Integrating financial and physical supply chains: the role of banks in enabling supply chain integration

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Abstract

Purpose – The financial supply chain, running parallel to the flow of goods and information, is common to all economic supply networks, and its integration with the physical supply chain is therefore a critical and ubiquitous aspect of supply chain integration (SCI) largely ignored in the literature. This paper aims to develop a model of physical and financial SCI, which is based on a process view from both buyers’ and suppliers’ perspectives, and explores the role of banks in enabling SCI.

Design/methodology/approach – The paper reports an exploratory study of the role of banks in improving SCI, by presenting a case study analysis of two international banks.

Findings – The findings show that banks can support buyers and suppliers by contributing to the enablers of SCI, namely coordination, collaboration, information sharing and information visibility.

Research limitations/implications – The research is limited in that it is explorative; further studies are required in order to quantify the impact of banks’ interventions on SCI.

Practical implications – Improved SCI requires an understanding of the flow of physical and financial resources across supply networks. Banks can help buyers and suppliers develop a more holistic understanding of the supply chain, thus improving integration and optimising working capital.

Originality/value – The paper presents a process model of physical/financial SCI which uniquely recognises the role of banks in enabling buyers and suppliers to improve SCI, synchronisation and performance.

Keywords Supply chain management, Financial services, Financial supply chains, Supply chain integration

Paper type Research paper

Introduction

In the face of the economic recession and with the increasing complexity of global supply chains, buyers and suppliers are seeking opportunities to improve the efficiency of working capital by unlocking cash trapped in the financial supply chain (Lodge, 2010; Large and Large, 2010; Richman and Mutter, 2010). This hinges on improving the integration of financial supply chains with the flows of physical goods and information, and so buyers and suppliers are putting their banks under pressure to play a more proactive role in improving physical/financial supply chain (P/FSC) integration (Blount, 2008; Mathis and Cavinato, 2010).

Over the past two decades the operations and supply chain management literature has focused primarily on the flows of physical goods and information, rather than financial supply chains (Fairchild, 2005; Gupta and Dutta, 2011). The financial supply chain, which runs parallel to the flow of goods and information, is common to all
economic supply networks, and its integration with the physical supply chain is therefore a critical and ubiquitous aspect of supply chain integration (SCI). Whilst there is an emergent stream of literature which has highlighted the need to improve P/FSC integration (Fairchild, 2005; Guille´n et al., 2007; Field and Meila, 2008; Fellenz et al., 2009; Gupta and Dutta, 2011), financial services are rarely mentioned as contributors to SCI. Our contention is that since financial services, usually banks, are a key player in the economic activities of all supply networks in their capacity of managing payments and providing supply chain financing (SCF) solutions[1], their role in contributing to P/FSC integration is significant. This paper addresses a distinct gap in the operations and supply chain management literature by developing a model of P/FSC integration, which is based on a process view of the supply chain from both the buyers’ and suppliers’ perspective. The model identifies the role of banks in managing financial and information flows along the supply chain, and in facilitating P/FSC integration.

A number of factors have been identified in the literature as enabling SCI: supply chain coordination (Krajewskis and Wei, 2001; Chandra and Kumar, 2001; Childerhouse and Towill, 2003); inter- and intra-organisational collaboration (Pagell, 2004; Brown and Cousins, 2004; Vereecke and Muylle, 2006; Swink et al., 2007; Flynn et al., 2010); information sharing (Feldmann and Müller, 2003; Fiala, 2005; Vereecke and Muylle, 2006); and information visibility (Frohlich and Westbrook, 2002; Seggie et al., 2006; Kim et al., 2011). In this paper, we explore ways in which banks can contribute to the enablers of SCI integration, and thus help buyers and suppliers improve P/FSC integration. A case study analysis is presented of two large European banks, both of which have invested in technologies and developed strategies and services to help their clients improve P/FSC integration.

The paper begins with a review of the SCI literature leading to two research questions:

RQ1. What is the role of banks in integrating financial supply chains with the flows of physical goods and information?

RQ2. What is the role of banks in contributing to the enablers of SCI, namely, (a) supply chain coordination, (b) collaboration, (c) information sharing and (d) information visibility?

In response to RQ1 the model of P/FSC integration is developed; this is followed by the case study analysis addressing RQ2, and discussion of findings. The paper closes with a conclusion, identifying future research directions.

Supply chain integration
Chandra and Grabis (2007, p. 18) argue that a supply chain “is a network of suppliers, manufacturers, warehouses, distributors and retailers who through coordinated plans and activities, develop products by converting raw materials to finished goods inventory”. This focus on products and materials is characteristic of the supply chain management literature in which most empirical studies have been based on manufacturing contexts and physical distribution chains (Field and Meila, 2008). Another characteristic of the SCM literature of the past two decades is the conceptualisation of the supply chain as a series of buyer/supplier dyads (Harland et al., 2007; Choi and Wu, 2009). This is epitomised in the supply chain operations reference (SCOR) model, developed by the Supply Chain Council, which is widely recognised by academics and practitioners as a framework for
understanding and analysing supply chain performance (Huan et al., 2004) and which focuses on the series of dyads linking suppliers, manufacturers and customers. This narrow focus on dyadic relationships may explain why financial services, which manage financial flows running parallel to the flow of goods and information, rarely figure as supply chain partners in the SCM literature.

SCI has been advocated in the literature over the past decade as critical to supply chain performance (Pagell, 2004), and is defined by Flynn et al. (2010, p. 59) as:

\[ \text{SCI} = \text{the degree to which a manufacturer strategically collaborates with its supply chain partners and collaboratively manages intra- and inter-organization processes. The goal is to achieve effective and efficient flows of products and services, information, money and decisions, to provide maximum value to the customer at low cost and high speed.} \]

Based on an extensive review of the SCI literature, Flynn et al. identify three dimensions of SCI: customer integration (between the manufacturer and the buyer), supplier integration (between the manufacturer and its supplier) and internal integration, which refers to the extent to which a manufacturer integrates its organisational strategies, practices and processes into collaborative, synchronized processes, in order to fulfil customer requirements. While Flynn et al. recognise that money, as well as products, materials, and information, is a resource which needs to be managed along the supply chain, almost all SCI research is based on the exchange of goods and flows of information, rather than financial transactions or flows of cash. The financial supply chain, running parallel to the physical supply chain, is the flow of cash from firm to firm – including expenses, receipts, and investments – as well as the processes put in place to engage and interact with trading partners from a financial perspective. Since the payment for goods and services, and the financing of production and trade activities, are intrinsic to any supply chain, the existence of the financial supply chain is common to all economic supply chains, regardless of what products, services or information flow along the supply network (Figure 1). In a globalised world where supply networks are becoming ever more complex, the need to integrate the financial supply chain with the physical supply chain is one of the few integration issues common to all supply chains, yet it is largely ignored in the SCI literature.

Fairchild (2005, p. 244) explains how the physical supply chain can be disrupted through poor integration with the financial supply chain:

The financial information in the supply chain runs parallel to the physical movement of goods, and represents all transactions that occur in relation to that movement. The fact that the information flows at a different rate than the good or service is important, as gaps separating physical supply chain activities from their associated financial information, continue to frustrate companies that have focused on efficiency in their physical supply chains but found only partial success.

There have been some recent attempts to model financial flows with a view to optimising the management of cash along the supply chain. Guillén et al. (2007) propose a methodology for analysing supply chain performance in terms of the management of assets and flow of cash along the supply chain. Similarly Gupta and Dutta (2011) model the flow of money in a supply chain from the viewpoint of a supply chain partner who receives money from suppliers downstream and makes payments to customers upstream. These two studies provide methodologies for analysing supply chain performance in terms of equity management and cash flow, respectively; but neither
of them studies the role of financial services in managing payments and finance along the supply chain; rather, supply chain performance is analysed purely from the perspective of the series of dyadic relationships between suppliers and customers. Yet financial services organisations, typically banks, are supply chain players which are common to all economic supply chains, regardless of the nature of products and services flowing along the supply chain and regardless of the nature of the organisations participating in the network of supply partners. The aim of this paper therefore is to address an apparent gap in the SCI literature by exploring financial and physical SCI and addressing the following research question:

**RQ1.** What is the role of banks in integrating financial supply chains with the flows of physical goods and information?

### Enablers of SCI

Pagell (2004) argued that most contributions to the SCI literature have focused on links between SCI and performance, usually that of a focal firm (Harland et al., 2007); but more recently an emergent theme is the development of understanding of SCI enablers. Table I provides a summary of the main empirical contributions to the SCI literature. We find three emergent themes: the need to integrate activities along the supply chain, the need for organizational integration, and the need for information integration. In Table I, the constructs used to explore each of these three aspects of integration are identified for each of the references. These constructs can be conceptualised as four enablers of SCI. Integration of supply chain activities is enabled through supply chain coordination; organizational integration is enabled through collaboration; and information integration is enabled through information sharing and information visibility. In this paper, these enablers are used to explore the role of banks in integrating financial and physical supply chains.
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*Table I. Analysis of the constructs of SCI*
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Table I.
Supply chain coordination is the first enabler of SCI which has been explored in a number of empirical studies (Table I). Some studies have investigated the extent to which the coordination of activities internal to the focal firm and/or externally in its relationships with other supply partners, impacts on the performance of the focal firm (Frohlich and Westbrook, 2001; O'Leary-Kelly and Flores, 2002; Droge et al., 2004; Swink et al., 2007). More unusually the impact on supply chain performance has been studied (Krajewskis and Wei, 2001; Kim et al., 2011). Some authors have focused particularly on the challenge of synchronising product and information flows (Krajewskis and Wei, 2001; Chandra and Kumar, 2001; Fiala, 2005); Childerhouse and Towill explain:

[...] lack of synchronisation results in buffer stocks at every location where the time buckets differ. Consequently, information lead times are elongated and out-of-date data is frequently used as a result of conflicting time buckets in the planning process (p. 20).

They contend that the “twelve rules of simplified material flow” (Towill, 1999) are conducive to the implementation of “seamless” supply chain management. Indeed improving the synchronisation of resources along the supply chain is fundamental to the lean philosophy and is the key challenge of agile manufacturing, where quick responses in fast-moving markets are required in conditions of demand uncertainty (Mason-Jones et al., 2000).

The second enabler of SCI which emerges from the literature is collaboration between buyers and sellers along the supply chain (Christopher, 1999; Selen and Soliman, 2002). Chandra and Kumar (2001, p. 292) argue that increased collaboration between supply chain partners “can lead to reductions in lead time and costs, and improvement in the overall performance of each member as well as the supply chain”. Narasimhan and Kim (2001) and Brown and Cousins (2004) explore strategic collaboration between supply partners; while other studies investigate collaboration at an operational level (Krajewskis and Wei, 2001; Vereecke and Muylle, 2006). Most of the empirical studies of collaboration focus on buyer and supplier relationships (Table I), but there have also been some studies of internal collaboration within the focal firm (O'Leary-Kelly and Flores, 2002; Pagell, 2004); and Brown and Cousins (2004). Droge et al. (2004) and Flynn et al. (2010) have studied collaboration both internally and externally. Thus, collaboration has been explored in the context of each of Flynn et al.’s three dimensions of SCI.

The third SCI enabler is information sharing; empirical studies by Frohlich and Westbrook (2002) and Vereecke and Muylle (2006) demonstrate a link between information sharing and improved operational performance. Narasimhan and Kim’s (2001) study of SCI and performance included measures of information sharing and also information system integration within and between supply chain partners. Information system integration is key to the facilitation of information sharing (Selen and Soliman, 2002; Sahin and Robinson, 2002; Ganeshan, 2002). According to Fiala (2005, p. 422), information integration through centralisation of information technology can lead to a “mutually beneficial, win-win partnership that creates a synergistic supply chain in which the entire chain is more effective than the sum of its individual parts”; conversely, information asymmetry can be a barrier to information sharing and collaboration. Information asymmetry arises when there is an imbalance in power relationships along the supply chain, and can result in the bullwhip effect (Lee et al., 1997; Hsiao and Shieh, 2006) and an escalation of supply chain costs.
Feldmann and Müller (2003) show how information asymmetry can lead to dysfunctional behaviour amongst supply chain partners. They outline scenarios in which supply chain partners may share “untruthful” data and act opportunistically so as to maximise their own economic benefits, at the expense of supply partners, and of overall supply chain performance. They advocate supply chain information integration, and to this end, the creation of a role for an independent and impartial third party to manage and integrate supply chain information so as to reduce such opportunistic behaviour and improve supply chain performance as a whole.

Finally information visibility is identified as the fourth enabler of SCI and internet enabled technology is becoming increasingly important in facilitating this. Several research studies have been conducted to explore the impact of internet technology on supply chain relationships (Lancioni et al., 2003; Wu et al., 2004; Muckstadt et al., 2004; McIvor and Humphrey, 2004; Power and Singh, 2007); these contributors concur that full exploitation of internet technology requires close and effective collaboration and trading relationships. Power and Singh’s (2007) empirical study of the impact of internet applications on trading partner relationships suggests that as organisations increasingly rely on internet based applications to manage their trading partnerships, there is increased pressure to integrate resources and make asset specific investments with their supply chain partners. Cagliano et al. (2003), Croom (2005) and Chandra and Grabis (2007) maintain that supply chain information visibility hinges on systems integration between supply chain partners. Seggie et al. (2006) demonstrate that IT alignment and inter-firm system integration have positive effects on brand equity; while Kim et al. (2011) argues that inter-organisational information systems visibility is an important predictor of supply chain performance particularly from the supplier’s perspective.

All these empirical studies of the enablers of SCI focus on material and information flows, and on dyadic relationships between buyers and suppliers. In exploring the role of banks in contributing to the integration of financial and physical supply chains, we focus our study on the enablers of SCI identified in the literature, and address the following research question:

RQ2. What is the role of banks in contributing to the enablers of SCI, namely, (a) supply chain coordination, (b) collaboration, (c) information sharing and (d) information visibility?

In the next section, we address RQ1 by developing a model which explains the role of banks in integrating physical and financial supply chains. RQ2 is explored through a case study analysis of two European banks, which illustrate ways in which banks can contribute to the four enablers of SCI.

The role of banks in integrating financial supply chains with the flows of physical goods and information

In Figure 1, the financial supply chain is depicted as running parallel with the flows of goods and information. Banks have a direct involvement in the integration of information and financial flows because processing payments involves, not only interaction between buyer and supplier banks, but also reconciliation of the three documents identified in Figure 1: the order, shipping receipt and invoice. Before a payment can be sent to the supplier’s bank, the buyer’s bank manages what can be a complex process of reconciliation; for example, a single payment may cover several
invoices and receipts, and there are often discrepancies in the documents and even disputes between buyers and suppliers as to the amount owed.

Banks are also involved in integrating flows of goods, information and money by providing buyers and sellers with SCF, which is the funding of each step in the commercial cycle from manufacturing, inventory management, handling goods in transit through to invoice. The need for SCF is due to time lags that can arise in making payments for goods and services along the supply chain that affect the buyers’ and suppliers’ working capital and cash liquidity. This is shown in Figure 2 which builds on the two buyer/supplier dyads shown in Figure 1, in which the manufacturer is both a buyer of products from Supplier 1 and a supplier of products to Buyer 2. T1 to T2 is the manufacturer’s production lead time; while T2 to T3 is the time manufactured goods are stored and handled prior to sale. When the manufacturer fulfils an order (O2) from Buyer 2, an invoice is sent to Buyer 2 and a payment order (P2) sent to Buyer 2’s bank. Meanwhile the payment order (P1), covering purchases from Supplier 1, is sent to the manufacturer’s bank as soon as Buyer 1 receives the invoice (I1). If the flow of money from Buyer 2 (M2) takes longer than that by which the manufacturer has to pay Supplier 1 (M1), the cash outflow either reduces the manufacturer’s liquidity or the manufacturer can apply to the bank to finance the outflow on the basis of a trade finance[2] or credit agreement. Meanwhile the manufacturer’s bank receives all the payment orders and invoices, for both payments and collections, and, based on the manufacturer’s account/credit agreements, manages and balances outbound and inbound payments in order to maximize the benefit of the manufacturer. In providing SCF the manufacturer’s bank is effectively synchronising the financial flows with the physical supply chain with a view to managing and optimizing manufacturer’s

**Figure 2.**
Synchronising physical, financial and information flows along the supply chain

**Keys:** O = order; T = time; P = payment order; R = Receipt; I = invoice; M = money
liquidity and working capital. The financing of trade activities is facilitated by a rapidly growing range of financial services, including purchase order financing, letters of credit[3], open account[4], pre- and post-shipment financing, invoice financing, receivables financing, global asset-based lending, payables discounting and inventory financing[5].

In understanding the role of banks in P/FSC integration it is important to distinguish two financial processes which capture the differing perspectives of the buyer and supplier (Bear et al., 2011; Weiss, 2011). From the buyer’s perspective the process is known as “purchase-to-pay” and starts with supplier selection, through purchasing and receipt of goods, to payment for the goods. Taking the supplier perspective, the process is known as “order-to-cash”; this starts with customer acquisition and receipt of an order, through delivery, invoicing and receipt of payment.

We propose a model of P/FSC integration (Figure 3), which builds on Bear et al.’s process perspective, and makes explicit the role of the buyer’s and supplier’s banks in processing payments and providing SCF, while adjusting risk as the order progresses. The model represents the dual role of banks in P/FSC integration. First, in arranging payments banks manage information and financial flows which traverse the two processes (represented by arrows linking the two processes). Second, banks offer a range of different SCF products and services to finance various activities, purchases and sales during the process; these offerings differ between buyers and suppliers, as illustrated in Figure 3. On the one hand, the buyer’s requirements for SCF usually focus on trade finance and inventory financing. The buyer may also require legal and risk mitigation services, and a credit assessment so that the bank can provide letters of credit or more sophisticated services such as “open account”, cash pooling services[6] and reverse factoring[7] (Hurtrez and Salvadori, 2010). The supplier, on the other hand, may need to arrange credit with the bank to finance the purchases and production which occur long before they are paid for. The supplier therefore typically requires pre- and post-shipment finance, documentary collections, insurance and electronic invoicing services. Additionally, in order to increase its liquidity and speed up
access to cash, the supplier may opt for factoring services, whereby the supplier can sell its invoices to a third party at a discount in exchange for immediate cash.

The need to improve efficiency of working capital along the financial supply chain has heightened significantly over the past decade, with the result that both buyers and suppliers are becoming increasingly demanding clients for the banks. In the wake of globalisation, the financial services crisis and economic recession, there has been growing pressure on manufacturers and service providers to increase liquidity and release cash through the financial supply chain (Blount, 2008; Fellenz et al., 2009). Moreover, the contraction of credit markets has increased the difficulty in accessing conventional sources of credit, so buyers and suppliers are putting pressure on their banks to help them improve the efficiency of working capital along the supply chain (Richman and Mutter, 2010); indeed it is estimated that 4 per cent of production costs are related to SCF (Wohlgeschaffen, 2010). The economic recession has also led to increased danger of trading partners failing to honour their obligations (Richman and Mutter, 2010), so suppliers are increasingly focusing on mitigating counterparty risk. There has been less reliance on letters of credit to obviate risk, with buyers increasingly putting pressure on their suppliers to trade on open account terms, and paying for goods once they take ownership (Blount, 2008; Voncheck, 2008).

It is being argued that whilst considerable managerial effort has been expended on improving supply chain performance in terms of the flow of goods and information, the management of financial supply chains has lagged behind and is now hindering the physical supply chain (Blount, 2008; Mathis and Cavinato, 2010). However, there is evidence to suggest that banks now regard SCF offerings as an important means of service differentiation. A survey by Demica (2010) revealed that over the previous two years, half of European firms reported having been approached by competitors of their current bank(s) using a greater range of alternative financing methods to try to win their business, and 29 per cent had been offered SCF solutions. Carswell (2007) highlights the benefits of improved SCF provision to all the major supply chain players, buyers, suppliers and banks:

While buyers enjoy lower prices for goods purchased, improved visibility of their cash flow, and an increasingly reliable supply base, sellers can leverage the buyer’s credit to reduce the cost of capital, obtain lower cost financing and create more predictable cash flow. Meanwhile, trade banks increase the amount of business they conduct with their customers. By extending their reach to cover their customers’ end-to-end supply chain, they improve their bottom line and strengthen ties with their customers (Carswell, 2007, p. 8).

The growing complexity of global supply networks, spanning national boundaries, with widely differing financial technologies, platforms and regulatory frameworks (Uzureau and Knox, 2009; Mathis and Cavinato, 2010; Fellenz et al., 2009) means that information transparency along the supply chain is becoming a priority for buyers and suppliers. Furthermore, the recent economic crisis in the banking sector is resulting in increasing regulation and even more pressure for faster, smoother flows of transactions through European integration of electronic data transfer systems (Fairchild, 2005). These drives towards payment efficiency heighten the need for integration of banks’ and their clients’ information systems. However, in an empirical study which explores the barriers to financial system integration, Fellenz et al. (2009) conclude that current banking systems are “proprietary, burdensome, non-compatible and non-interoperable”; this is consistent with the contention that banks’ systems are currently hindering
rather than facilitating SCI (Blount, 2008; Mathis and Cavinato, 2010) and suggests that banks have a major role to play in facilitating information sharing and information transparency.

This brings us to RQ2; in the next section we explore the role of banks in contributing to the enablers of SCI, namely:

(a) supply chain coordination;
(b) collaboration;
(c) information sharing; and
(d) information visibility.

The role of banks in contributing to the enablers of SCI
In order to address RQ2 an empirical study of two European banks was conducted in order to identify ways in which banks’ capabilities and services can contribute to the enablers of SCI.

Research method
Given the qualitative, phenomenological and exploratory nature of this research, in-depth case studies were considered to be the most appropriate methodology to address the research questions (Meredith, 1998; Eisenhardt and Graebner, 2007; Yin, 2009). The case studies would require considerable access to managers at a senior level within each organisation, in order to gain an understanding of the strategic context in which the organisation was operating; but also to managers with specific responsibility for payments service operations and the provision of SCF products and services. This therefore called for the conduct of a small number of case studies, based on a theoretical sample (Eisenhardt and Graebner, 2007), with multiple in-depth interviews in each organisation (Yin, 2009).

In order to identify appropriate case sites an extensive review was undertaken of the financial services practitioner literature, where the particular challenge of P/FSC integration is recognised and a number of financial services experts have highlighted the opportunities for banks to support their clients in improving SCI. The review included, for example, financial services trade journals; conference proceedings; newsletters; and web sites specialising in payment services, corporate treasury management, and management of financial supply chains. Furthermore, one of the authors convened and participated in a series of quarterly workshops, in 2011, bringing together senior payment services managers from over 20 European banks with academics conducting research in financial services. The workshops provided a forum for presentations and discussions of the strategies adopted by the banks to help their clients improve SCI. The workshops lent support to the following views expressed in the financial services literature (Blount, 2008; Uzureau and Knox, 2009; Fellenz et al., 2009; Mathis and Cavinato, 2010):

- That, in the face of the economic recession and financial services crisis, banks have come under pressure from their corporate and retail clients to improve the utilisation of working capital along the supply chain.
- That corporates are increasingly expecting banks to understand the particular operational context of their supply chains in order to help them improve supply chain performance through the provision of flexible payments and SCF services.
That banks have been generally slow to respond to the demands of corporate clients to help them improve supply chain performance, in part due to technology and system integration issues.

Nevertheless, a small number of European banks were identified in the workshops as having implemented major initiatives to develop specific services and technologies to support P/FSC integration; and we were successful in gaining access to two of these for our case study research (hitherto referred to as Banks A and B). These were selected as case study sites because both are large international banks which have adopted differentiation strategies which are focused on the development of payments and SCF capabilities. Both organisations have invested heavily in internet based technologies to drive forward their competitive strategies; but it was also clear from the workshops that the approach adopted by the two organisations were different. Therefore, these case studies would contribute to the research by providing rich but contrasting narratives (Eisenhardt and Graebner, 2007), enabling us to explore the different ways in which banks can contribute to SCI.

The research study was consistent with the protocols outlined by Yin (2009); and a sufficient number of interviews were conducted in each organisation to ensure saturation (Glaser and Strauss, 1967). Nine managers were interviewed in each of the two organisations, with each interview lasting between 2 and 3 hours; in some cases follow-up interviews were conducted for clarification. In Bank A we were also provided with an opportunity to interview the corporate treasurer of one of their major clients in order to gain insights into the client perspective. Appendix 1 lists the positions of the managers interviewed in the two organisations, and Appendix 2 provides the interview protocol. The questions in Section 1 of the interview guide were conducted with senior managers in each bank in order to gain understanding of the organisational context and competitive strategies adopted by each company. The questions in Section 2 were directed towards payments service managers and SCF managers, respectively. Interviews were transcribed and structured notes were produced in order to facilitate comparative analysis. The management interviews were supplemented by the study of in-company archival data (Yin, 2009) including company reports, strategy documents and product/service descriptions; as well as public domain information about the banks in the financial services literature.

Case study 1: Bank A, global banking and transaction unit

Bank A is one of the leading banking groups of the Euro zone, with thousands of branches in Italy and a network of hundreds of branches across Europe. Recognising that its corporate clients need to improve control over their physical and financial supply chains Bank A’s service concept is changing from the inward-looking concept of providing best-in-class financial products, to an orientation towards customers who are interested in comprehensive SCF solutions, delivered by a trusted partner through a personalized relationship. With this strategic focus, Bank A recently launched a new global banking and transaction unit within the existing corporate and investment banking division, to become the main trade financing partner for corporate clients. A key initiative is the development and implementation of a raft of new products and services hinging on two enabling infrastructures: a web-based transaction banking portal and a back office technology designed to manage high volume collections and
payments messages at lower cost. With these combined technologies Bank A aims to provide efficient payment services together with value added trade financing services. The transaction banking portal streamlines and automates financing decisions, and facilitates information flow between the bank and its corporate clients. The aim is:

- to facilitate the integration of more than 150 products in cash and liquidity management, trade services, factoring and electronic billing; and
- to increase the transparency of relations between the bank and its corporate clients, and in turn their relations with their trading partners.

Bank A’s electronic invoicing technology allows customers to import invoices into the transaction banking portal; this information then becomes accessible to any possible trade partners whose banks belong to the Italian Consortium of Corporate Banking. In addition, customers can generate collection and payment instruments automatically, as well as retrieve reporting flows and upload them into their accounting system for reconciliation purposes. As a consequence, electronic invoicing is seamlessly integrated with trade financing services such as on line requests for advances on receivables.

The planned development of SCF as a structured and integrated offering instead of a simple umbrella of traditional transaction banking services, is being implemented by means of a strategy of mass customisation. This combines process simplification and cost effective high volume transaction processing, with a degree of product and pricing customisation, and provides system integration between the trade platform and corporates’ treasury and enterprise resource planning (ERP) systems. This approach has wide implications for the organisation as a whole: both its branch network and back office operations. The role of contact staff is to facilitate this process of customisation; to this end they are supported by a pool of product specialists with expertise in SCF. The provision of SCF therefore has major implications for organisational restructuring, changing the roles and responsibilities of both front line and back office staff, and requiring investment not only in technology but also in staff training and process redesign.

**Case study 2: Bank B, global transaction banking unit**

Bank B is a European bank with operations in over 20 countries. Its global transaction banking unit offers a wide set of core competencies in the fields of cash management, trade finance, supply chain management, structured trade and export finance, and global securities services, to help corporate clients optimise the different elements of their working capital throughout the entire supply chain. Bank B’s SCF services are supported by an internet-based trade platform that automatically links the information flows along the physical supply chain with the money supply, and facilitates the automated purchase of buyer-accepted invoices at attractive rates. It is designed to help the supplier access credit on the one hand, while aiming to optimise the buyer’s working capital on the other, through a supplier financing model that avoids manual processes and ensures a high degree of flexibility. For example, one of the bank’s key clients in the automotive sector, a tier-one supplier, needed to improve its working capital position, while also supporting its core suppliers, many of whom were adversely affected by the financial crisis and falling demand. Through careful negotiation with the client Bank B was able to arrange a tailored supplier financing solution which enabled the client to support its suppliers by improving their liquidity, without jeopardising the firm’s own key financial ratios (e.g. its debt to equity ratio).
Furthermore, through its forecasting platform Bank B has converted internal management control instruments and capabilities into new value added services. Customers who are willing to share information with the bank can be offered comprehensive, personalized financing consultancy to improve supply chain performance. In the case of small clients, Bank B can provide such consulting services as an external trusted advisor; whilst for large clients this becomes a way to collaborate with corporate treasurers and improve client intimacy. Bank B further supports its clients by providing analyses of supply chain performance. For example, a client’s supplier performance can be monitored through the automated tracking of days to shipment and days to payment. Collecting information on these two measures can yield critical information on the ability of the supplier to meet its borrowing obligations, and its ability to secure more capital to fulfil future orders. This should also provide a means of regaining confidence in pre-shipment lending to suppliers. Bank B’s analytic approach is based on monitoring the following three key performance indicators which can have a direct impact on the cash-to-cash cycle:

1. Days sales outstanding = \((\text{accounts receivable/annual revenue}) \times 365\).
2. Days payables outstanding = \((\text{accounts payable/annual revenue}) \times 365\).
3. Days of inventory outstanding = \((\text{inventory value/cost of goods sold}) \times 365\).

Improving the inventory outstanding metric, for example, can significantly reduce working capital along the supply chain. Sales outstanding can be a useful indicator because unexpected delays in cash receipts may force a company to delay orders of incoming materials due to working capital constraints and this could lead to reduced customer service later on, with higher stock outs, lower on-time deliveries, and decreased revenues. Through its network of relationship managers, Bank B provides corporates with an analysis of their working capital position, based on these key performance indicators and benchmarked against other companies in the same industry.

Bank B’s SCF programs have proved particularly effective in improving the financial ratios of SMEs and the management claims to have been able to reduce the cost of working capital financing for SME suppliers by up to 50 per cent. The benefits of SCF are even more apparent when buyers and suppliers have a cross-border relationship. Bank B recognises the opportunity for credit arbitrage between buyers located in low-interest rate countries and suppliers based in high-interest countries. Thus, for example, strong buyers in Germany can finance working capital at more favourable conditions than their suppliers in Eastern Europe who might countenance double digit interest rates.

Bank B actively encourages its relationship managers to take advantage of opportunities to mediate between supply chain partners, but they also perceive a need to mediate between departments within client organisations. Corporate treasurers, or chief financial officers, who are increasingly focusing on corporate liquidity and optimisation of working capital, have traditionally been considered to be the bank’s key point of contact in the client organisation; but increasingly relationship managers are having to liaise with operations, supply chain and logistics managers within the client organisation, who often have different objectives and priorities to those of the corporate treasurer. Bank B’s relationship managers recognise that in helping clients improve supply chain performance, they often need to understand the supply chain perspectives of different parties within the same organisation, as well as between
supply partners along the supply chain. The management of the global transaction banking unit observed that the capability to support corporate clients in developing a broader view of working capital needs and a better understanding of supply chain performance, was mutually beneficial to clients, their supply chain partners and to the bank itself in the long term. From the Bank’s perspective, a better understanding of the supply chain eco-system can generate more sophisticated assessments of corporate risk and enable the development of tailor-made and highly differentiated SCF services.

We now draw on the case studies to explore ways in which banks can contribute to the four enablers of SCI: supply chain coordination, collaboration, information sharing and information visibility.

**RQ2a: what is the role of banks in contributing to supply chain coordination?**

Over the past decade coordination of supply chain activities has become challenging due to the increasing complexity of supply chains which in turn increases complexity in the flow of funds at different points in the supply chain. In responding to this challenge Banks A and B offer the following technologies to help their clients improve supply chain synchronisation by processing payments faster and improving the management of working capital.

**Electronic invoicing.** This is a key technology of payments automation and can simplify and speed up payments processes as well as improve information transparency.

**Reconciliation databases.** This allows timely updating of customer accounts so that overdue amounts can be followed up quickly. Improving transparency over the order, invoice and collections processes minimises invoice disputes and enables timely resolution. An efficient collections process can benefit buyers as well as suppliers; for example, without rapid reconciliation, buyers may be prevented from placing orders or receiving goods because credit lines are not promptly updated.

**Electronic payment systems which are integrated with corporate clients’ information systems.** Both banks are investing in SCF technology so that they can align with their customers’ quickly evolving supply chain strategies. Both banks’ payments systems can be integrated with their clients’ ERP systems, but not currently with radio frequency identification (RFID) technologies.

**Trade platforms.** These are internet-based platforms which enable corporate clients to manage a full range of trade-related activities including letters of credit, documentary collections, open accounts, etc. giving real-time information on trade flows. Trade platforms make a wealth of operational information on supply chain performance accessible to multiple partners across the supply network.

**Forecasting platforms.** Globalisation of trade and geographical differences in regulation are heightening the challenge of cash flow forecasting, which is critical for effective cash management. Banks’ cash forecasting systems are required to collect inbound data via the web, and to aggregate and normalise the forecasts from operating units and subsidiaries around the world on a 24 × 7 basis.

In a globalized economic environment, effective management of corporate liquidity requires integration of cash management transactions with basic trade management functionalities. With these technologies Banks A and B aim to enable corporate treasurers to improve their cash flow by enhancing accounts payable and accounts receivable practices, speeding up collections, exercising greater control over their disbursements, decreasing payment processing time and costs, and reducing errors.
and fraud risk. The case study analysis suggests, however, that Bank B has more fully exploited its technology platforms to provide value added consultancy services to its clients. Rather than providing impersonal offerings of generic products, its aim is to provide flexible, tailored SCF solutions, with the aim of helping buyers and suppliers improve their liquidity and better manage supply chain performance.

RQ2b: what is the role of banks in contributing to buyer/supplier collaboration?

The interviews revealed that management in both Banks A and B recognise the importance of effectively collaborating with supply chain partners in arranging SCF, with a view to helping both buyers and suppliers optimise working capital. However, in Bank B this is a much more explicit part of their strategy for managing client relationships. Bank B management expects its relationship managers to mediate between supply chain partners in order to arrive at effective and appropriate SCF solutions; but it also perceives a need to mediate between departments within client organisations. As is often the case in B2B relationships, different stakeholders within the client organisation can have very different expectations and requirements (Anderson, 1995; Parasuraman, 1998; DeLong et al., 2007); indeed there can be a conflict of interest between the treasury management’s objectives and those of other functional managers within the same organisation (Blount, 2008) leading to a lack of internal integration which can in turn compromise supply chain performance.

This is perhaps best illustrated by an example. Let us suppose, for instance, that the corporate treasurer of a large retailer, which spends millions of euros per annum with a single supplier, aims to improve the company’s working capital position by extending the number of days payable outstanding. A 15 day extension might well have a significant impact on the retailer’s profit and loss and balance sheet, but it could also affect the efficiency of the overall supply chain. Extending payment terms may appeal to the corporate treasurer but might be resisted by the buyers within that same organisation, as they stand to lose negotiated early payment discounts. Gains from a better working capital position could be significantly eroded if the early payment discount is higher than the buyers’ cost of finance or capital. Furthermore, the extension could also damage supplier liquidity so that the supplier is obliged to borrow more working capital, typically at higher rates than those negotiated previously. High interest rates mean higher costs for the supplier who may try to pass this on to the buyer in the next round of price negotiations; moreover deteriorating supplier liquidity increases risk within the supply chain and this may come back to haunt the buyer. At this point a bank can take advantage of an arbitrage opportunity to the benefit of all the supply chain participants: the bank might offer SCF to the retailer to finance the extended terms at a rate that reflects its risk as a more creditworthy anchor client, with conditions more favourable than those that can be offered to the supplier. The key for the bank is to create a win-win situation between anchor clients, enabling buyers and suppliers to reduce costs and manage liquidity to the benefit of the supply chain as a whole.

The implication of this illustration is that banks can:

- mediate between supply chain partners to identify the most appropriate source of finance and optimise working capital along the supply chain; and
- mediate with internal partners within their client organisation so that corporate treasurers work more effectively with the operations, supply chain and logistics managers in their own organisations.
RQ2c: what is the role of banks in contributing to information sharing?

Banks A and B have invested in the development of trade platforms, facilitated by web-based portals, to enable information sharing between the bank and its client, but also between buyers and suppliers along the supply chain. As a provider of SCF the bank needs to know in advance the planned inbound and outbound flows, based on clients’ agreements with their suppliers and customers, so as to plan payments and collections and possible financing in order to optimise capital gains. This implies receiving on a timely basis all the documents that support these flows, such as purchase orders, shipping notices and invoices. Since much of the data contained in these documents is the same information that is used to efficiently manage physical flows, banks can facilitate improved SCI by collecting this information and making it accessible to buyers and suppliers along the supply chain.

The case analysis suggests that while both banks offer technologies to support information sharing, Bank B has arguably gone further in exploiting the opportunity to support its clients with consultancy based on the analysis of information made available by its trade platform. The case study illustrates how key indicators along the cash flow cycle can be monitored by the bank in order to more tightly control SCI. With this information Bank B supports its corporate clients with an analysis of supply chain performance that can help buyers to evaluate supplier performance, but also helps suppliers build a case for credit and trade finance. At the same time this analysis enables the bank to better evaluate its clients’ creditworthiness. For example, the ability of a corporate to pay its supplier, or indeed to repay its loan to the bank, relies critically on two key measures: days to shipment and days to payment. These directly affect a buyer’s credit rating and a supplier’s ability to secure trade finance, yet often such operational measures are not available; in fact there is a dearth of trade-related credit information (Weiss, 2011). By providing its corporate clients with supply chain performance analyses, Bank B is able to forge more intimate client relationships, whilst also facilitating a more holistic view of supply chain performance, which extends beyond the growth and profitability of the individual players.

RQ2d: what is the role of banks in contributing to information visibility?

Both Banks A and B have invested heavily in the development of trade platforms which enable the banks to make a wide range of trade information visible to multiple partners along the supply chain, accessible not only to the banks’ own clients, but also to other buyers, suppliers and logistics companies. Trade platforms work as virtual marketplaces which are fully integrated with electronic payment systems, with clients’ treasury management and ERP systems. Each participant in the supply chain can access information about the operational and financial reliability of current and possible counter-parties; this can spur each participant to share as much information as possible, so as to appear attractive or to justify bad performance. Making such information visible can also increase supply chain agility by enabling buyers and suppliers to respond to environmental changes more quickly. For example, the buyer can track the status of its invoices, while the supplier can check delivery data and use the platform to make payments. This enables the buyer to spot possible shortages of materials which may prevent the supplier from delivering finished goods on time; in this case the buyer may prefer to pay a higher price in order to allow the supplier to access more expensive stocks, but keeping the delivery on schedule.
Increasing information visibility to partners along the supply chain is seen not only as a benefit to those partners, but also enables the banks to develop deeper customer insights and a better understanding of their clients’ supply chain context. Both Banks A and B see this as an opportunity to differentiate their SCF offerings and thus reduce the likelihood of their clients approaching other SFC providers. In the longer term banks may even be able to attract new clients by being seen as the main financial services provider servicing particular supply networks.

Both these case studies provide examples of how banks can improve inter-organisational information systems visibility (Kim et al., 2011) and support the integration of information systems across supply networks (Seggie et al., 2006). Indeed Bank A’s initiatives for developing SCF services is having an impact beyond technology choice to fundamental organisational redesign, affecting the branch network and back office operations. This is consistent with Power and Singh’s (2007) contention that effective supply chain collaboration and information sharing can require organisational change and restructuring, but suggests that these implications apply to banks as well as buyers and suppliers.

Discussion
The two case studies have provided examples of services and technologies which banks are offering to address the challenge of P/FSC integration. The analysis reveals a number of ways in which the banks can contribute to the enablers of SCI. Both banks have invested in technologies which enables improved coordination and synchronisation of activities along the supply chain. Electronic payments and web-based technologies enable the banks to accelerate payment processing, simplify trade management and reduce process throughput times; thus directly affecting “the synchronisation of ‘time buckets’ throughout the supply chain” (Childerhouse and Towill, 2003, p. 19). However, Bank B’s client relationship strategy was based not only on helping clients improve supply chain coordination but also on facilitating collaboration between and within supply chain partners. Bank B recognised opportunities to not only mediate between external supply chain partners, but also to mediate between different functions and partners within client organisations. This suggests that banks can contribute to “internal integration” (Pagell, 2004; Flynn et al., 2010; Kim et al., 2011) as well as inter-organisational SCI. Indeed there may be opportunities for banks to arbitrate and facilitate negotiations between corporate treasurers, buyers and suppliers so that all players are encouraged to “think and act as one” (Childerhouse and Towill, 2003).

Both banks recognised the opportunity to use their payment technologies and trade platforms as vehicles for information sharing and for improving information visibility along the supply chain. However, Bank B saw the provision and analysis of this information as a specific consultancy offering, enabling buyers and suppliers to better understand supply chain performance, whilst also locking clients into their products and services. Bank B had identified a number of key supply chain performance indicators which could be accessed and then analysed in order to monitor supplier delivery performance, assess buyer and supplier credit positions and benchmark supply chain performance. The expected result of supply chain information sharing is a “win-win partnership” that creates supply chain synergies which render the entire chain more effective than the sum of its parts (Fiala, 2005, p. 422). The Bank B case suggests that banks may be able to contribute to the development of a holistic view of supply
chain performance, whereby supply chain partners aim to optimise performance across the supply chain rather than focus narrowly on their own organisational objectives.

Kim et al. (2011) demonstrated a link between information systems visibility and supply chain performance. The implications of supply chain information integration have previously been considered only in the context of the buyer and supplier dyad (Chandra and Kumar, 2001; Power and Singh, 2007; Harland et al., 2007; Kim et al., 2011); however this case analysis suggests that banks have a crucial role in managing information system integration across supply networks. The two case studies provide examples of the way banks are endeavouring to increase information transparency to the benefit of all players in the financial supply chain. However, it has also been argued that the increased customer intimacy which is afforded by improved transparency also increases the power of banks relative to their clients (both buyers and suppliers), since it provides banks with access to more accurate information on their creditworthiness which may result in a tightening of credit terms or rejection of applications for SCF. Some corporates may be unwilling to provide this degree of disclosure to their bank (Madinelli, 2010). The trade-off between information transparency and confidentiality in the management of B2B relationships has been highlighted by Zhu (2004). Corporate treasurers now have to weigh up the benefits and costs of increased transparency in their relationships with banks.

According to Feldmann and Müller (2003), SCI and performance can be compromised through the dissemination of asymmetric, even untruthful information by supply chain partners who behave opportunistically, at the expense of other individual players in the chain. They suggest that establishing an independent organisation or “third party” can incentivise a reduction in such dysfunctional behaviour. Since banks play a major part in the provision and management of supply chain information, there may be an opportunity for banks to assume this role as trusted mediators of supply chain information (even though they are an interested party). Banks may therefore be in a position to facilitate improvements in supply chain performance based on a holistic, long term supply chain perspective, increasing value for all supply chain partners, whilst reducing credit risk across the supply network.

Conclusion
This paper has explored an aspect of SCI which has hitherto been largely overlooked in the operations and supply chain management literature, namely, the integration of physical and financial supply chains, and the role of financial services in facilitating such integration. We propose a model of P/FSC integration which recognises the different perspectives of buyers and suppliers in managing financial and information flows, and identifies the role of buyers’ and suppliers’ banks in managing payments and providing SCF services. Our case analysis of the payments services and SCF offerings of two international banks further suggests that banks can play a significant role in the integration of physical and financial supply chains. We contend that banks are in a position to enhance or hinder SCI because they can contribute to the enablers of integration, namely, supply chain coordination, collaboration, information sharing and information visibility. Failing to recognise the role of banks in synchronising the flow of goods with financial and information flows, and in managing supply chain collaboration, information sharing and visibility, is to miss significant opportunities for improved supply chain performance.
Whilst this case study research provides illustrative evidence of the services and technologies which banks are now offering to help their clients improve SC integration, it is limited in that it is based on two European banks. This was considered appropriate given the nature of this explorative research endeavour (Meredith, 1998; Eisenhardt and Graebner, 2007; Yin, 2009) and given the large amount of qualitative data that had to be collected in these two large organisations. Nevertheless, there is a clear need for further empirical study in this field. Case study research could be conducted to determine the barriers and enablers of collaboration between the main players in the P/FSC integration model, as well as the implications of information transparency for the relative power of the main players. There is also scope for more quantitative analysis of the performance improvements, in terms of cost, speed and added value (Flynn et al., 2010), which banks can facilitate through improved P/FSC integration. This would generate a better understanding of the impact banks have on supply chain performance, an impact which has hitherto been largely overlooked in the operations and supply chain management literature.

To conclude, in this paper we propose that the improvement of supply chain performance and the optimisation of working capital along the supply chain require a holistic understanding of the flow of physical and financial resources across supply networks. This case research suggests that developments in banks’ payments systems and SCF technologies are creating opportunities for banks to help both buyers and suppliers develop a more holistic understanding of the supply chain “eco-system” with the aim of enabling “seamless” supply chains (Childerhouse and Towill, 2003). There may also be an opportunity for banks to act as trusted mediators of supply chain information, thus reducing the dysfunctional effects of supply chain information asymmetry.

Notes
1. In this paper “supply chain financing” refers broadly to banking financing activities to the benefits of any possible trading party, buyer or supplier. “supply chain finance” is used more narrowly to refer to buyer-centric initiatives using open accounts and providing liquidity to suppliers through reverse factoring (Hurtrez and Salvadori, 2010).
2. Trade finance is credit supplied for manufacturing, processing, distribution, and other commerce related activities, usually in the context of international trade. Trade finance can be provided by banks, credit agencies, insurers, forfeiters, and any other institution that enables importers and exporters to trade across borders.
3. Letter of credit: a binding document that a buyer can request from the bank in order to guarantee that the payment for goods will be transferred to the seller (source: www.investorwords.com/2774/letter_of_credit.html).
4. An open account is an account with a nonzero credit or debit balance, a credit or charge account initiated by the creditor on the basis of credit standing, or mutually agreed-upon payment terms.
5. Inventory financing is a loan made to a manufacturer using its inventory as collateral.
6. Cash pooling is a cash management technique employed by companies holding funds at financial institutions. Cash pooling allows companies to combine their credit and debit positions in various accounts into one account, and includes techniques like notional cash pooling and cash concentration. Notional cash pooling has the company combine the balances of several accounts in order to limit low balance or transaction fees. Cash concentration has the company physically combine various accounts into one single account.
7. Factoring is the selling of a company’s accounts receivable at a discount, to a factor, who then assumes the credit risk of the account debtors and receives cash as the debtors settle their accounts; also called accounts receivable financing. Reverse factoring is a process started by the ordering party, in order to help his suppliers to finance their receivables more easily, with a better interest rate.

References


Appendix 1

<table>
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<tr>
<th>Bank A</th>
<th>Bank B</th>
</tr>
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| (1) Head of transaction banking marketing and sales; international trade services, corporate banking | (1) Head of product and network management;  
global transaction banking for financial institutions, Italy |
| (2) Manager in charge of sales and marketing of trade finance services; international trade services, corporate banking division | (2) Senior professional reporting to (1) |
| (3) Head of customer relationship management; retail banking | (3) Head of cash management and payments development; global transaction banking for corporate clients, Italy |
| (4) Head of payment operations                              | (4) Senior professional reporting to (3) |
| (5) Payment products manager; payment operations            | (5) Head of shared service centre for payments and cards    |
| (6) Chief information officer                               | (6) Senior professional reporting to (5) |
| (7) Manager in IT responsible for liaising with payment operations | (7) Head of global product management and cash for financial institutions; all countries |
| (8) Senior professional belonging to the team responsible for coordinating regional back offices | (8) Head of product development payments, global transaction banking, Austria |
| (9) Senior professional belonging to central back offices   | (9) Product manager payments developments, global transaction banking, Germany |
| (10) Corporate treasurer of one of the bank’s corporate clients |                                                            |

Table AI.
List of interviewees
Appendix 2. Interview protocol

Positioning of interviewee

What is your job role? To whom do you report? Who reports to you?

What is the role and position of your unit within the organisation?

1. Questions addressed to senior managers on the bank’s organisational and strategic context

1.1 Is your organisation large, medium or small? Is it global, international, regional, local?

Which is the country of origin? Which are the main countries you serve?

1.2 How would you describe your organisation structure (select one or more, and explain structure): functional? Product oriented? Geographical/market/customer based? Matrix (specify the categories)? Other (please specify)?

1.3 Characterise the main features of your competitive environment in terms of: competitive rivalry, bargaining power of customers and suppliers, threat of new entrants and substitute products. What are the main trends in terms of technology which impacts your business?

1.4 Characterise the main market segments: geographical basis? Customer potential/size? Industry sector? Other (please, specify)? How are customer expectations changing? What are the main implications for service provision?

1.5 How do you create value? How would you characterise your service offerings: please comment on degree of customization/standardization offered, breadth and depth of product lines.

1.6 How do you competitively position yourselves? Have you adopted a cost leadership, differentiation or mixed strategy? On what basis do you differentiate your offerings from the competition?

1.7 What is your source of distinctive competence? (select one or more):

• production/operating systems;
• selling/marketing;
• information management;
• technology/R&D/creative or innovative capability;
• retail banking/corporate banking;
• retail payments/micro payments/wholesale payments;
• financial supply chain management;
• networking/resource leveraging; and
• other (please, specify).

2. Questions addressed to managers in (a) payments and (b) SCF services

2.1 Which organisational unit is in charge of payments/SCF services? Provide the name of the unit, position in the organisational chart and explain the structure of organisational unit.

2.2 Describe your organisational unit in terms of:

• mission and vision;
• service concept (including service experience and service outcomes);
• strategy and objectives; and
• operating model (explanation of service delivery system).

2.3 What are the main payments/SCF services you provide?

2.4 What are the main stages in the process of providing payments/SCF services and how are these linked to the supply chain activities of buyers and suppliers?
2.5 What are the key challenges your operation faces in terms of managing payments/SCF along the supply chain?

2.6 What demands are clients making in terms of technology platforms and the provision of information?

2.7 How are customer relationships managed? Explain the different perspectives and requirements of buyers and suppliers along the supply chain.

2.8 Does the bank have an impact on the flow of cash along the supply chain? If yes, please, provide examples to explain how.

2.9 Does the bank have an impact on the flow of goods/services along the supply chain? If yes, please, provide examples to explain how.

2.10 Does the bank have an impact on the flow of information along the supply chain? If yes, please, provide examples to explain how.

2.11 To what extent do you believe the bank can help supply chain partners improve supply chain performance? How is this achieved?

2.12 To what extent do you believe the bank can facilitate collaboration between partners along the supply chain? How is this achieved?

2.13 What are the challenges in terms of information system integration and transparency between the bank and supply chain partners?

2.14 Please identify any other demands you perceive clients to be making on the bank’s payments and SCF services and explain the bank’s strategic response.

About the authors
Rhian Silvestro, Associate Professor in operations management at the Warwick Business School, University of Warwick, has conducted service management research in a number of large, leading edge organisations including retail companies, banks, transport companies, and call centres. She has acted as a Consultant to ward managers in NHS hospital trusts, as well as NHS Direct, in the area of nurse scheduling and the computerisation of rostering systems. Her work is published in journals that include *OMEGA International Journal of Management Science*, *International Journal of Operations & Production Management*, *International Journal of Service Industry Management*, *International Journal of Quality & Reliability Management*, *Design Management Journal*, *Health Services Management Research*, and *Journal of Advanced Nursing*. She is a Co-author of *Performance Measurement in Service Businesses*, published by CIMA. Rhian Silvestro is the corresponding author and can be contacted at: Rhian.Silvestro@wbs.ac.uk

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