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**The impact of Incoterms Selection and Supply Chain
Finance on the Working Capital of a Company:
A case study analysis**

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Sommaire

Avec les progrès de la mondialisation et l'amélioration des échanges transversaux, un nombre croissant d'entreprises s'approvisionnent dans le monde entier afin de réduire leurs coûts d'acquisition de matières premières. L'objectif de cette recherche est d'explorer la relation entre la sélection des Incoterms et le supply chain finance, ainsi que leur impact sur le fonds de roulement des entreprises. Il y a généralement un manque de littérature académique sur les Incoterms et le supply chain finance, malgré leur pertinence dans le domaine de la gestion de la chaîne d'approvisionnement mondiale. Étant donné que chaque Incoterms stipule les droits et obligations de chaque partie; les sélections d'Incoterms devraient être réalisées avec un état d'esprit stratégique. En utilisant une méthode mixte dans le cadre d'une étude de cas, nous avons mené des questionnaires avec divers intervenants et utilisé l'analyse documentaire pour obtenir une perspective plus approfondie au sujet. Les résultats de la recherche concluent qu'il existe cinq facteurs (puissance, valeur, temps, collaboration, et connaissances et importance) qui relie la sélection des Incoterms et le supply chain finance. L'analyse des résultats obtenus permet de valider notre hypothèse primaire selon laquelle une plus grande accentuation sur l'utilisation des Incoterms en combinaison avec supply chain finance permettra une amélioration globale des cycles cash-to-cash (CCC). Notre étude révèle que les avantages d'un tel programme sont doubles, où une diminution du cycle cash-to-cash pour l'acheteur et le fournisseur fournira aux entreprises des avantages mesurables et significatifs en termes de fonds de roulement. De plus, cela permet à acheteurs de sécuriser des matériaux stratégiques et de réduire les risques de perturbation imprévue de la chaîne d'approvisionnement. Nous espérons que les résultats de cette ce mémoire thèse fourniront un fondement conceptuel à toutes les entreprises qui traitent à l'échelle internationale, car les résultats offrent un aperçu de l'importance des Incoterms et supply chain finance pour améliorer la gestion du fonds de roulement des entreprises. Optimisation de la sélection des Incoterms par rapport au cycle cash-to-cash de l'entreprise, afin d'offrir un programme de supply chain finance durable qui fournira à notre société un avantage concurrentiel à long terme viable à l'avenir.

Mots clés: Incoterms, Supply Chain Finance, Gestion du fonds de roulement, Cycle Cash-to-Cash, Gestion de la chaîne d'approvisionnement, Total Cost of Ownership

Abstract

With the advance of globalization and the improvement of cross-border trade, an increasing number of companies are sourcing globally to reduce their acquisition costs of raw materials. The objective of this research is to explore the relationship between Incoterms selection and supply chain finance programs, as well as their impact on the working capital of companies. Little academic literature exists on Incoterms and supply chain finance, despite their relevance within the field of global supply chain management. Given that each Incoterms rule stipulates the rights and obligations of each party, Incoterms selections should be taken with a strategic mindset. Through a mixed method approach under a single case study setting, we conducted questionnaires with various stakeholders and utilized a literature review to gain a broader perspective of the subject. The research findings conclude that there are five factors (power, value, time, collaboration and knowledge & importance) that connect Incoterms selection and supply chain finance. The analysis of the results obtained validates our primary hypothesis that a greater emphasis on Incoterms usage in combination with supply chain finance will allow an overall improvement of cash-to-cash cycles (CCC). Our study reveals that the benefits of such a program are two-fold: a decrease of the total cash-to-cash cycle for both buyer and supplier will provide companies with measurable and meaningful working capital improvements. In addition, it allows the buying firm the ability to secure strategic materials and to reduce the risks of unforeseen supply chain disruption. We expect the findings from this thesis will provide a conceptual foundation for all companies that trade internationally, as the findings offer insight into the importance of Incoterms and supply chain finance in enhancing the working capital management of firms. Optimizing the Incoterms selection in relation to the company's' cash-to-cash cycle, to offer a sustainable supply chain finance program will provide our case company with a viable long-term competitive edge going forward.

Keywords: Incoterms, Supply Chain Finance, Reverse Factoring, Working Capital Management, Cash-to-Cash Cycle, Supply Chain Management, Total Cost of Ownership

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List of Abbreviations

International Chamber of Commerce Incoterms 2010

EXW	(Ex-Works)
FCA	(Free Carrier)
FAS	(Free Alongside Ship)
FOB	(Free on Board)
CFR	(Cost and Freight)
CIF	(Cost, Insurance, Freight)
CPT	(Carriage Paid To)
CIP	(Carriage and Insurance Paid)
DAT	(Delivered At Terminal)
DAP	(Delivered At Place)
DDP	(Delivered Duties Paid)

Other Abbreviations

APICS	The Associations for Operations Management
APIs	Active Pharmaceutical Ingredients
A/P	Accounts Payable
A/R	Accounts Receivable
COGS	Cost of Goods Sold
CCC	Cash-to-Cash Cycle/Cash Conversion Cycle
DIO/DIH	Days Inventory Outstanding/Days Inventory Held
DPO	Days Payables Outstanding
DSO	Days Sales Outstanding
EDI	Electronic Data Interchange
Financial SCM	Financial Supply Chain Management
FMC	Full Manufacturing Cost
GDP	Gross Domestic Product
GIT	Goods in Transit
ICC	International Chamber of Commerce

Incoterms	International Commercial Terms
IT	Information Technology
L/Cs	Letters of Credits
LIBOR rate	London Interbank Offered Rate
KPIs	Key Performance Indicators
\$M	\$Million
NWC	Net Working Capital
RF	Reverse Factoring
RAFTD	Revised American Foreign Trade Definitions
SCM	Supply Chain Management
SCF	Supply chain finance
SKU	Stock Keeping Unit
SME	Small and Medium Enterprise
TF	Trade Finance
TCO	Total Cost of Ownership
UCC	Uniform Commercial Code
U.S.	United-States
WC	Working Capital
WCM	Working Capital Management

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1.0 Introduction

Over the last several decades, an increasing number of manufacturers have been seeking to source beyond their countries' borders to take advantage of the relative comparative advantages that many overseas suppliers offer (Porter, 1990; Gupta 2009). Globalization and the improvement of cross-border transactions have allowed companies to source globally in order to reduce their acquisition costs of important raw materials (Cook, 2007). Malfliet (2011) mentions that with every international transaction, there must be rules for both the buyer and seller coming from two different countries with differences in regulations, languages, and local business practices to come to terms. Bergami (2016) claims that international trades are generally more complex to organize than domestic transactions. The International Commercial Terms (Incoterms) is a set of guidelines of pre-defined trade terms created and published by the International Chamber of Commerce (ICC) with the purpose of facilitating domestic and international trade (ICC, 2010). According to the International Monetary Fund (2000), globalization has led to a more interconnected world economy with highly interdependent world trade and financial systems. The global financial crisis in 2008 reminds us that opportunities such as globalization do not come without risks (OECD, 2011). The last great recession was initially triggered by a failure of the U.S. real estate market which had rippled effects onto the entire global marketplace (Das, 2010). Due to the tremendous upheaval of the time, financial institutions across the globe restricted flows of money by limiting credit, which led to global manufacturing production plummeting by roughly 20 percent within only a few months (Hofmann et al., 2011).

Following the global financial crisis, access to liquidity is still not nearly adequate to satisfy the market demand. With the regulatory reforms, traditional financial instruments require greater strain on capital costs for banks (Hurtrez et al., 2010). Supply chain finance (SCF) is becoming increasingly popular among large organizations, as economic uncertainty has led companies to extend financing as a way to help their suppliers, as well as to secure strategic materials for their supply chain (Kristofik & al., 2012). With the emergence of supply chain finance, commercial banks can now offer their clients' working capital within a tighter regulatory framework (Hurtrez et al., 2010). Supply chain finance

is a financial optimization process that focuses on broad integration among customers, suppliers, and various service providers in the pursuit of mutually beneficial value creation (Pfohl & Gomm, 2009; Randall & Farris, 2009; Hofmann & Kotzab, 2010). These newer funding mechanisms, which cover more countries and global providers have altered the market dynamic of traditional financings (Steeman, 2014). Gruske (2013) claims that traditional commercial banking is evolving; unsecured open accounts now represent 80% of global trading. Moreover, open account transactions can assist both the buyer and seller to streamline their business processes and are considerably cheaper to obtain (Templar et al., 2016). Businesses are increasingly assuming the counterparty risk of their strategic trading partners by switching from letters of credit (L/Cs) and bank guarantees to open accounts (Gruske, 2013). According to research conducted by the McKinsey Group in 2010, there is a \$2 trillion global market of financeable payables; while the current supply chain finance penetrates only 1% of the total value (Hurtrez et al., 2010). Herath (2015) alleges that revenue from supply chain finance from 2010 to 2015 has increased at a rate of 20% per year and is expected to continue increasing at 15% per year from 2015 to 2020. Governments in both the U.K. and the U.S. are actively encouraging the supply chain finance initiative (Oracle Corporation, 2016).

Increased access to financing and liquidity will also drive international trade to higher levels (Rodriguez-Lopez, 2016). Moreover, the strategic use of Incoterms selection for all business transactions could further enhance the working capital of both customers and suppliers while taking into consideration the cost-benefit with the use of Total Cost of Ownership (TCO). Bernabucci (2008) argues that sourcing from foreign countries creates tremendous financial burden on the suppliers due to cash flows being tied up with longer inventory carrying. Furthermore, each Incoterms rule stipulates the rights, obligations, allocation of costs, and the risks of both buyer and seller. The proper management of Incoterms during contract negotiations is vital to mitigate the increased risks of open account transactions. Incoterms selections should be taken with a strategic mindset, a calculated decision that can help ensure a company ongoing financial performance (Gardner, 2012).

1.1 Research Objective & Question

The objective of this thesis is to examine the relationship between Incoterms selection and supply chain finance. We intend to explore the potential impact application of Incoterms coinciding with supply chain finance program can have on advancing the Working Capital Management (WCM) of companies. This research tries to validate that a greater emphasis on Incoterms usage in combination with supply chain finance will allow an overall improvement of Cash-to-Cash Cycles (CCC). We believe that both Incoterms and supply chain finance are highly relevant topics within Global Supply Chain Management (Global SCM), yet they are seldom employed collectively. Moreover, we will try to establish some of the common variables used for Incoterms selection and supply chain finance. Our research question is:

- How can the combination of Incoterms selection and supply chain finance impact the cash-to-cash cycle of both buyer and supplier?

1.2 Thesis Structure

This remaining thesis consists of five chapters. Chapter 2 includes the literature review and the research framework. Chapter 3 explains our research methodological approach such as the choice of case study, data collection process, analyzing method, as well as the reliability and validity of the study. Chapter 4 presents our case company, its industry challenges and the findings from both qualitative and quantitative data. Chapter 5 is the analysis and discussion chapter, where we will present the research findings. Finally, the last chapter includes the conclusion, limitations of the study, management implications, and some suggestions for future research.

2.0 Literature Review and Research Framework

In this chapter, a detailed overview on Incoterms will be given first. Then we will review the literature on supply chain management (SCM) and supply chain finance. In addition, we will discuss the supply chain management financial performance measurements used for this thesis. Moreover, we will explore the links between Incoterms selection, working capital management and Total Cost of Ownership (TCO). Finally, a theoretical summary will be included in the last section with a list of common factors connecting Incoterms selection and supply chain finance.

2.1 The ICC & Incoterms

The International Chamber of Commerce (ICC), was founded in Paris, France, in 1919. ICC's mandates encompass the promotion of global trade and investment, the free flow of goods and services, as well as capital in a rapidly integrating world economy (ICC Corporate Website, October, 2016). With over six million member companies across more than 130 countries, it is by far the most significant institution in international commerce and acts as an unparalleled governing body in establishing guidelines to oversee the conduct of international businesses (Kelly, 2005). Following its inception, the International Chamber of Commerce was determined to help facilitate international exchanges by standardizing commercial trade terms used by merchants in the international transit of goods (ICC Corporate Website, October, 2016)

The International Commercial Terms (Incoterms) is a set of voluntary guidelines of pre-defined trade terms created and published by the International Chamber of Commerce with the purpose of facilitating commercial trades (ICC, 2010). Since first presented in 1923, with the first edition known as Incoterms being published in 1936, the Incoterms have been in constant evolution in response to global trade' exigencies. Incoterms help define the corresponding rights and obligations associated with the transfer of merchandise from supplier to purchaser (Schwart, 1998). Although the application of Incoterms is by nature voluntary, nonetheless, they are widely employed by International traders and procurement professionals with the consents of international

trade councils, governments and legal authorities (Jacquet, 2000), where they are recognized as the pillars of international commerce (Coetzee, 2010).

As mentioned, each Incoterm rule stipulates the rights and obligations of both the seller and the buyer during the transaction. For instance, Incoterms help determine which party is ultimately responsible for the loading, allocation of the transportation costs of cargos, mode of carriage, insurance charge, as well as the import and export clearance under international sales contracts (Schwart, 1998). In addition, Incoterms further detail the point in the journey where risks transfer from the seller to the buyer (Cook, 2014). In other words, agreeing on an Incoterm transaction designation, precisely allows both the buyer and seller to know what tasks each party is obligated to do, and where the responsibility lies in the event of loss (Gooley, 2000). With its latest revision, the eighth of its kind, Incoterms 2010 are intended to make terms easier for exporters and importers to comprehend and apply. Incoterms help simplify international trades and eliminate uncertainties with the reduction in time spent in contract negotiations by standardizing trade term definitions (Coetzee, 2010). These delivery terms are easy to use given that they provide a short form of contractual term with certainty and established interpretations (Gabriel, 1999). Furthermore, the implementations of Incoterms in foreign trades aid companies in managing their risks by clarifying the responsibilities, costs, and risks associated in the transaction of goods between customers and vendors, thus avoiding potentially costly misunderstandings (Shuman, 2000; Stapleton et al., 2014). Fredriksson and Rappestad (2016) suggest that Incoterms can help reduce risks of delays and disruptions due to misunderstandings by providing a universally accepted terminology.

Incoterms are extremely important tools in international trades, and the proper usage strengthens a company's export performance (Hien et al., 2006). According to Gardner (2012), familiarity and fluency with the application of Incoterms is critical for all parties involved in global trades, and Incoterms should be part of their daily jargon. Gooley (2000) claims that despite the rising popularity of Incoterms among international emerging countries such as Africa, China, India, and even Peru; Incoterms are not as well regarded and utilized in North America as they ought to be. In his opinion, North American importers and exporters alike will benefit greatly by expanding their Incoterms proficiency. The adequate employment of Incoterms during contract negotiations will not only allow

organizations to extract significant cost savings; its successful execution will also create opportunities to develop a lasting competitive advantage for the firms (Gardner, 2000; Holley & Haynes, 2003). Gabriel (1999) emphasizes that Incoterms aid in simplifying the many corresponding areas during contract negotiations, but they are not laws. Incoterms do not determine ownership status or transfer title to products, nor do they dictate the price payable, currency to use, credit arrangements or negotiate payment terms between parties (Gibson, 2013).

The International Chamber of Commerce (ICC) strongly recommends that the most current version of Incoterms should be specified whenever the terms are used in parallel with a destination (Baily et al., 2008). Organized in a series of three-letter abbreviations in all standard sales contracts, Incoterms facilitate the allocation of responsibilities, risks, and charges related to the freights and distribution of goods (United Nations Economic Commission for Europe, 2000). The United Nations Center for Trade Facilitation and Electronic Business (UN/CEFACT) justifies that these shorten coded form of Incoterms can help standardize and promote trade, therefore governments, international institutions, and companies from across the globe should actively practice and advocate their usage (United Nations Economic Commission for Europe, 2011). For instance, the party should specify the exact delivery destination and version of Incoterm chosen in the contract to help minimize the potential risk of legal complications in the event of damage/loss (Ramberg, 2008). According to August et al. (2013), terms such as delivery, arrival, free, carrier and terminal attached alongside Incoterms can help further differentiate the status of delivery.

2.1.1 The Evolution of Incoterms

During the early part of 1920s, the newly founded organization initiated a comprehensive investigation across thirteen countries to understand the implications of the six most popular terms used. The results were presented in 1923 and highlighted significant discrepancies in the understandings and interpretation of these trade terms between countries. A revised research study was later directed by expanding the examination to more than 30 countries to increase its scope and representation. The first official version of Incoterms was released in 1936 as the International Chamber of

Commerce Recognized Rules (ICC Corporate Website, October, 2016). Further revisions of Incoterms with additional amendments and modifications were done following the Second World War, resulting in Incoterms 1953, 1967, 1976, 1980, 1990, 2000, and 2010 to cope with the shift in global trades' needs (Biederman, 1999). Appendix 1 presents a detailed account of different Incoterms versions.

For instance, some of the major modifications to Incoterms occurred during the 1990 Incoterms revision, in which Incoterms were grouped into four basic categories (E, F, C & D) based on each delivery term obligation (Schwart, 1998).

Group E: Departure term

- EXW (Ex-Works)

Group F: Shipment terms with main carriage unpaid

- FCA (Free Carrier at named point)
- FAS (Free Alongside Ship)
- FOB (Free On Board)

Group C: Shipment terms with main carriage paid

- CFR (Cost and Freight)
- CIF (Cost, Insurance and Freight)
- CPT (Carriage paid to)
- CIP (Carriage and Insurance paid to)

Group D: Delivery terms

- DAF (Delivered at Frontier)
- DES (Delivered Ex-Ship)
- DEQ (Delivered Ex-Quay)
- DDU (Delivered Duty Unpaid)
- DDP (Delivery Duty Paid)

Under Group E (Departure term), EXW (Ex-Works) signifies the least possible obligation where the supplier is only responsible for making the goods available at its own location to the buyer. On the other hand, Group F (Shipment terms with main carriage unpaid) specifies that the supplier must deliver the goods to a specific agreed location, yet the supplier is not responsible for any shipping cost or risk associated with the main carriage chosen by the customer. Whereas in Group C (Shipment terms with main carriage paid), the vendor is accountable for the total shipping costs up to a named port or place at the destination; however, the risk of loss or damage still lies with the purchaser.

In essence, Group C possesses the same risk characteristics as F terms in which the sellers' obligations end in the country of export (Ramberg, 2011). The main difference between Group F and Group C is that under Group F, the seller's transportation expenses are limited to those costs acquired in the export country. Finally, in Group D (Delivery terms), the seller is in charge of delivering the merchandise to a named point at the destination in the country of import along with all the risks and the costs associated with the primary mode of shipment (ICC, 1990).

Another noticeable amendment in Incoterms 1990 compared to previous versions was that the respective obligations of the seller and buyer have been assembled under 10 headings as listed in (Table 1).

Table 1: Incoterms 10 headings

<u>Seller's Obligation</u>	<u>Buyer's Obligation</u>
A1 Provision of Goods in Conformity with the contract	B1 Payment of the price
A2 Licences, Authorisations and Formalities	B2 Licences, Authorisation and Formalities
A3 Contract of Carriage and Insurance (a) Contract of carriage (b) Contract of insurance	B3 Contract of Carriage
A4 Delivery	B4 Taking Delivery
A5 Transfer of Risks	B5 transfer of Risks
A6 Division of Costs	B6 Division of Costs
A7 Notice to the Buyer	B7 Notice to the Seller
A8 Proof of Delivery, Transport Document or Equivalent Electronic Message	B8 Proof of Delivery, Transport Document or Equivalent Electronic Message
A9 Checking – Packaging – Marking	B9 Inspection of Goods
A10 Other Obligations	B10 Other Obligations

Source: (ICC, 1990)

2.1.2 Incoterms 2010: Technological Advancement, Collaboration & Continuous Improvement

Incoterms 2010 are the current edition of the trade rules and this newest version will be more convenient for international traders (Reynolds, 2010). A slight adjustment was made regarding the risk transfer from seller to buyer for FOB (Free on Board), CFR (Cost and Freight) and CIF (Carriage Insurance and Freight) (Ramberg, 2011). For example, when using FOB in maritime transportation, the vendor's obligations must cover until the cargos have successfully been loaded onto the ship, instead of simply crossing the ship's rail at the port as with previous versions (Reynolds, 2011). Furthermore, packaging materials must not only be provided when using the FOB rule, but now the seller must also bundle them onto the merchandises prior to shipping (Ramberg, 2011). Moreover, an official section for Terminal Handling Charges (THC) was also incorporated under Incoterms 2010 to ratify the previous problem of misinformed buyers of paying duplicate handling costs in terminals (Casuccio, 2011). Furthermore, the new Incoterms 2010 also impose a progressive collaboration initiative among buyers and sellers, to cooperate on information sharing and platforms to streamline string sales transactions, to enhance greater visibility (Malfliet, 2011).

According to ICC (2010), the total number of Incoterms was reduced from 13 to 11 with consolidating the responsibilities of DAF (Delivered at Frontier), DES (Delivered Ex-Ship) and DDU (Delivered Duty Unpaid) into a new DAP (Delivered at Place) term. In addition, the previous term DEQ (Delivered Ex-Quay) was also revised to accommodate all modes of transportation as DAT (Delivered at Terminal) where the delivery requirement is deemed respected once the goods are made available to the buyer and are unloaded at any agreed terminal (Reynolds, 2011). The creation of the new DAT and DAP rules signifies that all risks were assumed by the vendor until the place of delivery (Reynolds, 2011). With more advanced technologies facilitating the transfer of information, companies can better manage, track and control shipments better. According to Barron (2011), our current business settings necessitated these continuous evolutions of Incoterms.

During Incoterms 1990 revision, Incoterms were categorized into four families (E, F, C & D). According to Malfliet (2011), this latest revision subdivides these 11 trade terms

into two distinct groups: Multi-modal Incoterms and Maritime Incoterms, as presented in (Table 2). Maritime Incoterms governs goods that employ FAS (Free Alongside Ship), FOB, CFR, and CIF (Cost, Insurance and Freight); while the remaining Incoterms are considered multi-modal. For Incoterms to be properly applied, the rule set out in the contract of sale must conform with the mode of transport (Cauccio, 2011). Gangadharan (2011) stresses that this differentiation was momentous, as it prevents future documents' rejection and costly delays due to misalignment of Incoterms selection. Figure 1 presents a listing of different version of Incoterms from 1936 to 2010.

Table 2: (Incoterms 2010) Modes of Transportations

7 Incoterms suitable for any modes of transportations:

<u>Incoterms</u>	<u>Place of delivery/destination & Port of shipment/destination</u>
EXW (Ex-Works)	EXW...named place of delivery, Incoterms 2010
FCA (Free Carrier at name point)	FCA...named place of delivery, Incoterms 2010
CPT (Carriage paid to)	CPT...named place of destination, Incoterms 2010
CIP (Carriage and Insurance paid to)	CIP...named place of destination, Incoterms 2010
DAT (Delivered at Terminal)	DAT...named terminal at port or place of destination, Incoterms 2010
DAP (Delivered at Place)	DAP...named place of destination, Incoterms 2010
DDP (Delivered duty paid)	DDP...at named place of destination, Incoterms 2010

4 Incoterms strictly for sea mode and inland waterway transportations:

<u>Incoterms</u>	<u>Place of delivery/destination & Port of shipment/destination</u>
FAS (Free Alongside Ship)	FAS...named port of shipment, Incoterms 2010
FOB (Free on Board)	FOB...named port of shipment, Incoterms 2010
CFR (Cost and Freight)	CFR...named port of destination, Incoterms 2010
CIF (Cost, Insurance and Freight)	CIF...named port of destination, Incoterms 2010

Source: (Ramberg, 2011)

Figure 1: From Incoterms 1936 to Incoterms 2010

Incoterms 1936 (7)	Incoterms 1953 (9)	Incoterms 1967 (11)	Incoterms 1976 (12)	Incoterms 1980 (14)	Incoterms 1990 & Incoterms 2000 (13)	Incoterms 2010 (11)
EXW (Ex-Works)	EXW (Ex-Works)	EXW (Ex-Works)	EXW (Ex-Works)	EXW (Ex-Works)	EXW (Ex-Works)	EXW (Ex-Works)
	FOR (Free on Rail)/ FOT (Free on Truck)	FOR (Free on Rail)/ FOT (Free on Truck)	FOR (Free on Rail)/ FOT (Free on Truck)	FOR (Free on Rail)/ FOT (Free on Truck)		
			FOB (Free on Board Airport)	FOB (Free on Board Airport)	FCA (Free Carrier At name point)	FCA (Free Carrier At name point)
				FRC (Free Carrier)		
FAS (Free Alongside Ship)	FAS (Free Alongside Ship)	FAS (Free Alongside Ship)	FAS (Free Alongside Ship)	FAS (Free Alongside Ship)	FAS (Free Alongside Ship)	FAS (Free Alongside Ship)
FOB (Free on Board)	FOB (Free on Board)	FOB (Free on Board)	FOB (Free on Board)	FOB (Free on Board)	FOB (Free on Board)	FOB (Free on Board)
C&F (Cost and Freight)	C&F (Cost and Freight)	C&F (Cost and Freight)	C&F (Cost and Freight)	C&F (Cost and Freight)	CFR (Cost and Freight)	CFR (Cost and Freight)
CIF (Cost, Insurance, Freight)	CIF (Cost, Insurance, Freight)	CIF (Cost, Insurance, Freight)	CIF (Cost, Insurance, Freight)	CIF (Cost, Insurance, Freight)	CIF (Cost, Insurance, Freight)	CIF (Cost, Insurance, Freight)
	FCP (Freight or Carriage paid to)	FCP (Freight or Carriage paid to)	FCP (Freight or Carriage paid to)	FCP (Freight or Carriage paid to)	CPT (Carriage Paid To)	CPT (Carriage Paid To)
				CIP (Carriage and Insurance Paid to)	CIP (Carriage and Insurance Paid to)	CIP (Carriage and Insurance Paid to)
Ex-Quay	Ex-Quay	Ex-Quay	Ex-Quay	Ex-Quay	DEQ (Delivered Ex-Quay)	DAT (Delivered At Terminal)
Ex-Ship	Ex-Ship	Ex-Ship	Ex-Ship	Ex-Ship	DES (Delivered Ex-Ship)	
		DAF (Delivered at Frontier)	DAF (Delivered at Frontier)	DAF (Delivered at Frontier)	DAF (Delivered at Frontier)	DAP (Delivered At Place)
					DDU (Delivered Duty Unpaid)	
		DDP (Delivered Duty Paid)	DDP (Delivered Duty Paid)	DDP (Delivered Duty Paid)	DDP (Delivered Duty Paid)	DDP (Delivered Duty Paid)

Sources: (ICC 1953, 1980, 1990, 2000 and 2010)

The “E” Family of Incoterms (EXW)

- EXW: This term may be used for any mode of transport including multimodal transport

EXW (Ex-Works ...named place of delivery) represents the minimum responsibilities on the seller and maximum obligations for the buyer. The seller completes his contractual obligation when the goods are made available for pick-up at the seller's location (ICC, 2010). Under EXW (Ex-Works), the buyer must arrange for collecting transport and the costs of all other transportations thereafter, in addition to load and export customs clearance. Based on the above details, EXW (Ex-Works) is not suited for international trading (Gardner, 2012). Moreover, if the buyer cannot perform directly or indirectly the export formalities and declaration, then this term should be avoided. In this instance, if the seller elects to perform these tasks, it is done at the risk and expense of the buyer under EXW (Ex-Works), otherwise FCA (Free Carrier at named point) should be selected (Malfliet, 2012).

The "F" Family of Incoterms (FCA, FSA, and FOB): (Main carriage not paid by the seller)

- FCA: This term may be used for any mode of transport including multimodal transport

FCA (Free Carrier at named point... named place of delivery) may contain more than one delivery point at origin. If both parties decide on "FCA Seller's warehouse" then the seller is responsible for loading the truck, as well as export customs clearance and the issuance of appropriate transportation documents such as an air waybill or bill of lading will also be the seller's responsibilities. Both the air waybill and bill of lading are legal contracts of carriage signed and issued by or on behalf of a carrier of goods. Their primary functions include to specify the shipping instructions, the carrier's terms of carriage, as well as to lay out the liability and claims procedures (Torsten, 2011). Conversely, if the delivery place is other than the seller's location, then the seller covers the inland shipping expenses, but he/she is no longer responsible for unloading of goods at the carrier's facility. The seller is deemed to have respected his contractual obligation to deliver the goods when they are in the custody of the buyer appointed professional (ICC, 2010). From that point onwards, the buyer assumes all the risks and costs. The buyer organizes the main international transport and all subsequent shipments, therefore the shipper on the waybill should be the buyer (Gardner, 2012; Malfliet, 2012).

- FAS: This term can only be used for maritime transportation. FAS (Free Alongside Ship ... named port of shipment) signifies that when the goods have been placed alongside the vessel nominated by the purchaser at the named port of shipment, the obligations of the seller have been satisfied (ICC, 2010). Gardner (2012) suggests that FAS is suited toward large/oversized loads that require special handling, and it is not relevant for regular container shipments. Identical to FCA (Free Carrier), with FAS the seller is responsible for export clearance and inland freight costs. Once the goods are placed alongside the vessel, the buyer will take charge for all transportation and customs costs until the destination, including the loading of the ship and any potential risk of loss of or damage to the shipment (Ramberg, 2011).

- FOB: This term can only be used for maritime transportation. FOB (Free on Board ... named port shipment) dictates that the responsibilities of the seller end when goods are loaded on board the boat at the named port of shipment (ICC, 2010). Like FAS, FOB is not suitable in the case of roll-on/roll-off container cargos but instead is more appropriate for bulk shipment (Ramberg, 2011). The FOB term requires the vendor to clear the goods for export and all the transportation costs until the delivery point; all costs and risk beyond this point belong to the buyer (Gardner, 2012).

The "C" Family of Incoterms (CFR, CIF, CPT, and CIP): (Main carriage paid by seller)

The Incoterms that are associated with the C family are distinctively different when dealing with the division of costs and risks in comparison to the other Incoterms (Ramberg, 2011). Once the vendor has promptly fulfilled his obligations by securing the main transportation for carriage and handing over the goods to the carrier appointed by the buyer, any event happening afterward is at the buyer's own risk. In case of unexpected interruptions such as problem at the port, labor disputes, government intervention, or war, the carriers could exercise their rights under a transshipment or similar clause to relieve their responsibilities, so any additional costs would be at the expense of the buyer and not the seller. In other words, the seller is to take care of main transportation, but if anything happens, it is at the buyer's risk. Furthermore, under all four Group C rules, it is the buyer who is responsible for customs clearance formalities of the importing country, while the supplier is responsible for customs export.

- CFR: This term can only be used for maritime transportation. CFR (Cost and Freight... named port of destination) means that the seller must pay all the required costs and freight to carry the goods to the named port of export and have them loaded on board the vessel, in addition to provide an ocean bill of lading (ICC, 2010). The CFR rule implies that the price quoted to the buyer includes not only the sales price of the products but all ocean carriage and related charges up to the named port of destination (Gardner, 2012). Comparable to FOB, the CFR was initially created for bulk commodities such as chemicals passing the ship's rail, therefore it will enhance shipping efficiency by using CPT for container transportation (Ramberg, 2011). Moreover, insurance for the goods is not included with the term.

- CIF: This term can only be used for maritime transportation. CIF (Cost, Insurance, Freight... named port of destination) signifies the same commitments for the vendor as under CFR also, the seller is contracted to procure ocean transport insurance for any risk of loss of or damage to the merchandise during the voyage (ICC, 2010). Regarding the naval insurance, if the buyer wants to procure additional coverage over the minimum coverage provided in the contract, then it is at the buyer's expense. Moreover, the insurance needs to be covered from the moment goods have loaded on board the boat at origin to the final named port of destination. The seller must also send the buyer the insurance certificate for a single shipment or proof of blanket coverage, and the insurance must be of the type that allows any party with an insurable interest to file a claim directly with the insurance company (Gardner, 2012).

- CPT: This term may be used for any mode of transport including multimodal transport
CPT (Carriage paid to ... named place of destination) is where the seller honors its obligations by handling the merchandise and paying for freight to the carrier contracted for the shipment of goods to the named destination (ICC, 2010). With the election of this Incoterm, the delivery should not be made directly to the shipping vessel, and the cost of the transit is the responsibility of the seller, which has already accounted for the portion of the transportation costs in his selling price (Gardner, 2012).

In general, the seller's main tasks include to packing, loading, reserving, as well as paying for the transportation costs until the named destination. In addition, the seller must conduct export clearance and provide necessary documents and information to facilitate the customs formalities in the destination country for the customer; while all risks occurring after the delivery into the custody of the first carrier will be the buyer's (Ramberg, 2011).

- CIP: This term may be used for any mode of transport including multimodal transport

CIP (Carriage Insurance paid to ... named place of destination) signifies the same commitments for the vendor as under CPT in addition, the seller is contracted to procure ocean transport insurance to the agreed place to protect against risk of loss or damage for the benefit of the buyer (ICC, 2010). Basically, the link between CIP and CPT is equivalent to the relationship of CIF (Cost, Insurance, Freight) to CFR (Cost and Freight), where the seller must purchase the minimum insurance required and that risk passes to the buyer at origin with the first.

The "D" Family of Incoterms (DAT, DAP, and DDP)

As previously mentioned, terms in Group D are arrival contracts where the seller must deliver the goods to an agreed point at a destination and pay for the corresponding shipping costs up to that named point. The D family trade terms are much simpler in comparison to the C Incoterms in which the transfer point under D terms for risk of loss or damage and the transportation expense are the same. Currently, there is an increasing usage of the D family delivered terms between both the vendor and customer during international transactions (Ramberg, 2011). Obviously, the election of D Family Incoterms will increase the risks and responsibilities of the selling parties, but it also allows the vendors greater control over the supply chain to cope with the evolving industry practices (Malfliet, 2011).

- DAT: This term may be used for any mode of transport including multimodal transport

DAT (Delivered at Terminal ... named terminal at port or place of destination) is a new trade term introduced in the latest Incoterm revision to replace DEQ (Delivered Ex-Quay)

to allow greater flexibility for application (Gardner, 2012). Under DAT (Delivered at Terminal), the seller pays for all transporting related expenses including export duties, principle transporter shipment costs, marine insurance and the unloading fees at the terminal port (ICC, 2010). Furthermore, all risks occurring during the voyage of carrying and unloading the goods at the terminal of destination belong to the vendor. Moreover, it is the buyer who is responsible for the import customs formalities in addition to all the other costs from the terminal to the final point of destination (Gardner, 2012). If both parties agreed that the vendor should assume all responsibilities and costs for the passage between the terminal to a further point in the supply chain, then DAT (Delivered At Place) or DDP (Delivered Duties Paid) might be more suitable.

- DAP: This term may be used for any mode of transport including multimodal transport

DAP (Delivered at Place ... named place of destination) is another new trade term added to the official Incoterms 2010 rules by merging the responsibilities of DES (Delivered Ex-Ship), DAF (Delivered at Frontier) and DDU (Delivered Duty Unpaid). As with the use of other Group D terms, the seller is responsible for arranging the entire supply chain until the goods are ready to be unloaded from the designated carriage at the named place (ICC, 2010). In addition, the seller is also in charge of customs clearance, taxes, duties and VAT at the importing country, but unlike DAT (Delivered at Terminal), the seller is not responsible for unloading the goods from the carrier at the destination location (Gardner, 2012).

- DDP: This term may be used for any mode of transport including multimodal transport

DDP (Delivered Duty Paid ... at named place of destination) represents the greatest responsibilities on the seller and minimum obligation for the buyer. In essence, it is the same as DAP (Delivered at Place) with the extra requirement of obtaining all official approvals to ensure the delivery of the shipment along with customs clearance, duties, taxes, and value-added tax for exporting and importing countries' customs (ICC, 2010). Under DDP (Delivered Duty Paid), the sole duty of the buyer is unloading once the shipment has arrived at the destination (Ramberg, 2011). Figure 2 exhibits the risk and cost allocation for each respective Incoterm selection.

Figure 2: Incoterms 2010 Risk and Cost Breakdown

	EXW		FCA		FAS		FOB		CFR		CIF		CPT		CIP		DAT		DAP		DDP	
Mode:	All		All		Water		Water		Water		Water		All		All		All		All		All	
Service:	Risk Cost		Risk Cost		Risk Cost		Risk Cost		Risk Cost		Risk Cost		Risk Cost		Risk Cost		Risk Cost		Risk Cost		Risk Cost	
Goods available at seller's	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Packaging of the goods	B	B	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Loading at Seller	B	B	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Export Customs declaration	B	B	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Initial carriage to place of export	B	B	/	/	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Unloading of initial carriage at named place	B	B	B	B	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Loading charges	B	B	B	B	B	B	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Loaded on board ship	B	B	B	B	B	B	S	S	S	S	S	S	B	S	B	S	S	S	S	S	S	S
Main carriage to country of import	B	B	B	B	B	B	B	B	B	S	B	S	B	S	B	S	S	S	S	S	S	S
Delivery at terminal	B	B	B	B	B	B	B	B	B	B	B	B	B	S	B	S	S	S	S	S	S	S
Unloading charges at Terminal	B	B	B	B	B	B	B	B	B	B	B	B	B	S	B	S	S	S	S	S	S	S
Insurance Cargo & Carriage	B	B	B	B	B	B	B	B	B	B	B	S	B	B	B	S	S	S	S	S	S	S
Reloading onward carriage at terminal	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	S	S	S	S
Additional transport to destination cost	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	/	/	S	S
Import Customs clearance	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	S	S
Unloading at Buyer	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	Buyer: Risk & Cost											Seller: Risk & Cost										

Sources: Prepared by the author based on a similar chart produced by Kuehne + Nagel

2.1.3 The American Incoterms

U.S. Incoterms by the U.S. Chamber of Commerce RAFTD (Revised American Foreign Trade Definitions) or UCC (Uniform Commercial Code) do not possess the same interpretations as international Incoterms by ICC (Reynolds, 2003). There are currently six variations of FOB contained in Article Two of the Uniform Commercial Code. Moreover, there are no restriction nor recommendations on the means of transportation in the American FOB terms in comparison to the FOB Incoterm from ICC, which has much more concrete meanings and only applies to maritime cargo (Reynolds, 2003).

According to Rigos Bar Review (2011), this version of Incoterms revolves around two important distinctions between “FOB Origin” and “FOB Destination.” FOB Origin (FOB Shipping Point)/(FOB Delivery)/(FOB Delivery Point) signifies that the sale is considered completed at the seller’s shipping dock; hence, responsibility for the freight costs and liability during transport lie with the buyer. On the other hand, goods are delivered to the buyer’s doorstep, and the seller is responsible for freight costs and liability during transport with FOB Destination. Much like the Incoterms by ICC, it is important to determine where the responsibility for merchandise is transferred, in addition to which party between the buyer and seller, assumes the loading costs and carriage costs. The focal transfer point determines liability or risk of loss for goods lost or damaged in transit from the seller to the buyer. Table 3 illustrates the difference in interpretation between American Incoterms and ICC Incoterms.

Table 3: Difference in interpretation between the American Incoterms by UCC and Incoterms 2010 by ICC

American Incoterms (Revised Americans Foreign Trade Definitions)	Incoterms 2010
FOB origin	EXW
FOB vessel	FOB
FOB shipping point or FOB shipping point, freight collect	FCA shipping point
FOB shipping point, freight prepaid	CPT destination
FOB destination or FOB destination, freight prepaid	DAP destination
	DDP

As we can see from the above table, different American FOBs are interpreted differently from the Incoterms 2010 by ICC. When dealing with Americans, it is vital to specify the conditions of deliveries on the contracts by identifying the correct version of Incoterms. Moreover, due to the risk of confusion with the employment of various U.S. FOBs, the best practice would be to consistently specify both the year of issue of the rule, as well as the place such as "FOB New York (ICC Incoterms 2010)" (Legrand & Martini, 2008)

Due to the similar terminology of International Chamber of Commerce FOB and American FOBs with very different definitions, where each U.S. state has its own official version creates tremendous confusion for both Americans and international traders. Hence in this research project, we will focus primarily on the International Chamber of Commerce Incoterms.

2.1.4 Incoterms limitations and suggestions

The proper selection of Incoterms removes many country-specific sales and shipping contracts' inconsistencies and ambiguities. As per Giermanski (2001), although there is no law that obliges companies to use Incoterms, it is imprudent not to use them. It is both smarter and safer to use these guidelines as everyone knows what each Incoterm signifies (Gooley, 2000). Although there are no transportation terms within the United Nations Convention on Contracts for the International Sale of Goods (CISG), nevertheless, many observers suggest that the CISG risk rule is consistent in concepts and terminologies with Incoterms (Coetzee, 2010). However, there are still occurrences where Incoterms fails to align with standard International trade practices (Malfliet, 2011)

Limitations of EXW (Ex-Works):

- For instance, one of the most popular trade terms in all commercial contracts is EXW (Ex-Works), and under the new Incoterms 2010 classification, this term can sometimes be out of line with common international business practices. Based on the official ICC definition, if EXW (Ex-Works) is selected, the buyer must be the one to load the goods. Yet, in reality, it is common business courtesy for the vendor to load the collecting transportation. Consequently, the seller is exposed to

additional risk and cost that wasn't included in the original contract. Furthermore, any damages caused by a third party in the seller's premises might not be covered by the liability insurance of the seller even if the carrier is acting on behalf of the buyer (Ramberg, 2011).

- Another problem with EXW (Ex-Works) is that the transport insurance of the buyer only covers damage or loss from the moment the goods are handed over to the designed carrier, whereas the passing of risk under EXW (Ex-Works) occurs when the goods are available to the buyer for pick-up. The presence of a risk gap occurs when the buyer's risk is not insured under the transport insurance policy as long as the carrier has not picked up the goods at the seller's premises which is the main characteristic of EXW (Ex-Works) contracts (Malfliet, 2011).
- Many countries' commerce laws dictate that the seller be the entity to clear export customs clearance, but EXW (Ex-Works) is the only Incoterms where the purchaser is obligated to clear its own export clearance (Gardner, 2012).

To avoid the three potential issues of EXW (Ex-Works), it is recommended to elect the use of the FCA (Free Carrier) Seller's Facility term, where the seller will assume both the export clearance and loading the vehicle. In addition, it also eliminates the risk gap arising with the use of EXW (Ex-Works).

Limitations to solve title of transfer & payment issues:

- Brancusi (2010) claims that the inability of the Incoterms to solve the issue of the transfer of ownership and transfer of property rights can be accounted as one of its most important deficiencies that requires a solution. The use of Incoterms focuses on the costs and associated risks; the actual transfer of title is determined by the sales contract during contract negotiation (Cook, 2014). There is a huge legal implication gap between responsibility for the well-being of merchandise and actually owning these goods. The lack of legislation coherence vis-à-vis the transfer of property from one country to another can lead to potential payment problems in international trade.

- Moreover, special attention should be paid to Incoterms selection and payment terms combination to avoid any potential conflicts or misalignment as it is a gray area in the official Incoterms definition concerning payment obligations (Cook, 2014). Comparable to the issue with the transfer of ownership, questions regarding the exact timing, the method of payment, potential discount, payment terms and related documents must be determined by the sales contract during contract negotiations.

Consequently, it is prudent industry practices that proper due diligence is made when stipulating conditions for all commercial contracts of great importance. Guided by the applicable law imposed in an individual clause in the contract, both seller and buyer must come to a consensus separately during contract negotiation upon the title transfer and methods of payment (Gardner, 2012).

Limitations on adequate insurance coverage:

- When transacting globally, the issue of adequate insurance is critical. In the event of loss or damage, it could lead to potential conflicts and litigations with one of the strategic partners. Although it makes absolute business sense to have insurance on all commercial cargo transits; nonetheless, out of the eleven official Incoterms trade rules, only CIF (Cost, Insurance, Freight) and CIP (Carriage and Insurance Paid to) necessitate the purchase of insurance by the seller on behalf of the buyer (Gardner, 2012). For instance, under FOB or CFR (Free Carrier) transactions, since it is the buyer who has to bear the risk of loss or damage to the goods from the moment they have been loaded on board the ship, it would be normal commercial practice for the seller to insure until the point of delivery and for the buyer to purchase insurance on board the ship (Coetzee, 2010).
- Furthermore, under CIF (Cost, Insurance, Freight) and CIP (Carriage and Insurance Paid to) the vendor is only obligated to procure minimum insurance coverage on behalf of the buyer. If the buyer and seller want greater coverage, then they will need to procure a more expensive type of cargo insurance (Ramberg, 2011).

Incoterms do not deal with whether it is in terms of commercial practice either common or prudent for a party to take certain measures such as buying insurance, even though the seller has no obligation under the particular Incoterms selection to do so in relation to the other party. As Incoterms other than CIF and CIP do not require either party to obtain insurance, it has become a business decision that must be made outside the scope of the trade terms.

Limitations with Incoterms variants:

- Many Incoterms variants exist, such as EXW (Ex-Works) Loaded, FOB Stowed, and CIF (Cost, Insurance, Freight) Landed, to help facilitate trades; conversely these variants create additional uncertainties around the trade terms (Ramberg, 2011). The precise needs of international commerce, as well as different materials transportation requirements, led to many Incoterms trade terms variants being generated, yet the official Incoterms are EXW (Ex-Works), FOB, and CIF (Cost, Insurance, Freight) (Gardner, 2012). Coetzee (2010) stresses that despite acknowledging the presence of Incoterms variants in commercial practices, the ICC does not provide any guidance on how traders may safely exercise them and potential legal risks may arise when no standardized understanding of these additions exists. Cheng and Cheng (1986) suggest that the addition of a word or even a letter to Incoterms may sometime have an entirely unforeseen result. These variants are not Incoterms, hence there is no worldwide legal definition, and any potential damage or risks of loss due to their application may go directly to local and national justice (Biederman, 1999).

Ultimately, the regulation of Incoterms variants depends on the universal acceptance of different industries and trade groups' collective practices. Once unanimous definitions of these Incoterms variants have been recognized, the International Chamber of Commerce must act proactively toward harmonizing these deviations and their usages to increase their overall efficiency (Coetzee, 2010).

2.2 Supply Chain Management & Supply Chain Finance

Supply Chain Management (SCM) is a multi-disciplinary management concept associated with the collaboration and planning of the flows of goods, information and capital (Sanders, 2011). According to Brown (2002), SCM is a combination of cross-functional groups in the purchasing, manufacturing production, logistics distribution, and the promotion of goods ultimately to satisfy a demand. The goal of SCM is to deliver superior and sustainable financial performance for the enterprise (Lee et al., 2016). Given its sweeping effect on a business' success or failure, SCM is identified as a value driver with great importance. Consequently, it is crucial for companies to carefully align their supply chain designs with both business strategies and processes to achieve their strategic financial objectives (Elgazzar, 2012). Countless studies have been done on the issues surrounding both the physical and information flows within SCM, however only limited attention has been paid to examine the financial movement in this field (Hofmann & Kotzab, 2010; Wuttke et al., 2013; Steeman, 2014; Liu et al., 2015). According to Avanzo et al. (2003), financial communication among business partners, which is vital in all international commerce, is often neglected. Templar et al. (2016) argue that supply chain finance is a part of the broader SCM framework facilitating the end-to-end visibility of the chain and the predictability of financial flows within an organization.

According to Kettula (2015), a major undertaking of SCM is to enhance the performance of related supply chain partners. By expanding the fundamentals of SCM from inventory and information flows to financial flows, supply chain finance allows companies to improve their operating margins, reduces the need for additional working capital, and reduces the overall risk for all partners (Aberdeen Group, 2006). Supply chain finance is a financial optimization process that focuses on the broad integration among customers, suppliers, and various service providers in pursuit of a mutually beneficial value creation (Pfohl and Gomm, 2009; Randall & Farris, 2009; Hofmann & Kotzab, 2010). Following the global financial crisis, supply chain finance has become increasingly popular among large organizations as economic uncertainty led companies to secure strategic materials for their supply chain by extending payment terms with suppliers (Kristofik et al., 2012). The idea behind this notion is intuitively simple, yet the potential gains can be substantial. In essence, information gathered from the supply chain can be

used to reduce investment risk; hence, the capital costs of financing potential projects can decrease dramatically. According to Dello Iacono et al. (2015), approving invoices before financing helps enhance the information sharing between financial institutions, and buyer and seller; thus, these receivables are deemed more valuable with less uncertainty. Blount (2008) claims that this innovative approach will generate value for all participants within the chain. Supply chain finance offers both quantitative measurable benefits and qualitative advantages to an existing buyer-supplier relationship (Blackman et al., 2013; Randall & Farris, 2009). For instance, Seifert and Seifert (2009) justify that supply chain finance can help deliver the added benefit of improving the trust and cooperation among trading parties. With an increasing number of enterprises beginning to implement a more complex and extended SCM structure; additional focus will be directed toward the financial models through collaborative teamwork with other parties within the chain to support the overall supply chain strategy (Steeman, 2014).

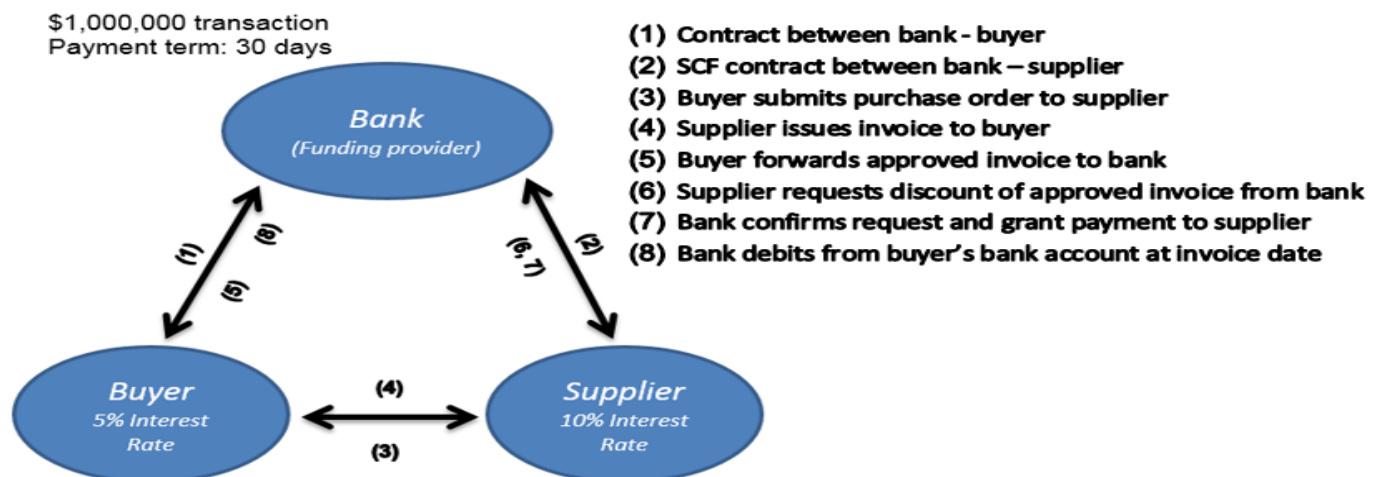
2.2.1 Trade Finance vs. Supply Chain Finance

Based on ICC's 2016 survey, up to 80% of global trade utilizes a variety of financing or credit insurance options; hence the accessibility of trade finance (TF) is crucial for an active and well-functioning trading system (ICC, 2016). Generally, trade finance is the financing of cross-border trades with the primary goal of bridging the working capital gap between buyer and supplier (Klapper & Randall, 2011). According to Global Business Intelligence (2016), trade finance product sets can be broken down into four major categories of trade transactions: 1) Traditional trade instruments such as letter of credits (L/Cs) and documentary collections, 2) Supply chain finance 3) Medium to long term export finance and 4) Structured trade finance. Chauffour (2011) suggests that the letter of credit is a financial commitment by the buyer's bank to remunerate the seller once the purchasing conditions within a contract have been fulfilled. Similarly, a documentary collection is a set of export documents provided by the vendor to the buyer's bank requesting payment once the products have been shipped and delivered (Holter et al., 2010). Moreover, medium to long term export finance are credits of greater than three years duration provided by export credit agency to support the needs of export credit insurance and export credit guarantees of sellers against the risks of nonpayment, foreign

exchange variation and political tumor (Chauffour, 2011). On the other hand, structured trade finance transactions are primarily seen in the commodity sector to finance high value commodity purchase financing, as well as medium term prepayment finance (Global Business Intelligence, 2016).

Supply chain finance is the fastest growing model of trade finance, where the use of unsecured open account transactions allows goods to be shipped and delivered prior to the reception of payment (Global Business Intelligence, 2016). Supply chain finance is an optimization process that can be further divided into several funding solutions (Gelsomino et al., 2016). For instance, Caniato et al. (2016) present a list of innovative financing supply chain finance programs such as inventory financing, dynamic discounting, seller-based Invoice auction and reverse factoring. Among them, reverse factoring is the most commonly used supply chain finance program available. Reverse factoring is a three-way agreement between the buyer, the seller and the bank/factor/funds provider, where the bank acquires the accounts receivable of the vendor which has legal recourse on the buyer (Templar et al., 2016). Figure 3 details the transaction flow mechanism of reverse factoring.

Figure 3: Transaction flow with Supply Chain Finance - Reverse Factoring



In an open account transaction without supply chain finance, the supplier would pay: $10\% \times \frac{30}{365} \times \$1,000,000 = \$8,219.18$ in interest for granting the buyer a term of payment for 30 days. On the other hand, in a reverse factoring transaction, the larger buyer is usually the focal company that initiates the process by contracting with the bank

and enrolling its supplier (buyer-driven). This way, the supplier is able to utilize the scale and credit rating of the larger buyer to borrow at a lower rate, where the capital cost for the same 30-day payment term would be: $5\% \times \frac{30}{365} \times \$1,000,000 = \$4,109.59$, a savings of 50%. In other words, the implementation of reverse factoring allows the buyer to extend its payment term with the supplier to up to 60 days without negatively impacting the working capital of the supplier.

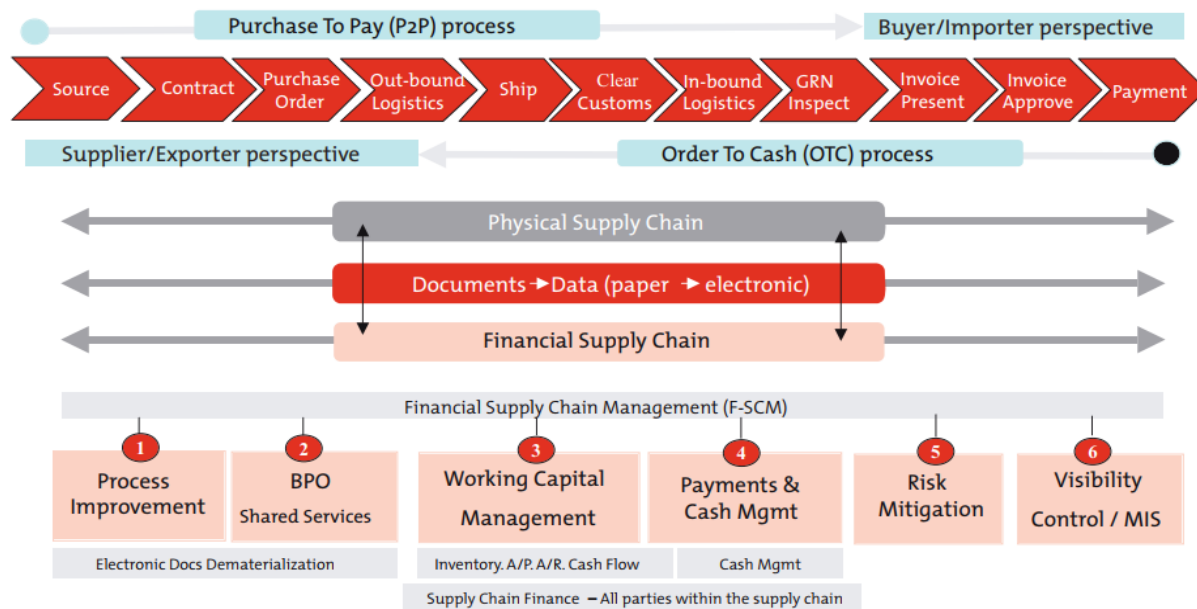
From the above example, we see that potential benefits of supply chain finance can be tremendous. Managers need to have a strong understanding not only of their own supply chain working capital situations, but to also possess a familiarity with various supply chain finance programs to properly select a suitable solution (Wuttke et al., 2013). Templar et al. (2016) suggest that supply chain finance encompasses three diverse methodologies in business financing:

- 1) In a narrower sense, supply chain finance as a buyer-driven payables solution allows the buyer the opportunity to lengthen its Days Payable Outstanding (DPO) by taking advantage of its stronger credit position (Polak, 2012). Hurtrez et al. (2010) claim that reverse factoring is, in fact, a form of credit arbitrage as it relies on the stronger credit rating of the buyer to provide liquidity to smaller suppliers at more favorable terms.
- 2) Supply chain finance is a set of supply chain financing solutions linking the liquidity strained suppliers to the bank/fund provider, and exploring the physical and information flows of a supply chain to enhance financial return (Camerinelli, 2009; Chen & Hu, 2011). With the development of new technology platforms, this method can evaluate the effectiveness of various financial institutions instruments on the financial performance of the supply chain simultaneously as a means of optimizing the financial supply chain (Steeman, 2014).
- 3) In a broader perspective, supply chain finance as financial supply chain management (Financial SCM) covers both the inter and intra organizational integration and the optimization of all financial activities. By managing, planning, and controlling all financial flows both internally and externally such as Pre-Shipment, In-Transit, and Post-Shipment financing, companies can

optimise the working capital of a given partnership (More & Basu, 2013). Through the continuous collaboration among different departments within an organization, along with suppliers and banks inside the chain, it envelops the entire supply chain from end-to-end. (Kristofik et al., 2012).

Based on the three interpretations listed above, we can observe the emphasis on advanced technology and collaboration among different partners within the supply chain as key elements to financial SCM end-to-end programs. The objective of financial SCM is to improve visibility of all processes involving the sourcing, billing, recording, and paying for goods and services from one end of the spectrum to the other (Kristofik et al., 2012). Figure 4 illustrates the key elements of financial SCM from phase one to phase six. Moreover, it considers the perspectives of both importer and supplier where it includes many more steps and processes within the supply chain than reverse factoring program as shown in Figure 3. For the remainder of this thesis, to avoid any confusion we will refer the collaborative supply chain finance from end-to-end as financial SCM.

Figure 4: Key elements of Financial Supply Chain Management

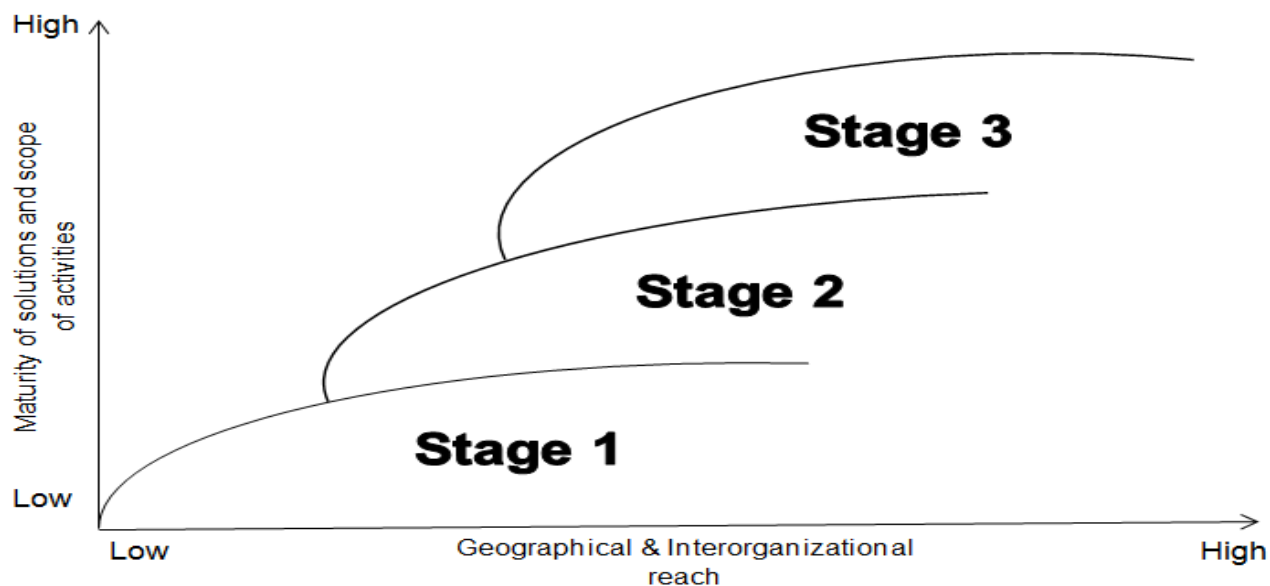


Sources: (HSBC Group, 2007).

In 2015, Dello Iacono et al. concluded in their extensive research on the adoption of supply chain finance – reverse factoring programs that a number of key market dynamics such as interest rate, working capital needs of the supply chain, competition intensity, as well as the reputation of partners can have direct impacts on the continuous development of supply chain finance. Similarly, Wuttke et al. (2013) identifies senior management commitment, behavior of competitors, working capital goals, technology, and collaboration as main criteria for supply chain finance implementation in six European companies in its study.

As the topic of supply chain finance advances, Templar et al. (2016) claim that there are three transition stages that characterize the rise of supply chain finance. Achieving each level of maturity establishes a higher level of geographical and inter-organizational reach, as illustrated in Figure 5.

Figure 5: Transition Stages – The Rise of Supply Chain Finance



Source: Adapted from a similar figure produced by (Templar et al., 2016)

The first stage of this transitional phase represents the most basic business functionalities. With mostly manual processes, this stage emphasizes the use of traditional trade finance instruments such as letters of credit (L/Cs), bank guarantees and documentary collections to settle trades. The focal company concentrates solely on its

own benefit with a shorter-term focus on financial performance where all transactions with other supply chain partners are at an arm's length basis (Templar et al., 2016).

In the second stage of the supply chain finance maturity cycle, by combining the features of trade finance with SCM, supply chain finance has developed into innovative financing arrangements such as reverse factoring (Polak, 2012). Payment processes are semi-automatic with the advancement of technology. Moreover, optimization has been made possible, as multiple credit providers with various financial instruments are now connected and compete for financing on the same platform (Templar et al., 2016).

In its third and final stage, supply chain finance maturity cycle involves a tight integration of inter and intra organization supply chain partners. With a fully automated process, the goal of this stage, financial SCM, is to optimize the working capital by acquiring visibility over the end-to-end processes. By leveraging advance technology platforms and collaboration, financial SCM synchronizes the accounts payable, accounts receivable, level of inventory, payment terms and discount agreement of a given buyer-seller relation to achieve the desire purchase-to-pay and order-to-cash cycles (Lamoureux & Evans, 2011; Kristofik et al., 2012).

2.2.2 Benefits of Supply Chain Finance

Supply chain finance is a brilliant illustration of a triangular beneficial partnership between suppliers, banks and buyers (Hurtrez et al., 2010).

Suppliers can demand payment sooner via the buyers' credit rating, reducing their receivables and their risks; while improving their liquidity (Bank of America Merrill Lynch, 2015). In addition, supply chain finance allows the suppliers to have a clear visibility of cash flow, as the buyers' bank will settle all approved invoices on time (Greensill, 2010). With fewer constraints on working capital and liquidity, the often smaller and less credit proven suppliers will benefit from better financing arrangements and financing options (Wuttke et al., 2013). Alternative means of financing such as lines of credit can then be used for other value creation purposes (Greensill, 2010). This process, in turn, enables the suppliers to offer more purchasers friendly terms since the cost of late payment no longer applies to invoices (Hurtrez et al., 2010). Reconciliation, account posting, and

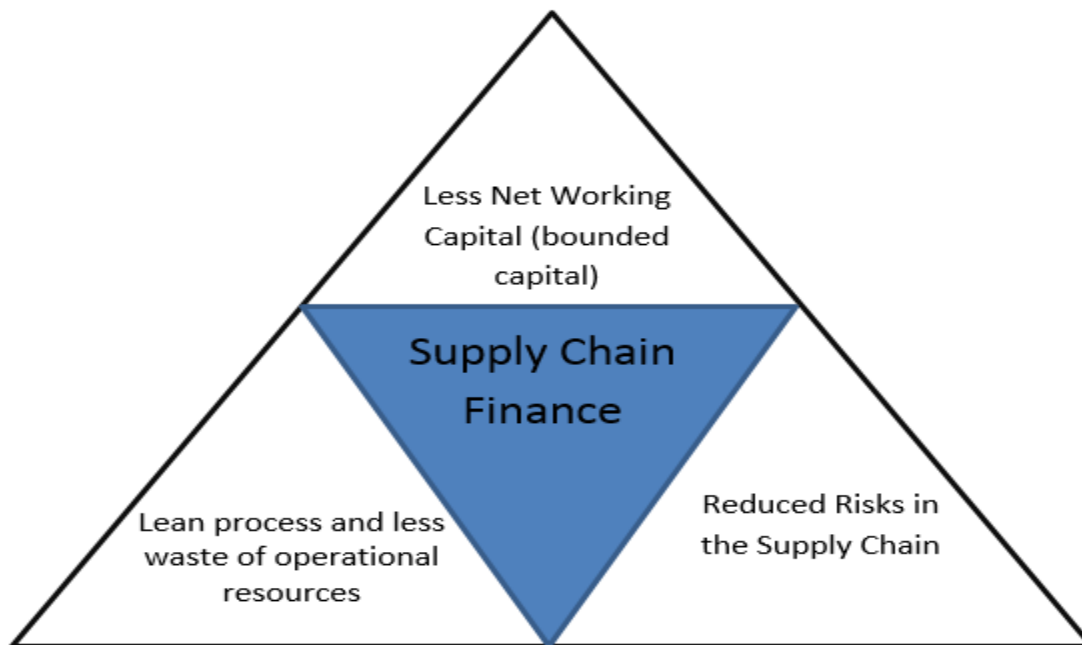
financial reporting are also enriched with information directly integrated into internal systems (Greensill, 2010).

For the funding parties, due to its lower capital requirement, supply chain finance programs offer greater profit margin than conventional trade finance instruments (Global Business Intelligence, 2016). Moreover, as counterparty risks have been transferred to the larger buyers with better credits, the banks are able to reduce their risk-based assets expenditure, an important factor with the arrival of Basel III (Appendix 5). Compared to traditional factoring, the bank's exposure lies with a single stronger buyer for supply chain finance rather than many smaller sellers; therefore, the risk is assessed more competitively (Greensill, 2010). By supporting the clients' entire supply chain from end-to-end, the revenue from financial SCM will also be higher, with a possibility of cross-sales and much stronger collaborative relationships with clients (Herath, 2015). Moreover, there is a risk of disintermediation for the banks that choose to forgo the ongoing evolution of supply chain finance. As supply chain finance is gaining traction and becomes mainstream, the latest innovative technologies allow non-bank players to act as key contributors in the integrated financial supply chain services (Hurtrez et al., 2010).

Supply chain finance programs such as reverse factoring offer buyers the opportunity to delay their payment terms. Furthermore, supply chain finance also allows buyers to secure their raw material needs by providing supplementary financing to their suppliers. Moreover, the financial SCM practices can help build a long-term sustainable relationship by instilling improved trust, commitment to cooperate, and value creation throughout the chain (Randall & Farris, 2009). As the number of manual queries, payments handling time and payment fees diminish through automatic IT platforms, the cost of processing for all parties will also be decreased (Greensill, 2010).

Figure 6 shows the goals of supply chain finance. By leveraging advanced technologies, visibility and collaboration within the supply chain, supply chain finance reduces operating, financial and compliance risks (Templar et al., 2016).

Figure 6: Goals of Supply Chain Finance



Source: Prepared by the author based on a similar figure produced by (Templar et al., 2016)

2.3 Supply Chain Financial Performance

Klapper & Randall (2011) claim that supply chain finance can help bridge the funding gap between the purchaser and the vendor, which helps improve their financial performances. At the same time, an effective SCM can equally provide a positive impact to a company's financial metrics (Farris & Hutchison 2002). A superior SCM will allow a company to improve its profitability, liquidity and productivity performances (Christopher, 1999). Hofmann & Kotzab (2010) justify that the implementation of supply chain finance program can help optimize the liquidity, working capital and cost of capital between each transactional buyer-supplier relationship. In other words, they both possess the same objectives.

During the last great recession in 2008, lending from banks fell dramatically; while businesses that were fortunate to have access to loans discovered that the cost of borrowing had considerably increased (Ivashina & Scharfstein, 2010). Following the financial crisis, supply chain finance became much more prominent as many companies began to seek better working capital management methods to unlock potential liquidity across the financial supply chain (Templar et al., 2016).

2.3.1 Working Capital Management

Buchmann and Jung (2014) define working capital/net working capital as the difference between a company's current assets and current liabilities, and it helps evaluate the company's operating liquidity position. Meanwhile, the principle of working capital management (WCM) is to successfully manage the working capital to achieve the desirable results without holding too much cash on hand, but also enough to meet ongoing near-term operating expenses (Kristofik et al., 2012). Working capital is one immense source of liquidity that is often forgotten (Buckmann et al., 2008). Prioritizing and increasing the productivity of working capital will significantly reduce the need for outside funding for a company, thus improving the overall company performance (Smid & Windaus, 2015; National Center for the Middle Market, 2016). Cronie (2009) claims that the liquidity position and balance sheet of a firm will be strengthened with successful working capital management execution. Close to 20% of all bankruptcies can be attributed to financial negligence; with a proper working capital management strategy, some industries may achieve interest related cost reductions of 5% to 10% by proactively shrinking tied-up capital (Hofmann et al., 2011). Kristofik et al. (2012) suggest that companies require an integrated process that contains measurable objectives and key performance indicators to realize a sustainable working capital management optimization strategy. According to Harrison et al. (2003), some of the most important supply chain performance indicators for financial flows include cash conversion cycle (CCC), days sales outstanding (DSO), days inventory outstanding (DIO), days payable outstanding (DPO), days of working capital (DWC), reliability of payment methods and predictability of payment inflows and outflows. As we saw earlier, both the reliability and predictability of payments can be enriched through more advanced integrated IT platforms and enhanced visibility through end-to-end financial SCM.

2.3.2 Cash-to-Cash Cycle

The cash-to-cash cycle or cash conversion cycle (CCC) is the most commonly used formula to evaluate the supply chain finance performance of a company (Lamoureux & Evans, 2011). It represents the timing difference in days between the payment to suppliers for goods and services to the collection of payment from the customers for

merchandises sold and delivered (Farris & Hutchison, 2002). The use of cash-to-cash cycle as an analysis tool permits credit analyst to clearly comprehend why the funds are needed, when the funds will be needed, and how the businesses will be able to repay the financing (Banomyong, 2005). The longer the cash-to-cash cycle, the greater need to seek outside financing to bridge the funding gap (Templar et al., 2016). The cash-to-cash cycle is a great working capital management tool to track the payment periods within the supply chain, as well as both the physical and financial flows of inventories (Hofmann & Kotzab, 2010). For instance, Kettula (2015) argues that companies operating in the manufacturing of goods have to deal with huge inventories and various payment terms with clients and suppliers, which leads to a high overall cash-to-cash cycle. Knauer and Wöhrmann (2013) justify that since cash-to-cash cycle is a relative assessment, it facilitates the performance benchmarking of an organization and its respective sector. Randall and Farris (2009) suggest that the cash-to-cash cycle measurement can be used to determine the effectiveness of an organization in its financial resources management.

The cash-to-cash cycle contains the three components of operative net working capital (Buchmann & Jung, 2014).

$$\text{Cash-to-Cash Cycle} = \text{Days Sales Outstanding} + \text{Days Inventories Outstanding} - \text{Days Payables Outstanding}$$

(1)

- Days Sales Outstanding (DSO)

= (average receivable ÷ cumulative sales) × 365 days. It measures the average number of days it takes for the company to be paid by its customers. (2)

- Days Inventory Outstanding (DIO)

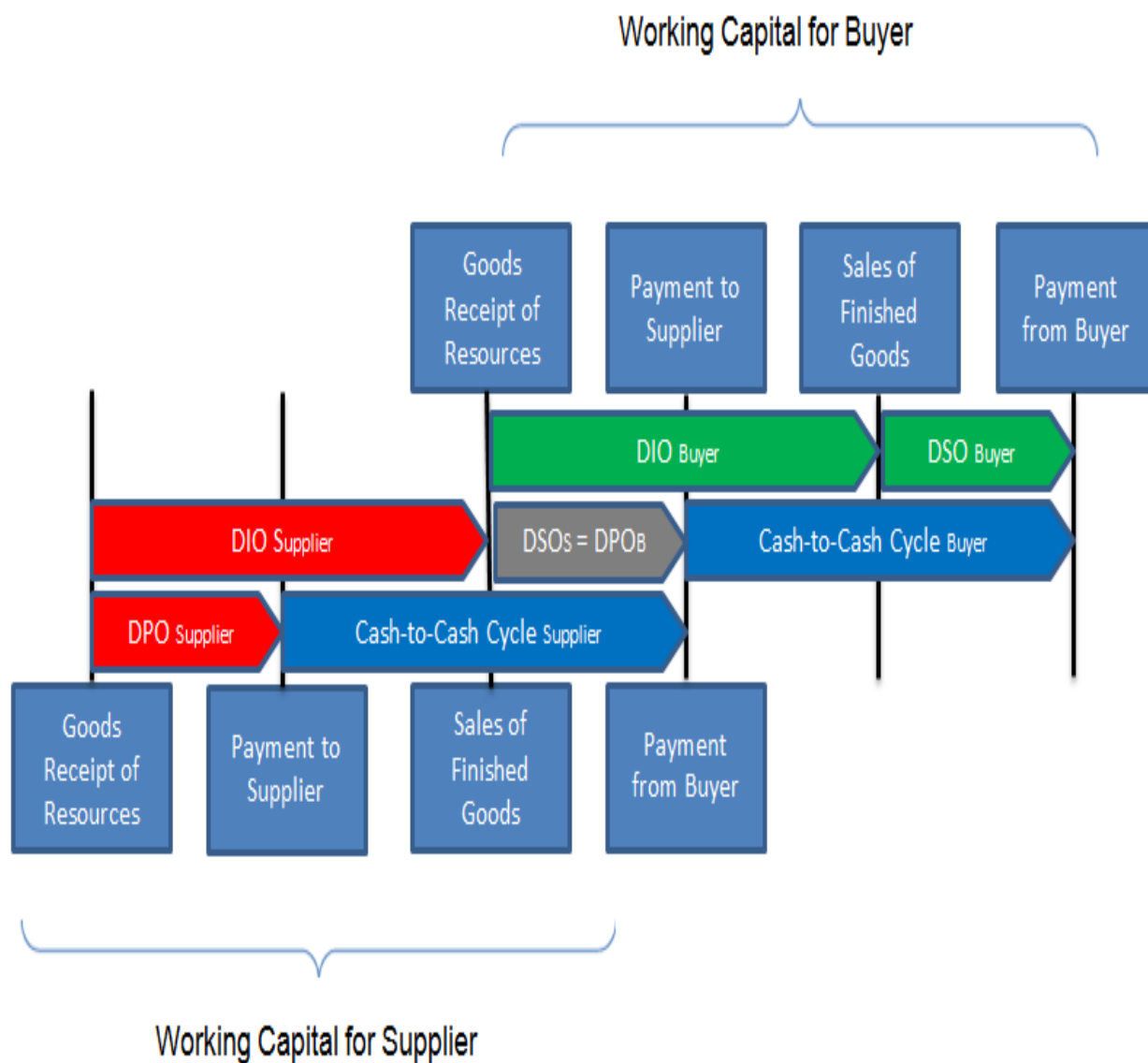
= (average inventory ÷ cumulative costs of goods sold) × 365 days. It measures the average number of days for inventory to convert to finished goods and be sold. (3)

- Days Payable Outstanding (DPO)

= (average payable ÷ cumulative costs of goods sold) × 365 days. It measures the average number of days it takes for the company to pay its suppliers. (4)

Figure 7 is an illustration of a cash-to-cash cycle for both the supplier and buyer. It accounts for the moment when goods are received, to when supplier must be paid, to the sales of finished goods and finally the collection of payment from the customer. As we can see that the days sales outstanding of the supplier is in fact the days payable outstanding of the purchaser, therefore this is truly an integrated process that requires a continuous collaboration to generate a sustainable solution.

Figure 7: Understanding the Relationship between DSO, DPO, DIO and CCC



Source: Prepared by the author based on a similar chart produced by Hofmann et al. (2011)

The objective of most companies is to have a cash-to-cash cycle as low as possible. According to Kristofik et al. (2012), within the three components of the cash conversion cycle, a streamlined order-to-cash process can shrink the days sales outstanding (DSO), and an integrated purchase-to-pay process will be able to prolong the days payable outstanding (DPO). At the same time, Days Inventory Outstanding (DIO) can be planned through effective inventory management which helps reduce tied-up capital. Randall and Ferris (2009) offer three techniques to companies to improve their cash-to-cash metric: 1) reduce inventories held, 2) speed up the collection from customers to reduce accounts receivable, and 3) extend payment term with suppliers to increase the accounts payable.

Hofmann et al. (2011) claim that the improvement of days sales outstanding (DSO) and days payable outstanding (DPO) between the buyer and the seller is a zero sum game, because as shown in Figure 7, the DPO of the buyer is the DSO of the seller. However, Smid & Windaus (2015) argue that by simply observing the differences in DSO and DPO between different industries, as well as the settlement behaviors of the end consumers, one can see that such optimization is not useless. For an inventory management perspective, Kettula (2015) lists the raw material conversion cycle, the work in process conversion cycle, the finished goods conversion cycle, and the goods in transit cycle as four variables that make up a manufacturing company's inventory cycle. The greatest leverage point for a company to improve its cash-to-cash cycle is by optimizing its inventory management strategy (Randall & Ferris, 2009). Opportunity cost is yet another reason to reduce the cash conversion cycle. The more days it takes for a business to convert capital to liquidity, the greater the risk of not being able to accept new orders due to insufficient of working capital (Hofmann et al., 2011).

From this section, we can clearly see the importance of having a proper working capital management strategy for any company aspiring to deliver superior and sustainable financial results. According to Hurtrez et al. (2010), supply chain finance has the potential to liberate an estimated \$100 billion to \$500 billion of working capital by speeding up the cash conversion cycle for suppliers and prolonging the DPO for buyers. Among the fastest growing and most successful middle market businesses are generally the ones that put the greatest emphasis on their working capital strategies (National Center for the Middle Market, 2016). Working capital metrics are key managerial

accounting measures spanning the dynamics of an organization (Templar et al., 2016). Pezza (2011) credits the improvement in payment technology and the collaborative approach among individual departments within an organization as the *raison d'être* for superior supply chain finance performance. Of the 140 plus organizations in his study, he considers the best-in-class organizations are those in the top 20% in performance that take generally half the time to process an invoice than the median firm; while at least having 50% longer in days payables outstanding and are also able to decrease their average purchasing costs by 6.5%.

2.4 Incoterms & Supply Chain Management

SCM covers all facets of the value chain from raw materials extractions by suppliers to the eventual delivery of the finished goods to clients; Incoterms help classify each stage within the supply chain by assigning the delivery responsibility, risk allocation, division of transportation costs, and other fees (Legrand & Martini, 2008). Although much of the academic literature has covered Incoterms, only a handful of these studies actively discuss its potential application within a global SCM perspective (Del Rosa, 2013). Importing goods from oversea generally requires the use of ocean freight or air cargo and could implicate multiple ports, places or points of destination (Teacher Law, 2013). Proper Incoterm choice is an integral part of a greater SCM strategy in which its strategic selection can reduce global supply chain uncertainties, and at the same time enhance a business's income (Gardner, 2012).

Hien et al. (2006) describe in their research that there is generally a lack of proficient knowledge of Incoterms among professionals engaged in international trading despite its strong correlation with export performance. Using statistical analysis, this research suggests that as the knowledge of Incoterms and the importance of their Incoterms selection increases, environmental factors such as the negotiation power, intensity of competition, previous export experience in the country of destination, and the value of the shipment can directly explain Incoterms usage and superior export financial performance. Hien et al.'s (2006) paper defines financial performance as profitable, high sales volume with an exceptional growth rate. Moreover, the research by Del Rosal (2013), the author identifies elements such as the distance between origin and

destination, GDP per capita and the weight/value ratio as having significant linkage to Incoterms selection.

Pedersen and Gray's (1998) survey stresses the delivery reliability of the supplier, transit time, and transportation cost as the most important factors to consider in international shipments. Blanco and Ponce-Cueto's (2015) working paper formulates a mathematical model to differential the total supply chain cost by the buyer and seller under different Incoterms selections between EXW (Ex-Work), FCA (Free Carrier) and DDP (Delivered Duties Paid). Their model includes variables such as the annual expected demand, selling price, cost of capital, transit time, transportation cost, and payment term as important variables to contemplate.

Considering that Incoterms define the costs and risks of each negotiated contract, total landed cost elements/total cost of ownership can help in determining the appropriate Incoterm choice of a given international contract.

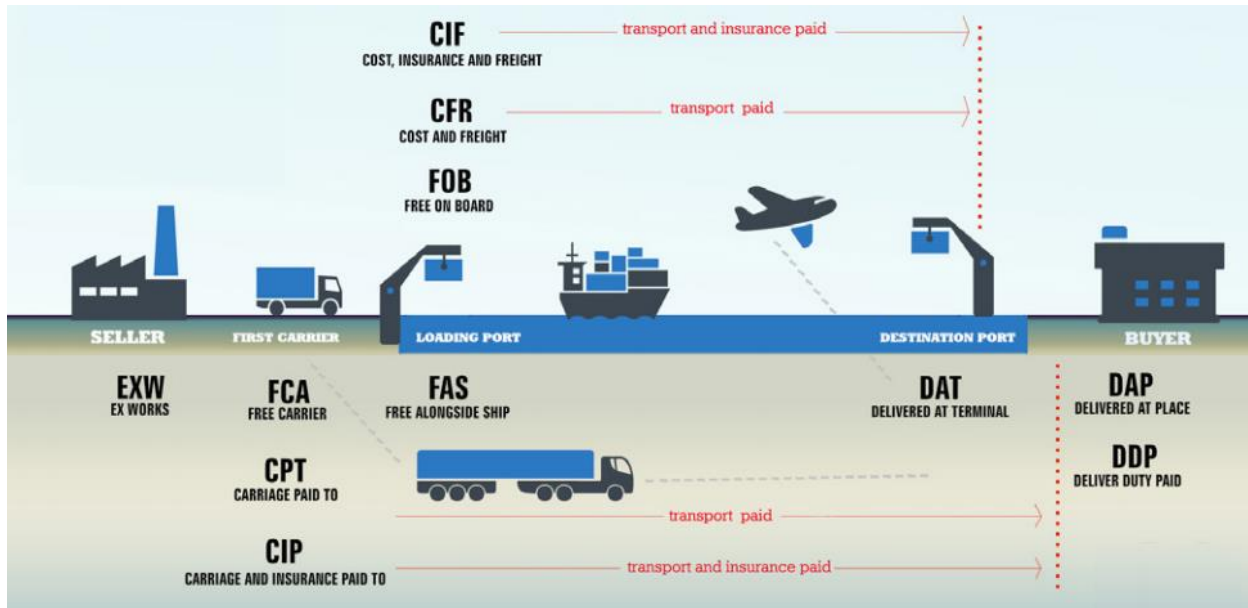
2.4.1 Total Cost of Ownership

Total cost of ownership (TCO) is an analysis of all direct and indirect costs that go into a product during its useful life (Ellram, 1995). TCO is generally used at the beginning of the purchase cycle to evaluate decisions by considering the supplier's selling price, transportation expenses, inventory holding costs, inspection fees and opportunity costs for tied-up funds prior to selling the product (Degraeve et al., 2000). According to Ellram (1995), TCO is an informal approach to determining the true overall cost of each purchase made from a particular buyer-seller relationship. The Association for Operations Management (APICS) defines TCO as "The sum of all the costs associated with every activity of the supply stream" (Blackstone, 2013, p. 183). Other than Incoterms, there are several other variables that the buyer and seller may use to negotiate, such as delivery lead time, payment terms, delivery reliability, quality assurance, and other performance factors, which can all be used as important variables to determine the final sourcing price (Kettula, 2015). Habitually, a large share of the total international sourcing costs represented in total landed cost help itemize the potential for savings (Zeng & Rossetti, 2003). According to Gettinger (2013), the Total Landed Cost in relation to each Incoterm selection consists of the following elements:

1. Loading at supplier's location
2. Inland transportation to a port or airport
3. Export licensing, documentation, and duties
4. Origin terminal and port fees
5. Ocean or air carriage
6. Import documentation and duties
7. Terminal and port fees at destination
8. Customs review
9. Harbor maintenance fees
10. Maritime insurance
11. Inland transportation to importer's location

Regarding the final selling price charged by the supplier for goods on a contract, the choice of EXW (Ex-Work) does not include transportation or expenses related to delivery. This price will increase progressively with costs as it moves from Family E to F, to C and then to D, as the seller bears additional costs of delivery and risks (Căruntu & Lăpăduși, 2010). Gettinger (2013) argues that by analyzing Incoterms selection objectively, the buyer will be able to calculate the trade-offs of each Incoterm choice in respect to the total landed cost model. The Incoterms selection should align with the objective of securing the lowest total cost of ownership (Cook, 2014). Figure 8 shows a graphical display of the risk and cost transfer from seller to buyer for all eleven Incoterms 2010. For instance, under the TCO principle, if the delivery lead time, modes of transportation, payment term, risk and quality stay constant, then the difference in total selling price quoted by seller for a shipment in DDP (Buyer Location) or FCA (Port of Export) should only be the logistics costs incurred from line 4 to 11 of the above list. By electing to use FCA instead of DDP, the buyer will be taking on additional responsibilities and costs such as the vessel loading cost, main transport, insurance, terminal charges, import custom, and delivery from port of destination to buyer location (Vincenti & Roy, 2016). In hindsight, the procurement professionals will generally be able to secure more favorable contracts for the firm by proactively requesting multiple quotes with different Incoterms for the same goods.

Figure 8: Incoterms 2010 (Transfer of Risk and Cost from the Seller to Buyer)



Source: (Nebraska Business Development Center, 2016 with slight modification by the author)

For instance, in the research by Matikka (2016), the author assumes that the initial costs of changing from Group C to Group F Incoterms would be significantly more as additional responsibilities will be allocated to the buyer's logistics agents. However, as it has been shown from his research, the overall supply chain processes would be easier to manage, creating less work where the overall savings would outweigh the additional costs in the long run. Regarding the issue of paying the main carriage transportation and handling costs from the country of exportation, Kaye (2012) stresses that, in fact, the only difference between C and F terms is that these costs are already built into the final selling price by the vendor. Typically, the buyer pays more in C family contracts than Group F contracts, as it is the supplier's responsibility for selecting the freight forwarder and often it is very difficult to verify the exact amount the supplier paid for these freight and insurance surcharges (Kaye, 2012). These net sale prices routinely carry huge buffers as a margin for fluctuations in freight prices (Matikka, 2016). By switching from C Family or D Family Incoterms to Group F, the buyer is effectively taking on more shipping responsibilities, and directly negotiating various rates; hence it should reduce the overall costs of sourcing the materials (APL Logistics, 2007).

2.4.2 Selecting the right Incoterm

- Inventory Management

The successful manipulation of Incoterms can be used to gain more control over the supply chain in order to reduce supply chain variability and uncertainty (Gardner, 2012). At the same time, the proper incoterms usage can also help optimize inventory management by deferring inventory ownership (Kaye, 2008). Kaye (2008) claims that not only small, inexperienced importers, but even some large global enterprises do not comprehend the opportunity and flexibility the strategic use of Incoterms can have in directing their inventory management strategy. Kettula (2015) states that the implementation of direct invoicing and a uniform use of Incoterms are some of the techniques she identifies which can help delay the goods in transit (GIT) financial reporting recognition. For instance, Kaye (2012) justifies that the use of F Family terms allows buyers better control, management and tracking of their cargo while delaying the location at which they record these merchandise in their inventory. Having complete control and increasing visibility of the supply chain from end-to-end, companies have the power to determine how and when the transfer of ownership will occur. In other words, they can postpone expenses to a later point in the transaction while boosting profit (Kaye, 2012).

- Transportation Optimization

The prospect to enact value creation through the transportation segment of the supply chain can be tremendous (Koudai, 2005). Over ninety percent of international cargo is shipped by vessels and roughly seventy percent of total shipments are inside containers (International Maritime Organization, 2016). Vincenti and Roy (2016) contend that transoceanic shipping is the true pillar of globalization. To reduce transportation expenses, merchants can utilize volume discount via freight forwarders to enhance competitive rates (Vincenti & Roy, 2016) and greater flexibility in route utilization with Incoterms (Majora, 2011). Logistics agents may elect to use maritime shipment, which would be significantly less costly than air, but the tradeoff would be a longer lead time and planning time (Matikka, 2016; Vincenti & Roy, 2016). A successful transportation strategy takes into account the transportation costs vs. desired transit time, in addition to

reliability, quality and security (Shah, 2009). Căruntu and Lăpăduși (2010) suggest that each Incoterm dictates its own means of delivery, which signifies substantial costs to the overall contract value. Kumar (2010) suggests that FCA (Free Carrier) offers a greater flexibility than FOB in optimizing inland routing and loading ports combinations, which allows the company in its research to realize upwards of 40% in savings. With a greater control, the company can optimize the financial flows by analyzing the cost-benefit of each transportation option (Majora, 2011).

Matikka (2016) argues that carefully substituting the existing Group C Incoterms with F Family Incoterms will allow his case company to gain better control of its supply chain. His model predicts a savings of 26.54% in total transportation costs as well as 44% reduction in container usage from 140 containers to 78 per week (Matikka, 2016). Moreover, fewer shipments also means less work for employees within the company, which will result in additional savings in total sourcing costs (Ellram, 1995; Matikka, 2016). Matikka (2016) recognizes that the change of Incoterms selection will initially create roughly 30% to 40% in principle carriage transportations and other charges that the business wasn't previously responsible for. At the same time, Kaye (2012) justifies that with lower responsibilities and costs for the sellers, the buying prices should also be adjusted appropriately downward. As global supply chains are becoming longer and more complex, it is vital for companies to seize the optimum process to goods transportation and to establish a sustainable competitive advantage through cost reduction and timely delivery (Majora, 2011).

- Risk Reduction

One of the main objectives of Incoterms is to standardize the international trading process to reduce uncertainty. Incoterms specify the allocation of risks and obligations between trading partners during the shipment of goods (Ramberg, 2011). One key aspect of Incoterms is its ability to transfer risks; comprehending potential risk of loss and damage determines the proper Incoterms selection (Baily et al., 2008). Vincenti and Roy (2016) argue that choosing the right Incoterms should be part of a calculated decision based on the trade-offs between transportation risks reduction and meeting customers' needs. Of the three triggering events listed by More and Basu (2013), Incoterms preside over the in-transit/delivery phase; they dictate the party who hold the ultimate

responsibility in the event of a loss (Gooley, 2000). Furthermore, the proper use of Incoterms allows for greater end-to-end supply chain visibility and flexibility to deal with uncontrollable circumstances and to mitigate the risk of greater damages (Kumar, 2010). International buying firms, depending on the amount of risk they are willing take, can select the suitable Incoterms for their contracts.

Seyoum (2000) divides risks into four distinct groups: political risk, nonpayment risk, transit risk, and foreign exchange risk. These risks are the principal vulnerabilities that businesses face in international trading. Striving toward the same goal of improving access to cash flow, both importer and exporter are in conflicting interest when dealing with their respective working capital preference. On the one hand, the buyer prefers to delay payments for liquidity and interest rate reasons and is exposed to political, transit, and foreign exchange risk. On the other hand, the supplier desires cash in advance payment term and is exposed to nonpayment risk, transit risk, and foreign exchange risk (Templar et al., 2016). Moreover, with the exception of foreign exchange risk, the successful handling of Incoterms and payment terms can mitigate other risks that reside in international trade. With an increasing adoption of open account transactions, extra focus on the Incoterms choice and payment terms during contract negotiation is needed. Over the long run, cost-shifting to suppliers will result in an increased total cost of ownership for both parties due to financial inefficiencies that weaken the overall competitiveness of the entire supply chain (Hofmann & Kotzab, 2010).

From this section, we can see that Incoterms have an impact on inventory, transportation costs, and risk management strategies for any company dealing internationally. The final sourcing price depends on variables such as delivery lead time, payment terms, delivery reliability, quality assurance of products, and other performance factors, as they are all part of the total cost of ownership equation. Matikka (2016) suggests that choosing the right delivery term in a contract needs to coincide with a company's purchasing and selling business model. Through leveraging the specific characteristics of different Incoterms within a sale contract, one can gain a competitive advantage and deliver superior supply chain performance (Cook, 2014; Gardner, 2012). Different Incoterms choices can influence a whole range of factors, including the buyer's

balance sheet, the vendor's financial capacity, the risk in the trade, and the relative cost of financing (Waters, 2007).

Overall, both Matikka (2016) and Kaye (2012) generally agree that replacing D and C Families Incoterms with F Group terms for international transactions is preferable as it allows the buyer greater control, visibility and flexibility. The mastery of Incoterms and their relevance by managers in companies have a large effect on company performance (Hien et al., 2006). SCM is a multi-departmental domain where employees from the purchasing/procurement departments should be supported to consult with the logistics department to determine their capacity to execute the planning and physical shipments of the goods with the right trade-offs; constant communication is needed with the finance/accounting staff to ensure that the company's financial objectives are being considered with regards to Incoterms selection and that the supply chain strategy of the firm is coherent among all departments. When harmonized with other aspects of a sales arrangement, Incoterms could be a significant instrument in enhancing the supply chain performance of a firm (Gardner, 2012). Given the tremendous impact that Incoterms can have on dictating a given buyer-supplier contract, Incoterms can also influence the financial flows of their supply chain.

2.4.3 Incoterms Selection & Working Capital Management

In general, the risks and costs vary greatly from trade term EXW (Ex-Works) to DDP (Delivery Duty Paid), and Incoterms do not dictate the payment terms of a transaction (Cook, 2014). However, with the rise in open account transactions where suppliers will be paid only on or after the delivery of goods, Incoterms have become an important trigger point in determining the cash flow of buyer and supplier. Subject to the volume and value of the shipment, the use of DDP in long-range transportation where the seller pays for all logistical costs in advance prior to delivery could potentially lock up a significant sum of its working capital in freight and duties costs (Gardner, 2012). Inventory expenses and transportation costs are the two most prevalent sources of expenditures in Global SCM (Kumar, 2010). According to the Aberdeen Group (2006), transportation and distributor costs account for roughly four percent of total finished goods costs, which is equivalent to the total financial costs associated with the goods moving through the

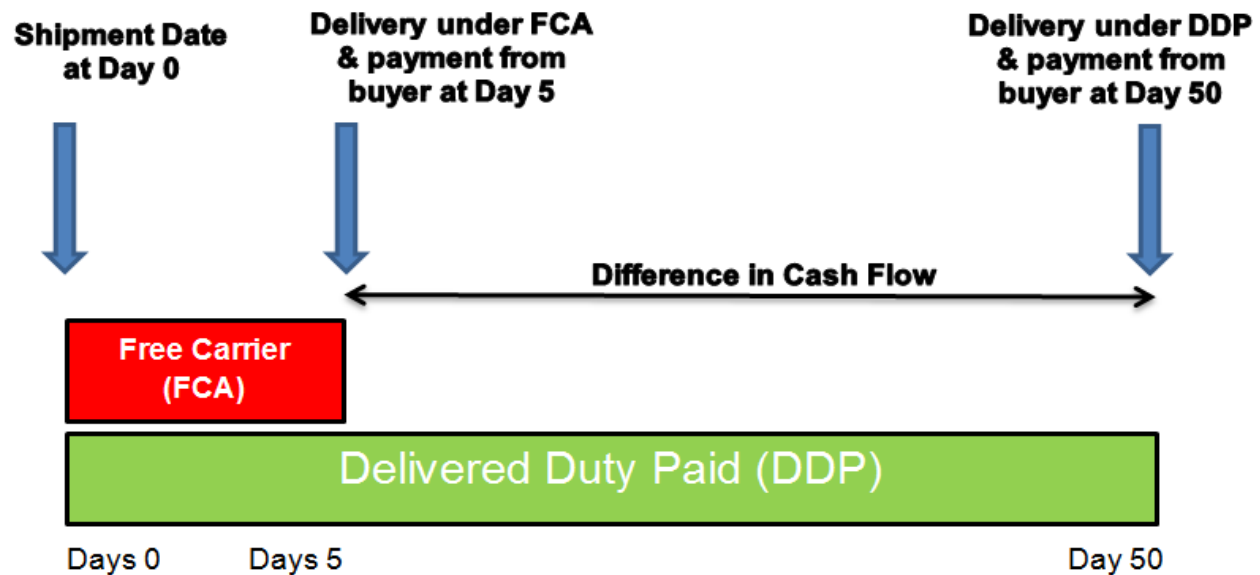
Supply Chain. Further capital constraints for sellers arise when customers are increasingly demanding greater payment terms flexibility (Hofmann, 2009). Hence, by optimizing both the Incoterms selection (Transportation & Distribution) and financial SCM (Financial & Accounting), companies can potentially harvest significant returns (Aberdeen Group, 2006).

When considering the cash-to-cash cycle perspective, Holter et al. (2010) argue that the transport cost, transit time and payment terms are all vital factors in a successful business transaction. Moreover, the total cost of a shipment is the sum of all transportation expenses and cash flow cost. They justify that cash flow cost is the opportunity cost of carrying the inventory from the shipment expedition date until the collection of payment from customer (Holter et al., 2010). In an open account transaction with a zero-day payment term where the seller will be paid only when the goods have been delivered according to the Incoterm selected, the cash flow cost is the Days Inventory Outstanding (DIO) of the supplier, in other words, Goods in Transit. One can note that any extended payment term negotiated in the contract will be considered the Days Sales Outstanding (DSO) of the supplier.

$$\text{Total Cost of Transportation} = \text{Transport Rate} + \text{Cash Flow Cost} \quad (5)$$

In Figure 7, we present the diagram of the cash-to-cash cycle of the supplier followed by the cash-to-cash cycle of the buyer where the DSO of the supplier is the same as the DPO of the buyer (Hofmann et al., 2011). In an open account transaction, the selected delivery term will be able to directly influence the DIO of the supplier. Figure 9 demonstrates an example where in a globalization environment, it takes the supplier 50 days to delivery in a DDP term, compare to only 5 days for FCA term port of export, then by selecting a DDP delivery term instead of FCA term, the supplier would have its working capital tied-up by an additional 45 days. Depending on the short-term borrowing cost of the supplier, this cash flow cost could potentially represent hundreds of thousands in additional interest expense.

Figure 9: Difference in Cash Flow between FCA and DDP



With the supply chain being lengthened as a consequence of globalization, where extensive transoceanic shipments result in an elevated level of DIO for foreign suppliers; pressure from customers to offer longer payment terms leads to a further heightening in DSO (Ferris et al., 2003). The combination of both conditions causes the deterioration of cash-to-cash cycle for suppliers, as vendors are now finding it increasingly costly to maintain reasonable capital liquidity (Hofmann and Belin, 2011). The previous sections show us the potential financial performance improvement a supply chain finance program may offer. Supply chain finance programs such as reverse factoring can ease the working capital needs of the suppliers by providing them with cheaper funds based on the credit rating of the larger buyers. Moreover, the use of supply chain finance with smaller suppliers can equally offer a reduction of risks in suppliers' failure and supply chain disruption for the buyers (Steeman, 2014).

2.5 Research framework

From the above literature, we can perceive that both Incoterms and supply chain finance are equally important in global supply chain management and their application can potentially contribute to enhancing the financial performance of an enterprise. Furthermore, we learn that the successful selection of Incoterms combined with the

deployment of supply chain finance program will allow companies the opportunity to create greater visibility of their supply chain, reducing uncertainties (risks) and variability by controlling the supply chain from end-to-end. Nonetheless, the choice of an Incoterm selection for a given contract and supply chain finance decision making process are rarely engaged collectively.

Kettula (2015) alleges that there is a lack of scientific literature on the connection between Incoterms and the working capital management. Investigation of the link between Incoterms, SCM, working capital management and supply chain finance performance has been rare. Consequently, these gaps form the basis of the current research. Table 4 summaries the variables we have identified from the literature review that connect Incoterms selection and supply chain finance. We classify these variables into five main factors that explain Incoterms selection and supply chain finance program implementation in the working capital management of companies.

Table 4: Factors that connect Incoterms Selection and Supply Chain Finance

Main factors linking Incoterms selection and Supply Chain Finance	Variables
Power	Negotiation power of buyer and supplier
	Capital intensiveness of the industry
Value	Value of shipment
	Rate of capital
	Reliability of supplier to delivery
	Financial Resources
Time	Distance between origin-destination
	Transportation cost
	Trasit time
	Payment term
Collaboration	Characteristics of the counterparty (supplier integration)
	Intracompany collaboration (cross functional)
Knowledge & Importance	Working capital goal
	International experience
	Payment method & Transfer of ownership
	Technological advancement

Power:

- Negotiation power of buyer and supplier: Size of the company, strategic importance of the supplied goods and competition intensity have a direct impact on the power of buyer and supplier. Generally, a larger buying company has a lower cost of capital, can initiate Incoterms selection, and can choose supply chain finance program more freely.
- Capital intensiveness of the industry: Certain industries such as automotive, steel and pharmaceutical industries require large sum of money and capital to support their continuous operations. These industries are more likely to benefit from the implementation of supply chain finance.

Value:

- Value of shipment: Volume of purchase and selling price form the value of the shipment, which has a huge influence on the Incoterm choice as Incoterms are used for transfer of costs and risks. In addition, the purchase volume and type of purchase (weight/value ratio) determine the mode of transportation, which impacts the effectiveness of supply chain finance.
- Rate of capital: Value of purchase and interest rate can have major implications on the working capital, and cash flow cost of both the supplier and buyer. Moreover, the credit rating of each participant determines the rate of capital and will ultimately affect the cost of the entire supply chain.
- Reliability of supplier to delivery: The ability of the supplier to deliver and the quality of delivered goods directly influence on the Incoterm choice and final cost of goods sold.
- Financial resources: Actively considering the financial resources of both your customers and suppliers when making Incoterms choice during contract negotiation will help to reduce the supply chain cost of a given transaction.

Time:

- Distance between origin and destination: For each 1% increase in distance, the probability of choosing an F incoterm increases by 3% (Del Rosa, 2013). Moreover, distance also determines the transportation cost and transit time.
- Transportation Cost: Transport cost and speed of delivery are contingent on the mode of transportation and density/value of the shipment.
- Transit time: By knowing the distance and speed, we will be able to calculate transit time. Transit time implies the goods in transit inventory and cash flow cost.

- Payment term: The credit terms granted by the supplier directly influence the working capital, financial resources, and capital intensiveness of both buyer and supplier.

Collaboration:

- Characteristics of counterparty (supplier integration): The success of building a sustainable buyer-supplier relationship depends on the continuous collaboration of internal and external stakeholders where trust and commitment are vital.
- Intracompany collaboration (cross functional): Properly selecting an Incoterm requires the collaboration of multiple departments within an organization.

One thing we need to keep in mind is that Incoterms selection with a supplier for long-term sourcing where the buyer-supplier relationship can be developed is very different than Incoterms for a one-time purchase contract.

Knowledge and Importance:

- Working capital goal: Each participant of the supply chain can dictate their motivations toward implementation of supply chain finance program.
- International experience: Having positive previous export experience and supply chain finance experience can aid in future engagement.
- Payment method & Transfer of Ownership: The successful manipulation of payment method and transfer of ownership can improve the financial performance of a company.
- Technological advancement: Allows for better visibility and control of the physical flow, information flow and financial flow in the supply chain.

Based on the theoretical background presented above, we can conclude that the choice of Incoterms will have a meaningful effect on the transferring of risks and responsibilities between buyer and seller. Although payment terms and the transfer of ownership are independently negotiated during contract negotiation, combining them with Incoterm selection directly impact the timing of when the seller and buyer exchange of cash. Our study will investigate on whether these five factors are relevant for a company in the pharmaceutical industry. The goal of this study is to validate our primary hypothesis that a greater emphasis on Incoterms usage in combination with supply chain finance will reduce total tied-up capital in a buyer-supplier relationship. More precisely, an overall

improvement of both the purchaser's and vendor's cash-to-cash cycle. By doing this, we aim to bring more clarity on the relationship of Incoterms selection and supply chain finance on the working capital of a firm, as well as how their successful execution will provide our case company with a viable long-term competitive edge going forward.

3.0 Research Methodology

This chapter will explain the research method, the data collection procedures, data processing and analysis, and the reliability and validity of the study.

3.1 The Choice of a Case Study

Based on their research on the adoption of financial SCM practices, Blackman et al. (2013) justify that since the topic of financial supply chain is relatively new, the case study method on an existing company within the field is a suitable approach to help develop new theory concerning the topic. Hancock and Algozzine (2006) claim that a case study offers the scientist the ability to control the process of data collection, to analyze the relevant phenomenon, and to interpret data. Moreover, Yin (2003) justifies that a case study is an empirical inquiry that explores a current paradox by studying it comprehensively and within a real-life situation. Perry (1998) suggests that a single instrumental case study is an appropriate research strategy in instances where no existing theory can be used to test assumptions, which is the case for this research where there is a lack of existing literature to define the relationship between Incoterms selection and supply chain finance. We are aware that it may be difficult to draw generalized conclusions based only on an individual case (Yin, 2003). However, this single case study offers a possibility to investigate this compelling subject empirically and in-depth, through observing this relationship in a corporate setting, which provides us the chance to gain extensive insight on the actual phenomenon.

The case company, which we will refer to as “Beta”, has been chosen as part of the author’s Mitacs Accelerate Scholarship where the author has access to information about the firm and its business processes. Due to this access, as well as the possibility to conduct questionnaire with various stakeholders within and outside the organization, this was a good opportunity to investigate our research question. Currently, Beta is in the process of implementing supply chain finance - reverse factoring program; hence, all data are readily available. Additionally, the business structure of this multinational company is representative of other buying firms of similar size within the same sector that source

internationally and who are often experiencing the same issues, as the case is built on a sound research framework.

3.2 Data Collection

This study was conducted by gathering information from multiple sources. The primary data of this research were obtained via questionnaires with various stakeholders and through the author's direct observations. In addition, secondary data were collected via databases, journals, and companies' websites. To ensure validity and reliability, the same questionnaire was used with all participants. To obtain information concerning bank products related to reverse factoring, the Bank of America Merrill Lynch Marketing Presentation 2015 was used. Finally, we visited the public website <http://www.bankrate.com/rates/interest-rates/libor.aspx> to consult the latest rate on LIBOR.

3.2.1 Mixed methods approach

The use of a sequential exploratory mixed method approach was chosen using the qualitative data obtained from our questionnaires to gain insight into the link between Incoterms selection and supply chain finance. Subsequently, the use of quantitative secondary data can help examine the phenomenon in a more generalized manner (Creswell, 2014). A mixed method approach is an appropriate research technique for this thesis because we have elected a case study setting where the researcher can ask in-depth research questions to derive greater understandings compared to what qualitative or quantitative methods alone can provide (Creswell, 2014). This is a suitable method for this thesis because our main motive is to show whether Incoterms selection and supply chain finance can impact working capital management. Moreover, Yin (2003) claims that quantitative data can be used as support to explain or test the suggestions from qualitative data of a case study.

A paper data collection instrument was used to conduct the questionnaires. Rowley (2014) suggests that questionnaires are the most commonly used approach to collect data as the combination of both open and closed ended questions allow the researcher the opportunity to gather the participants' experiences, opinions, perceptions,

and knowledge. Another advantage of implementing both qualitative and quantitative methods is for methodological triangulation where the research evident will be enhanced by analyzing the research questions from multiple means of investigations and to avoid the presence of single method bias (Carter & New, 2004). The combination of questionnaires and direct observation provide in-depth evidence regarding the relationship between Incoterms selection and supply chain finance.

3.2.2 Research Questionnaire

Our questionnaire guide (Appendix 3) includes a combination of open-ended questions and structural questions containing a scale of measures that were developed to gain access to the qualitative data for the thesis. The questionnaire consists of four parts in which the objective of the first and third sections is to gain a better understanding of each participant's attitude and awareness toward Incoterms. Moreover, we would also like to gain insight on their existing organizations circumstances and business practices. Subsequently, sections two and four of the questionnaire offer us the opportunity to evaluate how the factors identified in the literature review that connect Incoterms selection and supply chain finance are being weighted by each respondent. The goal is to discover more about each participant perception and vision on Incoterms, supply chain finance, working capital management, and cash-to-cash cycle which are the four main themes of our thesis.

The selection of participants for the questionnaires was based on their respective positions in the case company and valuable expertise from experts outside the company. Rowley (2014) argues that closed questions may increase response rate and easier to conduct analysis as the respondents can answer them swiftly. Whilst open questions allow participants to express their own opinions and to collect more comprehensive insights, but these questionnaires tend to receive less responses as they are more time consuming to complete. DiCicco-Bloom and Crabtree (2006) claim that in a qualitative study, there is a balance between collecting too many versus too few data sources. On the one hand, having too many participants will make the data difficult to analyze; on the other hand, having too few can make the research inconclusive (DiCicco-Bloom & Crabtree; 2006).

To understand and identify relevant factors that connect Incoterms selection and supply chain finance, we chose to employ questionnaires to benefit from the extend of flexibility that is required for the exploratory dimension of this research. The individuals chosen for the questionnaires were considered to have exceptional knowledge in their primary business function. Overall, we conducted 10 questionnaires with internal and external stakeholders. The respondents include employees at Beta such as the purchasing and finance directors, as well as managers that are directly involved in the supply chain finance project (Appendix 2). Furthermore, employees from the purchasing, supply chain, logistics, and finance departments were chosen to gain different perspectives into the researched area. In addition, external experts from the transportation service provider (freight forwarder), API suppliers of Beta, and supply chain finance experts were consulted. The number of responses was deemed lacking, but since the research is conducted in a case study setting where we value and invest in understanding each participant's experiences, opinions, perceptions, and knowledge in greater details regarding the subject matter, hence it is still able to fulfill the purpose of the study (Brace, 2013).

The questionnaires were conducted through numerous means such as personal meetings at Beta's office or video conferencing where each contributor was given the same questionnaire with each individual session lasting around 25 to 30 mins to ensure participants' reliability (Yin, 2003). The participants will be referred to by their respective department for confidentiality purposes. After the questionnaires were completed and transcribed, participants were asked to review them and given the opportunity to ask further questions and make additional contributions.

3.2.3 Secondary Data

The secondary data were collected and gathered via publicly available databases, journals, companies' websites, and financial reports for the year 2016. As mentioned, the purpose of the quantitative data obtained is to support the qualitative data. The quantitative information gives us an idea of the financial situation of Beta and its suppliers, with data such as cost of capital, cost of goods sold, inventory, accounts receivable, accounts payable, sales (value of shipment), and transit time, which allow us to model

and to create different scenarios that the potential impact of Incoterms selection and supply chain finance can have on the cash-to-cash cycle of businesses.

3.2.4 Data Processing & Analysis

The processing of data contains the grouping, reviewing, filtering, and reorganizing of data (Stake, 1995). After the initial questionnaire data has been gathered, we organized the content by section into groups to facilitate our analysis. A scale from 1 (strongly disagree) to 10 (strongly agree) is included in these questions to measure the degree of importance perceived by the participants for each variable. We then summarized the outcome of the responses by providing the average scores of each factor, which forms the basis for the qualitative analysis of the results (Appendix 4). The average scores were obtained by summing the responses given to the variables by each respondent then dividing the score by the number of respondents. The higher the average score indicates the more relevant the factor perceived by the participants. Categorizing the data collected from the questionnaires allows the researcher to get a good indication of the findings in relation to the theoretical background. Comparing the questionnaire data with the themes from the literature, this data analysis process allows us to locate common patterns. Through numerous attempts of processing the data from initial questionnaire, transcribing, and analyzing, the researcher has become sufficiently knowledgeable about the survey results and the research method.

Another important means of gathering valuable data is through direct observation, as the author had the opportunity to work at Beta for the duration of his thesis as part of the Mitacs Accelerate Scholarship. From day-to-day contacts with the directors, managers, colleagues, suppliers and transportation service providers of the company, the author was able to assemble supplementary information on the case company business model, as well as the industry dynamics. Data regarding the invoice value of each transaction, Incoterms choice, mode of transport and the location of the suppliers were accessible. Subsequently, the author would consult with his immediate supervisor at the case company and his thesis professor to discuss in greater detail these observations. The data processing also includes a review of data where gaps and errors can be

systematically identified. A final review on the quality of data was examined as part of the data processing.

Additionally, this research includes quantitative analysis to illustrate the impact of Incoterms selection and supply chain finance on long distance delivery of goods, which according Dello Iacono et al. (2015), Holter et al. (2010), and Randall and Farris (2009), represent a substantial cash flow cost and significant strain on the selling company's working capital. As shown in Figure 3, reverse factoring program can be used by the buyer to extend its payment term with the supplier or as a financing option to support the supplier's working capital management. For this research, we exemplify reverse factoring with several scenarios to first show Beta's current processes with one of its foreign suppliers. Then we display scenario of how companies can use the same reverse factoring program in combination with Incoterms selection to optimize their cash-to-cash cycles. In the model, we present an existing tier one manufacturing supplier relationship of Beta and a single funding provider (bank) that will offer reverse factoring to the supply chain. For this case, we presume that the bank in our model does not have any previous financing relationship with the supplier. The structure of the model is based on descriptions given by the case company, through observations, and by utilizing secondary data. Information such as the payment term, transit time, rate of capital, value of shipment will be used. In this research, the goal is to demonstrate that combining Incoterms selection and supply chain finance can enhance the cash-to-cash cycles of both buyer and supplier. In other words, the implementation of supply chain finance program – reverse factoring and the continuous collaborative with the supplier through Incoterms selection initiative will allow both companies to be closely integrated and to advance their supply chain finance maturity cycle. This model conceptualizes the theory of financial SCM collaboration in helping both buyer and seller improving their cash-to-cash cycles through advancement in technologies and collaboration among different partners.

3.3 Reliability and Validity

Research can be considered as reliable when any researcher can replicate the study and get similar findings. For a case study at an explicit company to be reliable means that the study could be repeated with similar results at a comparable size firm in

the same industry (Stake, 1995). Agrawal (1999) suggests that companies in the pharmaceutical sector in general have very similar procurement, planning, and production processes. By proactively describing the data, research strategy, and analysis in detail, we hope that prospective researchers could use this research as a basis for future investigations of other multinational pharmaceutical corporations with similar constraints. There is a potential threat that respondents might answer questions in accordance with what they perceive the researcher wants to hear (Creswell, 2007). By being aware of this risk, the author has personally ensured the participants that all results will be kept in strict confidence. Creating an atmosphere of honesty and trust, it helps address the dependability of the data (Yin, 2003). Moreover, the use of case study protocol as recommended by Yin (2003), enhances the reliability and validity of the study.

According to Yin (2003), the interpretation of results in a case study can be detected from the construct and external and internal validities of the study. By employing multiple data sources (qualitative and quantitative) and detailing the objective of the thesis from the start, we secured the construct validity. Moreover, external validity is established through consistent procedures during the data collection process where potential researchers may follow the same format to be reproduced (Yin, 2009). Finally, to address the issue of internal validity and the risks of researcher bias, the use of triangulation where the author adopts multiple methods and sources of data in particular annual reports, company websites and books provided a means to further validate the proposed study while reducing potential biases (Carter & New, 2004). The choice of selecting participants from various departments within Beta and to consult external experts increases its merit, as the use of multiple sources allows the researcher to gain a greater perspective from the point of view of each stakeholder.

Even though the main scope of this study is to understand the relationship between Incoterms and supply chain finance, it is essential to keep in mind that the main purpose of Incoterms is to facilitate contract negotiations by specifying risks and responsibilities between trading parties during the shipment phase of a supply chain transaction. Therefore, the questionnaires included variables such as experience, knowledge, and importance to gain an in-depth understanding of Incoterms selection. This research topic is typical in other businesses that deal internationally; hence, the results of this research

could help other multinational corporations to combat the possible problem of how Incoterms should be used effectively in combination with supply chain finance to tackle working capital management constraints. As a result, this case study is considered to provide credible and valuable results to the gap in the literature identified in Chapter 2.

4.0 Case Study

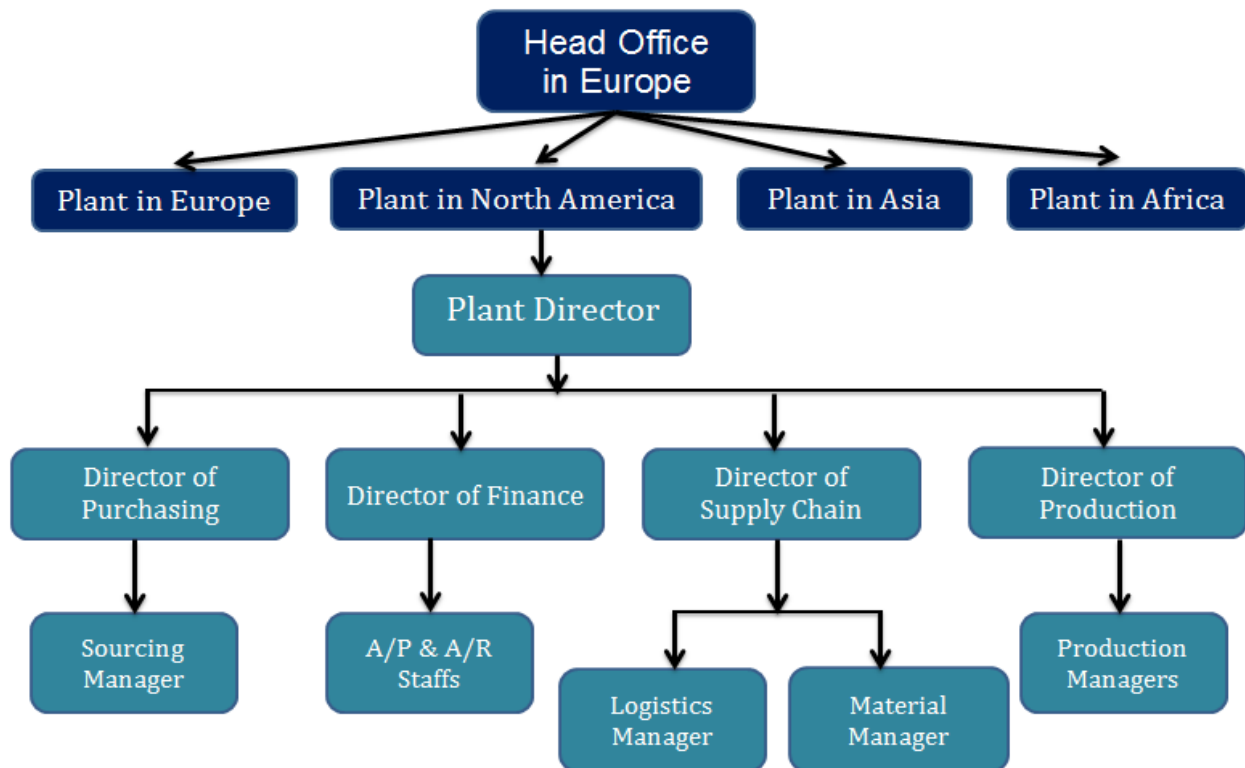
In this chapter, we will start by briefly discussing the case company, its existing business model, objectives, and some of the working capital challenges present in the pharmaceutical industry, to which our case company belongs. Then, we will present the results of the questionnaires and the findings relating to factors linking Incoterms selection and supply chain finance.

4.1 The Case Company: Beta

Beta is the manufacturing plant of pharmaceutical products for a huge multinational conglomerate based in Europe involved in many different lines of businesses. The parent company of Beta that specializes in pharmaceuticals has a decentralized organization structure. Each plant is responsible for its own sourcing, manufacturing, and distribution of finished goods to the internal sales and marketing departments of each region prior to selling to customers. In addition, only these sales affiliates have contact with the company's clients. Our research for this study focuses on the manufacturing plant in North America in Montreal, Canada. However, the same organizational structure applies to other plants within the group.

Our case company (Montreal plant), has a Plant Director who is responsible for all issues within the plant. Working under the Plant Director are directors of purchasing, finance, supply chain and production. The Sourcing Manager is responsible for contract negotiations and reports to the Director of Purchasing. Under the Director of Finance, there are A/P & A/R staff members overseeing the payables and receivables of the company. The Director of Supply Chain supervises the logistics & distribution management and the material requirement planning functions. Finally, because this is a manufacturing plant, the Director of Production manages several production managers. Figure 10 represents the conceptual diagram of the organization structure.

Figure 10: Beta with Head Office in Europe and plants around the world



Beta has been experiencing double-digit growth over the last ten years, and the annual sales have reached \$1.2 billion dollars in 2016 from less than \$300 million in 2006. Since Beta is structured as a manufacturing plant that does not deal with external clients, all sales figures are to internal entities with very low profit mark-up. What the company accounts as sales is how much it costs to source, transportation, manufacture, warehouse and distribute, which the industry generally refers to as full manufacturing cost (FMC). Moreover, the need to source quality materials cannot be overstated in the pharmaceutical industry. Each year Beta spends around 60% of its total revenue to source materials from various vendors. As we mentioned in the introduction that the purchasing of raw materials from active pharmaceutical ingredient (API) manufacturers represent significant amount, at roughly 50% of the total sourcing budget.

The current supply chain structure of Beta is very similar to other pharmaceutical companies that specialize in the field of dermatology. The manufacturing plant would

source materials from various Canadian, American and foreign suppliers. The Incoterms negotiated with these suppliers, they govern the lead-time, mode of transport, the party who will be responsible for the delivery and costs, and who ultimately bears the risks during the voyage. Once these materials arrive at Beta's facility, they will be stored and manufactured into finished products. As mentioned, Beta does not deal with external customers; therefore, everything that is produced will be shipped directly to the sales affiliates and those contracts are standard internal managing contracts dictated by the head office in Europe. As a result, the scope of this research mainly focuses on supply chain for the manufacturing plant with the upstream acquisition and transportation of the raw materials. Overall, the company follows a make-to-order manufacturing process where the customary frozen period for affiliates to submit their orders is typically three months. In addition, more than 50% of the company's existing production is on a number of selective stock keeping units (SKUs) that share the same manufacturing formulas. Consequently, the supply chain strategy that Beta follows is efficient supply chain with functional and stable demand products (Lee, 2002). Moreover, the corporation has an overall objective of 99% order fill rate (service level) for the site in Canada. Therefore, one of Beta's main supply chain objectives is to secure a stable supply of raw materials to avoid any production interruption. It is not unusual to see safety stocks built-up for some of the longer lead-time active pharmaceutical ingredients.

Beta sources a significant amount of its raw materials from various active pharmaceutical ingredient (API) manufacturers abroad. Not only do these APIs represent substantial costs, but a great number of these suppliers are located in Europe and around the world with very long sourcing lead times. For instance, both domestic and U.S. suppliers typically employ in-land transportation and they represent close to 50% of the total procurement value. Conversely, foreign suppliers consist of countries such as Belgium, England, France, Germany, Italy, Spain, Morocco, India, Japan, and China for which ocean shipment is generally the norm. According to Smid & Windaus (2015), the pharmaceuticals and life sciences sector was ranked as the worst performing industry in a handful of working capital performance measurements. Hence, one of the primary areas where Beta could improve its working capital management would be to optimize these cross-border trades with foreign suppliers that have long delivery times. Generally, the

longer the sourcing lead time, the greater financial strain is put on the buyer-supplier, depending on the Incoterms selection. It is important to derive a solution to improve the working capital of Beta and its suppliers to secure a stable flow of raw materials. Optimizing the Incoterms selection in relation to the companies' cash-to-cash cycle will offer a sustainable supply chain finance program that will provide the company with a viable long-term competitive edge going forward.

4.2 Working Capital Challenge in the Industry

Optimising working capital has been a key and growing challenge for businesses of all sizes since the global financial crisis. This is especially true for companies in long cash-to-cash conversion industries such as the aerospace and defense and pharmaceutical industries, given the nature of their businesses as well as supply conditions arising from a high manufacturing inventory cycle. Hofmann et al. (2011) argue that the combination of different circumstances contributed by the global financial crisis in 2008, including the lack of available liquidities, ultimately led world manufacturing production to crumble by almost 20 percent. In the years following the global financial crisis, lending standards tightened and have remained restricted. Although the economy and the pharmaceutical sector in general are improving, financing conditions remain a challenge for these often-smaller suppliers of active pharmaceutical ingredient (APIs). In the years since the downturn, with the enforcement of Basel III, banks are becoming more risk-averse, so accessing much-needed financing to continue production becomes a challenge for these sellers, which potentially increases the risks of supply chain disruption for the buyers. As mentioned in the previous section, according to PwC 2015 Global Working Capital Survey by Smid and Windaus (2015), the pharmaceuticals & life sciences sector was ranked as the worst performer in a handful of working capital performance measurements. The article states that pharmaceuticals & life sciences take on average 92 days to convert working capital into funds, which is 21 days more than the second and third worst sectors in this measurement. In the same survey, the pharmaceuticals & life sciences sector is also the sector with one of the longest DSO measures with a median of 65 days, trailing only the engineering & construction and technology sectors by a narrow margin. Furthermore, not surprisingly, the pharmaceuticals & life sciences sector

is the sector with the longest DIO at 116 days for a median company, which is more than twice as long as engineering & construction sector at 54 days. The DPO for pharmaceuticals & life sciences has a median of 62 days, slightly more than the overall average of all sectors at 49 days. Furthermore, the NWC/sales for pharmaceuticals & life sciences is as high as 20.3%, trailing only engineering & construction at 21.5%, while the average rate is 11% across all sectors in the world. Table 5 presents the findings from the PwC survey, which shows the huge gap between top performers versus bottom performers. Smid and Windaus (2015) justify that companies in the upper quartile in working capital are generally better at generating cash, as well as converting profits into liquidity.

Table 5: DSO, DIO & DPO of the Pharmaceutical and Life Sciences Sector

Pharmaceutical & Life Sciences	<u>Median</u>	<u>Top performers</u>	<u>Bottom performers</u>
Days Sales Outstanding (DSO)	65 days	46 days	95 days
Days Inventory Outstanding (DIO)	116 days	76 days	174 days
Days Payable Outstanding (DPO)	62 days	98 days	41 days

Source: Prepared by the author based on a data from PWC 2015 survey

From the above information, we can envision the potential benefits a supply chain finance program can offer to Beta's working capital management. National Center for the Middle Market (2016) suggests that by identifying and defining these major opportunities for companies to optimize Working Capital Management, businesses from working capital challenged industries can potentially free up millions of dollars in extra cash flow.

4.3 Beta's Objectives

As mentioned, the company has experienced tremendous growth in the last few years. However, the negotiated contracts have not been appropriately revised; therefore, the Incoterms that Beta has with suppliers are the same as when the company had significantly less purchasing volume. The only variables that have been dramatically increased over the last ten years are the value of shipment and transportation cost. The

aim is to reduce the total cash-to-cash cycle for both buyer and supplier to enhance buyer-supplier relationship. At the same time, Beta seeks to secure strategic materials to reduce the risks of unforeseen supply chain disruption due to a lack of capitals at the suppliers.

Given that Beta belongs to a multinational conglomerate, in terms of risk management perspective, Beta employs open account transactions and will only issue payment for products when the company has possession of the goods. For example, with a FCA (Free Carrier) contract, the net 30 payment term granted by the supplier starts when the freight forwarder representing Beta successfully confirms reception of the goods and forwards the confirmation to Beta. The reception of goods by Beta or someone acting on its behalf will be the event triggering the term 30 days to begin. In addition, all transactions are on an open account basis and all existing contracts with API suppliers are net 30 terms. Due to the size and the reputation of its parent firm, Beta is considered a very powerful buyer with a high negotiation power.

The objective of Beta, as mandated by its head office is to improve its existing days payables outstanding with API suppliers by at least 1 day from the current 30 days. In reality, Beta has the financial capability to pay all its suppliers immediately without the need for payment terms. However, Beta's management has been given a directive to not only maintain the existing DPO, but to also improve this ratio. Therefore, Beta must strike a balance between securing strategic raw materials by improving the working capital of its suppliers and at the same time to also improve its own liquidity measurements. As a matter of fact, Beta is already in the process of actively renegotiating the payment terms with some of its larger suppliers to extend their existing payment terms from Net 30 to longer by introducing supply chain finance. According to the employee from the Department of Finance, reverse factoring program allows them to extend their payment term with suppliers from 30 days to up to 90 days. Any duration longer than 90 days is deemed as higher risk and the bank will demand greater financial requirements and a risk premium for these longer-term financing programs; therefore, Beta will only seek to extend its payment terms to up to 90 days. Currently, the company is in negotiation with Bank of America Merrill Lynch, a highly reputable financial institution, to potentially implement a variant of a supply chain finance program with some of its existing suppliers.

As pointed out, the parent of Beta is very large and currently there is a program where working capital can be shared among entities within this multinational corporation at the risk-free rate of 2%. Furthermore, an analysis of the financial statements of several number of API suppliers shows these suppliers pay on average anywhere from 5% to 8% interest rate on their short-term borrowing.

4.4 Presentation and findings of the questionnaires

As mentioned in the previous chapter, to understand and identify relevant factors that connect Incoterms selection and supply chain finance, we chose to conduct our research in the form of an questionnaire. In total, we conducted ten questionnaires with employees from the departments of finance, purchasing, supply chain and logistics of Beta, as well as external stakeholders including the transportation service provider, API suppliers, and supply chain finance experts. Moreover, the combination of the four sections of the questionnaire enhance our understandings on how each factor linking Incoterms selection and supply chain finance are being weighted by each respondent. In addition, they also provide us valuable insight of each participant's attitude and awareness toward the topics. Our questionnaires results elicited the inputs of participants on the relevancy of the factors we identified in the literature review for choosing the appropriate Incoterms in international trades and supply chain finance performance.

From the results of the questionnaires, we can presume that although Incoterms are perceived to be important among the employees of Beta, nevertheless the respondents acknowledge that there is generally a lack of proficiency in the topic for both Canadian and U.S. companies in comparison to the rest of the world, most noticeably from Europe and Asia (Appendix 4). Overall, the respondents feel that the Incoterms proficiency of suppliers/customers are generally inadequate in North America. In fact, after the surveys, the participants almost unanimously agreed that Incoterms selection is relevant, but there is generally a lack of knowledge and importance paid to this area during contract negotiation. In the first section of the questionnaire, we asked participants how they would rate the Incoterms proficiency of suppliers/customers in Canada and U.S. and both received a score of 60 and 62 respectively out of a possible total score of 100. Whilst, their overseas counterparts are being perceived as superior in this regard by

securing a score of 7.5 on average. To further reiterate this point, employees from different departments of Beta responded differently to questions 3.1-4 and 3.1-5 of our questionnaire, where we ask them to rate the Incoterms knowledge of employees in their organization and own corresponding department. From the survey, we learn that both the purchasing and logistics team members feel very strongly regarding their Incoterms knowledge; while the employees from the supply chain and finance departments admit that there definitely is room for improvement.

Another observation we made is that the respondents mostly feel that Incoterms is an important topic in international commerce, yet the degree of importance of Incoterms given by Canadian companies during contract negotiations only received a score of 67 out of 100, whereas the contributors mostly feel that foreign companies lay greater importance of delivery terms choice than Canadian organizations with an average score of 7.3. Additionally, despite the fact that the decision of Incoterms selections are made internally, yet habit play an important role and cause Beta to retain systematically the same payment structure and Incoterms choice with some of its long standing suppliers. This result suggests there is a lack of coherence in the matter, as the department of purchasing is typically the one solely responsible to negotiate both Incoterms and payment terms with suppliers within Beta and very little consultation are made with other departments within the organization.

This section contemplates the importance of the five key factors as construed above – Power, Value, Time, Collaboration, and Knowledge & Importance.

Among the value factor (Table 6), the value of shipment and reliability of supplier to delivery are the two variables that received the most weight allocated by the respondents. This could be because one of the main goals of Incoterms selection is to agree on costs and risks, and with a higher value of shipment, the greater the risks will be delegated to the party based on the Incoterms chosen. Meanwhile, the reliability of the supplier has a direct impact on the overall performance of the Incoterms contract, hence it high relative weight. Meanwhile, in the minds of the participants, the rate of capital is a relatively important variable to consider, but not as important as the other two variables. Similarly, the emphasis on the financial resources of an organization during Incoterms

selection are comparable to the rate of capital of supplier/customer in section four, as the rate of capital is a decisive component of the overall financial resources of a firm. Both are recognized as being important, hence their relatively high score, but there are other priorities when dealing with Incoterms selection and supply chain finance in the mind of participants, especially for the purchasing, supply chain and logistics employees.

Table 6: Ranking the value factors

Questions	Value Factors	Total Score *	Average Score **
2.1-3	Taking the total shipment value of goods into account	91	9.1
2.1-6	Taking the reliability of the counterparty into account	86	8.6
2.1-9	Taking the financial resources into account	83	8.3
4.1-12	Taking the difference in rate of capital of supplier/customer into account	83	8.3
Note:			
* Total scores were obtained by summing the result of each respondent for the question			
** Average scores were obtained by dividing the total score by the number of respondents			
The higher the average score represents greater pertinency of the variable to the factor			

Among the time factors (Table 7), there is little distinction between the two highest ranked variables, which are clearly perceived as more important than the distance between origin and destination during the Incoterms selection process. Moreover, as pointed out in the literature review, the flexibility of payment term ultimately plays an imperative role in determining the supply chain cost and cash-to-cash cycle of a buyer/supplier relationship as this is the case from the opinions of the finance employees from Beta, as well as the supply chain finance experts. We believe this is reasonable because at the end of the day companies focus more on expense components such as transportation cost and cash flow cost than the location where the goods are sourced. As long as what they are sourcing is in good quality, and to arrive in a timely manner then the purchasing firm pays little attention to the actual distance. This finding aligns with the research by Pedersen and Gray (1998).

Table 7: Ranking the time factors

Questions	Time Factors	Total Score *	Average Score **
2.1-2	Taking the mode of transportation and transportation costs into account	89	8.9
2.1-8	Taking the transportation distance between exporting/importing country into account	79	7.9
2.1-10	Taking the transit time between exporting/importing country into account	87	8.7
4.1-9	Taking the flexibility of payment term into account	89	8.9
<u>Note:</u>			
* Total scores were obtained by summing the result of each respondent for the question			
** Average scores were obtained by dividing the total score by the number of respondents			
The higher the average score represents greater pertinency of the variable to the factor			

With reference to knowledge and importance factors (Table 8), both technological advancement and working capital goal are perceived extremely well in the view of the participants for supply chain finance performance. Eight out of ten respondents, and all of Beta's employees feel that the enhanced technological tools will allow them to optimize the financial performance of the company. Moreover, with the increasing use of open account transactions, the participants mostly feel that the transfer of ownership is an importance element to consider, hence its approximately high weight. The basis of having previous international experience does play a role during Incoterms selection, however the respondents feel that it is not one of the vital determinants which steer the outcome during contract negotiations, as per the external contributors.

Table 8: Ranking the knowledge and importance factors

Questions	Knowledge & Importance Factors	Total Score *	Average Score **
2.1-1	Taking the international experience into account	79	7.9
4.1-1	Taking the working capital management to supply chain finance performance into account	92	9.2
4.1-4	Taking the transfer of ownership into account	88	8.8
4.1-13	Taking the technology advancement into account	91	9.1
<u>Note:</u>			
* Total scores were obtained by summing the result of each respondent for the question			
** Average scores were obtained by dividing the total score by the number of respondents			
The higher the average score represents greater pertinency of the variable to the factor			

In terms of the power versus collaboration debate, the power factors consist of the negotiation power of counterparty and capital intensiveness of the industry (Table 9) scored a lower ranking than the collaboration factors (Table 10), and all respondents collectively agreed successful communication and coordination between organizations and departments are critical to superior financial performance. In a way, the two factors are in direct contradiction to each other in that the party who is more powerful can dictate an Incoterms choice. But as we learn from TCO, choosing a particular Incoterm merely shifts the costs, while in a long-term buyer-supplier relationship, the full coordination and collaboration between partners is essential to reduce the total supply chain costs. Overall, with the exception of one of the API suppliers, the participants recognize that it is vital to properly define the characteristics of the counterparty in whom you are dealing with, to understand both the ability and willingness to enhance cooperation between the two entities in order to achieve optimum outcome. Similarly, during supply chain finance implementation, it is important to gain the trust and commitment of the supplier; while sharing the benefits of the potential gains equally to achieve a sustainable end-to-end financial SCM program.

Table 9: Ranking the power factors

Questions	Power Factors	Total Score *	Average Score **
2.1-7	Taking the negotiation power of the counterparty into account	87	8.7
4.1-11	Taking the capital intensiveness of the industry into account	86	8.6
Note:			
* Total scores were obtained by summing the result of each respondent for the question			
** Average scores were obtained by dividing the total score by the number of respondents			
The higher the average score represents greater pertinency of the variable to the factor			

Table 10: Ranking the collaboration factors

Questions	Collaboration Factors	Total Score *	Average Score **
2.1-4	Taking the characteristics of the counterparty into account	94	9.4
4.1-2	Taking the successful communication and coordination between departements within an organization into account	96	9.6
Note:			
* Total scores were obtained by summing the result of each respondent for the question			
** Average scores were obtained by dividing the total score by the number of respondents			
The higher the average score represents greater pertinency of the variable to the factor			

Overall, the variables made up of collaboration factors received the highest rank, with the value of shipment, working capital goal and technological advancement being scored closely behind (Table 11). According to our study, these variables are recognized to be the most important considerations that connect Incoterms selection and supply chain finance in international transactions. The questionnaires' results suggest that although the costs and risks are important considerations during Incoterms selection, in a more strategic long-term buyer-supplier relationship, the need to collaborate and to invest into new technologies to achieve greater efficiency and automation are deemed to be the priority in a multinational corporation. The findings could partially be explained by Beta's sector, in which the need is to source quality APIs, which are strategic in nature and the number of suppliers able to supply the volume and specifications that the company requires are limited. Furthermore, the external participants equally consider the needs of successful integration and collaboration to be vital for a lasting partnership. As a result, during contract negotiations there must be a balance between the need to secure savings and the goal to foster a long term buyer-supplier relationship.

Table 11: Ranking the factors to each variable pertinency

Main factors linking Incoterms	Variables	Average Score		Main factors linking Supply Chain Finance Performance	Variables	Average Score
Power	Negotiation power of buyer and supplier	8.7	↔	Power	Capital intensiveness of the industry	8.7
Value	Value of shipment	9.1		Value	Rate of capital	8.3
	Reliability of supplier to delivery	8.6				
	Financial resources	8.6				
Time	Transportation cost	8.9		Time	Payment term	8.9
	Distance between origin-destination	7.9				
Collaboration	Characteristics of the counterparty (supplier integration)	9.4	↔	Collaboration	Intracompany collaboration (cross functional)	9.6
Knowledge & Importance	International experience	7.9		Knowledge & Importance	Working capital goal	9.2
			Payment method & Transfer of ownership		8.8	
			Technological advancement		9.1	

In summary, the results from the questionnaires are consistent with our findings from the literature review, which indicate that the five factors (power, value, time, collaboration, and knowledge & importance) identified are important factors that connect Incoterms selection and supply chain finance. Although there are certain variations to different questions based on the department and functions of the participants, nonetheless we are able to gain an extensive findings for this research.

5.0 Analysis and Discussion

In this chapter, we will utilize a scenario analysis model to validate how Beta can assist its suppliers in reducing their working capital costs and at the same time to improve its own cash-to-cash cycle.

5.1 Scenario Analysis

One of Beta's largest API suppliers, Supplier A, is in northern Europe and accounts for annual purchasing costs of 5% of the overall purchasing budget and 10% of the entire API budget of Beta at \$36 million. It takes on average 26 days of door-to-door transit time to transport the materials by ship to Beta's factory. Based on data from www.searates.com and www.worldfreightrates.com, the main carriage transportation time from northern Europe (U.K, Germany, and France) is 15 days at a transportation speed of 14 knots. A knot is a unit of speed equal to 1.852km per hour; therefore, 14 knots is equivalent to 25.93 km per hour. Generally, it takes three days for the supplier to deliver to the port of origin. In addition, loading and unloading of shipments at the port of origin or destination usually takes three days to complete, while the inland delivery takes two days from the port of destination to the customer. Holter et al. (2010) argue that in dealing with long-rang multi-model transportation, the transportation costs and the cash flow costs are important determinants to consider in international trading. This is similar to the findings we identified from our research questionnaires where the participants perceived both transportation cost and transit time extremely well. For this scenario analysis, we keep the mode of transportation constant; therefore, the transportation costs and transit time will stay the same. We will only consider the change in cash flow costs with a change of rate of capital to give a clear picture of the cash flow perspective of Beta, the API supplier in northern Europe, and the bank. Figure 11 illustrates the transportation flow.

Figure 11: Transit time from Northern Europe Supplier to Beta



To demonstrate the benefits of such initiative fully, we illustrated separate scenarios to show the extent to which Incoterms selection can influence the cash-to-cash cycle of both buyer and supplier, and how combining reverse factoring can help contribute to further improvements. We will use an interest rate of 6.5% for the supplier, which is the mid-point an average supplier pays on their short-term borrowing. We assume that a party will participate in a reverse factoring arrangement only if it creates value to that company. For example, a buyer would become the focal company and to initial the Incoterms evaluation process and implement reverse factoring arrangement with the bank and supplier only if it brings benefits. For the supplier, participation means accepting the Incoterm switch and utilizing the advance payment of accounts receivable to bridge the funding gap. Whereas, from the point of view of the bank, reverse factoring generates income when the supplier borrows against the value of its account receivable.

5.2 Scenario Presentation

Scenario 1 (Base Case) of Figure 12 shows the current situation before any changes. Currently, Supplier A offers DDP (Delivered Duties Paid) terms for all the materials delivered to Beta. The payment term granted to the buyer is 30 days after the invoice and confirmation of reception, meaning that for an annual sale of \$36 million, this grant of credit from the supplier allows Beta to delay the payment by 30 days. In other words, Supplier A provides Beta with thirty days of additional working capital to loan to other entities within the group company at a risk-free rate of return of 2%. On the other

hand, the cost for granting 30 days payment term to the buyer means that Supplier A needs to finance the associated account receivable at its rate of capital at 6.5%. For each day that Beta can delay its payment to the supplier, it will earn an extra \$1,972.60 from an affiliate, thus this will be considered as an opportunity cost. Overall, Beta with net 30 terms can earn \$59,178.08 per year; while it costs the supplier \$6,410.96 per day in cash flow costs and \$359,013.69 for delivering the goods in DDP with the same payment term. The total supply chain cost will be $\$359,013.69 - \$59,178.08 = \$299,835.61$.

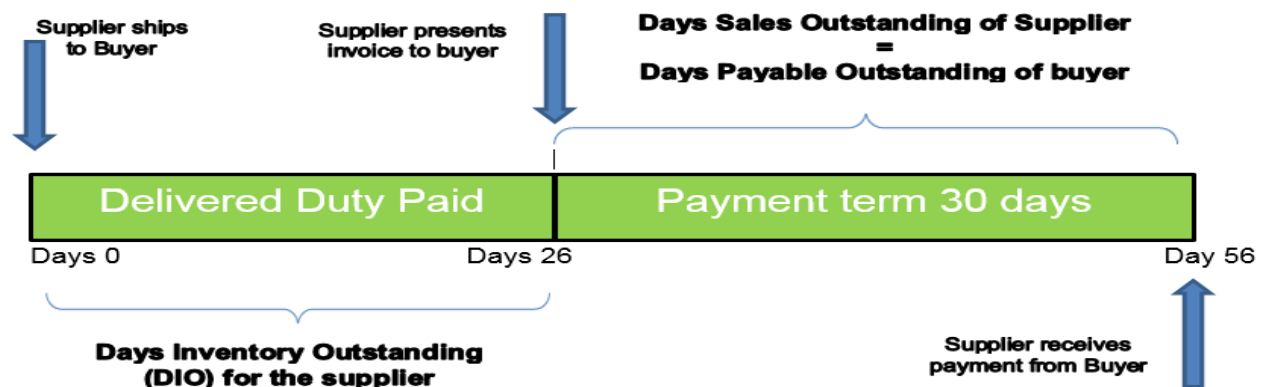
Beta:

$2\% \times \frac{\$36M \text{ per year}}{365 \text{ days}} = \$1,972.60$ per day; therefore, the 30 days payment term equals \$59,178.08 of income.

API supplier Northern Europe:

$6.5\% \times \frac{\$36M \text{ per year}}{365 \text{ days}} = \$6,410.96$ per day; therefore, the 26 days of transit time and 30 days payment term equal \$166,684.93 and \$192,328.76 respectively, for a total interest cost of \$359,013.69.

Figure 12: Scenario 1 (DDP with 30 days payment term)



Scenario 2 of Figure 13 shows the change of the existing Incoterm from DDP to FCA (Free Carrier) port of origin, while keeping the same payment term at 30 days. Due to the risk management perspective we mentioned earlier, the trigger event for payment terms will always be at the reception of goods. In this case, the buyer will pay 23 days sooner than in Scenario 1. Theoretically, the transit lead time will shift from 26 days to

three days, as soon as Beta's freight forwarder confirms with the bill of lading the receipt of the goods at the port of export. However, this will have no impact on the DPO of the buyer, as the payment term stays constant at 30 days; only the physical cash outflow will be 23 days sooner. At the same time, since the supplier is getting paid 23 days sooner without necessarily changing the payment term of the contract, its DSO stays the same; while its DIO decreases as the portion of its goods in transit decreases. This change of Incoterms selection as proposed by Kaye (2012) generates an overall supply chain cost of \$197,753.42, an overall reduction of \$102,082.19 compared to Scenario 1.

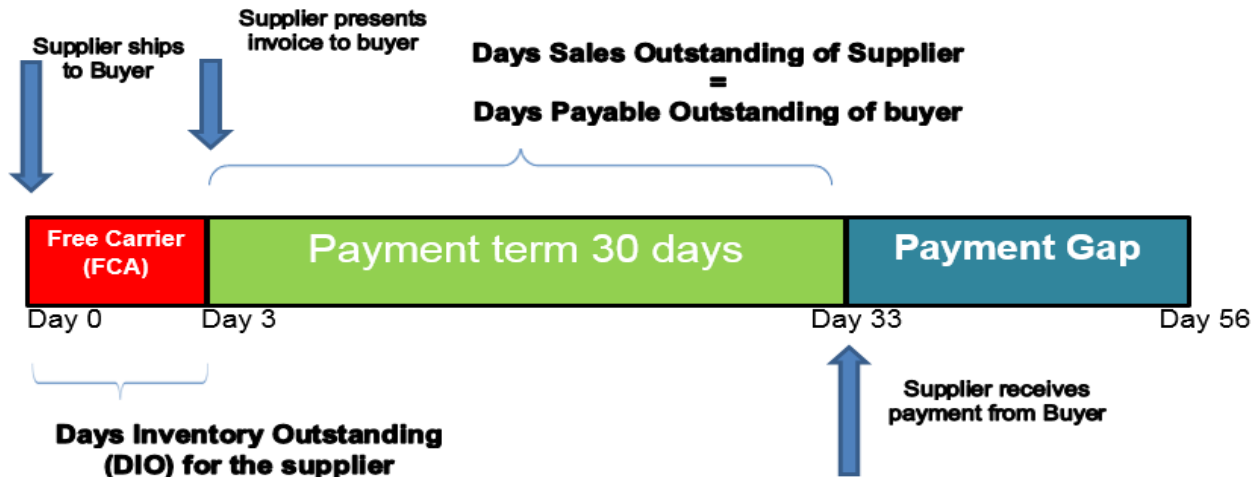
Beta:

$2\% \times \frac{\$36M \text{ per year}}{365 \text{ days}} = \$1,972.60$ per day; therefore, for the same 30 days payment term, subtracting the 23 days earlier payment equals a new income of seven days or \$13,808.22, a reduction of \$45,369.86.

API supplier northern Europe:

$6.5\% \times \frac{\$36M \text{ per year}}{365 \text{ days}} = \$6,410.96$ per day; which for the three days of transit time and 30 days payment term equals \$19,232.88 and \$192,328.76 respectively, for a total interest cost of \$211,561.64, a reduction in interest cost of \$147,452.05 from a decrease of DIO.

Figure 13: Scenario 2 (DDP to FCA with 30 days)



Scenario 3 of Figure 14 is a combination of Scenario 2 (Incoterms selection) and reverse factoring, where Bank of America Merrill Lynch offers to purchase approved invoices of Beta from Supplier A (API Supplier northern Europe) at the LIBOR rate + 25 basis points (0.25%). Currently, the 3-month LIBOR rate is at 1.31% as of August 8, 2017. Therefore, with reverse factoring, leveraging from Beta's strong credit position allows the supplier to borrow at 1.56% with BofAML Trade Pro Platform, instead of drawing from its line of credit at 6.5%.

As we saw from Scenario 2, actively switching Incoterms from DDP to FCA does not affect the DPO of the buyer, since the payment term stays at 30 days; thus, its cash-to-cash cycle is constant. However, there will be a negative impact on the buyer's cashflow, as it is required to pay 23 days sooner. At the same time, the corresponding switch of Incoterms will improve the DIO of the seller with no change to its DSO. For this scenario, the payment term will stay constant at 30 days, but with the change of Incoterms selection from DDP to FCA, the use of reverse factoring will help bridge the funding gap. So instead of the buyer paying 23 days earlier due to a switch in Incoterms as we saw in Scenario 2, it will be the bank that pays the supplier; the buyer will only reimburse the bank on Day 56 as was the case in Scenario 1 where the buyer pays the supplier at Day 56. The total supply chain cost is $\$110,524.93 - \$59,178.08 = \$51,346.85$, a decrease of $\$248,488.76$ from Scenario 1.

Beta:

$2\% \times \frac{\$36M \text{ per year}}{365 \text{ days}} = \$1,972.60$ per day; therefore, the 30 days payment term equals $\$59,178.08$ of income, as in Scenario 1.

API supplier northern Europe:

$6.5\% \times \frac{\$36M \text{ per year}}{365 \text{ days}} = \$6,410.96$ per day and $1.56\% \times \frac{\$36M \text{ per year}}{365 \text{ days}} = \$1,538.63$ per day with the reverse factoring rate; therefore, for the three days of transit time the supplier will continue to pay at 6.5%, while the payment term of 30 days and the payment gap from Day 33 to Day 56 ensure the buyer keeps the same cash outflow, which will be at 1.56%.

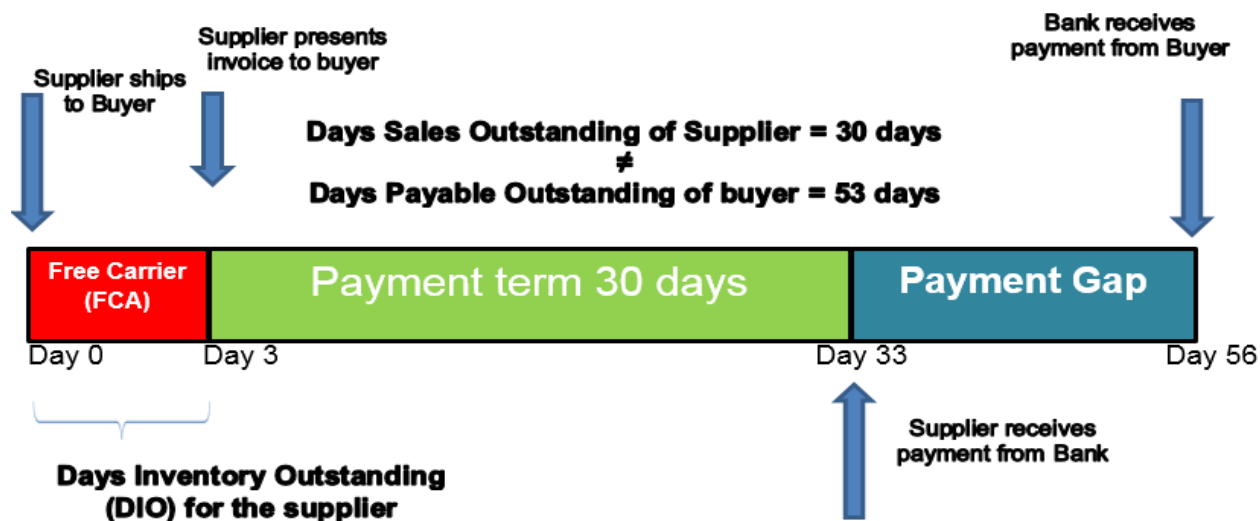
$\$19,232.88 + \$46,158.90 + \$35,388.49 = \$110,524.93$ total interest cost. This amount represents \$258,233.42 less than Scenario 1 (Base case) and \$110,781.37 less than Scenario 2 (Switch of Incoterms).

$\$6,410.96 \times 3 \text{ days} = \$19,232.88$

$\$1,538.63 \times 30 \text{ days} = \$46,158.90$

$\$1,538.63 \times 23 \text{ days} = \$35,388.49$

Figure 14: Scenario 3 (FCA with 30 days payment term and Reverse Factoring)



As we can see from the above scenario, there is no change to the cash flow of the buyer between Scenario 1 and Scenario 3, but at the same time electing to change Incoterm selection and the implementation of a reverse factoring program allow Beta to improve its days payable outstanding from 30 days to 53 days. Recall from the previous chapters that DPO in an open account transaction is the difference between the moment goods are received and the moment the buyer must pay for the goods. With the switch in Incoterms, goods were received on Day 3 and the buyer only pays at Day 56, therefore, its revised DPO is 53 days with Supplier A.

This example shows that Incoterms selection in combination with supply chain finance - reverse factoring allows the supplier to decrease both its DIO and DSO; hence, reducing its cash-to-cash cycle. At the same time, it allows the buyer to increase its DPO by artificially extending its payment term, as well as to gain a purchasing discount with

the seller by switching Incoterms in the contract. Such potential purchasing discount the buyer receives from the switch of Incoterms selection can effectively diminish its cost of goods sold (COGS); hence, reducing its DIO further. Overall, this initiative will improve both the buyer's and seller's cash-to-cash cycle. This is a demonstration of a successful collaboration and utilization of technological advancement to derive superior gains to all stakeholders.

5.3 Discussion

The goal of the supply chain finance approach is to improve collaboration and foster commitment between partners to create a win-win proposition. During contract renegotiation, switching Incoterm from DDP to FCA lessens both the risks and obligations of the supplier dramatically, where most of the previous costs will be passed to Beta. Electing to use FCA means that the time from the confirmation of goods receipt at port of export until the goods arrive at Beta's location will now be the responsibility of the buyer. This includes additional expenses such as vessel loading cost, main transport, insurance, terminal charges, import custom, and delivery from port of destination to buyer location (Vincenti & Roy, 2016). Such a major switch of delivery responsibilities should result in a significant alteration to the original purchase price of the goods, since these costs were previously built into the purchase price. Switching from DDP to FCA requires the buyer to take on significant responsibilities, in addition to necessitate the required expertise to execute and to follow-up such undertaking; therefore, Beta should be able to negotiate a lower selling price per unit and to reduce the total supply chain cost. To accomplish such task requires the full collaboration of supplier and intracompany cross functional cooperation. According to Pedersen and Gray (1998), transportation costs can account for 9.2% of the export value and 10.6% if they include insurance and packaging without accounting for logistics costs such as export customs and other charges. Reducing the purchase price of the procured goods will also lower the final inventory costs for Beta, resulting in a lower cost of goods sold (COGS) which directly impacts the DIO, decreasing its cash-to-cash cycle. Consequently, this final shipment value is an important element as per indicated by our participants in the questionnaire.

To calculate the actual implication on the working capital of Scenario 3, first we must determine the current cash-to-cash cycle of Beta. From our case study, we learn that the existing DPO is 30 days, and since the company only sells to internal customers at net 30 terms, its DSO is also 30 days. In addition, the DIO is 99 days; therefore, the cash-to-cash cycle of Beta under Scenario 1 is 99 days ($30 \text{ days} + 99 \text{ days} - 30 \text{ days}$). Without considering the potential discount Beta may receive from the supplier, a change of DPO from 30 days to 53 days for 5% of its total purchasing contracts (10% of API contracts) will decrease the cash-to-cash cycle of Beta by 1.15 days, which exceed the working capital goal mandated by the head office of 1 day. This will effectively reduce the cash-to-cash cycle of Beta to 98.85 days with the potential to achieve further reduction from lower DIO through a purchasing discount.

The choice of Incoterm by Beta is not limited to only FCA as shown in our Scenario 3, as there are four families that separate each Incoterm's corresponding costs and risks. As pointed out in the previous chapter that habit plays an important role and cause Beta to retain systematically the same payment structure and Incoterms choice with some of its older suppliers. In fact, some of its existing contracts have not been revised despite the tremendous growth the company experienced over the last ten years. With the help of a professional freight forwarder, Beta will be able to accurately evaluate the risks, costs and benefits of each respective Incoterm choice, hence both the knowledge and importance put into Incoterms selection is vital.

From the literature review, we learn that it is generally not recommended to use EXW (Ex-Works) for Transocean contracts (Gardner, 2012; Ramberg, 2011). Conversely, if the managers at Beta judge that the additional risks and costs from the use the E or F family terms are not suitable for the company's risk profile due to difficulties in negotiating an acceptable discount rate with the supplier or because they do not have the necessary expertise or experience to ship from the country of export then Beta can consider the use of C family terms as potential alternative. As suggested by Matikka (2016), sometimes the supplier can have an advantage of procuring carriage at the country of export locally at a more competitive rate due to their extensive international experience. Of the four Group C Incoterms, CIP (Carriage and Insurance Paid) and CIF (Cost, Insurance, and Freight) are considered an equivalent version of CPT (Carriage Paid to) and CFR (Cost

and Freight) respectively with the additional of insurance coverage. However, after speaking with a participant from the logistics department at Beta, we learn that since our case company belongs to a multinational conglomerate that possesses an expansive logistics network around the world, insurance for all shipments within the group had already been covered collectively; any addition insurance coverage will simply be in duplication. Furthermore, Ramberg (2011) reveals that the CFR (Cost and Freight) and FOB were initially created for bulk commodities, therefore for this exercise, it is only logical for Beta to seek a CPT (Carriage Paid to) delivery term.

By choosing to use CPT, where the seller delivers the goods to the carrier at an agreed place of delivery and pays for the transport to the named destination, both FCA and CPT have the same risk profile to Beta and the difference between the two is that the price quoted to the buyer under CPT includes not only the sales price of the products, but all ocean carriage and related charges up to the named port of destination (Gardner, 2012). With the help of a professional freight forwarder, Beta will be able to itemize each corresponding cost such as the main transportation from the country of import, loading and unloading charges at both the port of origin and port of destination and compare it to the selling price provided by the supplier to know if it is economically beneficial to elect CPT instead of the more flexible FCA. With CPT in respect to FCA, the buyer only needs to deal locally with the local transportation companies, but the negative factors for the buyer include the loss of control of the supply chain, lack of visibility, reactive position in terms of uncontrollable circumstances such as strikes, and the possibility of hidden costs in the final selling price of goods, which will lead to a higher inventory and COGS on the financial statements, negatively affecting Beta's cash-to-cash cycle. Basically, a simpler way to describe CPT is that the seller is using the buyer's money to pay for all the relative transportation and logistics costs at the buyer's risk. Since we determine that both FCA and CPT have the same risk profile, then the payment term can either be the same as FCA three days at the place of delivery or 24 days at the named destination custody of the carrier of the buyer, which will have a direct implication on the total cash flow cost of the transaction. By renegotiating from DDP to CPT, we know that the buyer will effectively be taking on the responsibilities of local transportation and the costs of insurance and customs clearance. In the end, we must evaluate each option objectively and construct

each solution under the total cost of ownership framework to identify the optimized Incoterms selection and supply chain finance combination. For this case, the potential benefits may not be as apparent as the switch in Incoterms from DDP to FCA.

One important point that we need to always keep in mind is that Incoterms are neither laws nor regulations. The primary goal of Incoterms is to standardize the allocations of costs and obligations of the delivery terms; therefore, in terms of revenue recognition and the transfer of ownership, even if Beta elects to switch from the existing DDP Incoterm to FCA, both parties can still elect to delay the recognizing of the inventory received at the buyer's factory, so there is no change on the financial statement in this regard.

6.0 Conclusion

The purpose of this thesis was to address, investigate and discuss the relationships between Incoterms selection and supply chain finance on the cash-to-cash cycle of both the buyer and seller in an international cross border transaction. This thesis is constructed based on a case study of an unnamed European multinational pharmaceutical manufacturer. With this, we intend to explore the effect of Incoterms selection and supply chain finance program can have on advancing the working capital management (WCM) of companies. The aim of the research is to investigate how total tied-up capital can be reduced through the implementation of a supply chain finance program, along with the strategic selection of Incoterms will enable the optimization of the cash-to-cash cycle performance under the total cost of ownership framework.

The implementation of a supply chain finance - reverse factoring program and the continuous collaboration with the supplier through an Incoterms selection initiative will allow both the buyer and the supplier to be closely integrated and to enhance their supply chain finance maturity cycle progression. The benefits of such a program are two-fold where a decrease of total cash-to-cash cycle for both buyer and supplier will provide companies with measurable and meaningful working capital benefits. Based on our case study, Beta will be able to decrease its DPO by 1.15, which is greater than its initial objective with only one program implementation, while keeping the contract payment term at 30 days. In addition, the buying firm can secure strategic materials and reduce the risk of unforeseen supply chain disruption due to a lack of capital at the suppliers, enhancing its relationship with suppliers. This, for example, will allow Beta to secure a stable flow of raw materials to maintain or exceed the prescribed service level without necessarily needing to carry a huge amount of safety stock. The research findings conclude that there are five factors (power, value, time, collaboration and knowledge & importance) that link Incoterms selection and supply chain finance. With the use of a mixed method study, we are able to validate our primary hypothesis that a greater emphasis on Incoterms usage in combination with supply chain finance will allow an overall improvement of cash-to-cash cycles (CCC). This model conceptualizes the theory of financial SCM collaboration in helping both buyer and seller improve their

cash-to-cash cycles through advancement in technologies and collaboration among different partners.

6.1 Analysis Summary

After successfully completing both the qualitative and quantitative analyses in the research methodology chapter, while comparing the results with the findings from the literature, we can answer our research question.

- How can the combination of Incoterms selection and supply chain finance impact the cash-to-cash cycle of both buyer and supplier?

Supply chain finance is a brilliant illustration of a triangular beneficial partnership between suppliers, banks and buyers (Hurtrez et al., 2010). Not only will the supplier be able to benefit from the strong credit rating of the focal company to gain access to cheaper rate of capital but also supply chain finance – reverse factoring can allow the supplier to sell approved invoices in advance, to collect funds prior to the specified payment term. For instance, the advance technological payment platform from BofAML allows the option to speed up the payment to the supplier, allowing the supplier to receive the funds two days after the buyer approves its invoices, dramatically reducing the traditional turnaround time for these suppliers to get paid; hence, lowering its DSO. In addition, the buyer can also benefit from supply chain finance – reverse factoring by extending payment terms with the supplier; while the bank provides the capital to bridge the funding gap. This, in turn, allows the buyer to improve its DPO.

Moreover, the rise of open account transactions has transformed Incoterms into an important trigger point in determining the working capital management of both buyer and supplier. In long distance international transactions, the difference in lead time between EXW (Ex-Works) and DDP (Delivery Duty Paid) delivery terms can be significant. Figure 9 provides us with a concrete example to show how the selected delivery term can directly influence the DIO of the supplier. This DIO improvement will have a major bearing on the cash-to-cash cycle of the supplier. Moreover, Scenario 2 offers us the chance to examine how the modification from DDP to FCA will not affect the buyer's DPO. Nevertheless, the DIO of the buyer can decrease depending on the cost of

goods sold, which the buyer is able to decrease by receiving a sourcing discount from the seller.

From the above explanation, we see that the use of Incoterms and supply chain finance discretely can help improve the cash-to-cash cycle of buyer and supplier. For instance, the implementation of supply chain finance – reverse factoring can directly affect the DSO of the supplier and DPO of the buyer, whereas the change in Incoterms selection will impact the DIO of both buyer and supplier. However, each option used in isolation will only bring a limited benefit to the participants. As we pointed out earlier in the thesis, we assume that a party will participate in reverse factoring arrangement only if it brings benefits to that company. Dello Iacono et al. (2015) stress that the adoption of reverse factoring is, in fact, market dynamics, where the change in factors such as interest rates, volumes of shipment and working capital goals of suppliers can influence the potential perceived benefits of these programs over time. Combining the two solutions in Incoterms selection and supply chain finance allows the parties an additional tool and greater leverage to seek the optimum scenario depending on the present market dynamics. This principle should help improve the overall adoption of reverse factoring among smaller foreign entities. Furthermore, it will enhance the cross-functional and supplier integration collaboration to derive a sustainable competitive advantage.

6.2 Contributions of the Research

Based on the above analysis, this study contains many relevant contributions to Beta. Certainly, we can see that the combination of globalization, the increased use of open account transactions and pressure from customers to extend payment terms result in the deterioration of the cash-to-cash cycle for suppliers, especially for those that are located abroad with a long transit time. As mentioned in the literature review, with the rise in open account transactions where suppliers will be paid only on or after the delivery of goods, Incoterms have become an important trigger point in determining the cash flow of buyer and supplier. Subject to the volume and value of the shipment, the use of delivery Incoterms such as Group D delivery terms in long-range transportation where the seller pays for all logistical costs in advance, could potentially lock up a significant sum of their working capital in freight and duties costs (Gardner, 2012).

In other words, there is a strong link between Incoterms selection, supply chain finance, and working capital management, and this research should help increase awareness of the importance of Incoterms in organizations. SCM involves cross-functional groups collaborating in purchasing, manufacturing production, logistics distribution, and the promotion of goods to ultimately satisfy a demand. Managers should actively work toward promoting collaboration both within and outside the organization. The elimination of the silos within the supply chain along with the adoption of advanced technologies are two key elements to the continuous evolution of SCM and financial SCM in an organization. During the implementation of a supply chain finance program, the company should treat the initiative as strategic means to enhance the buyer-supplier relationship, a mechanism to provide additional funding options to the suppliers to strengthen the entire supply chain, rather than treating it as a tool to improve its own days payable outstanding. Within the scope of global supply chain management, we need to recognize that there is a trade-off on each decision a company makes, and we should look at all decisions with a greater perspective in order to determine the long term sustainable benefits. Moreover, it has been identified from the results of our survey that habit play an important role and cause the company to behave irrationally during contract negotiations. As a result, it is generally best practice to re-evaluate the existing Incoterms selection annually or every two years to account for accurate modelling. Understanding the importance of the Incoterms selection and unrelenting collaboration with related firms leads to the optimization of the company's cash-to-cash cycle, to offer a sustainable supply chain finance program that will provide Beta with a viable long-term competitive edge going forward.

6.3 Limitations and Risks of our Model

The results generated by this research are specific to the pharmaceutical manufacturing entity. Other sectors such as aerospace or automotive industries may have other factors to consider such as the intensity of competition and government regulations. As pointed out in the research methodology chapter, because this is a single case study, sometimes it is hard to draw conclusive validation. In addition, the questionnaire samples have been limited, which presents another challenge to drawing

conclusions. Nevertheless, by using a single case study mixed methods approach that utilized both the quantitative and qualitative data analysis, we were able to enhance the reliability and validity of the research.

Our research revolves around the Incoterms by ICC, and due to the differences in interpretations it might be difficult to draw the same conclusion with American Incoterms by the U.S. Chamber of Commerce. Another limitation of our research could be that given our situation where our case company only deals with internal sales affiliates, we only look at the upstream sourcing for Beta, but we didn't look at the use of Incoterms selection and supply chain finance in the export and distribution perspective to see if the same conclusions apply.

Like any other model, our model has risks; any dramatic change in the variables will alter our research findings. Our model is based on certain assumptions, such as the speed of transportation, the shipping and handling time of a transoceanic shipment, the interest rate and the relative fee for supply chain finance, which directly impact the calculation of the transit time and total cost of ocean transport. For example, presently there is a trend for vessels to slow down to reduce oil consumption, but this change negatively affects the transit time of the goods. With globalization, more and more giant cargo vessels are being put into use, but these super ships take an increasing amount of time to load and unload, which also affects the transit time of the goods. Consequently, changing transit time due to changing ship speeds or longer shipping and handling times will have a material impact on the total supply chain cost and attainable benefits of our model. From the supply chain finance perspective, a widening of the overall transit time will likely increase the cash flow costs of both the buyer and supplier.

Changing the value of the shipments and the rate of capital may also potentially affect the Incoterms selection and supply chain finance implementation process. In terms of the market dynamic, based on our scenarios, we are using the latest LIBRO rate, which is generally lower than the prime rate in North America. However, if the two rates converge and the LIBRO rate rises to a point where it reduces or eliminates the benefits of reverse factoring for the supplier, then the cost savings calculations may no longer be valid. In addition, the current fee of Bank of America is 25 basis points;

however, if the bank decides to increase this charge significantly, then it will also affect our calculations.

6.4 Scope for Future Research

It would be interesting if replicated research on a larger scale is conducted by sampling other plants of the pharmaceutical companies affiliated with Beta. As mentioned, in addition to the plant in North America, the European-based pharmaceutical company has manufacturing production facilities in Europe, Asia, and Africa. Conducting a study on the overall organization would give us an enhanced view on the actual practices of other plants and the organization as a whole. In addition, a comparable study from the point of view of exporting would help to validate the results obtained in particular regarding the effectiveness of Incoterms selection and supply chain finance in enhancing the cash-to-cash cycle of the downstream supply chain. This will provide the opportunity to study the issues surrounding Incoterms selection and supply chain finance by evaluating the perspective of other stakeholders and the end-to-end supply chain viewpoint.

Moreover, it would be relevant to carry out a similar study on a European scale where the general perception of knowledge on Incoterms and supply chain finance are stronger. It would be interesting to compare practices and to analyze the differences in outcome between factors linking Incoterms selection and supply chain finance. In addition, there are many other forms of supply chain finance programs such as dynamic discounting, inventory financing and it would be interesting to see how these programs can be combined with Incoterms selection to optimize the cash-to-cash cycle of both buyer and supplier.

Appendix 1:

- **Incoterms 1936: Global Standard and a new language for export traders post WWI Era**

In 1936, the first edition of the Incoterms rules was issued. Based on the ICC corporate website, trade terms during that period involving carriage of goods revolved around maritime transportation and the first Incoterms were EXW (Ex-Works), FAS (Free Alongside Ship), FOB (Free on Board), C&F (Cost and Freight), CIF (Cost, Insurance and Freight), Ex-Ship and Ex-Quay.

Source: <https://iccwbo.org/resources-for-business/incoterms-rules/incoterms-rules-history/>

- **Incoterms 1953: The emergence of rail transportation**

In 1953, the first revision of Incoterms rules was enforced (ICC, 1953). While in Incoterms 1936, commercial trade terms were created to deal primarily with ocean transportation; Incoterms 1953 presented new Incoterms for non-maritime carriage to address the rise of locomotive shipment of goods by with the conclusion of Second World War. New trade terms such as FOR (Free on Rail)/FOT (Free on Truck) and Freight or Carriage paid to were introduced (Hien et al., 2006). Moreover, concerns were raised regarding the practicability of term FOT (Free On Truck) given that it could refer to any truck regardless if it was used in connection with rail or road transport. In fact, it was misleading because FOT (Free On Truck) only applied to train transportation. The need for a universal interpretation was conceded during the preliminary findings of the ICC (Eisemann, 1980). Incoterms 1953 had a total of 9 Incoterms which included EXW (Ex-Works), FOR (Free on Rail)/FOT (Free on Truck), FAS (Free Alongside Ship), Freight or Carriage paid to, FOB (Free on Board), C&F (Cost and Freight), CIF (Cost, Insurance, Freight), Ex-Ship and Ex-Quay.

- **Incoterms 1967: Resolved previous misinterpretations and two additional terms were created to deal with goods delivery**

Following to the publication of Incoterms 1953, the ICC indicated that it was possible at the time to establish rules to deal with the delivery of goods, yet it was decided not to include in Incoterms 1953 and only officially published as a trial in Incoterms 1976

(Eisemann, 1980). Two new commercial terms, DAF (Delivery at frontier) and DDP (Delivery Duties Paid), were added to incorporate the delivery of merchandises where the risks and costs remain with the selling party further along the route (Coetzee, 2010). At this point, there were 11 Incoterms, with six dealing with maritime trades, two for rails transportation, two focusing for the actual delivery of goods and Ex-Works. In addition, ICC elected to actively advertise their interpretation of international sales terms as opposed to other systems used during that period with the addition of «country of expedition» and «charges», definitions which helped simplified the actual interpretations which were lacking from the previous editions (Hien et al., 2006). In return, this led to the correction of misinterpretations of the previous versions while helping Incoterms to become much more comprehensive to the actual industry practice.

- **Incoterms 1976: The adoption of air transit**

In 1976, the fourth edition of Incoterms was introduced aim at addressing the opportunity created with the increasing popular usage of air shipment (Coetzee, 2010). This revision included the new trade term FOB Airport (Free on Board Airport) in order to address confusion surrounding the term FOB (Free on Board) by signifying the exact mode of transport. The introduction of FOB Airport (Free on Board Airport) was in response to the confusion arising from the original FOB (Free on Board) Incoterm. With ocean freight, the passing of the goods over the ship's rail implied the transfer of risk from the vendor to the purchaser. Conversely, there is no ship's rail within an airplane, thus a new Incoterm was needed to assign the delivering to the air carrier as the point where the transfer of risk occurred. The creation of FOB Airport (Free on Board Airport) is example where the development of a new international means of transportation demanded innovative term to reflect changes in global trade practices (Eisemann, 1980). With a total of 12 Incoterms launched so far covering the maritime, land and air trades, Incoterms have finally become the standardize commerce trade terms that ICC envisioned almost 50 years prior to its initial creation.

- **Incoterms 1980: Mass acceptance of container shipment**

The adoption of containerization revolutionized global freight transport and stimulated the growth of the globalization (Bernhofen et al., 2016). The amendments of Incoterms 1980 included the introduction of FRC (Free Carrier-Named at Point) and CIP (Carriage and Insurance Paid To) as necessitated with the rise of container revolution to deal with modifications in transportation practices and new documentation methods (Coetzee, 2010; Ramberg, 2011). With the revised terms, the obligations of seller are deemed to be fulfilled when the goods arrived into the custody of the carrier at the named point rather than at the ship's rail (ICC, 1980). The growth of containers cargo resulted in merchandises not actually being delivered at the ship's side of the vessel but instead at a specific location on-shore (Cheng & Cheng, 1986). This is based on the same principle similar to FOB Airport (Free on Board Airport), the relevant point for the risk of loss or damage transfer would be the point of handling over the goods to the carrier.

Incoterms are ever-evolving, however with a total of 14 Incoterms to choose from, it became harder to understand and to interpret, which is the major shortcoming of Incoterm 1980 (Hein et al., 2006).

- **Incoterms 1990: The emergence of EDI**

Till now, Incoterms 1967, Incoterms 1976 and Incoterms 1980 were merely amendments to Incoterms 1953. One of the main reasons for Incoterms 1990 revision was the desire to adapt terms to the increasing use of Electronic Data Interchange (EDI) (Gabriel, 1999). The newest version of Incoterms ensured that the buyer possessed the same legal position when dealing with EDI messages as equivalent to an original bill of lading from the seller. Moreover, by simplifying the (Free Carrier) trade term to a fixed delivery point and expanding its usage to cover different modes of transportation; rules created for specific modes such as FOR (Free on Rail), FOT (Free on Truck) and FOA (Free on Board Airport) were no longer needed (Ramberg, 2011). Additionally, 3 more commerce terms with respect to the delivery of goods were added, DES (Delivered Ex-Ship), DEQ (Delivered Ex-Quay) and DDU(Delivered Duty Unpaid); while Ex-Ship and Ex-Quay were removed to enhance clarification and alignment.

- **Incoterms 2000: Intermodal & revised customs clearance**

In Incoterms 2000, there were numerous changes made to adapt to the growing trend of intermodal transporting. For instance, there were as many as seven different modes of shipping in Incoterms 1990; while the term FCA (Free Carrier) under Incoterms 2000, now has a sole application for any mode of transportation which made Incoterms as a whole far clearer and easier to use (Biedermann, 1999). According to (Reynolds, 2004), it was for this very same reason that Incoterms 2000 has become the logical replacement to Uniform Commercial Code (UCC), the U.S. equivalent version of trade terms, given its simplicity and practicability. Under the new Incoterms, what matters was no longer the mode of transport selected, but which party completed which part of the voyage and the exact point of delivery (Freudmann, 1999).

Another modification made to Incoterms 2000 was the allocation of loading and unloading risks and costs combination under Free Carrier Seller's Place terms where significant amount of confusions were seen in the older versions (Jolivet, 2003). If the designed delivery location was at the seller, then the seller will load the goods, otherwise once the products arrived to the buyer's appointed carrier, the seller's responsibility ends (Biederman, 1999). In addition, the latest Incoterms revision also contained some significant reversal of responsibilities for customs clearance between buyer and seller under the "License, Authorizations and Formalities" section of FAS and DEQ (Ramberg, 2008). Under Incoterms 2000, by choosing the FAS term export obligation became the seller's responsibility as opposed to the customer (Gooley, 2000). At the same time, with DEQ incoterm, the buyer was responsible for customs clearance, including paying for duties and taxes (Freudmann, 1999). According to (Ramberg, 2008), the new Incoterms are designed to be more in sync with U.N. Convention on Contracts dealing with International Sales of Goods as both buyer and seller were responsible for clearance and compliance with government regulations in their home countries which align with actual practice.

With the latest modification, Incoterms 2000 had 13 Incoterms in total which included EXW (Ex-Works), FCA (Free Carrier at name point), FAS (Free Alongside Ship), FOB (Free on Board), CFR (Cost and Freight), CIF (Cost Insurance and Freight), CPT

(Carriage Paid to), CIP (Carriage and Insurance Paid to), DAF (Delivered at Frontier), DES (Delivered Ex-Ship), DEQ (Delivered Ex-Quay), DDU (Delivered Duty Unpaid) and DDP (Delivery Duty Paid).

- **Incoterms 2010: Modernize, Collaboration & Continuous Improvement**

Incoterms 2010 are the most current edition of the rules to date and the new version will be more convenience for both international and domestic traders (Reynolds, 2010). A slight adjustments had been made in regards to the risk transfer from seller to buyer for FOB (Free on Board), CFR (Cost and Freight) and CIF (Carriage Insurance and Freight) (Ramberg, 2011). For example, when using FOB (Free on Board) in maritime transportation, the vendor's obligations must cover until the containers have successfully been loaded onto the ship, instead of simply crossing the ship's rail of the port (Reynolds, 2011). Furthermore, packaging materials must now not only be provided when using FOB (Free on Board) rule, but the seller must also be assembled onto the merchandises prior to shipping (Ramberg, 2011).

An official section for Terminal Handling Charges (THC) was also incorporated under Incoterms 2010 to ratify the previous problem of misinformed buyers of paying handling costs in terminals twice (Casuccio, 2011). Furthermore, the new Incoterms 2010 also impose a progressive collaboration initiative among buyers and sellers, to cooperate on information sharing and platform to streamline string sales transactions (Malfliet, 2011).

According to ICC (2010), the total number of Incoterms reduced from 13 to 11 with the consolidating the responsibilities of DAF (Delivered at Frontier), DES (Delivered Ex Ship) and DDU (Delivered Duty Unpaid) into a new DAP (Delivered at Place) term. In addition, the previous term DEQ (Delivered Ex Quay) had also been revised to accommodate all modes of transportation as DAT (Delivered at Terminal) where the delivery requirement is deemed respected once the goods are made available to the buyer and are unloaded at any agreed terminal (Reynolds, 2011). The creation of the new DAT (Delivered at Terminal) and DAP (Delivered at Place) rules were important where all risks were assumed by the vendor until the place of delivery (Reynolds, 2011). Our current business settings necessitated the continuous evolutions of Incoterms (Barron, 2011).

Appendix 2 : Questionnaires

1	Employee of Finance	11th April, 2017
2	Employee of Purchasing	18th April, 2017
3	Employee of Supply Chain	27th April, 2017
4	Employee of Finance	6th June, 2017
5	Employee of Supply Chain	14th June, 2017
6	Employee of Supplier	20th June, 2017
7	SCF Expert	23rd June, 2017
8	Employee of Transporter	5th July, 2017
9	Employee of Purchasing	13th July, 2017
10	Employee of Supply Chain	26th July 2017

Appendix 3: Research Questionnaire

Questionnaire Consent Form

Research project title: The impact of Incoterms Selection and Supply Chain Finance on the Working Capital of a Company: A case study analysis

Brief description of the research project:

This research focuses on the dynamic usage of Incoterms. More specifically, this research explores a number of factors that could influence their choices and its corresponding supply chain finance performance. The results of this study can be relevance in several respects. First, they will improve knowledge on the matter. Second, the results will not only allow the managers of organization to understand the importance of the Incoterms but also to know how to select them adequately. Finally, the results will allow the writing of a dissertation of M.Sc. and the possible publication of one or several articles of research. As part of this study, you are invited to complete the research questionnaire, which we estimate should take approximately 25 to 30 minutes duration. We don't anticipate that there are any risks associated with your participation, but you have the right to stop the questionnaire session or withdraw from the research at any time.

Thank you for agreeing to participate as part of the above research project. Ethical procedures for academic research undertaken within HEC Montreal require that participants explicitly agree to being questioned and how the information contained in their questionnaires will be used. This consent form is necessary for us to ensure that you understand the purpose of your involvement and that you agree to the conditions of your participation. Would you therefore read the accompanying **information sheet** and then sign this form to certify that you approve the following:

1. I am voluntarily taking part in this project. I understand that I don't have to take part, and I can stop the questionnaire session at any time;
2. The transcribed questionnaire or extracts from it may be used as described above;
3. I have read the information sheet;
4. I don't expect to receive any benefit or payment for my participation;
5. I can request a copy of the transcript of my questionnaire and may make edits I feel necessary to ensure the effectiveness of any agreement made about confidentiality;
6. I have been able to ask any questions I might have, and I understand that I am free to contact the researcher with any questions I may have in the future.

Printed Name

Participants Signature

Date

Researchers Signature

Date

Contact Information

This research has been reviewed and approved by HEC Montreal University Research Ethics Board. If you have any further questions or concerns about this study, please contact:

Principal Researcher: Stewart Soh, M.Sc. Student in Global Supply Chain Management at HEC Montreal,
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Thesis Supervisor: André Tchokogué, Associate Professor, Department of Operations and Logistics Management at HEC Montreal,
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Research Questionnaire

Research project:

The impact of Incoterms Selection and Supply Chain Finance on the Working Capital of a Company: A case study analysis

Presented by:

Stewart Soh
M.Sc. candidate in Global Supply Chain Management

Under the directive of:

André Tchokogué
Associate Professor

Section 2: Choosing the appropriate Incoterms in international trades:

2.1-1 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, should managers take into account his/her own international experience dealing in that country as well as the organization's international expertise?

Strongly Disagree

Strongly Agree



Do managers of a supplier/customer usually take into account their international experience as well as the organization's international expertise during Incoterms selection? (Yes/No)

In Canada:

In U.S.:

--	--

In the rest of the world (Example: European and Asian organizations)

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2.1-2 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, should managers take into account the mode of transportation and the transportation costs of the shipment?

Strongly Disagree

Strongly Agree



Do managers of a supplier/customer usually take into account the mode of transportation and the transportation costs of the shipment during Incoterms selection? (Yes/No)

In Canada:

In U.S.:

--	--

In the rest of the world (Example: European and Asian organizations)

--

2.1-3 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, should managers take into account the total shipment value of the goods?

Strongly Disagree

Strongly Agree



Do managers of a supplier/customer usually take into account the total shipment value of the goods during Incoterms selection? (Yes/No)

In Canada:

In U.S.:

--	--

In the rest of the world (Example: European and Asian organizations)

--

2.1-4 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, should managers take into account the characteristics of the counterparty (the ability and willingness of the supplier to collaborate)?

Strongly Disagree

Strongly Agree



Do managers of a supplier/customer usually take into account the characteristics of the counterparty during Incoterms selection? (Yes/No)

In Canada:

In U.S.:

--	--

In the rest of the world (Example: European and Asian organizations)

--

2.1-5 In your opinion, managers should re-evaluate the Incoterms selection with a respective supplier/customer in a systematic time-frame?

Weekly

Monthly

Quarterly

Semi-annually

Annually

2 years

5 years

Not necessary



Do managers of a supplier/customer usually re-evaluate the Incoterms selection in a systematic time-frame? (Yes/No)

In Canada:

In U.S.:

--	--

In the rest of the world (Example: European and Asian organizations)

--

2.1-6 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, should managers take into account the reliability of the counterparty (Will the supplier be able to honor the Incoterm that was chosen in a timely manner)?

Strongly Disagree

Strongly Agree



Do managers of a supplier/customer usually take into account the reliability of the counterparty during Incoterms selection? (Yes/No)

In Canada:

In U.S.:

--	--

In the rest of the world (Example: European and Asian organizations)

--

2.1-7 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, should managers take into account the negotiation power of the counterparty?

Strongly Disagree

Strongly Agree



Do managers of a supplier/customer usually take into account the negotiation power of the counterparty during Incoterms selection? (Yes/No)

In Canada:

In U.S.:

--	--

In the rest of the world (Example: European and Asian organizations)

--

2.1-8 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, should managers take into account the transportation distance between the exporting/importing country?

Strongly Disagree

Strongly Agree



Do managers of a supplier/customer usually take into account the distance of both the exporting/importing country during Incoterms selection? (Yes/No)

In Canada:

In U.S.:

--	--

In the rest of the world (Example: European and Asian organizations)

--

2.1-9 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, should managers take into account the financial resources (working capital) of its organization?

Strongly Disagree

Strongly Agree



Do managers of a supplier/customer usually take into account the financial resources (working capital) of its organization during Incoterms selection? (Yes/No)

In Canada:

In U.S.:

--	--

In the rest of the world (Example: European and Asian organizations)

--

2.1-10 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, should managers take into account the transit time between the exporting/importing country?

Strongly Disagree

Strongly Agree



Do managers of a supplier/customer usually take into account the transit time between the exporting/importing country during Incoterms selection? (Yes/No)

In Canada:

In U.S.:

--	--

In the rest of the world (Example: European and Asian organizations)

--

2.1-11 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, what other factors should managers consider when deciding on the choice of Incoterms?

--

Section 3: Incoterms Selection & Opportunity:

3.1-1 Within your organization, at what regularity are Incoterms being used?

- Incoterms are used in all our contracts negotiation.
- Incoterms are used in around half of all our contracts negotiation.
- Incoterms are used on an ad-hoc basis in our contracts negotiation.
- Incoterms are never used in any of our contracts negotiations.

3.1-2 If Incoterms are used during your contract negotiations, who makes the Incoterms decisions?

- Internally by the Purchasing department
- Internally by the Supply Chain and Logistics department
- Internally by the Finance department
- Externally by the customers
- Externally by the suppliers
- Externally by the transportation service provider
- Externally by the third party logistics provider
- Not applicable

If you answered (externally), please explain why the decision on the choice of Incoterms is not made by staffs within the organization?

3.1-3 In your organization, which types of Incoterms are practiced for contract negotiations?

- Incoterms by the International Chamber of Commerce (EXW, FOB, CIF, DDP, etc.)
- Trade terms by the U.S. Chamber of Commerce RAFTD (Revised American Foreign Trade Definitions)
- Both
- Others, please specify:
- Not applicable

The following questions strictly apply to the Incoterms by the International Chamber of Commerce:

3.1-4 In your opinion, how would you rate the Incoterms knowledge of employees in your organization?
(Employees in the Purchasing, Supply Chain, Logistics and Finance departments)

Strongly Disagree Strongly Agree



3.1-5 In your opinion, how would you rate the Incoterms knowledge of employees in your department?

Strongly Disagree Strongly Agree



3.1-6 In your opinion, how would you rate the Incoterms knowledge of other competitors in your industry?

Strongly Disagree Strongly Agree



3.1-7 In your opinion, how important is Incoterms to your organization in terms of its contracts negotiation?

Strongly Disagree Strongly Agree



3.1-8 In your opinion, how important is Incoterms to your competitors in terms of their contracts negotiation?

Strongly Disagree Strongly Agree



3.1-9 In your opinion, which Incoterms selection are the top three most frequently used for contracts negotiation in your industry?



3.1-10 In your opinion, what are the future challenges and issues in regards to Incoterms in Canada/the rest of the world?

3.1-11 In your opinion, what are the difficulties and problems related to the practical use of incoterms in Canada/the rest of the world during contract negotiation?

3.1-12 In your opinion, are there any area you may recommend for future studies on Incoterms?

Section 4: Supply Chain Finance Performance

4.1-1 In your opinion, is successful working capital management important to the overall Supply Chain Finance performance of an organization?

Strongly Disagree Strongly Agree



4.1-2 In your opinion, is successful communication and coordination between departments within an organization (Purchasing, Logistics, Supply Chain, Warehouse, Finance & Account Receivable/Payable) and with external stakeholders important factor for superior financial performance?

Strongly Disagree Strongly Agree



4.1-3 In your opinion, which of the following Key Performance Indicators (KPIs) are most effective in evaluating the Supply Chain Finance performance of an organization?

Please circle the top five most appropriate KPIs:

Net Working Capital %	Operating Cash Flow	Current Ratio	EBITDA Margin
Quick Ratio	Acid Test	Quick Ratio/Acid Test	Debt/Equity Ratio
Day Payable Outstanding (DPO)	Day Sales Outstanding (DSO)	Day Inventory Outstanding (DIO)	Cash-to-Cash Cycle (C2C)
Return on Investment	Return on Supply Chain fixed assets	Return on Working Capital	Interest Expense/Avg Total Debt
Return on Equity	Net Profit Margin	Gross Profit Margin	Payment Error Rate

Others, please specify:

4.1-4 In your opinion, is the Transfer of Ownership/Title of Transfer an important factor to determine during contract negotiation?

Strongly Disagree Strongly Agree

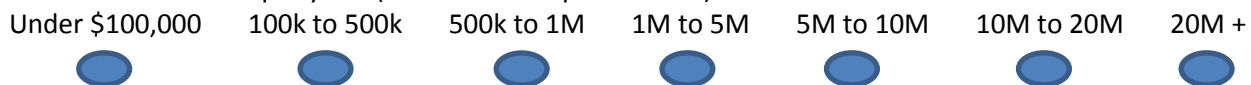


4.1-5 In your organization, is the Transfer of Ownership the primary factor which triggers payments from buyer to supplier in a standard contract? (Yes/No)

If not, please specify:

4.1-6 In your opinion, what needs to be the minimum total shipment value of goods prior to the successful implementation of Supply Chain Finance program between supplier and customer?

Level of transactions per year: (Can have multiple answers)



4.1-11 In your opinion, is the capital intensiveness of the industry/sector an important factor to consider during payment structure negotiation? (Invoice payment Net 30, Net 60, Net 90 and etc.)

Strongly Disagree

Strongly Agree



4.1-12 In your opinion, is the credit rating of the supplier versus customer (difference in interest rate between what the party with a stronger credit rating to the weaker one) an important factor to consider during payment structure negotiation? (Invoice payment Net 30, Net 60, Net 90 and etc.)

Strongly Disagree

Strongly Agree



4.1-13 In your opinion, how important does technology play in improving the flows of payments between supplier/customer? (Accuracy, Security & User-friendliness)

Strongly Disagree

Strongly Agree



4.1-14 In your opinion, is exchange rate control an important consideration during contract negotiation for international trades?

Strongly Disagree

Strongly Agree



4.1-15 For your organization, what percentage of negotiated contracts are denominated in USD?

4.1-16 For your organization, what percentage of your suppliers/customers are located in the U.S. or reside in countries that use USD as their local currencies?

4.1-17 In your opinion, will Supply Chain Finance program be more beneficial with long or short lead-time transportation? (Proximity of suppliers vs. mode of transportation)

4.1-18 In your opinion, what is the typical turnaround time for the buyer to pay its suppliers once all delivery obligations have been fulfilled? Is this timeframe acceptable or is there a potential for improvement?

4.1-19 In your opinion, what do you think of the relevancy of this research?

Appendix 4: Research Questionnaire Results

Section 1: International Chamber of Commerce (ICC) Incoterms 2010 relevancy in international commerce:

1.1 In your opinion, for Canadian/U.S./E.U. suppliers/customers, the choice of Incoterms is generally made internally by the managers of the organization or externally by the carrier or a third party? In case where there is a mix of both, please indicate their relative proportion.

Respondents report Internally 7 out of 10 responses, including all employees of Beta
Mixed of both internally and externally for transportation service provider and API suppliers

1.2 In your opinion, how would you rate the Incoterms proficiency of suppliers/customers of Canadian firms?
In Canada

One respondent gave 3 on 10, three gave 5 on 10, 6 on 10, and 8 on 10 respectively for a total score of 60 points.

In U.S.

Four respondents gave 5 on 10. Then three each gave 6 on 10 and 8 on 10 respectively for a total score of 62 points.

In the rest of the world (Example: European and Asian organizations)

Two respondents gave 6 on 10, three gave 7 on 10. Then three gave 8 out of 10 and two gave 9 out of 10 for a total score of 75 points.

1.3 In your opinion, what importance of Incoterms given by Canadian companies during contract negotiations?

One respondent gave 4 out of 10. Four respondents gave 5 on 10, one gave 6 on 10 and 7 out of 10 respectively. One the other hand, three participants gave 10 out of 10 for a total score of 67 points.

1.4 In your opinion, what importance of Incoterms given by foreign companies during contract negotiations?

One respondent gave 5 on 10, while two respondents gave 6 on 10 and 7 on 10 respectively. Then four gave 8 out of 10 and one respondent gave 10 out of 10 for a total score of 73 points.

1.5 In your opinion, which is the most widely used Incoterms in Canada and around the world in cross-border trades?

In Canada

Overall, the respondents feel that EXW, FOB and DDP are the most commonly used ICC Incoterms in Canada.

In U.S.

Overall, the respondents feel that EXW and FOB are the most commonly used ICC Incoterms in U.S.

In the rest of the world (Example: European and Asian organizations)

Overall, the respondents feel that EXW, FOB and CFR are the most commonly used ICC Incoterms in the rest of the world.

Section 2: Choosing the appropriate Incoterms in international trades:

2.1-1 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, should managers take into account his/her own international experience dealing in that country as well as the organization's international expertise?

One respondent gave 5 on 10, while three respondents gave 7 on 10. Two participants gave 8 out of 10, three gave 9 out of 10 and one respondent gave 10 out of 10 for a total score of 79 points.

Do managers of a supplier/customer usually take into account their international experience as well as the organization's international expertise during Incoterms selection? (Yes/No)

In Canada:

In U.S.:

Sometime

Sometime

In the rest of the world (Example: European and Asian organizations)

Most often

2.1-2 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, should managers take into account the mode of transportation and the transportation costs of the shipment?

One respondent gave 4 on 10, while another one gave 8 on 10. Three participants gave 9 out of 10 and 5 respondents gave 10 out of 10 for a total score of 89 points.

Do managers of a supplier/customer usually take into account the mode of transportation and the transportation costs of the shipment during Incoterms selection? (Yes/No)

In Canada:

In U.S.:

Most often

Most often

In the rest of the world (Example: European and Asian organizations)

Almost always

2.1-3 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, should managers take into account the total shipment value of the goods?

One respondent each gave 5 on 10 and 8 on 10. Two participants gave 9 out of 10 and the remaining gave 10 out of 10 for a total score of 91 points.

Do managers of a supplier/customer usually take into account the total shipment value of the goods during Incoterms selection? (Yes/No)

In Canada:

In U.S.:

Most often

Most often

In the rest of the world (Example: European and Asian organizations)

Almost always

2.1-4 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, should managers take into account the characteristics of the counterparty (the ability and willingness of the supplier to collaborate)?

One respondent gave 8 on 10, while four respondents gave 9 on 10. A total of five respondents gave 10 out of 10 for a total score of 94 points.

Do managers of a supplier/customer usually take into account the characteristics of the counterparty during Incoterms selection? (Yes/No)

In Canada:

In U.S.:

Almost always

Almost always

In the rest of the world (Example: European and Asian organizations)

Almost always

2.1-5 In your opinion, managers should re-evaluate the Incoterms selection with a respective supplier/customer in a systematic time-frame?

The majority of responses revolve around annually or every two years

Do managers of a supplier/customer usually re-evaluate the Incoterms selection in a systematic time-frame? (Yes/No)

In Canada:

In U.S.:

Not at all

Not at all

In the rest of the world (Example: European and Asian organizations)

Sometime, but not always

2.1-6 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, should managers take into account the reliability of the counterparty (Will the supplier be able to honor the Incoterm that was chosen in a timely manner)?

One respondent gave 7 on 10 and two gave 8 on 10. A total of seven participants gave 9 out of 10 for a total score of 86 points.

Do managers of a supplier/customer usually take into account the reliability of the counterparty during Incoterms selection? (Yes/No)

In Canada:

In U.S.:

Most often

More than likely

In the rest of the world (Example: European and Asian organizations)

Almost always

2.1-7 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, should managers take into account the negotiation power of the counterparty?

One respondent gave 7 on 10 and two gave 8 on 10. Six participants gave 9 out of 10; while the remaining one gave 10 out of 10 for a total score of 87 points.

Do managers of a supplier/customer usually take into account the negotiation power of the counterparty during Incoterms selection? (Yes/No)

In Canada:

In U.S.:

Most often

Most often

In the rest of the world (Example: European and Asian organizations)

Almost always

2.1-8 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, should managers take into account the transportation distance between the exporting/importing country?

Four respondents gave 7 on 10 and three gave 8 on 10. Then three participants gave 9 out of 10 for a total score of 79 points.

Do managers of a supplier/customer usually take into account the distance of both the exporting/importing country during Incoterms selection? (Yes/No)

In Canada:

In U.S.:

Sometime

More than likely

In the rest of the world (Example: European and Asian organizations)

Most often

2.1-9 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, should managers take into account the financial resources (working capital) of its organization?

Three respondents gave 7 on 10 and 9 on 10. Then two participants each gave 8 on 10 and 10 on 10 respectively for a total score of 84 points.

Do managers of a supplier/customer usually take into account the financial resources (working capital) of its organization during Incoterms selection? (Yes/No)

In Canada:

In U.S.:

Sometime

Sometime

In the rest of the world (Example: European and Asian organizations)

Most often

2.1-10 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, should managers take into account the transit time between the exporting/importing country?

Two respondents gave 7 on 10 and three gave 8 on 10. While five participants gave 10 out of 10 for a total score of 87 points.

Do managers of a supplier/customer usually take into account the transit time between the exporting/importing country during Incoterms selection? (Yes/No)

In Canada:

In U.S.:

Most often

Sometime

In the rest of the world (Example: European and Asian organizations)

Most often

2.1-11 In your opinion, when evaluating the most appropriate Incoterms with a respective supplier/customer, what other factors should managers consider when deciding on the choice of Incoterms?

A number of respondents suggest company strategy, end-to-end profitability and globalization, etc...

Section 3: Incoterms Selection & Opportunity:

3.1-1 Within your organization, at what regularity are Incoterms being used?

Most respondents suggested that Incoterms are used in all contracts negotiation, only two of the 10 participants are not too sure.

3.1-2 If Incoterms are used during your contract negotiations, who makes the Incoterms decisions?

A combination of internally by the Purchasing department, externally by customers and suppliers

If you answered (externally), please explain why the decision on the choice of Incoterms is not made by staffs within the organization?

Due to business needs

3.1-3 In your organization, which types of Incoterms are practiced for contract negotiations?

Almost all participants claimed Incoterms by ICC is what they practice with the exception of one that sometime use RAFTD for its clients

The following questions strictly apply to the Incoterms by the International Chamber of Commerce:

3.1-4 In your opinion, how would you rate the Incoterms knowledge of employees in your organization? (Employees in the Purchasing, Supply Chain, Logistics and Finance departments)

3.1-5 In your opinion, how would you rate the Incoterms knowledge of employees in your department?

Employees from different departments of Beta responded differently, but generally they recognized there is a need to be proficient in this area. The Purchasing and Logistics staffs feel their Incoterms knowledge are adequate; while the Supply Chain and Finance feel there is room for improvement. The only one truly believe he/she is an expert is from the transportation service provider.

3.1-6 In your opinion, how would you rate the Incoterms knowledge of other competitors in your industry?

Overall, with the exception of the transportation service provider and supply chain finance experts, the respondents believe that other competitors in the industry posses greater Incoterms knowledge than themselves

3.1-7 In your opinion, how important is Incoterms to your organization in terms of its contracts negotiation?

Four respondents gave 5 on 10 and one each gave 4 on 10, 6 on 10 and 7 on 10. Then three participants gave 10 out of 10 for a total score of 67 points.

3.1-8 In your opinion, how important is Incoterms to your competitors in terms of their contracts negotiation?

Almost unanimously the participants believe their competitors pay greater attention to Incoterms selection during contract negotiations.

3.1-9 In your opinion, which Incoterms selection are the top three most frequently used for contracts negotiation in your industry?

With the exception of the two supply chain finance experts, the respondents feel that EXW, FOB and DDP are the most commonly used ICC Incoterms.

3.1-10 In your opinion, what are the future challenges and issues in regard to Incoterms in Canada/the rest of the world?

A number of respondents referred the NAFTA negotiation, environment concerns, the price of oil as some of the challenges and issues in regard to Incoterms in Canada and the rest of the world.

3.1-11 In your opinion, what are the difficulties and problems related to the practical use of incoterms in Canada/the rest of the world during contract negotiation?

It takes tremendous efforts and time to become someone who is proficient in this domain. In addition, respondents also feel that the company's strategy and culture also steer the topic of knowledge and importance of Incoterms. In addition, the companies must be willing to invest into their team members trainings.

3.1-12 In your opinion, are there any area you may recommend for future studies on Incoterms?

Some respondents feel that Incoterms can potentially benefit the green initiative, as well as the renewable energy in transportation

Section 4: Supply Chain Finance Performance

4.1-1 In your opinion, is successful working capital management important to the overall Supply Chain Finance performance of an organization?

Two respondents gave 8 on 10, four gave 9 on 10, while four participants gave 10 out of 10 for a total score of 92 points.

4.1-2 In your opinion, is successful communication and coordination between departments within an organization (Purchasing, Logistics, Supply Chain, Warehouse, Finance & Account Receivable/Payable) and with external stakeholders important factor for superior financial performance?

Four respondents gave 9 on 10 and the remaining gave 10 on 10 for a total score of 96 points

4.1-3 In your opinion, which of the following Key Performance Indicators (KPIs) are most effective in evaluating the Supply Chain Finance performance of an organization?

Please circle the top five most appropriate KPIs:

Net Working Capital %	Operating Cash Flow	Current Ratio	EBITDA Margin
Quick Ratio	Acid Test	Quick Ratio/Acid Test	Debt/Equity Ratio
Day Payable Outstanding (DPO)	Day Sales Outstanding (DSO)	Day Inventory Outstanding (DIO)	Cash-to-Cash Cycle (C2C)
Return on Investment	Return on Supply Chain fixed assets	Return on Working Capital	Interest Expense/Avg Total Debt
Return on Equity	Net Profit Margin	Gross Profit Margin	Payment Error Rate

Others, please specify:

The overall end-to-end profitability of the firm must be considered.

4.1-4 In your opinion, is the Transfer of Ownership/Title of Transfer an important factor to determine during contract negotiation?

Two respondents gave 7 on 10. Then six respondents gave 9 on 10; while two participants gave 10 out of 10 for a total score of 88 points.

4.1-5 In your organization, is the Transfer of Ownership the primary factor which triggers payments from buyer to supplier in a standard contract? (Yes/No)

If not, please specify:

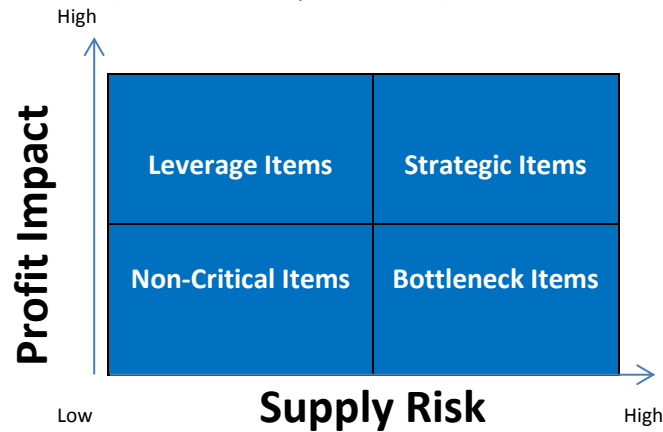
Seven out of 10 responded "Yes" that the Transfer of Ownership is the primary factor which triggers payments; while some mentioned about other payment mechanism such as letters of credit and cash in advance payment.

4.1-6 In your opinion, what needs to be the minimum total shipment value of goods prior to the successful implementation of Supply Chain Finance program between supplier and customer?

Generally, the participants believe that the transaction level need to be at least 100k to 1M in order for supply chain finance program to be implemented successfully. The supply chain finance experts believe in the lower sales level; while the API suppliers assume higher turnover is needed.

4.1-7 In your opinion, what level of integration/suppliers-buyers relationship is needed before an organization can choose to enroll into Supply Chain Finance program?

According to Kraljic Matrix : (Can have multiple answers)



Level of suppliers' importance:

Generally, the participants believe that the level of suppliers' importance need to be top 50% in order for supply chain finance program to be implemented successfully and to yield mutual benefits. The supply chain finance experts believe in greater adoption as there are additional intangible benefits from supply chain finance implementation.

Other criteria that you believe should be appropriate? (Example: Bensaou's buyer-supplier relationships)

After explaining to the participants, both the Kraljic Matrix and the Buyer-Supplier relationships by Bensaou are perceived to be useful for evaluation purposes.

4.1-8 In your organization, does habit play an important role and cause the company to retain systematically the same payment structure with all suppliers rather than to make analysis on a case-by-case basis? (Invoice payment Net 30, Net 60, Net 90 and etc.)

Three respondents gave 8 on 10 and seven respondents gave 9 on 10 for a total score of 87 points.

Does anyone else other than the purchasing managers dictate the payment structure with suppliers?

The purchasing manager and the sales manager would be the one that select the payment structure and Incoterms selection. For the transportation service provider would be the clients with inputs from their own upper managements for potential consultation.

4.1-9 In your opinion, will a more flexible payment term structure to suppliers enhance the supply chain finance performance of the buyer-supplier relationship? (Invoice payment Net 30, Net 60, Net 90 and etc.)

Two respondents gave 8 on 10 and seven respondents gave 9 on 10, as well one gave 10 on 10 for a total score of 89 points.

4.1-10 In your opinion, would an increase of the number of suppliers decrease the cost to source materials and to improve the products qualities?

Four respondents gave 3 on 10 and two respondents gave 4 on 10 and 5 on 10 respectively. In addition, one gave 6 on 10 and the other gave 8 on 10 for a total score of 44 points.

4.1-11 In your opinion, is the capital intensiveness of the industry/sector an important factor to consider during payment structure negotiation? (Invoice payment Net 30, Net 60, Net 90 and etc.)

Two respondents gave 6 on 10 and three respondents gave 8 on 10. Then 5 respondents gave 10 on 10 for a total score of 86 points.

4.1-12 In your opinion, is the credit rating of the supplier versus customer (difference in interest rate between what the party with a stronger credit rating to the weaker one) an important factor to consider during payment structure negotiation? (Invoice payment Net 30, Net 60, Net 90 and etc.)

Three respondents gave 7 on 10 and 8 on 10 respectively. While two respondents gave 9 on 10, as well two gave 10 on 10 for a total score of 83 points.

4.1-13 In your opinion, how important does technology play in improving the flows of payments between supplier/customer? (Accuracy, Security & User-friendliness)

One respondent gave 7 on 10. Then two respondents gave 8 on 10 and 9 on 10; while the remaining participants gave 10 out of 10 for a total score of 91 points.

4.1-14 In your opinion, is exchange rate control an important consideration during contract negotiation for international trades?

Similarly to importance of Incoterms, this is a topic which participants feel there is a need for improvement, but the total score right now is 52 points

4.1-15 For your organization, what percentage of negotiated contracts are denominated in USD?

The majority of participants answered between 35% to 75%

4.1-16 For your organization, what percentage of your suppliers/customers are located in the U.S. or reside in countries that use USD as their local currencies?

According to the questionnaires, it is between 25% to 60%

4.1-17 In your opinion, will Supply Chain Finance program be more beneficial with long or short lead-time transportation? (Proximity of suppliers vs. mode of transportation)

All of the participants answered long lead-time.

4.1-18 In your opinion, what is the typical turnaround time for the buyer to pay its suppliers once all delivery obligations have been fulfilled? Is this timeframe acceptable or is there a potential for improvement?

The majority of participants answered between 30 days to 94 days.

4.1-19 In your opinion, what do you think of the relevancy of this research?

All of the participants found that this research is very interesting and highly relevant.

Appendix 5 : Basel III Framework

Following the global financial crisis, topics surrounding Basel III have been much more prominent. Basel III is a set of extensive oversights refined by the twenty-eight countries members of the Basel Committee on Banking Supervision in order to avoid a repeat of the last global financial meltdown (Oracle Corporation, 2016). According to Fratianni & Pattison (2015), the Basel III pays a greater emphasis on routine stress testing on the quality of capitals and risk controlling compared to its predecessor (Basel II). The latest update was adopted in the U.S. in 2013 and subsequently introduced in the European common markets the following year (Oracle Corporation, 2016). Global Business Intelligence (2016) claims that Basel III has material impacts on Trade Finance borrowing due to the added requirement for banks to hold more capitals and to expand their compliance reporting, which lead to greater capital costs; while shrinking their potential loan portfolio by as much as eight percent. The International Chamber of Commerce Trade Registry is actively working with the Basel Committee to demonstrate that Trade Finance is low risk, low exposure global trade instruments with little capital adequacy concern, hence it should not be categorized as liability on the balance sheet (ICC Trade Register, 2016).

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