vol. 43(4), pp. 355-369.

Eisenhardt, K. M. (1989). Building theories from case study research, *Academy of Management Review*, Vol. 14(4), pp. 532-550.

Fairchild, A. (2005). Intelligent matching: integrating efficiencies in the financial supply chain, *Supply Chain Management: An International Journal*, Vol. 10(4), pp. 244-248.

Gelsomino, L. M., Mangiaracina, R., Perego, A., and Tumino, A. (2016). Supply chain finance: a literature review", *International Journal of Physical Distribution & Logistics Management*, Vol. 46(4), pp. 348-366.

Grosse-Ruyken, P. T., Wagner, S. M., and Jönke, R. (2011). What is the right cash conversion cycle for your supply chain?, *International Journal of Services and Operations Management*, Vol. 10(1), pp. 13-29.

Gulati, R., and Singh, H. (1998). The architecture of cooperation: Managing coordination costs and appropriation concerns in strategic alliances, *Administrative Science Quarterly*, Vol. 43(4), pp. 781-814.

Gunasekaran, A., Subramanian, N., & Papadopoulos, T. (2017). Information technology for competitive advantage within logistics and supply chains: A review. *Transportation Research Part E: Logistics and Transportation Review*, Vol. 99, pp. 14-33.

Gupta, A. K., and Govindarajan, V. (2000). Knowledge flows within multinational corporations", *Strategic Management Journal*, Vol. 21(4), pp. 473-496.

Hennart, J. F. (1993). Explaining the swollen middle: Why most transactions are a mix of "market" and "hierarchy". *Organization Science*, Vol. 4(4), pp. 529-547.

Hofman, D., O'Marah, K., and Elvy, C. (2011). The Gartner supply chain top 25 for 2011, *Gartner, Editor, Gartner Research*. Vol. 31 No. 2, pp. 305-330.

Hofmann, E., and Kotzab, H. (2010). A supply chain-oriented approach of working capital management, *Journal of Business Logistics*, Vol. 31(2), pp. 305-330.

Holcomb, T. R., Holmes, R. M., and Hitt, M. A. (2006). Diversification to achieve scale and scope: The strategic implications of resource management for value creation, In *Ecology and Strategy* (pp. 549-587). Emerald Group Publishing Limited.

Hugos, M. H. (2018). *Essentials of supply chain management*. John Wiley & Sons.

Jacobides, M. G., and Winter, S. G. (2005). The co-evolution of capabilities and transaction costs: Explaining the institutional structure of production, *Strategic Management Journal*, Vol. 26(5), pp. 395-413.

Ketokivi, M., and Choi, T. (2014). Renaissance of case research as a scientific method, *Journal of Operations Management*, Vol. 32(5), pp. 232-240.

Klapper, L. (2006). The role of factoring for financing small and medium enterprises. *Journal of Banking & Finance*, Vol.30 (11), pp. 3111-3130.

Konsynski, B. R. (1993). Strategic control in the extended enterprise", *IBM systems journal*, Vol. 32(1), pp. 111-142.

Kumar, R. L., and Crook, C. W. (1999). A multi-disciplinary framework for the management of interorganizational systems, *ACM SIGMIS Database*, Vol. 30(1), pp. 22-37.

Lorentz, H., Solakivi, T., Töyli, J., and Ojala, L. (2016). Trade credit dynamics during the phases of the business cycle – a value chain perspective, *Supply Chain Management: An International Journal*, Vol. 21(3), pp.363-380.

Malone, T. W., Yates, J., and Benjamin, R. I. (1987). Electronic markets and electronic hierarchies, *Communications of the ACM*, Vol. 30(6), pp. 484-497.

McCutcheon, D., and Stuart, F. I. (2000). Issues in the choice of supplier alliance partners, Journal *of Operations Management*, Vol. 18(3), pp. 279-301.

More, D., and Basu, P. (2013). Challenges of supply chain finance: A detailed study and a hierarchical model based on the experiences of an Indian firm, *Business Process Management Journal*, Vol. 19(4), pp. 624-647.

Nobanee, H., Juma Abbas, F., Khan, M., and Varas, J. (2017). The Influence of Supply Chain Management and Net Trade Cycle on Financial Performance. *International Journal of Supply Chain Management*, Vol. 6(4), pp. 51-60.

Patnayakuni, R., Rai, A., and Seth, N. (2006). Relational antecedents of information flow integration for supply chain coordination, *Journal of Management Information Systems*, Vol. 23(1), pp. 13-49.

Pfohl, H. C., and Gomm, M. (2009). Supply chain finance: optimizing financial flows in supply chains, *Logistics Research*, Vol. 1(3-4), pp. 149-161.

Protopappa-Sieke, M., and Seifert, R. W. (2010). Interrelating operational and financial performance measurements in inventory control, *European Journal of Operational Research*, Vol. 204(3), pp. 439-448.

Rai, A., Patnayakuni, R., and Seth, N. (2006). Firm performance impacts of digitally enabled supply chain integration capabilities, *MIS Quarterly*, Vol. 30(2), pp. 225-246.

Robinson, P. (2007). The 2007 guide to Financial Supply Chain Management, HSBC.

Sari, K. (2007). "Exploring the benefits of vendor managed inventory", *International Journal of Physical Distribution & Logistics Management*, Vol. 37 No. 7, pp. 529-545.

Seifert, D., Seifert, R. W., and Protopappa-Sieke, M. (2013). "A review of trade credit literature: Opportunities for research in operations", *European Journal of Operational Research*, Vol. 231 No. 2, pp. 245-256.

Silvestro, R., and Lustrato, P. (2014). Integrating financial and physical supply chains: the role of banks in enabling supply chain integration, *International Journal of Operations & Production Management*, Vol. 34, No. 3, pp. 298-324.

Tanrisever, F., Morrice, D., and Morton, D. (2012). Managing capacity flexibility in make-to-order production environments. *European Journal of Operational Research*, Vol. 216(2), pp. 334-345.

Williamson, O. E. (1996). Transaction cost economics and the Carnegie connection, *Journal of Economic Behavior & Organization*, Vol. 31(2), pp. 149-155.

Wuttke, D. A., Blome, C., and Henke, M. (2013a). Focusing the financial flow of supply chains: An empirical investigation of financial supply chain management, *International Journal of Production Economics*, Vol. 145(2), pp. 773-789.

Wuttke, D. A., Blome, C., Foerstl, K., and Henke, M. (2013b). Managing the innovation adoption of supply chain finance-Empirical evidence from six European case studies, *Journal of Business Logistics*, Vol. 34(2), pp. 148-166.

Yin, R. K. (2009). Case study research: Design and methods (applied social research methods). *London and Singapore: Sage*.

Appendix 1: Interview Protocol

Each interview began with an introduction to the purpose of the research. This helped establish a rapport with the interviewee and communicated the purpose of the study (Strauss and Corbin, 1998). Subsequently, we used the following template to conduct in-depth discussion to probe the interviewees' views on FSCM.

Issues explored during the interviews:

- Structure of FSCM
  - Describe the FSCM setup, old and new and explain the differences.
  - How do banks distinguish themselves from one another on the basis of e-FSCM structure?
  - How are the e-Dealer and e-Vendor initiatives different?
- Motivations for adoption of e-FSCM
  - What benefits - current and future - prompt adoption of e-FSCM System compared to old setup?
  - What competitive advantage the manufacturer & their dealers derive from the FSCM?
  - What competitive advantage do banks derive from the FSCM?
- Contingencies, experiences and capabilities that encourage/inhibit successful FSCM implementation.
  - How do factors such as – nature of product or industry, financial resources, IT sophistication, trading partner readiness, any others - prompt adoption of the FSCM?
  - What role does the bank play in enabling the adoption of the FSCM?
- Structural, behavioral, operational, and relational characteristics and performance outcomes
  - If a party plays foul (defaults in payments), then how is that handled by the bank, by other members of the FSCM?
  - Are there privacy issues - demand visibility to competitors, etc.?
  - How have the various relationships been impacted due to the FSCM? Has it become more collaborative or more competitive? What are the business implications of these changes?
  - How integrated is the FSCM system with other intra or inter-organizational IT (e.g., ERP) systems?
  - Issues about bank financing vs. financing of the dealer by the manufacturer?
  - How (e.g., financial, operational, strategic etc.) have the various parties been benefited?
  - Other benefits of FSCM if any – reports, control and MIS etc.
- Demographic info (e.g., employees, assets, turnover, etc) of participating firms (industry major/dealers).

Appendix 2. Characteristics of informants and firms

Firm	**Alpha (Bank)**	**Beta (Bank)**	**Gamma (Bank)**	**A (Manufg)**	**B (Manufg)**	**C (Vendor)**	**D (Dealer)**
Firm size[2] (Turnover and/or employees)	USD 28 billion	USD 11 billion	USD 48 billion	USD 43 billion	USD 161 million	USD 11 million	USD 2 million
Informants' job title (hours of interviews)	2 Chief Managers General Manager Assistant General Manager Deputy General Manager (Supply Chain Finance) Deputy General Manager Relationship Manager Hours of interview: 15	Deputy Vice President Vice President Hours of interview: 5	Senior Vice President Senior Vice President & Area Head Director Hours of interview: 5	Regional in charge – Retail Channel Finance Product Manager – Channel Finance Hours of interview: 4	Head – Customer Finance Hours of interview: 2	Proprietor and CEO Hours of interview: 3	Proprietor and CEO Hours of interview: 2
Years of experience with FSCM	10	12	15	5	3	5	5
Volume[3] of FSCM transaction	10%	2%	7%	65%	35%	80%	85%

Appendix 3. FSCM Characteristics across cases

FSCM features: **Structure, process and outcomes**	**Company A (manufacturer) – Alpha (Bank) – Company C (Dealer)**	**Company B (manufacturer) – Alpha (Bank)**	**Alpha (Bank) – Company D (Dealer)**	**Company YY[4] (manufacturer) – Beta (Bank) – Company XX[1] (Vendor)**	**Company YYY[1] (manufacturer) – Gamma (Bank) – Company XXX[1] (Vendor)**
Infrastructure: (ownership, technology, facilities etc.)	Electronic Dealer Finance Scheme (i.e., e-DFS) owned by Alpha Infrastructure is created and maintained by an IT company Functionality requirements are provided by the bank The infrastructure is web-enabled The infrastructure is capable of seamless integration with business partners' ERP systems Small dealers need just a web browser and Internet connection to connect to the system Supply chain partners pay a small onetime fee to be a part of the system The bank provides training in the use of the system The infrastructure is capable of sending text massages to users' cell Phones			Supply Chain Finance System owned by Beta Infrastructure is created and maintained by the bank The infrastructure is web-enabled The infrastructure is capable of seamless integration with business partners' ERP systems	Supply Chain System Infrastructure is created and maintained by the Gamma The infrastructure is web-enabled Small supply chain partners are able to link with the OEM without much investment in the infrastructure at their end

[2] Measured in million dollars and numbers
[3] % share of total business
[4]Firms that are discussed by the bank but not interviewed by the research team

Appendix 3. Continued

FSCM features: **Structure, process and outcomes**	**Company A (manufacturer) – Alpha (Bank) – Company C (Dealer)**	**Company B (manufacturer) – Alpha (Bank)**	**Alpha (Bank) – Company D (Dealer)**	**Company YY[5] (manufacturer) – Beta (Bank) – Company XX[1] (Vendor)**	**Company YYY[1] (manufacturer) – Gamma (Bank) – Company XXX[1] (Vendor)**
Operations most affected by FSCM	Downstream supply chain processes are affected: cash flows are faster; there is more liquidity in the supply chain; dealers are able to stock more inventory; there is increase in sales and inventory turnover; the manufacturer is able to produce more; customers get more variants	Manufacturer has better view of the demand and has more visibility into the inventory in the supply chain. They are also able to transship inventory from the points of low demand to high demand.	Credit approval process is shortened; the dealer is able to stock more inventory; sales increase and inventory turnover goes up	Similar to those of Alpha's FSCM system	Procurement and payment to suppliers; they are able to provide country-specific services to their international customers. Gamma being a global company is able to capture exchange rate related benefits against currencies like USD, Euro, and GBP.
Operational/business (un)certainty	Alpha is assured of recovery of its dues from the dealer because of the guarantee & intervention of the manufacturer. Visibility of financial flows mitigates uncertainty – the players know when the payments are due and when will cash flows occur. Manufacturer has a better understanding of operations at the dealer's end, i.e., of demand, actual sales, & inventory.	Similar to that of the previous one.	Alpha tells its dealers that it is their policy that they are part of eFSCM, which in turn improves their decision making. Alpha offers additional discounts to buyers who purchase vehicles via eFSCM. This improves their decision making.	Beta does elaborate risk analysis (based oncentral bank (RBI)'s data and ratings of third parties) while approving the eFSCM partners. This reduces their risk. eFSCM facility is available only to large and reputed corporation to reduce business risk. Beta has arrangements with other banks to stop credit to defaulting companies. Beta is averse to extending eFSCM to fast moving consumer goods industries (FMCG) that are perceived to be more risky; focuses on concentrated industries with dominant major players (e.g, Steel and Polymers).	eFSCM offerings are available only to large and reputed corporations to reduce risk.

[5]Firms that are discussed by the bank but not interviewed by the research team

Appendix 3. Continued

FSCM features: **Structure, process and outcomes**	**Company A (manufacturer) – Alpha (Bank) – Company C (Dealer)**	**Company B (manufacturer) – Alpha (Bank)**	**Alpha (Bank) – Company D (Dealer)**	**Company YY[6] (manufacturer) – Beta (Bank) – Company XX[1] (Vendor)**	**Company YYY[1] (manufacturer) – Gamma (Bank) – Company XXX[1] (Vendor)**
Behavioral (un)certainty	The FSCM system keeps a close watch on financial flows which prevents behaviors like delayed or missed payments from dealers.	Dealers who default on payments to Alpha are blacklisted by the manufacturer.		In the case of default by a dealer, Beta blocks funds to the dealer and reimburses the manufacturer, which recovers some of their losses.	Gamma has arrangements in place whereby a part of the loss incurred to buyers due to seller's defaults is assumed by the seller. Gamma ties credit to actual movement and delivery of goods In case of large clients, Gamma adjusts the credit limits according to the duration of their relationship
Complexity	Complexity of the FSCM processes is greatly reduced because (a) the system is computerized and therefore there are no paper trails (b) the design of the system is such that the parties using it need just a Web browser and an Internet connection use it (c) the system is intuitive to use and requires a minimum amount of training.				
Coordination mechanism: (reliance on price and trust)	Alpha has a streamlined the process for monitoring and sanctioning for irregular payments Alpha grants need-based advances that are easy to implement through the data in the eFSCM system.	Because of increased transparency the manufacturer's need for exercising controls on dealers is reduced		Because of increased transparency the need for company specific control reduces.	
Working capital cost/cash-to-cash cycle time	Working capital cost is reduced for the manufacturer as their cash-to-cash cycle is reduced. FSCM partners have higher liquid funds because lesser funds are required to maintain run business If the working capital cycle increases beyond the tolerance limit then alerts are raised and corrective actions are taken.				

[6]Firms that are discussed by the bank but not interviewed by the research team

Appendix 3. Continued

FSCM features: **Structure, process and outcomes**	**Company A (manufacturer) – Alpha (Bank) – Company C (Dealer)**	**Company B (manufacturer) – Alpha (Bank)**	**Alpha (Bank) – Company D (Dealer)**	**Company YY[7] (manufacturer) – Beta (Bank) – Company XX[1] (Vendor)**	**Company YYY[1] (manufacturer) – Gamma (Bank) – Company XXX[1] (Vendor)**
Search/ identification cost	The manufacturer recommends dealers who could / should be the part of the FSCM. These are the trusted, "good" dealers. This reduces the client search cost for banks credit-worthy companies. Sometimes banks do their own due diligence and recommends "good" dealers who the manufacturer could accept. This reduces the search costs for the manufacturer.				
Bargaining/negotiation cost	These costs are reduced as the dealers who become part of the FSCM are pre-approved by the manufacturer. So, Alpha doesn't need to whet the dealers for financial charge. Secondly, all the dealers who become a part of the FSCM are charged a uniform rate of interest.				
Monitoring cost	Improved monitoring of dealer due to access to dealer's sales information. Better control on internal inventory and production levels at the manufacturer's due to improved visibility of dealer's working capital and inventory. Because of direct payment by bank to manufacturer, disruption due to dealer's chance of default / cheating are eliminated. With MIS generated and provided by the banks, decision making and monitoring at manufacturer improves as manufacturer knows more about dealer.				
Relational outcomes (length/quality)	Exchange partners who are part of the FSCM cooperate more as they have a special/preferential status. Since only those dealers who have a long relationship with the manufacturer become part of the FSCM, the strength and length of their relationship with the manufacturer is further increased.				

[7]Firms that are discussed by the bank but not interviewed by the research team