

Theoretical Foundations for Illegal Supply Chains

by

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Abstract

The subject of illegal supply chains (ISCs) is all but absent from supply chain management research. However, there is much to be gained from investigating this enigmatic and complex topic. This thesis presents propositions that outline the fundamentals for ISCs as an area of study, and reviews relevant theories for ISCs from criminology and supply chain management literature. By exploring these propositions in relation to a case study of the Sinaloa Cartel, the largest drug syndicate in the world, the aim was to verify the accuracy of the propositions so that they could be used in future research. Based on this example, it is proposed that ISCs are similar to their legal counterparts in terms of motivations, structure, and certain key strategies including agility and supply chain integration. Certain strategies are also found to be commonly held, whereas relationships are defined by individualistic rather than truly collaborative behaviours.

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“The longer you have to wait for something, the more you will appreciate it when it finally arrives. The harder you have to fight for something, the more priceless it will become once you achieve it. And the more pain you have to endure on your journey, the sweeter the arrival at your destination. All good things are worth waiting for and worth fighting for.”

– Susan Gale

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Chapter 1: Introduction – The Unexplored Side of Supply Chain Management

Supply chain management (SCM) is a discipline that is essentially as old as trade itself. The origins of SCM as we know it today are credited to the ancient Armenians of approximately 5000 BCE who, by the use of crudely constructed animal skin vessels, transported goods made of obsidian down the Euphrates to Babylon (Bernstein, 2008). While one can suppose that the focus of those supply chain pioneers was ensuring that their boats did in fact float, as transport systems improved through the ages the concerns of supply chain decision makers shifted to other practical considerations, namely speed, cost, and quality. Indeed, it is these considerations and their importance, combined with the age of globalization, which led to the formalization of SCM as a discipline roughly 7000 years later. Though SCM is a discipline rooted in pragmatics, great strides have been made over the last three decades to advance the academic theory associated with such an intrinsically practical field. This runs in contrast to the majority of other prominent social sciences (both management and non-management based), which tend to be founded on theories first and foremost. The advances made in SCM theory development since the 1980s is evidenced by the voluminous literature that now exists on the topic, which continue to be expanded upon. Yet for all the research that has been done, all the topics that have been explored, and all of the theories that have been proposed and tested, it is this author's belief that SCM as an academic study is still very much in its adolescent stages. There is considerable disagreement among SCM scholars with respect to a definition or the scope of the subject itself; too often authors fail to recognize all of the limitations of their work; some studies' conclusions are too general, too case-specific, or inconclusive; some theories presented are too esoteric and have limited or at best niche value in the "real world"; and lastly, there are subjects of great

importance to SCM practitioners that have yet to be formally recognized in the literature, let alone explored in depth (Croom, Romano, & Giannakis, 2000).

In time many of these criticisms will sort themselves out. As more scholars conduct additional research, analyze, and criticize, the quality of the theory being developed will rise. This trend can be thought of as the maturation of an academic discipline; even the most respected social sciences, such as psychology, sociology, and economics all suffered from their share of similar growing pains. However, the one concern that is not guaranteed to be addressed relates to the introduction of new or innovative topics. New ideas, particularly those of the groundbreaking variety, do not come about from studying the same topics, concepts, methodologies and data over and over (a common criticism of modern social science research). New ideas primarily originate from creative or imaginative thinking, an inclination and capability to go beyond the norms and conventions of a field by discussing something of significance that has been either overlooked or misunderstood. It is the culmination of these new ideas that makes a discipline more robust; the presence of fresh knowledge acts as a stimulus for the creation of new perspectives and theories. The exploration of new ideas also yields the benefit of ensuring that a discipline does not become conceptually stagnant. This expanded knowledge base will serve to make a discipline more relevant and applicable to the world as it is experienced, which is without a doubt a respectable goal for academics to strive towards.

The bestselling book by Levitt and Dubner, *Freakonomics* (2009), is a prime example of how progressive thinking can further an academic field. This work is based on the principle that economics is, at its core, about how people respond to incentives and disincentives. The authors challenge the traditional view in economics that incentives are purely monetary, and state that incentives can be conceptualized much more broadly so long as they can be beneficial or

detrimental to the person or persons being studied. Levitt and Dubner state that since all human decisions are made on the basis of incentives, economic theory can and should be used to understand much more than finances and market behaviours. By ascribing to such definitional framework the authors have liberated themselves to use diverse subjects such as power, effort, revenge, happiness, and even legacy as incentives. Using the described principles the authors investigate a variety of fascinating topics and questions in their various “Freakonomic” publications, including but not limited to: the similarities between real estate agents and the Ku Klux Klan, why drug dealers still live with their mothers, how a department store Santa Claus is the same as a prostitute, why suicide bombers should buy life insurance, and what makes a perfect parent. The greatest value of this work is that economists are now liberated to study a breadth of topics that previously would have been considered outside of their area of expertise.

Wholly original research such as that produced by Levitt and Dubner raises several interesting questions for SCM: to this point, what fundamental ideas have supply chain scholars failed to identify and discuss? What innovative theories remain undiscovered, and if discovered could serve as an entirely new trajectory for future research? And is there any way that we can take the established theories of the discipline, and apply them an entirely new context? Though these are the sorts of questions that require many great minds, works, and years to answer, the aim of this thesis is to take one small step towards addressing these considerations by establishing a conceptual framework for illegal supply chains.

Chapter 2: Purpose – Why Illegal Supply Chains?

An examination of the existing SCM literature shows that virtually all of the research was performed on the underlying premise that supply chains are legal entities operating with a legal purpose. The foil to legal activity is, naturally, illegal activity; similarly, the foil to legal supply chains (LSCs) would be illegal supply chains (ISCs). The research on ISCs in and of themselves is well beyond being grossly underrepresented, it simply does not exist. The extent to which the topic of illegality has been discussed in the literature is limited to how illegal activities disrupt or impact LSCs. As a result, almost nothing is known about the properties, behaviours, and dynamics of ISCs.

This conclusion is the result of an extensive review of the literature. The terms “illegal”, “illegality”, “supply”, and “supply chain(s)” were queried in logical combination(s) using six frequently used electronic management journal databases (ABI/INFORM Complete, Academic Search Complete, CBCA Complete: Business, EBSCOhost Full Text, JSTOR, and SAGE Journals), one meta-search database (Google Scholar), and even using Google itself. 50 results returned from each of these databases, 200 Google Scholar, and 200 from Google were carefully read for contents describing ISCs from a supply chain perspective. While many of these articles discuss illegal activities as a factor in the safety of what is conventionally SCM, none of these sources delve into the operations of the ISCs themselves (from anything close to a supply chain/logistics perspective). The exception to this is a single doctoral thesis, “Managing the Risk for Threats Against the Transport Network”, by Daniel Ekwall (2009). The central implication of this review is as follows: all existing supply chain research, except for Ekwall’s study, is applicable exclusively to LSCs.

From the outset it must be understood that the chief distinction between what is normally understood to be a supply chain and an ISC lies in the difficulty of the barriers that the latter faces. These barriers are created by the numerous forces that work to counter and sabotage illegal organizations and their supply chains, such as governments, the military, the police, special interest groups, and the public eye in general. Truly it is remarkable that ISCs have managed to flourish in the face of so many persistent, resourceful, and powerful adversaries.

Despite the fact that little effort has been made to truly understand ISCs, they are worthy of study for a variety of reasons:

- 1) By researching ISCs insight will be gained into the organization, strategies, and considerations of these otherwise enigmatic supply chains.
- 2) Such research fosters an understanding of traits and innovations that make ISCs so successful and tenacious. These practices may prove adaptable to a legal context, which would allow decision makers to improve the functionality of traditional supply chains.
- 3) A clearer picture of how ISCs operate will assist legal forces with disruption and counteraction efforts.
- 4) Research on ISCs will expand the SCM knowledge base and open the topic up as an area of study for those scholars who had not previously considered it.
- 5) Organized crime is well represented in popular culture and the media. Consequently, much of the general population can read about this topic and appreciate the discussion because they at least have a frame of reference. In the end this broadens the audience for this dissertation and future related works.
- 6) And last but certainly not least, the mystery and danger surrounding ISCs make the topic fun and interesting to study in its own right!

The purpose of this dissertation is to establish foundational theories for ISCs by way of review of existing literature, case study, and case analysis. These theories can then be used to guide future research efforts. This thesis also provides the first formal study of ISCs, in addition to a preliminary framework for future research on the topic. There are six research questions that are to be used to guide the subsequent exploration in this paper:

RQ1: How are illegal supply chains organized, and how do they differ from legal supply chains?

RQ2: What are the organizational theories of crime from criminology and sociology that can provide background and understanding for how ISCs operate?

RQ3: What are the important theories and themes from the current body of SCM literature that can also be used to explore the function, form, and behaviour of ISCs in relation to LSCs?

RQ4: What is the Sinaloa Cartel, and how did it come to be the “largest and most powerful criminal network in the world”?

RQ5: How is the supply chain of the Sinaloa Cartel structured and how does it operate?

RQ6: Based on the case of the Sinaloa Cartel, how accurate are the propositions from RQ1?

In terms of structure, the rest of the thesis is divided into chapters as follows. Chapter 3 details the research approach used for the creation of Chapters 4 through 8. Chapter 4 compares and contrasts the contextual differences between ISCs and LSCs, and includes a discussion about the basic ISC orientation, typology, and structure. In doing so, Chapter 4 answers RQ1, and presents some general propositions regarding ISCs that are tested in the case analysis. Chapter 5 addressed RQ2 by exploring the concept of organized crime, the criminal networks, and criminal finances within the criminology and sociology literature. These two related disciplines were selected for a literature review as they are regarded to have the most established understanding of organized criminal enterprises within academia. Chapter 6 addresses RQ3 through a literature

review of key topics in legal SCM with high applicability to organizational ISC study, namely supply chain strategy and relationships. RQ4 and RQ5 are addressed in Chapter 7 through a detailed case study of the Sinaloa Cartel. Chapter 8 of the thesis focuses on analyzing the case study, testing the propositions arising from the discussion in Chapter 4, generating new emergent propositions, and applying theories from the literature review sections to the case itself (RQ6). Chapter 9 provides conclusions for the paper, details areas for future research on ISCs, and closes with a discussion of the research limitations of the thesis. For the sake of further clarity, a table showing the chapter breakdown of the thesis and the correlating research questions can be found in Table 1.

Table 1 – Thesis Outline

Chapter	Title	Research question addressed
1	Introduction – The Unexplored Side of Supply Chain Management	
2	Purpose – Why Illegal Supply Chains?	
3	Research Approach	
4	Preliminary Propositions Regarding Illegal Supply Chains	RQ1
5	Criminological and Sociological Theories Pertaining to Illegal Supply Chains	RQ2
6	Literature Review of Key Themes in Legal Supply Chain Management	RQ3
7	Case Study: The Sinaloa Cartel and its Supply Chain	RQ4, RQ5
8	Case Analysis: The Sinaloa Cartel and its Supply Chain	RQ6
9	Conclusion and Limitations	

Chapter 3: Research Approach

3.1: Chapters 4-6

Chapter 4 is the construct of this author's expertise on the subject, and it consists mainly of theory crafting. The author has reviewed a broad range of material and studied the topic of illegal organizations and their supply chain operations as an area of research interest. This chapter is an attempt to distill the complexities of illegal supply chains into their most fundamental elements, and generate reasonable propositions for testing purposes on that basis.

The goal of Chapter 5 is to provide an overview of the relevant theories from criminology to establish the required background and context for understanding the subsequent discussion. In Chapter 6 a detailed review of the many topics included under the umbrella of supply chain strategy and relationships was performed. The intent here was to provide a complete representation of the SCM theories in order to explore the propositions, in particular P2, P3, and P4. Webster and Watson (2002) explain that a good literature review does the following: (1) creates a strong foundation for developing knowledge; (2) closes areas where an abundance of research exists; and (3) reveals areas where research is needed. This approach, along with critical evaluation of selected sources within the discussion itself, was adopted for the literature reviews in Chapter 5 and 6.

The literature review in Chapter 5 is a culmination of literature from a range of academic and credible sources, such as government reports and history reviews. As such the terms that were queried had to do with combinations of "criminology" and/or "sociology" and "organized crime", "criminal networks", and "criminal finances".

In order to conduct the literature review in Chapter 6 a similar approach as detailed in Chapter 2 was used. For 6.1 the terms "supply chain management strategy", "supply chain

strategy”, “logistics strategy”, and “transport strategy” were queried; in 6.2 the terms “supply chain management relationships” “supply chain relationships”, “supply chain relationship management”, “logistics relationship management” were searched. In these instances the same six electronic management journal databases (ABI/INFORM Complete, Academic Search Complete, CBCA Complete: Business, EBSCOhost Full Text, JSTOR, and SAGE Journals) were used in addition to Google Scholar. The search for articles was restricted to those published after 1998 to better ensure the recency of information. As a standard, for each chapter at least 10 results from each database and 40 from Google Scholar were reviewed. In cases where it was found that this standard was lacking, additional searches were performed as necessary. Abstracts of all retrieved articles were read carefully for pertinence, and when the article was determined to be of relevance it was read in detail. To better ensure comprehensiveness, the majority of included articles contained their own literature review. Sources were also selected on the basis of their prevalence within the research base and the extent to which they covered important pieces that preceded their publication.

3.2: Case Study Philosophy

The topic of the case discussion in Chapter 7 is the Sinaloa Cartel, where the emphasis is placed on the structure, operation, strategies, and relationships of its supply chain. This particular organization that deals in narcotics, money laundering, and munitions (see Chapter 4) was selected for the following reasons: (1) the Cartel is one of the largest crime syndicates globally and has only achieved its level of success due to methodical control of its supply chain activities; (2) because of the size, influence, and violence of the Cartel, it has received a lot of attention globally (especially in the US), making a great deal of information readily available; and (3) the audience of the thesis, be it the thesis committee, academics, or even the general public, will

have an easier time understanding an organization that they are familiar with because of its notoriety. Anyone who has watched the hit show *Breaking Bad* will immediately have a frame of reference for this thesis, the Sinaloa Cartel's activities were inspiration for the series.

On the case design itself: Robert Yin is widely regarded as one of the foremost experts on case study research. Since the 1980s he has published numerous seminal works on how to effectively perform and construct case studies. In many ways, he gave credibility to a research method that many previously considered to be inferior to the traditional empirical approaches. One of his most recognized works has been the *Case Study Research Design and Methods* book. This resource serves as the guiding principle for the subsequent case design and analysis.

Why a case was selected to explain and analyze ISCs requires explanation. Yin (2013) states that case studies are the favoured strategy when dealing with how and why questions. The research questions (RQ4 and RQ5) pertaining to the Sinaloa Cartel as outlined are posed as both how's and why's, which are exploratory in nature. Exploratory type questions are more concerned with operational links, rather than frequencies or incidence. This means that any topic to be probed with them will lead to more answers with a greater level of insight if not detail. Case studies also make an ideal research method when the researcher cannot influence the events or organization being studied. In this case, it is safe to assume that the Cartel is beyond experimental manipulation and direct observation. Lastly, cases are a solid approach when dealing with modern topics that possess a great deal of real-life context. The Sinaloa Cartel, as one of the largest criminal organizations of the present day whose operations remain shrouded, thereby necessitates case study. Related to this, Table 2 displays the type of research strategy one should select on the basis of research question, ability of control of events, and focus on contemporary issues.

Table 2 – Relevant Situations for Different Research Strategies

Strategy	Form of research question	Requires control over events?	Focuses on contemporary events?
Experiment	How, why	Yes	Yes
Survey	Who, what, where, how many, how much	No	Yes
Archival analysis	Who, what, where, how many, how much	No	Yes/no
History	How, why	No	No
Case study	How, why	No	Yes

Adapted from Yin (1984)

Yin (2013) states that in order to perform a case study one must first determine the (research) questions being asked. The questions in this paper were provided in Chapter 2. These questions were then used to establish the theoretical propositions (again, provided in Chapter 4), which serve as the basis for the data collection and analysis. According to Yin it is also necessary to specifically state a unit of analysis, which in this thesis is dominant organization for a given set of illegal supply chains. Specifically, the Sinaloa Cartel is the organization that will be examined. The Cartel is explored using supply chain lens, and an appropriate portion of the discussion centres on activities related to the operation of its supply chain. The time boundary for this case is from the origins of the Cartel in the 1960s through to its current existence (InSight Crime, 2015).

Yin (1984) also states that any one of the three following criteria justifies conducting a single case study instead of multiple case studies: (1) when it represents the critical case in testing a well-formulated theory; (2) when it represents an extreme or unique case; or (3) when an investigator has the opportunity to observe and analyze a phenomenon previously inaccessible

to scientific investigation. The subject of the Sinaloa Cartel in the context of ISCs meets criteria 2. The Sinaloa Cartel can be considered unique or extreme for numerous reasons that are expounded upon later, the least of all not being the sheer scope of its operations.

In order to fully describe the phenomenon of interest in a case study, Yin states that “context” must also be included. Context in case study methodology is explained as the external influences on a phenomenon, such as other organizations. To meet this guideline, the case study addresses a number of organizations affiliated with and opposing the Sinaloa Cartel. This information allows for an enhanced understanding of the Cartel’s collaborative and competitive nature, and a more comprehensive look at its supply chain properties.

3.3: Case Study Data Sources and Analysis

A case study also has the unique strength of being able to bring together a breadth of evidence to paint a picture of an event or phenomenon. Such evidence often includes primary data sources such as documents, artifacts, interviews, and direct observational studies. Undoubtedly, the phenomenon of ISCs would be well explained using such information. The reality is that the availability of this information is limited, and attempting to gather it would be at best difficult and extremely dangerous. Consequently, the decision was made to construct the case study on the Sinaloa Cartel using predominantly secondary information sources. Because of the lack of detailed pre-existing research on the Sinaloa Cartel, the ensuing case discussion draws information from a diverse range of sources, so long as they provide a unique insight or data that is unobtainable elsewhere. These sources include but are not limited to government reports, news reports, documentaries, and editorials. Any source selected, be it conventional or unconventional, was scrutinized for credibility and consistency. Yin states that this is a perfectly valid approach, especially when dealing with an exploratory topic: “one could even do a valid

and high quality case study without leaving the library and the telephone, depending on the topic being studied” (1984, p. 11). Castells (2010), one of the foremost academic experts on crime networks, has also conducted a great deal of exploratory research on organized crime. His thoughts on the use of a variety of sources for such studies, especially those not traditionally in the purview of academic research, is as follows:

Yet, the phenomenon [of using unconventional sources] is largely ignored by social scientists... with the arguments that the data are not truly reliable, and that sensationalism taints interpretation. I take exception to these views. If a phenomenon is acknowledged as a fundamental dimension of our societies, indeed of the new, globalized system, we must use whatever evidence is available to explore the connection between these criminal activities and societies and economies at large (p. 173).

One commonality among the sources selected for the case study is that they mostly fall under the classification of documentation. Documents are regarded as one of the best data sources because they can be reviewed repeatedly as well as easily retrieved at any point. Additionally, secondary documents do not impose upon people for informational gathering, contain highly specific information, and allow for a coverage of a phenomenon over time and many events (which is consistent with indicated time boundary for the case) (Yin, 1984).

As a result of the case analysis in Chapter 8, the propositions stated in Chapter 4 are either supported, rejected, or reworked to be correct. Again, within an exploratory study this is considered perfectly acceptable and even encouraged (Yin, 2013). According to Yin’s methodology, these propositions are analytically generalizable, and can be used as a basis for future studies (2010). This approach to case study research can be thought of as iterative:

explanations evolve as the content develops. According to Yin (1984), iteration follows a pattern of:

- Making an initial theoretical statement or an initial proposition;
- Comparing the findings of an initial case against such a statement or proposition;
- Revising the statement or proposition;
- Comparing the details of the case against the revision;
- Again revising the statement or proposition;
- Repeating this process as many times as needed.

Such is the approach that was utilized in adjusting any inaccurate propositions.

To ensure the rigour of the case analysis, theories from the literature reviews in Chapters 5 and 6 were related to the findings of the case discussion and used to explore the related propositions. By comparing and contrasting these theories with the case narrative it was made clear what overarching ideas from criminology literature pertain to the Sinaloa Cartel, and precisely how this example ISC differs from traditional LSCs.

3.4: Case Study Quality

In constructing the case and performing the analysis, specific approaches were taken to ensure construct validity, internal validity, and reliability (Table 3). Using a variety of sources as indicated ensured high construct validity. Internal validity was accounted for by way of pattern-matching: several pieces of information were used to either confirm or disconfirm a single proposition. The exception to this approach was when the sole source could be considered definitive, or had appeared to do its own pattern-matching. External validity was accounted for using the principle of analytic generalization as previously discussed. In order to ensure reliability the case study protocol as outlined in this chapter was strictly adhered to. Relatedly,

the level of detail included in this chapter is another dimension of the study's reliability; by meticulously documenting the approach to the research, the results of this study are more easily replicable.

Table 3 – Tests for Case Study Quality

Tests	Case study tactic	Phase of research in which tactic occurs
Construct validity	<ul style="list-style-type: none"> • Use of multiple sources of evidence • Establish chain of evidence • Have key informants review draft case study report 	<ul style="list-style-type: none"> • Data collection • Data collection • Composition
Internal validity	<ul style="list-style-type: none"> • Do pattern-matching • Do explanation-building • Do time-series analysis 	<ul style="list-style-type: none"> • Data analysis • Data analysis • Data analysis
External validity	<ul style="list-style-type: none"> • Use replication logic in multiple case 	<ul style="list-style-type: none"> • Research design
Reliability	<ul style="list-style-type: none"> • Use case study protocol • Develop case study database 	<ul style="list-style-type: none"> • Data collection • Data collection

Adapted from Yin (1984)

Four additional methods of quality control as identified by Yin (1984) were applied as well: (1) all relevant evidence was weighed and included in the case analysis (and construction); (2) the analysis includes counter-theories where they exist (albeit these are limited); (3) the focus

of the analysis is on major components, not minute details; and (4) the author leveraged his own expertise on the topic to interpret the findings and heighten the discussion.

Chapter 4: Preliminary Propositions Regarding Illegal Supply Chains

RQ1: How are illegal supply chains organized, and how do they differ from legal supply chains?

4.1: Orientation

In order to fully distinguish between LSCs and ISCs, it is necessary to start by examining their elemental properties. LSCs possess the defining characteristic of being perceived as both legal and legitimate domestically or within their country of origin, as well as internationally. To reiterate, LSCs are those supply chains that have been nearly exclusively studied as a convention in the SCM field. ISCs can be defined as supply chains that are focused on the movement of illegal goods. The Council of Supply Chain Management Professionals (2013), a major industry association defines supply chain management as: the material and informational interchanges in the logistical process stretching from acquisition of raw materials to delivery of finished products to the end user. Using this definition, illegal supply chain management can be defined as: the material and informational interchanges in the logistical process stretching from acquisition of raw materials to delivery of illegal products and services to the end user. An ISC is a system of organizations, players, activities, and information flows arranged to transform raw materials into illegal goods and deliver them on a continuous basis.

Illegal goods delivered through ISCs may also sometimes require a facilitating service, which can be legal but more often than not also tends to be illicit. This service is often seen on the final delivery or retail component of the supply chain. An example of what is primarily a legal facilitating service may be the pizza shop that knowingly procures illegally supplied cheeses, whereas an illegal facilitating service may be the group of “foot soldiers” used to sell narcotics to final consumers.

Illegal supply chain activities that are organized for one-time dealings are not considered supply chains in the truest sense of the word as repeatability is not a factor. The implication of this is that the conditions that allow for the delivery of goods and the behaviours that are used to exploit these circumstances are situation specific. It follows that any conclusions reached about such illegal networks are exceptions and not generalizable. For the purpose of this dissertation and the ensuing discussion, consider that all ISCs will refer to supply chains constructed for the purposes of repeat deliveries for as long as the window of opportunity remains open, either as a matter of opportunity or as a state that is ensured by the constructs or influence of those involved with the supply chain.

➔ Proposition 1: ISCs are supply chains focused on delivering illegal goods and related services on a repeat basis.

LSCs also typically use a variety of strategies to ensure they are successful. These strategies are geared towards ensuring the supply chain operates optimally with respect to efficiency or effectiveness. Proper use of supply chain strategy is also considered a key source of competitive advantage. For these reasons, it is believed that ISCs would use supply chain strategies in the same way to manage their own operations. Of course, not all strategies used by LSCs would be applicable to ISCs as they operate under very different sets of conditions.

➔ Proposition 2: ISCs use supply chain strategies to optimize their network and gain competitive advantage. Some of these strategies will be common to LSCs, while others will not.

In order for an LSC to function, there are a variety of network level roles that need to be fulfilled, including: supplier, manufacturer, distributor, retailer, and consumer. In a very simply supply chain, a supplier would provide the materials for production to the manufacturer, who

would then make a product and provide it to a distributor for delivery to a retailer who would then sell it to the final consumer. As these are standard roles in traditional SCM, it is conceptualized that these standard roles also exist in ISCs.

In order for an ISC to operate, at the bare minimum functional relationships between the organizations fulfilling these roles is a requirement. Only in exceptional cases is an ISC controlled by a single organization. Illegal organizations partner together to form a supply chain if the relationship proves to be mutually advantageous. In a narcotics example, one organization may have expertise in making a drug while another may have expertise in moving it. Because of their opportunistic nature and the constant threat from external forces, ISC relationships tend to be volatile.

- ➔ Proposition 3: ISCs are comprised of organizations that form mutually advantageous relationships to fulfill the usual LSC roles.
- ➔ Proposition 4: ISC relationships are significantly more volatile than LSC relationships.

In order to fully distinguish between LSCs and ISCs, it is necessary to compare them on several key possible dimensions. LSCs possess the defining characteristic of being perceived as both legal and legitimate domestically within their country of origin, as well as internationally. McLachlin, Larson, and Khan (2009) provide a solid outline for the different general categories of LSCs (Table 4).

Table 4 – Orientations of Legal Supply Chains

Motivation	Environment	
	Uninterrupted	Interrupted
For-profit	<i>Business as usual</i>	<i>Risk management</i>
Not-for-profit	<i>Development aid</i>	<i>Disaster relief</i>

Adapted from McLachlin, Larson, & Khan (2009)

All LSCs can be typified by their motivations and the environment in which they function. Motivations for LSCs can be either for-profit or not-for-profit. For-profit organizations centrally seek economic gains (such as the Wal-Marts of the world), while not-for-profit organizations focus on social goals (such as the International Red Cross or Oxfam International). The environments that these supply chains operate within can be either uninterrupted or interrupted. Uninterrupted environments are those with stable economic, political, and/or environmental conditions, whereas interrupted environments are unstable with respect to the same mix of these conditions. The inner quadrants of Table 4 describe the orientations of different supply chains on the basis of their motivation and environmental circumstances.

Like LSCs, ISCs can possess a for-profit or a not-for-profit motivation; those with a not-for-profit motivation likely have more questionable socio-political objectives. Note that the use of an “illegal” label in relation to this type of supply chain is merely supposed to be a method of categorization in accordance with the laws of a country or countries in which the ISC operates, rather than a moral or ethical judgement.

Table 5 is a modified version of Table 4, which has been updated to include ISCs. From Table 5 one can see that both for-profit and not-for-profit supply chains operating within an illegal context can exist in a state of moderate stability. These ISCs are considered stable insofar as they are able to function in a routine fashion, despite the persistence of serious threats that are normally foreign to LSCs. The parties involved in these supply chains are hypothesized to have found an effective strategy for mitigating or containing these threats, which likely involves other illegal practices.

Table 5 – Orientations of Legal and Illegal Supply Chains

Category	Motivation	Environment	
		Uninterrupted	Interrupted
Legal	For-profit	<i>Business as usual</i>	<i>Risk management</i>
Legal	Not-for-profit	<i>Development aid</i>	<i>Disaster relief</i>
Illegal	For-profit	<i>Business as unusual (moderate stability)</i>	<i>Chaotic perseverance</i>
Illegal	Not-for-profit	<i>Covert operation (moderate stability)</i>	<i>Per fas et nefas</i>

ISCs with a for-profit motivation that exist in an uninterrupted environment can be thought of as having a “business as unusual” orientation. The “unusual” part of this orientation has a double meaning: the first as a point of reference when compared to the standard of LSCs, and the second to represent the reactive changes that such ISCs must make to adjust to the changing threats around them. As such, these supply chains can be thought of as typically having a low to moderate level of agility. Supply chain agility simply defined is the concept of speed and flexibility within a supply chain. This topic is explored in further detail in the literature review in section 6.2.

ISCs that operate in uninterrupted environment with a not-for-profit motivation can be best described as covert operations. Since these ISCs are organized to accomplish non-monetary goals that are considered to be of paramount importance, the notion is that they will aim to operate as covertly as possible to minimize the risk of interruption. Independent of motivation, ISCs in uninterrupted environments continue to operate in a routine fashion until their existence is discovered or challenged. At such a point in time, the environments of these ISCs would become interrupted and their orientations would shift to those as listed under the corresponding

column in Table 5. Such a shift will occur if and only if the key operators of this supply chain have strong risk management skills or business continuity plans. Otherwise, the ISC would either be disabled until it could be suitably reorganized or permanently disbanded.

Illegal, for-profit supply chains facing persistent environmental interruption are bound to suffer some setbacks. However, barring exceptional circumstances or events the idea being presented is that these operations are resilient enough to persevere in spite of their chaotic environment. It is important to consider that large-scale illegal, for-profit supply chains often possess the capital and connections required for enduring ongoing environmental disarray. These ISCs are also characterized by their extreme agility and ability to react to changing threats around them.

Illegal, not-for-profit supply chains operating in an interrupted environment are oriented towards achieving their objectives *per fas et nefas*, which is a Latin expression that translates to "through right and wrong". Such a statement is indicative of the fact that those parties and organizations knowingly involved in the supply chain are resolved to accomplish their goals by any means necessary, including dangerous or violent methods, despite the risks that they face (adapted from Levy, 2010). Herein lies the central difference between this orientation and chaotic perseverance: organizations that resort to illegal activity to accomplish a not-for-profit goal are often willing to take greater risks and make larger sacrifices for their cause than those that break the law for the sake of profit alone.

➔ Proposition 5: ISCs can have one of 4 specific orientations: business as unusual, chaotic perseverance, covert operation, or *per fas et nefas*. These vary based on whether the motivation is for-profit or not for-profit, and whether the environment is interrupted or uninterrupted.

4.2: Typology

Listed in Table 6 are some of the major specializations of ISCs that exist today with their corresponding primary motivations. These specializations are defined by the type of product that a particular ISC is focused on delivering.

Table 6 – Specialization of Illegal Supply Chains

Specialization	Primary motivation
Narcotics	For-profit
Illegal resource farming	For-profit
Illegal animal farming	For-profit
Cargo theft	For-profit
Cargo smuggling	For-profit
Opportunistic	For-profit
Illegal arms/munitions	Either for-profit or not-for-profit
Human trafficking/smuggling	Either for-profit or not-for-profit
Terrorism	Either not-for-profit or for-profit

The first 6 ISCs noted are thought to be motivated by profit maximization alone. The first of these for-profit supply chains is the narcotics supply chain. This type of supply chain specializes in the production and delivery of illegal drugs, such as lysergic acid diethylamide (LSD) in the UK as a very general example. The next type of supply chain is illegal resource farming. This type of supply chain focuses on the transport and sale of natural resources that are considered scarce or protected by law; a common example of this is the sale of illegally harvested timber in Eastern Europe. A similar type of supply chain is illegal animal farming. Such an ISC is one that typically involves the sale of endangered species and their products, or the unlicensed and often inhumane exploitation of animals for production purposes. The ivory trade is a tragic example of the former. Cargo theft supply chains deal with the extraction and

relocation of goods traveling in LSCs (goods in transit). One example of this type of ISC is the theft of oil in transit, which has been a systemic problem in Nigeria from the early 2000s to the present (Wilson, 2014). Cargo smuggling supply chains on the other hand are based upon the movement of contraband goods through LSCs. These supply chains are hijacked by non-authorized users for illegal goods movement at certain points known as antagonistic gateways; these users also exit the supply chain at these gateways (Ekwall, 2009). Other specializations of ISCs may also resort to cargo smuggling in order to transport their deliverables. Opportunistic, for-profit supply chains are those temporary supply chains organized within disrupted environments and disbanded upon a return to normalcy. An example of one such supply chain includes the organized theft, distribution, and sale of humanitarian supplies within Haiti after the 2010 earthquake. Note that opportunistic supply chains are included as a specialization because being time and circumstance sensitive, they are not limited to a single run but rather repeatedly operate over a period of time. Illegal arms/munitions supply chains are ISCs that specialize in getting weapons and ammunition to those organizations that are not supposed to have them according to law. These supply chains may be organized for monetary gain, or to achieve political or social goals. Persons who would be denied the purchase of a gun through legal means (because of intended use, age, criminal record, or other circumstance) are the normal customers of this supply chain (Braga, Cook, Kennedy, & Moore, 2002). An example of a not-for-profit goal in this context is the arming of an insurgent group by one political party in order to bring about a coup against another. Human trafficking or smuggling supply chains illegally move people rather than goods for the purposes of monetary gain, or instead to accomplish a non-monetary objective. Some for-profit examples of this ISC include industries dealing in human smuggling for slavery and prostitution purposes, while a common not-for-profit example is

organized illegal immigration (Schloenhardt, 1999). A category of ISC with an exclusively not-for-profit motivation is the terrorist supply chain. Terrorism supply chains focus on the delivery of terror to their targets by way of delivering destructive goods for financial gain or social and political ends. A well-known example of a for-profit terrorism supply chain in action was that of the Sicilian Mafia, which was utilized to kill the Italian judges Giovanni Falcone and Paolo Borsellino in 1992. Note that the use of the word “terrorism” is used to describe only what the developed world generally views as terrorist organizations and activities. Though the terminology is inherently loaded, for the purposes of this discussion this term is being used a matter of convention and to simplify the discourse rather than impose a value judgement (Levy, 2010).

➔ Proposition 6: Each ISC has a specialization on the basis of the type of good and service it is organized to deliver as well as its motivation.

It is proposed that similarly specialized ISCs share many approaches and practices. Therefore, such supply chains have a high degree of strategic similarity. For example, the production methods of a methamphetamine supply chain in Canada are going to be very much the same as a methamphetamine supply chain in Australia, especially because they share a similar context.

➔ Proposition 7: ISCs with the same specialization are strategically similar because they share many of the same practices and approaches.

Although ISCs are typically independent, they are often linked together as a part of a larger criminal network. It is very common for one of these supply chains to financially support another, especially when they are both under the control of a single organization. The well-known example of opium farming in Afghanistan proves this point. Some of the opium farms in

that region are owned and in some cases operated by terrorist organizations themselves; the revenues generated by such farms are then used to fund terrorist activities. Similarly, the terrorist organization Islamic State of Iraq and the Levant (ISIS) is known to sell oil and antiques to fund its terror campaigns.

To restate the discussion surrounding Table 5: fundamentally, for-profit ISCs are aimed at cost reduction and revenue growth, and not-for-profit ISCs are focused delivering a message above all else. Even if there is a cash link between two differently motivated supply chains, the principle is that these motivations are so disparate that they will be managed based on their own unique considerations. Therefore, supply chain behaviours cannot be generalized between two disparately motivated ISCs.

➔ Proposition 8: Independent ISCs may be controlled by a single criminal organization, but run according to their respective motivations.

It is extremely important to note that what is considered legal and illegal is ever changing. As the production of a particular good moves from one of these categories to another, it will also dramatically shift how the associated supply chain itself functions. Consider the example of marijuana, one type of narcotics ISC. As little as a decade ago only those on the fringe would have considered the legalization of marijuana in the US and Canada to be within the realm of possibility. Now there is a growing social and political movement in both countries to support legalization, and all signs indicate that within a decade marijuana will be available over-the-counter. Proponents basically state that cannabis is no more harmful than alcohol, and should therefore be legalized with similar guidelines to alcohol in place. Of course, Colorado is a leader on this front. Since 2000 the “drug” has become increasingly legalized due largely in part to growing social support. In 2007 there was a pivotal lawsuit against the state health department

that resulted in approximately 1000 new legal dispensaries opening up just a few months afterwards (TIME, 2014). The major development on this front took place in late 2013, when the production of small quantities of cannabis and the consumption of marijuana were fully legalized without the previous restrictions. In the first full year, this industry netted a staggering \$700 million in sales for both medical and recreational purposes; this is expected to climb to \$1 billion by the end of 2016 (Ingraham, 2015). With the magnitude of this associated economic boom, it is not surprising that even very conservative states such as Texas are seriously exploring the possibility of legalizing marijuana. The implication of this is that a marijuana ISC, which may have previously operated in the shadows, could now theoretically much more easily gain licencing to move into full-scale legal production. What was previously contraband could now be available at a local mom and pop store, or perhaps even at a larger retail chain. Under these conditions the supply chain itself would have no need for the practices that are required for flying underneath the radar of the law. These practices take considerable time and resources and if they are no longer required then they would be a nonsensical waste of resources. For this reason it is hypothesized that such formerly illegal supply chains would transition to a state of supply chain “normalcy”, and come to strategically function in much the same way as a conventional LSC does.

On the other hand, there may be a supply chain that was considered legal but which has moved into the illegal realm. A common catalyst for this is hypothesized to be growing consumer awareness. A possible example of this is the production of caged civet cat coffee (kopi luwak), a “cruel and avaricious” example of what is presently legal animal farming. Kopi luwak is the outcome of the process when an Asian palm civet consumes coffee berries, digests them, and defecates them. As unappetizing as this may sound the idea is that the unique digestive

processes of this species releases the full flavour of these beans. As such, these beans are considered a delicacy and a national treasure in their country of origin, Indonesia. The beans were originally collected in the wild from droppings that were stumbled upon, a practice that does not pose any ecological threat. With a cup of kopi luwak going for upwards of \$75 USD, it is no surprise that people have taken to farming these creatures. In a developing country such as Indonesia where animal rights are not considered as important as in the western world, it should also come as no surprise that this has led to widespread animal abuse. Today, the jungle cats are captured and kept in horrifying conditions and fed only coffee berries until they succumb to the lifestyle and diet. The reality is that many consumers are not aware of where these beans originate from. The common conception is likely that these beans are collected via the traditional fashion, which is the image that the industry and the vendors of this coffee try to sell (Kwok, 2013). Although some consumers of premium products such as these may not care, consider that this is the group with the luxury of being conscientious about its consumer decisions. It would not be a stretch to speculate that those within this group are many of the same people who support buying fair-trade, organic coffee. With the support of this group and others to ban factory farmed civet beans, import of this product could very well become illegal. Often times it may be at the grassroots that drive legislation, especially when there is substantiated evidence to support such a movement. This is precisely how marijuana has come to be legalized in the previous example. Under these circumstances, given the premium price charged for the product and the higher costs of traditional farming methods, the supply of the farmed kopi luwak may continue to vendors who do not care about the source and deem the risk worth taking. Consequently, the participants within this supply chain would have to operate in a covert manner so as not to be interrupted by the authorities at any stage. It follows that this newly founded ISC

would take on many of the attributes commonly seen among illegal animal farming supply chains. If the thought of an ISC emerging from these circumstances sounds improbable, consider that in 2012 a long-standing significant cheese-smuggling ring between Canada and the US (occurring over the Windsor-Detroit border) was busted. This supply chain arose out of the fairly innocuous fact that cheese is one-third the price in US than in Canada (Chappell, 2012). This highlights an underlying economic principle of the discussion on for-profit illegal activity thus far: if there is sufficient money to be made from selling an illegal good, then an ISC will be organized to seize the opportunity.

- Proposition 9: What is considered legal and illegal is not static. When an ISC becomes legal, its operations will transition to operating in much the same as a typical LSC does. When a supply chain is re-categorized as illegal, it will either cease to exist or innovate to survive.

4.3: Structure

ISCs possess the defining characteristic being either wholly or only in part illegal. As such, there are two categories of ISCs: pure and mixed. Pure ISCs are those supply chains whose operation is entirely illegal from the very first supplier through to the final customer. There are two subcategories of pure ISCs: domestic and international. Domestic pure ISCs are illegal supply chains that operate within a single country. International pure ISCs operate within multiple countries, and in all of these states its existence is considered illegal. Figure 1 illustrates a non-complex, domestic, pure ISC (shown to be present only in Country A). In a more complex version of an ISC, there would be multiple echelons or tiers of suppliers, manufacturers, distributors, and even retailers. In Figure 1 the types of organizations typically present in a LSC are visible (Proposition 3). However, such parties within an ISC take on very different forms

from their legal counterparts. For example, a “retailer” of stolen goods is not likely to overtly run a store in a strip mall; instead this party might sell its wares using a series of strategically placed foot soldiers. Figure 2 illustrates a non-complex, international, pure ISC with several independent countries being represented as A, B, and C.

Figure 1 – A Domestic Pure Illegal Supply Chain

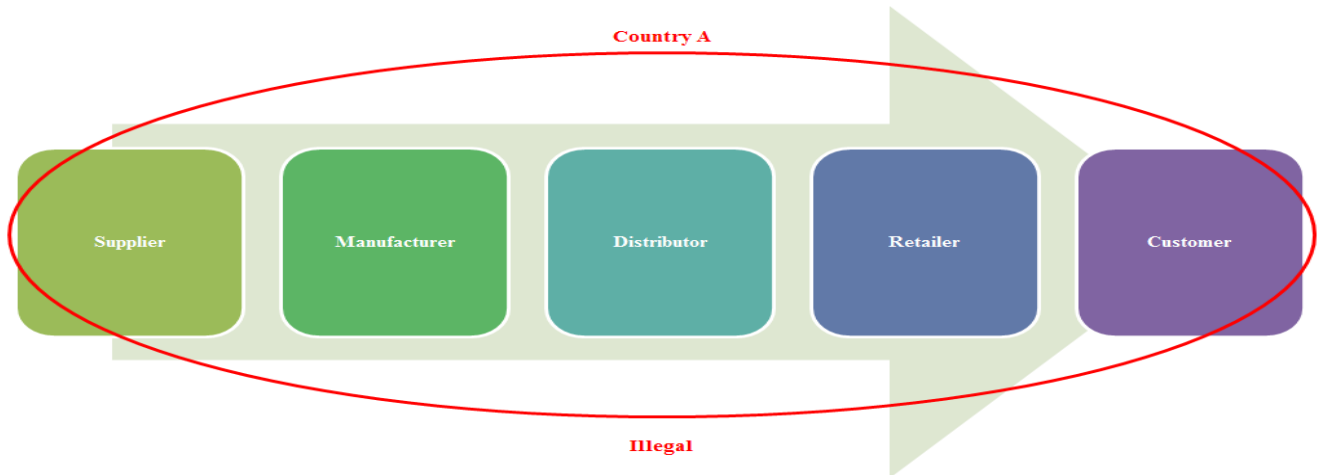
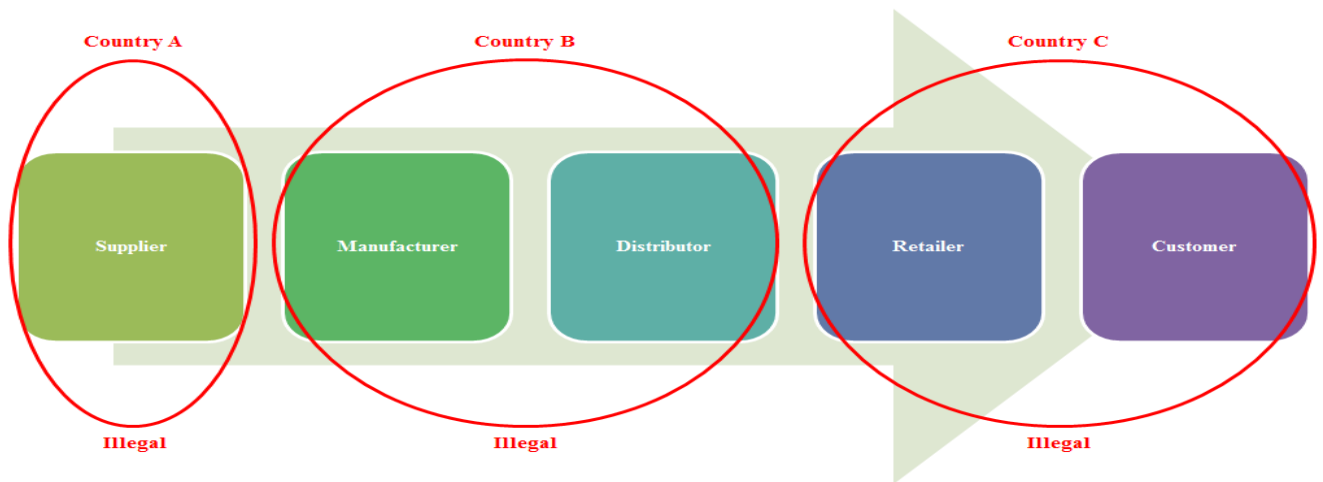


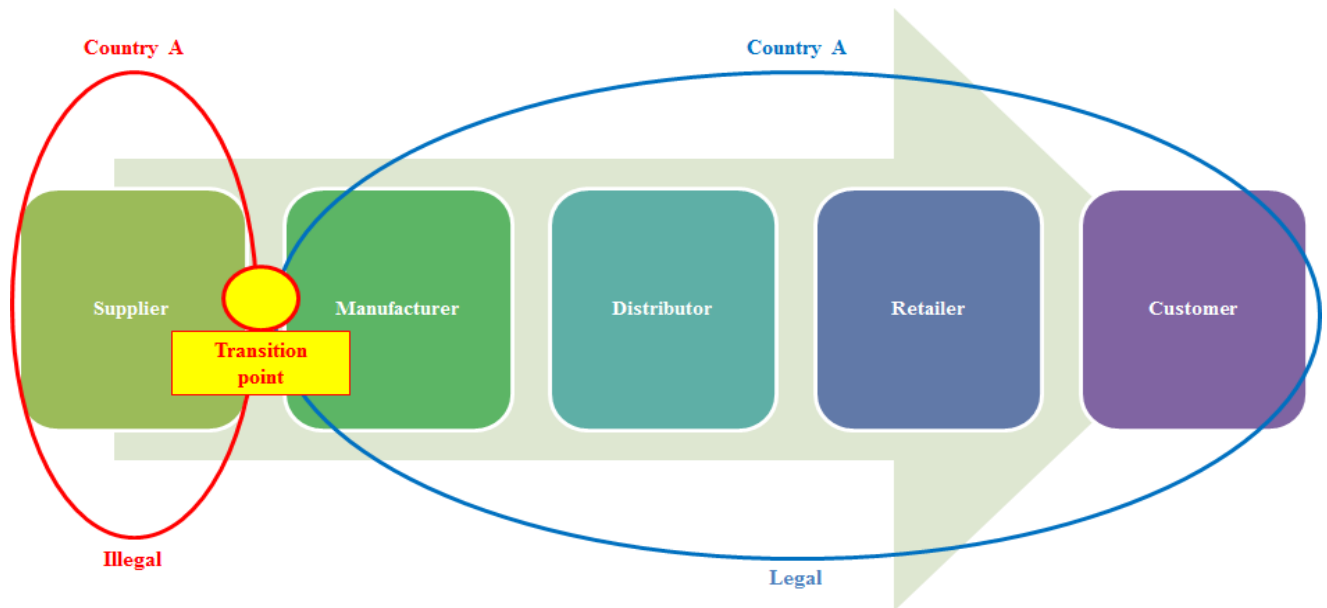
Figure 2 – An International Pure Illegal Supply Chain



Mixed ISCs are those supply chains that are only in part illegal. The area of research interest within these supply chains are those segments that are illegally operated, because such sections are subject to the same constraints and difficulties as pure ISCs. Again, there exists the

subcategorization of domestic and international for mixed ISCs. A domestic mixed ISC may operate within a single country where only particular segments of it are considered illegal. Figure 3 illustrates a non-complex mixed domestic ISC where the sourcing is illegally done, but the remainder of the supply chain is legal and legitimate. Between the supplier and the manufacturer in this diagram is what is known as a transition point. This node depicts the exact stage where a supply chain changes from being illegal to legal or vice versa. A real world example of the arrangement shown in Figure 3 might be a wood products supply chain, where a reputable manufacturer unknowingly purchases raw wood that has been illegally gathered. Under these circumstances the only illegal component of the supply chain is the raw materials gathering. The transition occurs when said manufacturer procures these materials assuming they were legally gathered. From this point on, the goods produced, distributed, and sold would in practice be treated as legal goods, and therefore not be subject to any of the constraints usually placed on illegal activity. A reverse example of the Figure 3 structure is typically observed in small to medium sized methamphetamine operations. In methamphetamine production two of the important ingredients, ephedrine and pseudoephedrine, are obtainable by processing over-the-counter, readily available cold and asthma medications. If the manufacturer obtains these ingredients from such medications, then the supplier of those ingredients as a legitimate pharmaceutical business would be considered legal, whereas the remainder of the supply chain would not.

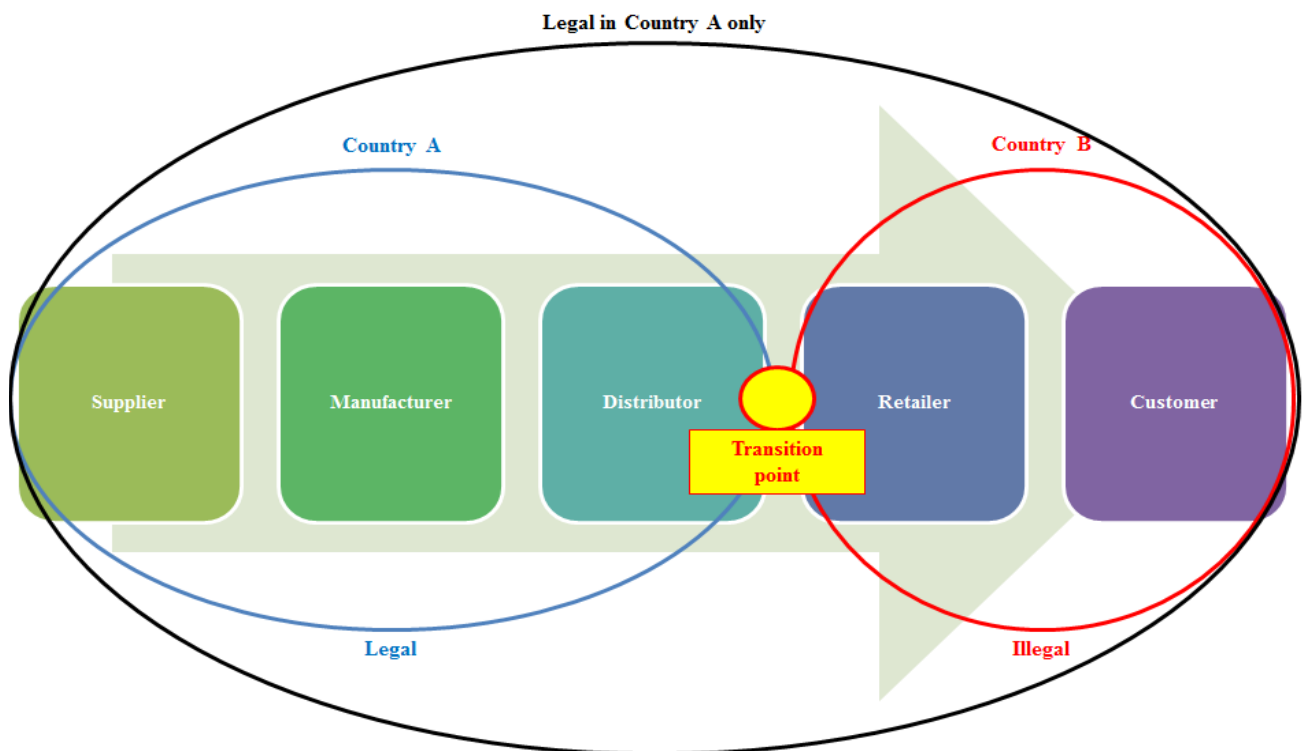
Figure 3 – A Domestic Mixed Illegal Supply Chain



Alternatively, an international mixed ISC operates within multiple countries, where a part, parts, or whole of the supply chain is/are considered illegal within one or more countries. This type of supply chain is best understood through a non-complex example as depicted in Figure 4. Consider a marijuana supply chain, where the supply, manufacture, and distribution are all done in Uruguay, and the retailing takes place in the US. Since there are no restrictions on marijuana production or consumption in Uruguay (Country A) such a supply chain could be operated in a manner similar to a bread supply chain in Canada. Effectively, for any party operating in this context it is “business as usual” and there is no need to work in secrecy. The difficulty here arises from the international distribution component. In the US, marijuana is a controlled substance, and with certain regional exceptions it is illegal to produce as well as to consume. If a Uruguay marijuana producer is looking to sell its product to the US, it will have to do so in an illegal way. At this transition point the supply chain becomes illegal. The buyers (retailers) of the marijuana in the US who obtain the product then sell to their customers, and in

doing so engage in further illegal activity. This is just one example of a non-complex international ISC; the particulars will change considerably based on the ISC specialization (Table 6) and the countries involved. One additional dimension of complexity applicable to Figures 3 and 4 is the number of transition points. In more complex versions of these supply chains, it is entirely possible that they may transition from being legal to illegal or vice versa multiple times.

Figure 4 – An International Mixed Illegal Supply Chain



➔ Proposition 10: ISCs can both operate within a single country or across multiple countries, and be entirely or partially illegal (mixed) based on the laws of the country/countries of operation. Within these mixed ISCs there is a transition point or points where the supply chain moves from illegal to legal or vice versa.

A summary of the propositions from this chapter are as follows:

- ➔ Proposition 1: ISCs are supply chains focused on delivering illegal goods and related services on a repeat basis.
- ➔ Proposition 2: ISCs use supply chain strategies to optimize their network and gain competitive advantage. Some of these strategies will be common to LSCs, while others will not.
- ➔ Proposition 3: ISCs are comprised of organizations that form mutually advantageous relationships to fulfill the usual LSC roles.
- ➔ Proposition 4: ISC relationships are significantly more volatile than LSC relationships.
- ➔ Proposition 5: ISCs can have one of 4 specific orientations: business as unusual, chaotic perseverance, covert operation, or per fas et nefas. These vary based on whether the motivation is for-profit or not for-profit, and whether the environment is interrupted or uninterrupted.
- ➔ Proposition 6: Each ISC has a specialization on the basis of the type of good and service it is organized to deliver as well as its motivation.
- ➔ Proposition 7: ISCs with the same specialization are strategically similar because they share many of the same practices and approaches.
- ➔ Proposition 8: Independent ISCs may be controlled by a single criminal organization, but run according to their respective motivations.
- ➔ Proposition 9: What is considered legal and illegal is not static. When an ISC becomes legal, its operations will transition to operating in much the same a typical LSC does. When a supply chain is re-categorized as illegal, it will either cease to exist or innovate to survive.

→ Proposition 10: ISCs can both operate within a single country or across multiple countries, and be entirely or partially illegal (mixed) based on the laws of the country/countries of operation. Within these mixed ISCs there is a transition point or points where the supply chain moves from illegal to legal or vice versa.

Chapter 5: Criminological and Sociological Theories Pertaining to Illegal Supply Chains

RQ2: What are the organizational theories of crime from criminology and sociology that can be provide background and understanding for how ISCs operate?

5.1: What is Organized Crime?

Organized crime is one of those terms that evokes vivid mental images and many preconceived notions for most people. They tend to imagine the shady drug dealer standing on a street corner in a rundown neighborhood, the Italian mobster in a pinstripe suit armed with a tommy gun readying to do a drive by, or the Latin American kingpin lounging by the Olympic-sized pool in his sprawling estate, surrounded by exotic flora and fauna. The reality is that these ideas have been largely shaped by the popular media that we in most developed cultures are exposed to. While these images are not always wrong they are far from universally correct—organized crime, as it is portrayed in popular culture, tends to be based on well-known, highly exposed, or sensationalized examples. As a result, what people tend to “know” about organized crime is oversimplified, and a far cry from representative of the plethora of forms and structures that exist as a part of the criminal mega industry (Edwards & Gill, 2004).

To understand what organized crime is we must first consider what it is not. Organized crime is not simply “crimes that are organized”, but rather strategically constructed criminal parties that intend to commit multiple criminal acts. To delve further, the word “organized” can be problematic in and of itself as it is inherently ambiguous. Fincknauer (2005) attempts to shed light on this term in this context by breaking it down into 11 different measureable dimensions: ideology (what values does the group hold or seek to transmit), structure and hierarchy (levels of power and authority), continuity (how does the group survive over time), level of violence, restricted membership/bonding (how does the group add new members and how does it integrate

said members), illegal enterprises (the nature of the illegal activity), penetration of legitimate business (the extent to which the crime is intertwined with legal or legitimate activity), and corruption (of those with power on the legal side of the equation). Though this stratification provides a solid basis for understanding the concept of organization, it is limited in that it assumes that all criminal groups exhibit these parameters. Realistically, just as many criminal operations exist without an ideological motive, some operations may be highly successful without employing corruption tactics, for example. On the “crime” portion of the expression, note that what exactly is criminal activity varies from nation to nation based on laws, but that there tends to more or less be global consensus around criminal activities that violate fundamental human rights— the exceptions to this being dictatorships and fundamentalist theocracies (though the two are not necessarily mutually exclusive). As such, the precise meaning of organized crime is quite subjective and tends to vary at least slightly even among persons, parties, or nations with much in common.

It should come as no shock that over the last century organized crime has grown dramatically both in terms of scale and complexity. The traditional model of organized crime, where illegal factions operated independently and in information silos, confined to particular nations or regions, has shifted to a state where the leading criminal organizations are both highly organized and interconnected on a global scale. This trajectory for this shift appears to have occurred during the 1920s and early 1930s when the United States made the consumption, production, and sale of alcohol illegal with the passing of the Eighteenth Amendment to its constitution. Prohibition created the largest black market, both by volume and value, ever seen in the country. The leading criminal organizations of the time were largely composed of first generation immigrants, and their cultural differences were often the source of hostilities between

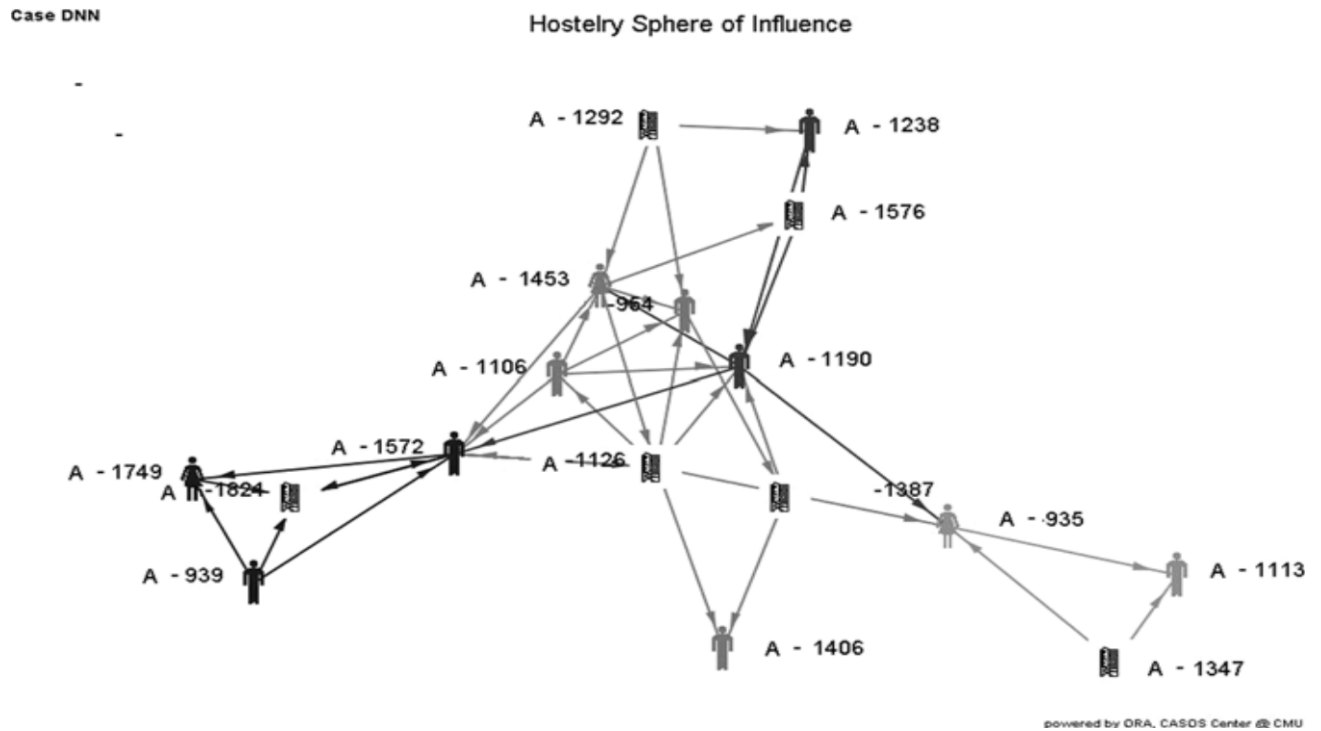
them. However, due to the extreme restrictions and consequences put in place by the US Government's forces, and the potential for earnings that Prohibition presented, the most successful illegal players of this time period understood that they had much more to gain through collusion than conflict. By linking resources and networks these now codependent players managed to achieve what would otherwise have been an impossibility. While some disagreements and betrayals did still occur among organized crime groups, this is a pronounced example in a modern context where culture and the power of identity it instills took a backseat to the potential to realize significant financial gains. An Italian buyer was willing to disregard the fact that his whiskey was supplied by an Irishman via a source in Ireland, as long as the whiskey was of good quality, delivered on time, and offered at a fair price. The criminal world took note of the gains and lessons learned during this period, and a trajectory was set for cooperative, complex organized crime.

According to Bjelopera and Finklea (2012) this trajectory saw a sharp upswing within the last 20 years, often referred to as the post-Cold War criminal era, as a result of three central factors: (1) greater global awareness of illegal operations and activities aimed at disruption has made association a necessity rather than an option, especially for international players; (2) the benefits of collaboration, such as entering new markets, "outsourcing" of competencies, and diversification of risk, have become better understood- though relationships are still volatile; and (3) the prevalence of information technologies in combination with better, faster transportation modes and infrastructure has facilitated more effective and efficient illicit business transactions. Needless to say, the criminal networks that have emerged as a product of these trends are resourceful and sophisticated, and pose an increasingly difficult challenge for nations to diagnose and neutralize. This new structure of organized crime has lent itself to much higher levels of

activity globally. The activities of organized crime today are at an all-time high and continually expanding (Hutchins & Hutchins, 2010); however, due to the covert nature of illegal activity the exact figure is difficult to pinpoint.

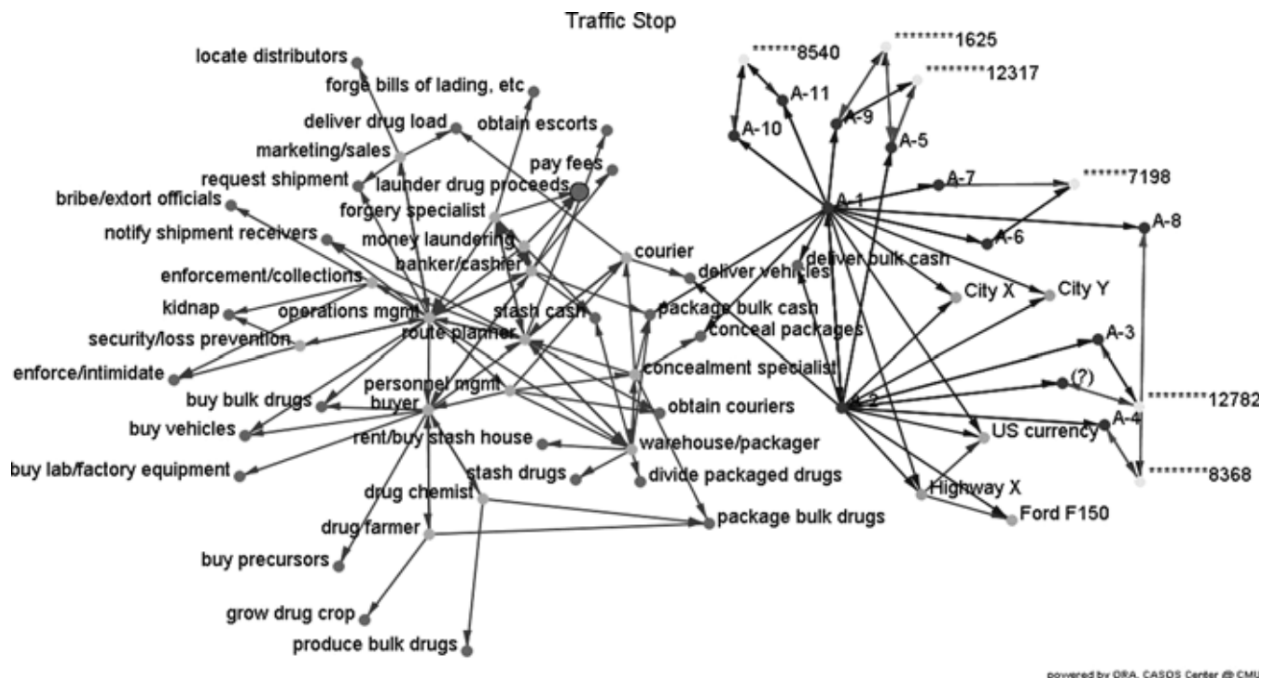
The enormity and complexity of criminal organizations and their associated networks has necessitated the use of new methods of analysis that are capable of tracing the interrelationships of the independent actors and parties. Once upon a time when crime was less complicated it was possible to map “who, what, and where” and draw straight-line connections, but this is no longer practical when looking at the intricate social structure of today’s criminal networks. As such, crime network analysis techniques (computational based mathematical modelling) are commonly used by criminologists and law enforcement officials to try and gain a sense of the social and to a lesser extent the structural organization of criminal groups. One popular technique among the literature base is the Dynamic Network Analysis (DNA) approach. DNA is a combination of data mining techniques like Social Network Analysis (SNA) and network depiction approaches that came before it. As a result, it can collate and represent enormous amounts of information, making it well suited for analyzing microcosmic social structures and individual characteristics (Xu & Chen, 2005). The primary output from DNA and SNA both are matrix diagrams; examples of both can be seen in Figure 1 and 2 respectively.

Figure 5 – Sample Dynamic Network Analysis Matrix Diagram



Hutchins & Hutchins (2010)

Figure 6 – Sample Social Network Analysis Matrix Diagram



Hutchins & Hutchins (2010)

Though there are analysts and prominent law enforcement institutions that almost exclusively employ sociometrics such as DNA and SNA, it is important to recognize that these approaches are not without limitation. The first factor to consider is that in order for network analysis techniques to paint a complete picture they require all of the pieces of the informational puzzle. The reality is that when trying to assess criminal networks researchers will always be dealing with imperfect information, and so these models will never be as fully comprehensive as they are designed and intended to be. Moreover, as individual actors tend to change within a criminal network with a high degree of frequency, any network generated is only temporarily relevant, failing to be useful in anything but the short term. Consequently, it seems more appropriate to look at criminal networks from an organizational level, where change is less frequent and more easily observable, and the amount of available information is satisfactory. It has also been suggested that such sophisticated modeling techniques are best reserved for instances when a high degree of low level detail is needed, such as ongoing and serious criminal investigations (Edwards & Gill, 2004). These limitations validate the logic behind focusing this dissertation on the organizational and network level of crime.

5.2: Understanding Criminal Organizations

Though the leading illegal organizations of the modern era share innumerable connections and multifaceted relationships (due largely to their transnational orientation), this level of connectivity typically decreases along with the size of the faction. Table 7 provides an overview of the different models for criminal networks. As indicated, criminal organizations can be thought of as belonging to one of four model categories: transnational, national, transactional (sometimes across borders), and entrepreneurial. On one end of this spectrum the transnational groups are the massive organizations with significant clout, and on the other end are the

entrepreneurs who can be as low level and informal as the John Doe who sells the methamphetamine he “cooks” in his basement using an unsophisticated “shake-and-bake” production method. The subsequent discussion in this section will focus on transnational and national models— the models with the highest likelihood of having well established and highly organized supply chains.

Table 7 – Multimodal Approach to Understanding Criminal Organizations

Model	Environment	Organizational Characteristics	Defining Processes	Impacts	Inter-organizational connectedness
Transnational (eg. The Sinaloa Cartel)	In regions of political/economic instability	Highly organized; often vertically integrated	Exploits legitimate channels	Stable supply of illicit goods; high levels of corruption	High
National (eg. The Pagan Gang, based out of the North Eastern US)	Strong regional presence and historical and cultural basis	Based largely on family or hierarchy	Secrecy/bonds; links to insurgents	Local corruption and/or influence; fearful communities	Moderate-low
Entrepreneurial (eg. Online sale of marijuana through Kijiji or Craigslist)	Developed and high technology regions	Individuals or small groups	Operating through legitimate enterprise	Provision of illicit goods and services	Low
Circumstantial (eg. Crimes committed by Fagan’s gang in Oliver Twist)	Any	Flexible	Violent; opportunistic; risk taking	Variable and unstable supply of a range of illicit goods; exploits local young offenders	Low

Material in the table above was constructed using Federal Bureau of Investigation (2011), Jacobs & Gouldin (1999), and Morrison (2002)

The major illegal organizations in the world today all originated from national type models, and accordingly their current identities reflect characteristics in both the transnational and national categories. In particular, these prominent criminal groups all possess unique cultural dimensions, founded in ethnic, racial, religious, ideological, linguistic, and behaviour particulars. In many major criminal organizations family ties are often present, especially among those at the top end of the hierarchy. Apart from wishing to bring relatives into the family business, employing those with kin-based ties is an important mechanism for ensuring compliance and loyalty (Godson & Olson, 1995). It is apparent that intra-organizational trust is an essential element to operating in the illegal sphere; without it, operations would be severely compromised. Information regarding the list of the most prominent illegal organizations and a brief overview of their backgrounds can be found in Table 8. Note that this list is not meant to be exhaustive, but rather just to provide a sense of the current global landscape.

Table 8 – Major Illegal Organizations and their Origins

Name	Background
Sicilian mafia	<ul style="list-style-type: none"> • Extralegal protectors of land ownership rights in Sicily, circa 1860 • As paid enforcers of the land rights and upholders of the law came to collude with the criminals • Became a major smuggling organization in the 1970s • Currently the largest distributor of narcotics in Europe through alignment with the Mexican cartels
American mafia	<ul style="list-style-type: none"> • Initially started by Sicilian immigrants to the US in the 1860s as an organization looking to profit from theft, smuggling, and extortion • Extremely active during the US prohibition on alcohol; greatly profited from the production and smuggling of such beverages • Still holds a significant footprint in the US; involved in extortion, political corruption, gambling, tax fraud, and stock manipulation

Colombian cartels	<ul style="list-style-type: none"> • Saw significant growth during the 1960s and 1970s when the demand for illegal narcotics in the US saw a dramatic increase; the first major exporter of narcotics from developing to developed marketplaces • The cartels have been overseen by different barons from this boom through to today; these men have had the distinction of being among the most treacherous, influential, and affluent in the world • Responsible for production and supply of the vast majority of the world's cocaine supply
Mexican cartels	<ul style="list-style-type: none"> • Exploded in the 1980s through a demand for marijuana and opium in the US; start-up support was provided by the Colombian cartels • Divided into a hierarchical structure of cartels, with the lowest ranking cartels dealing at the street level with the highest level being responsible for strategic direction • Regarded as the single greatest organized crime threat to the US due to its level of influence, violence, and the systemic problems it both poses and exposes, the Mexican cartels are ever fueled by the drug demand in the nation
Russian mafiyas	<ul style="list-style-type: none"> • Modern incarnation emerged from the chaotic transition period from communism to state capitalism; self-ordained “end of millennium robber barons” • Have aggressively expanded from Russia into other regions of the world, often making enemies in the process • Been involved in a variety of illegal enterprises and activities ranging from narcotics to financial exploitation
Japanese yakuzas	<ul style="list-style-type: none"> • A quasi-legal organization in Japan initially created by the disenfranchised Samurai during the westernization of Japan in the late 1800s; similar to the Sicilian mafia, started out as a protector of the poor then became corrupted • Have strong links to the sex trade, blackmail and exploitation of

	prominent members of Japanese society, and manipulation of stock markets
Chinese triads	<ul style="list-style-type: none"> • Origins date back to formation as a resistance group against the Manchu invader of the Qing dynasty • After the communist revolution its presence was expanded throughout the globe • Known for its prowess in the fields of money laundering and human trafficking; also the leader in trade of Heroin from the Golden Triangle region

Material in the exhibit above was constructed using Castells (2010) and Wikipedia (2015a, 2015b, 2015c, 2015d, 2015e, 2015f)

Though it would be easy to assume that collaboration among these criminal groups may in fact blur or erode their distinctive features, working together has in fact allowed these factions to preserve their identities in times when the external forces threatened their existence. One prime example of this was observed in the 1980s when the American Mafia, having suffered considerable blows at the hands of the FBI, was revitalized through borrowed resources from the Sicilian Mafia, the Chinese Triads, and the Russian Mafia (though the cost of borrowing was certainly more than simple interest payments) (Castells, 2010). In this circumstance it is evident that this directly related recompense was but a secondary motivation for these funders. They understood something higher and more important to the longevity of their organizations: that allowing the American Mafia to fail meant potentially losing a vital network partner with deep penetration into the US market base, a risk too great to bear in such a highly integrated trade. And while there may be some goodwill that was earned through mutual dealings, this and other similar examples reinforce the fact that criminal organizations are often very discerning and calculating enterprises.

The network relationship between independent illegal groups has also given them greater clout in almost all areas of society, particularly in the political and economic realms. Illegal organizations are also constantly working to permeate societal institutions, especially in their main country of operation. By establishing a greater foothold in society at large illegal organizations increase their power and influence, affording them the ability to better ensure the stability of their operations. Institutional permeation is achieved through investment in private businesses, sponsorship of community initiatives, money laundering through banking institutions, as well as extortion and bribery of key officials. It follows that the level of corruption in a country and the activities of criminal enterprises is often strongly correlated (Buscaglia & Dijk, 2003). As a result of these conditions, in developing countries where criminal activity is rampant, the power of illegal organizations is often equal to or greater than the legitimized forces that exist to counter them.

The modern strategy employed by most transnational illegal networks is to position the production function in a country of low-risk. By doing this the illegal faction can exercise its control over the institutional environment to facilitate routine operation. There also exists the possibility that the production of a would-be contraband good is actually legal in the country of its origin, but not in its intended market destination. Times of political turnover or social upheaval also present an opportunity for criminal networks to flourish. One such example of this occurred following the collapse of the Soviet Union, when criminal organizations seized improperly guarded nuclear weapons and materials and effectively sold them to the buyer who was willing to pay the most (Ferguson, 2006; Keller 2002). Even to today, security of such devastating weaponry in Russia is a serious concern (Bender, 2015).

Culture and the preservation of culture is an important consideration for all major criminal organizations. Many criminal organizations have origins with a specific country, region, or ethnic group. These origins provide a flavour for the practices and traditions adhered to within a criminal organization (as noted in Table 8). In spite of increased dealings with other criminal groups, by in large criminal organizations actively work to uphold their customs and traditions. The often overt expression of a nationally and ethnically based identity breeds an immediate association with persons and particularly youths residing in the country of origin (Castells, 2010). This connection is enhanced by the fact that these youth, who are often in desperate circumstances, witness or hear of people from similar backgrounds who managed to work their way to a life of affluence through involvement in such a criminal organization. Though it is true that there are very few positions at the top of the pyramid, and even fewer stable ones, this high risk, high reward scenario is a better alternative to the life of despair and hardship that many are otherwise doomed to face. Criminal organizations, because of their strong identity, also offer a home and sense of belonging to those who would otherwise have none. The appeal of a life of crime is further enforced by how it is romanticised in the popular media. Such an existence is portrayed as one of adventure, excitement, and otherwise grand reward. These factors ensure that there will be no shortage of willing participants in criminal networks for the foreseeable future (Levitt & Dubner, 2005).

This is great news for the organized crime industry that is growing and will subsequently have increased staffing demands over the next several decades. This anticipated growth is attributable to six main factors, the first of these being the economics of production. For farmers and other producers in many countries (especially in developing nations) drug crops present the highest return and most stable demand pattern, so there exists solid grounds for narcotics ISCs to

continue to operate and expand. The second factor is “international ungovernability”. As society and the economy become increasingly complex, governments on a whole are believed to be losing their ability to manage the state. A reasonable claim, as evidenced by the increased instability in growing counties like Peru, Burma, and Myanmar over the last two decades. The third consideration is immigration streams. Where pools of new immigrants flow organized crime tends to follow, and immigration is easier and faster today than ever before. The inability of countries to protect every inch of their borders is becoming more widely known to criminal operators and exploited with increasing frequency (Lyman & Potter, 2014). Continued improvements in information technologies will also facilitate better communications between criminal players, allowing them to operate more effectively as well as become increasingly able to evade legal forces. Lastly, transnational crime needs to be met with ongoing transnational law enforcement efforts (Godson & Olson, 1995). However, since nations seem to be disorganized when it comes to coordinating anti-organized crime efforts, or reluctant to work with one another for unrelated political reasons, and there does not appear to be a unified concerted effort to change this, organized crime will be permitted to expand (Lyman & Potter, 2014).

In response to the growing presence of organized crime there has been a global trend, particularly in developed nations, towards increased counteraction and disruption efforts. The success of such initiatives has been mixed, and are entirely dependent on scope and context (Berdal & Serrano, 2002). This singular approach to the problem is not considered to be the most effective, as it is necessary for such reactive measures to go hand in hand with the proactive. A comprehensive approach to illegal activity would involve policies and actions aimed at both interrupting active ISCs, in addition to eliminating end user demand for illegal goods in the first place. Combating demand for illegal goods is a complicated issue, especially when referring to

controlled substances. The reasons why people use drugs are complicated and vary tremendously. It follows that the most substantial threat to illegal organizations operating in this sphere would be a broader social shift towards decreased narcotics usage, or the legalization of such substances. A legalization scenario is not without its own risks; if an illegal drug has health consequences then it would need to be carefully regulated and overseen in the same way that libations are. Of course, illegal operations would have a strong incentive to not want their illegal industries to be legalized— even if an organization could make the transition to a legal business, they would almost certainly lose their premium pricing (Becker, Murphy, & Grossman, 2006). Consequently, those illegal organizations with clout are likely to exercise their influence to ensure the goods they deal in remain illegal.

5.3: Financial Considerations and Corruption

The vast majority of revenue flowing into the coffers of criminal organizations is the result of the narcotics trade. The other areas that criminal organizations deal heavily in both in terms of value and volume includes: arms trafficking, nuclear materials trafficking, illegal immigrant trafficking, organ trafficking, and money laundering (Castells, 2010). In essence, any trade activity that is illegal, monetized, and where the profits are high enough to justify the risk of doing business is prime game for a criminal organization to venture into. As such, the spectrum for illegal activities can be pretty much anything, ranging from the theft of radioactive materials to illegal garbage dumping to even something as seemingly bizarre as maple syrup smuggling. Considering this, organized crime is by far and away the most varied industry on the planet.

Although the data regarding profits and financial activities of criminal networks differs widely from source to source, all accounts show of the sheer enormity of illegal trade. In 2005

the United Nations estimated that the illegal drug trade alone was grossing \$321.6 billion (USD) annually, which at the time was more than the profits of the oil trade (Pollard, 2005). Adjusted for inflation but not even accounting for growth, this trade is likely to be worth in the range of \$600-\$800 billion in the present day. It is currently estimated that the size of the underground economy in the US alone \$2 trillion annually. Using these approximations, it would not be unreasonable to state that the net worth of the entire illegal criminal industry and its externalities accounts for 5% of all worldwide GDP (The World Bank, 2015). Of course, there are certain economies where the illegitimate activities make up a significant portion of the GDP. In Peru, for example, approximately 40% of the entire economy is comprised of activities taking place outside of the legal realm. Colombian drug cartels generate approximately \$10 billion annually— a staggering figure, considering that the GDP of Columbia itself amounts to approximately \$40 billion (Badkar, 2011; Godson & Olson, 1995).

It also bears mentioning that as this money is being generated on one end it must be properly laundered on the other. However, it is extremely difficult to trace the cash flow from criminal syndicates because they disperse their income and shift funds by way of a plethora of legal commercial and financial means. The operation of legitimate businesses as a front for their operations, holding of multiple accounts in protected banking regions, investment in a range of currencies, purchasing stocks, bonds, and other futures, and making a variety of different capital investments, such as real estate, are all common tactics used by the major transnational players. Though legal markets and financial institutions are often unaware that they are engaging in illegal activity, there are some major examples in recent years that suggest they are far from collectively innocent. In 2012 HSBC was found to have been guilty of laundering close to \$7 billion in drug proceeds on behalf of Mexican drug cartels; subsequently, they were penalized

\$1.9 billion by the US Government. From this instance it can be said that even legal organizations face the same risk-reward considerations as individuals when the opportunity for crime is presented (Morselli & Giguere, 2006). This makes sense given that all organizations, including financial institutions, are directed by human actors. In the case of HSBC, where many individuals at all levels knowingly participated in the laundering of money, it was apparent the benefit to taking such a risk was deemed to be justified.

As if these financial matters were not complicated enough, some illegal groups reinvest a significant portion of total revenues in legal activities and organizations (typically in the base country of operation). The Sicilian Mafia are known to put anywhere from 15-25% of their earnings back directly into the Italian economy through direct spending and investment. This principle underscores the dependence of the legitimate economy on the black market, and the devastating economic consequences that can come from disabling criminal operations (Castells, 2010). It can also be said that the higher the level of corruption within a country, the greater the financial impact of illegal contravention would be— a major concern within many developing nations. In such countries governments face an objective interest conflict. On one hand, there is the desire to curb illegal activities and all of the harm that they can bring, but on the other hand there is reliance on the illegal sector as a major source of economic stimulus.

Within developing nations there also tends to be a higher rate of predatory organized crime. Rather than seeking to satisfy the demand for illegal goods and services, this type of structured crime exists to profit primarily from activities such as violence, fraud, racketeering, extortion, and corruption in general. There are two explanations for the emergence of predatory organized crime: the state failure hypothesis and the economic failure hypothesis. State failure theory states that if governments are unable to ensure political stability and security, criminal

organizations adopt the role of enforcer. Economic failure hypothesis asserts that as a result of poor economic conditions criminal organizations emerge as the suppliers of products, services, and employment. A global analysis shows that both theories hold merit, and can often be seen at play simultaneously. Interestingly, predatory organized crime tends to scare off foreign investment and other would-be legitimate and stable sources of economic development, which further ensures the opportunities for illegal organizations (Hung-En Sung, 2004).

Chapter 6: Literature Review of Key Themes in Legal Supply Chain Management

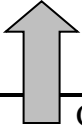
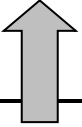
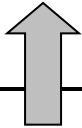
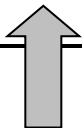
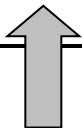
RQ3: What are the important theories and themes from the current body of SCM literature that can also be used to explore the function, form, and behaviour of ISCs in relation to LSCs?

6.1: Legal Supply Chain Strategy

Arguably the most important concept in all of legal SCM is supply chain strategy. Very simply, supply chain strategy provides the direction for how a supply chain as a whole should operate. A sound strategy will identify competitive priorities (such as efficiency and effectiveness), provide guidelines for how to achieve competitive advantage, and be difficult for other supply chains to imitate. The purpose of this section is to explore this fundamental concept in enough detail to understand the supply chain of the Sinaloa Cartel. The resulting information will then be used to analyze the case data, and explain/test the related propositions, namely P2.

Table 9, adapted from Tan (2001), exhibits the general strategic vision in SCM. Supply chain strategy is to be derived from the corporate vision, and then used to reinforce such vision. The strategic plans that are made must then be supported by the appropriate processes at the tactical and operational levels. Tan shows that a key aspect of corporate vision is ensuring customer satisfaction, and by satisfying customers through effective SCM practices it is possible to see actual business results. Ideally, SCM strategy is to be used in conjunction with the strategies generated by other functional areas (otherwise problems resulting from silos may occur).

Table 9 – Strategic Vision of Supply Chain Management

 Business Results	Business results are the outcomes of customer satisfaction
 Customer satisfaction	Customer satisfaction is the key indicator of successful processes; it is used to control the strategic plan and modify the corporate vision
 Processes	Processes are designed to support the overall strategic business plan and execute the tactical plans
 Strategic planning	Vision is translated into a strategic business plan
 Corporate vision	Leadership is the foundation of successful business results

Adapted from Tan (2001)

In order for a supply chain strategy to be effective, it must be present throughout the entire supply chain. A supply chain “strategy” that does not consider the full gamut of activities is not considered to be truly competitive. Whatever supply chain strategy is adopted, it is understood that it must adequately consider both the product and marketplace in which the supply chain operates (Sukati, Hamid, Baharun, & Yusoff, 2012). Note that the majority of research performed on SCM strategy is geared towards for-profit supply chains, but there also exists a solid amount of literature on non-for-profits as well.

One example of a strategic approach to managing supply chains suggested by many researchers, including Frohlich and Westbrook (2001), is that of integrated SCM. Integrated SCM involves the highly coordinated flow of goods and information throughout the entire supply chain. The goal is to seamlessly manage the supply chain as if it were a single organization. In order to achieve such synchronization, open and constant communication as well as appropriate IT systems are necessary (Van Hoek, Commandeur, & Voss, 1998). Some examples of the best practices that rely on integration are postponement and mass customization.

Though these two practices often go together, they are still somewhat different. Postponement is where the manufacturer produces a generic product that can be sufficiently modified at the final stage of production in accordance with customer specifications. On the other hand, mass customization focuses on combining the low unit costs of mass production with the flexibility of individual customization. In conjunction these strategies have been proven by the industry juggernauts such as Dell and HP to create a significant competitive advantage (Lummus, Vokurka, & Alber, 1998). Integration would certainly benefit effective ISC management as well.

Over roughly the last 15 years the concepts of leanness and agility have prevailed within the supply chain literature. A lean supply strategy originates from the Toyota production system, where emphasis is placed on the elimination of waste in all its forms. Lean operations customarily go hand-in-hand with just-in-time (JIT) production, where goods are produced on an as needed basis in order to minimize inventory holding costs and expose production problems. JIT production is known to work exceptionally well when demand is stable and variability is low (Christopher, 2000). Agility, on the other hand, is focused on improving supply chain responsiveness to high variability in market demand or other unpredictable events (Christopher & Peck, 2004). At first it was believed that leanness and agility were mutually exclusive, and the debate raged between proponents of either strategy. It was later argued through the concept of “leagility” that it is optimal to utilize both strategies in different parts of the same supply chain (Naylor, Naim, & Berry, 1999).

Table 10 shows four possible supply chain solutions on the basis of supply and demand characteristics. It is suggested that a lean approach always be taken when demand is predictable; with a long lead time it is suggested to produce ahead of demand in the most lean manner possible, while with a short lead time continuous replenishment of customer inventories is

suggested (though techniques such as vendor-managed inventories). When the supply is unpredictable and lead times are high, the leagile practice of postponement is preferable. With a short lead time and unpredictable demand, agility is believed to be the decisive strategic priority (Christopher, Peck, & Towill, 2006).

Table 10 – How Demand/Supply Characteristics Affect Supply Chain Strategy

		Supply characteristics	
		Long lead time	Short lead time
Demand Characteristics	Predictable	Lean (plan and execute)	Lean (continuous replenishment)
	Unpredictable	Leagile (postponement)	Agile (quick response)

Adapted from Christopher, Peck, & Towill (2006)

Vonderembse (2006) corroborates this. According to his research, there are 3 types of supply chains that match the three types of products: standard, innovative, and hybrid. Standard products, which are fairly simple and customized, pair best with a lean supply chain. Innovative products that necessitate new technologies are best coupled with an agile supply chain. Hybrid products, which tend to be fairly complex, are best catered to using a hybrid supply chain.

Another strategic decision supply chain organizations must make is with respect to the decision to outsource or offshore. Outsourcing involves contracting another organization to handle a particular supply chain activity, such as manufacturing. Offshoring specifically refers to outsourcing an activity internationally. The general principle behind the decision to outsource is whether or not another organization can perform the activity in question “better”, meaning faster, more cost effectively, and/or at a higher level of quality. If the decision to outsource provides a competitive advantage then on a strategic basis it should be seriously considered. Pisano and Shih (2012) provide a framework for what products should be considered for outsourcing or offshoring (Table 11). On the basis of the maturity of the process technologies and the

modularity of a product there are 4 theoretical categories: (1) process embedded innovation; (2) pure product innovation; (3) process driven innovation; and (4) pure process innovation.

Table 11 – Modularity-Maturity Matrix

Maturity	High	<p>Process-embedded innovation</p> <p>Process technologies, though mature, are still highly integral to product; subtle changes in process can alter the product’s characteristics in unpredictable ways; design cannot be separated from manufacturing, e.g., craft products, advanced materials fabrications</p>	<p>Pure product innovation</p> <p>The processes are mature, and the value of integrating product design with manufacturing is low; outsourcing manufacturing makes sense, e.g., computers, consumer electronics, active pharmaceutical ingredients, commodity semi-conductors</p>
	Low	<p>Process-driven innovation</p> <p>Major process innovations are evolving rapidly and can have a huge impact on the product; the value of integrating R&D and manufacturing is extremely high; the risks of separating design and manufacturing are enormous, e.g., biotech drugs, nano-materials, e-displays, super-miniaturized assembly</p>	<p>Pure process innovation</p> <p>Process technology is evolving rapidly but is not intimately connected to product innovation; while locating product design near manufacturing is not critical, proximity between R&D and manufacturing is, e.g., advanced semiconductors, high-density flexible circuits</p>
		Low	High
		Modularity	

Adapted from Pisano & Shih (2012)

Of course, any decision to outsource or especially off-shore has other non-business type considerations. The high extent of outsourcing in the US in particular has been the cause of much debate, and helped to prompt the entire “buy American” movement.

Ketchen and Hult (2006) are among the scholars who present an interesting argument for another increasingly popular SCM strategy: best value supply chains. A best value supply chain strategy emphasizes the need to understand competition less from a firm versus firm perspective, as was traditionally done, and more from a supply chain versus supply chain perspective. Table 12 shows a comparison between best value supply chains and traditional supply chains with respect to five main issues: the view of SCM, agility, adaptability, alignment, and competitive priorities. It is suggested that a best value supply chain strategy is superior in terms of its approach to all of these issues.

Table 12 – A Comparison of Best Value and Traditional Supply Chains


Issue	Best value supply chains	Traditional supply chains
View of supply chain management	“Strategic supply chain management”—chains are a strategic weapon	Chains are a method to move products in order to support strategy
Agility	Strong ability to be proactive as well as responsive to changes	Modest ability to respond to changes
Adaptability	Maintain a limited set of multiple chains to ensure distribution	Often limited to single chains or a large number of chains
Alignment	Interests of participants coincide (or are developed to be synergistic)	Participants forced to choose between own and chain’s interests
Competitive priorities	Total value across speed, quality, cost, and flexibility	Emphasizes one of the four competitive priorities

Adapted from Ketchen & Hult (2006)

An even-growing area within the supply chain literature is green or sustainable supply chain management (SSCM or GSCM). In response to the growing environmental and energy crisis globally, supply chain operators must find solutions that preserve harmony with nature, efficiently use resources, and minimize waste. While there is certainly an element of social corporate responsibility to this, sustainable supply chain solutions often mean lower costs, which is essentially a win-win scenario. The terms of sustainability and green have become so popular in a supply chain context that they are basically the definitive buzzword of the modern era. This has been evidenced by a rise in the popularity of green certifications, such as ISO-14001. A literature review by Fish (2015) shows that there are considered to be several areas of best practice within SSCM. The first has to do with top management support for green initiatives. This includes the development of a supply chain where sustainability is integrated, appropriate resource allocation to these sustainability efforts, financial support, and linked information systems. The second area involves focusing on market demands. This primarily involves analyzing the market for sustainable needs and capabilities. Supplier/customer integration is the third area, where selection of suppliers with the same sustainability principles or willingness to commit to green improvements is paramount. The fourth area has to do with integrated networks, where there is streamlined information exchange between partners in the supply chain supported by cutting edge software and hardware. Coordinated, cross-functional teams are also considered to be very useful in establishing sustainable practices; such coordination allows for communication and idea sharing between departments. Another aspect of this is to include sustainability experts from outside the organization for a fresh perspective. Lastly, a clear product vision that meets sustainability targets is crucial. Table 13 compares the difference in approach between traditional SCM and SSCM across 6 definitive dimensions: the background

that fostered the approach, all of the elements considered in designing and implementing strategies, the main activities associated with such strategies, the underlying theories, the manufacturing model or structure, and the main strategic objectives (Dawei, Hamid, Chin, & Leng 2015).

Table 13 – Comparison Between Traditional Supply Chain Management and Green Supply Chain Management

Dimensions	Traditional Supply Chain Management	Green Supply Chain Management 
Background	Accelerated diversification and uncertainty on market	Environmental degradation and resources shortage
Essential elements	Supplier, manufacturer, distributor, retailer, consumer	Supplier, manufacturer, distributor, retailer, consumer, society and environment
Primary activities	Material Flow, information flow, capital flow	Material Flow, information flow, capital flow, knowledge flow
Theoretical basis	Optimal allocation of resources	Optional allocation of resources, sustainable development (equity theory)
Manufacturing models	Lean production, agile manufacturing	Cleaner production, green manufacturing
Strategic objectives	Reducing uncertainty and maximizing benefits	Optimizing the allocation of resources with environmental compatibility in mind

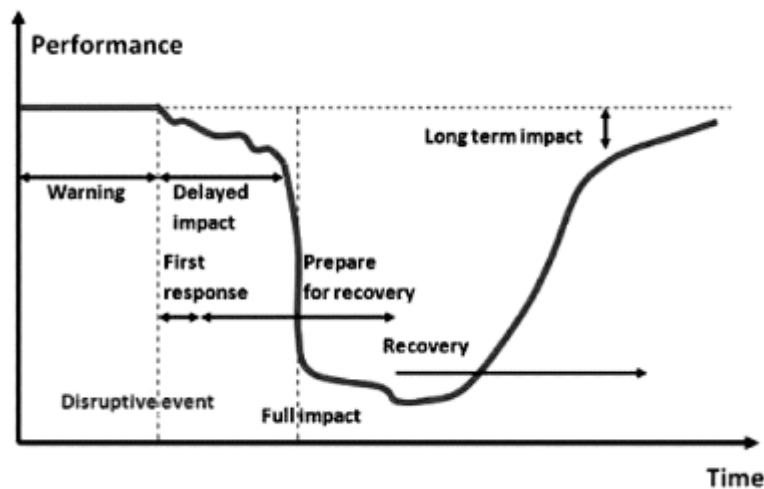
Adapted from Dawei, Hamid, Chin, & Leng (2015)

Creating a sustainable supply chain is not an easy process, especially for firms within the supply chain where such changes would mean a major cultural shift. Often times it can be difficult to discern exactly what the customer's green demands are. In a manufacturing context, being green often means some type of recycling program for scrap materials; however, the type

of scrap being dealt with may not be suitable for recycling or rework. Minimization of resource inputs, such as materials or energy, may also prove challenging as a process may already be running at a higher level of efficiency (that still falls below green standards). Finally, selection of materials for a low environmental impact could also be a problem if they are not substitutable (Dubey, Gunasekaran, & Ali, 2015).

In an era of globalization where supply chains tend to be complex and cross international borders they are subject to numerous risks, including supplier failure(s), loss of talent, changing laws, transportation network failure(s), weather disruptions/natural disasters, telecommunication malfunction, cyber-attacks, and even terrorism. The degree to which a supply chain can handle these uncertainties and still function is known as supply chain resiliency– the ability of the supply chain to return to its original form after disruption. If such circumstances are not managed appropriately, they can lead to a severe loss in competitive advantage, profitability, and in extreme cases perhaps even bankruptcy. Essentially, the extent of these vulnerabilities must be accounted for in any type of business succession planning.

Figure 7 – The Impact of Risk on the Supply Chain



Adapted from Mensah, Merkurjev, & Longo (2015)

Figure 7 displays the impact of risk according to performance and time. Once a risk (disruptive element) takes place both a supply chain and the associated organization require time to recover. The time it will take the participating organizations to recover depends entirely on how well prepared they are to handle such a disruption. Adequate handling of such circumstances requires well developed continuity plans, flexibility, and agility. Post-disruption there is a marked drop in performance, ultimately affecting productivity. The first response to such a scenario, preparing for recovery and recovery, is a time-consuming process. If the disruption is in fact significant, then the only organizations that are likely to survive are those with strong finances and strategic conscientiousness, such as Apple or General Motors. Conversely, virtually no small and middle size organizations can absorb such a blow (Mensah, Merkurjev, & Longo 2015).

Christopher and Peck (2004) state that there are four key steps to be undertaken in order to construct a resilient supply chain: (1) re-engineer the supply chain to build resiliency into the system prior to any disruption occurring (proactivity); (2) collaborate at a high level with all supply chain partners to effectively identify and manage risks; (3) become agile enough so that the supply chain can react to any emergent risks; and (4) foster a culture of risk management throughout the supply chain.

6.2: Legal Supply Chain Relationships

The following section will delve deeply into the concept of supply chain relationships. Succinctly stated, healthy inter-organizational relationships are essential for effective supply chain management. The theories presented herein will be used to explore the case data in relation to the propositions, especially P3 and P4.

There are many specific examples of how effectively creating and managing supply chain relationships can make an entire industry successful, which is exemplified by the Chinese automobile sector. Historically this was an industry where independent companies did not have close ties. Over recent decades this sector has become increasingly competitive and profitable in the global marketplace through dramatically improved communication and cooperation. Specifically, the associated increased information sharing has allowed supply chain partners to work in unison to improve the design quality of their product lines in response to changing and generally rising consumer demands (Dong-Hua, & Zailani, 2011).

The SCM literature on relationship building revolves heavily around the study of trust and commitment between supply chain parties. Trust is viewed as a critical factor for fostering successful relationships and long-term commitment within the supply chain. In general, the presence of trust is strongly linked to successful supply chain performance. Conversely, a lack of trust among supply chain partners has been proven to result in the inefficient and ineffective performance of the supply chain as a whole. In a supply chain that lacks trust every transaction is carefully scrutinized, which in turn drives up transaction costs overall (including those relating to verification, inspections, and certifications) (Sahay, 2003).

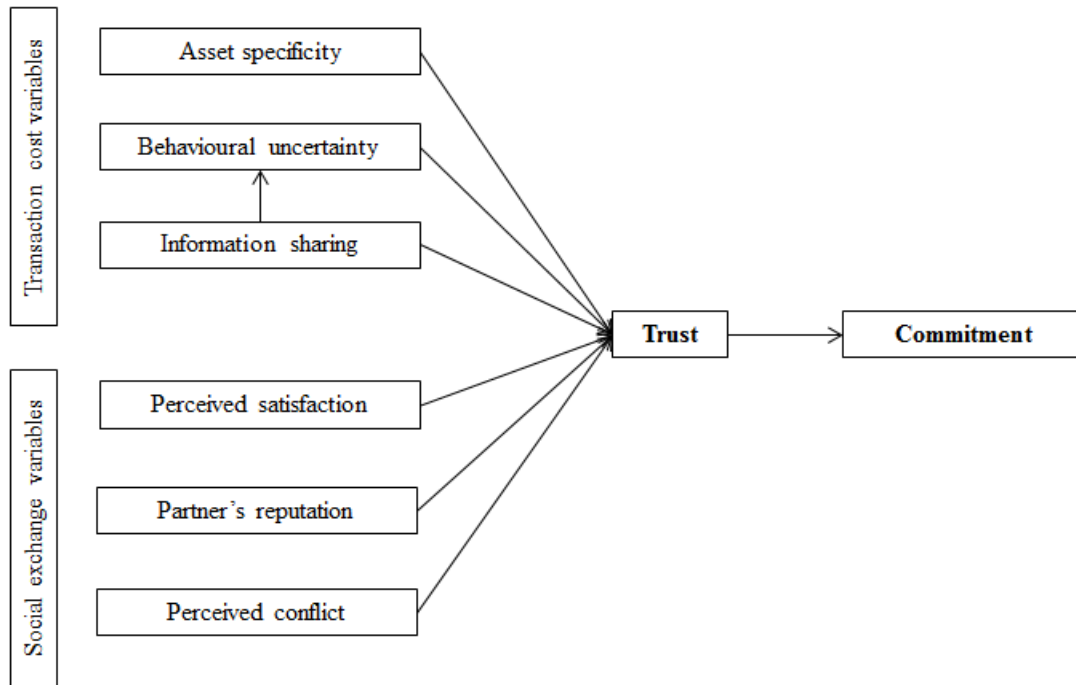
One of the central questions when exploring inter-organizational trust in supply chain relationships is “What does trust lead to?” Literature reviews on the topic have succinctly identified plethora of benefits, including: an increase in partners’ loyalty and support for change, an increase in affective commitment, a decrease in calculative commitment, higher degrees of relationship satisfaction and overall relationalism, higher chance of relationship continuity, joint responsibility for issues, willingness to financially invest in the relationship, increased information sharing, and more efficient and effective supply chain performance (Daugherty,

2011; Delbufalo, 2012). Of course, too much of any one good thing can have negative effects. High-trust relationships sometimes display low productivity, resulting from a culture of complacency. Additionally, in high-trust situations one party may sometimes abuse the trust of another (Delbufalo, 2012).

Trust is a complex concept in the literature, and is something that is normally quite difficult to implement in a supply chain. Blois (1999) states that trust in a supply chain can only be achieved when one party makes itself vulnerable to another by sharing of financial, strategic, and other operationally based information. Similarly, building trust “relies on the willingness to sacrifice independence” and building mutual dependence (O’Keefe, 1998). Sahay (2003) contends that trust in a customer-supplier relationship emerges from 3 conditions: (1) the perceived benefit of trusting a supply chain partner is higher than the costs; (2) the ability for one party to predict another party’s behaviour; (3) and determining that one party is capable of meeting another’s obligations.

Kwon and Suh (2004) provide an interesting conceptual model for the factors of trust that are required for fostering commitment in a supply chain (Figure 8). These factors are taken from transaction costs economics and social exchange theory. Asset specificity refers to the asset based investment that one supply chain party has made in another and the related asset costs that would be incurred if the relationship was terminated. The arrow between information sharing and behavioural uncertainty in Figure 8 is included to show that information sharing can help improve the degree to which one party can predict another’s behaviour. The perceived satisfaction from transactions, a partner’s previous reputation, and the perceived conflict resulting from interactions also factor heavily into trust.

Figure 8 – Factors of Trust Required for Creating Interfirm Commitment in a Supply Chain



Adapted from Kwon & Suh (2004)

Because trust in SCM relationships is heavily contingent on information sharing, linked IT systems are an essential part of the equation. Such systems allow for the instant exchange of information required for ongoing transactions including order placement and fulfillment. IT systems in this regard have also been proven to create additional value in inter-firm relationships, in the form of tangible and intangible benefits, such as cost reductions and a greater willingness to accommodate (Subramani, 2004). IT alignment has also been proven to have a direct positive benefit on the strategic and operational levels for suppliers in particular (Sanders, 2005).

Buyer-supplier relationships have also been found to impact a supply chain's ability to respond to unpredictable changes. In situations where relationships have been too restrictive, the necessary flexibility to deal with these emergent circumstances is absent. Conversely, in situations where the relationships are too lenient there is a risk of less-than-committed supply

chain partners taking advantage of others. The evolution of SCM as a whole has seen a decline in the transactional nature of doing business, and a sharp upswing in collaboration through trust and information sharing. This was first due to an increase in governance mechanisms, but later was the result of a greater understanding of the benefits of collaboration (Hoyt & Huq, 2000). A relationship with a high level of trust is sometimes called a supply chain alliance. Supply chain alliances are specifically defined as a “constellation of agreements typified by a commitment between two or more partner firms to reach a common goal that involves a pooling of resources and activities” (Teece, 1992).

Supply chain trust is exemplified by what is referred to in the literature as “collaborative supply chain relationships”. Formally explained, supply chain collaboration is when two or more parties work together to achieve competitive advantage (and hence, this may also be considered a strategy). Collaborative supply chain relationships have been shown to have numerous benefits for the supply chain, including “increased sales, improved forecasting, more accurate and timely information, reduced costs, reduced inventory, and improved customer service” (Whipple & Russell, 2007). Whipple and Russell (2007) assert that there are three types of collaborative relationships: (1) collaborative transaction management; (2) collaborative event management; and (3) collaborative process management. Each of these types varies on the basis of 10 factors: (1) people characteristics; (2) process characteristics; (3) technology characteristics; (4) degree of involvement in decision making; (5) collaboration focus; (6) time horizon; (7) classification of the return on the relationship; (8) organizational level; (9) informational domain; and (10) knowledge level. The authors conclude that both the number of relationships and expected payoff increases is highest at a Type I level (relative to Types II and III), and on this basis firms should strive to achieve Type III.

Another key concept in supply chain relationships is power. Power can be simply explained as the ability of one supply chain party to influence or force another to act in a specific way. In the literature on power structures, supply chains are broken down into dyadic relationships between positional buyers and suppliers and studied accordingly. Research shows that there are benefits and drawbacks to power imbalances in these relationships. In situations where a buyer holds the majority of power, they have the ability to force a higher level of performance out of their suppliers. This improved performance is achieved by driving greater adherence to expectations, and more importantly, implementation of new initiatives aimed at benefiting the buyer. This pushing of initiatives is known as proactive rather than reactive supplier development and is often beneficial to the supply chain as a whole. Suppliers may refuse these initiatives if they deem them to be detrimental to their organization and either hold the balance of power, or hold some type of veto privilege that can be exercised without destroying the relationship. An imbalanced power structure has also been shown to lead to misalignment of key strategic goals between buyers and suppliers. This is because the party with more power will be inclined to act solely within its best interests. In turn, power imbalances can be a result in decreased supply chain integration and more fractured or unstable relationships (Cox et al., 2004; Watson, 2001).

Relationships in a supply chain setting also tend to have a cohort type effect: good practices are often shared among close partners. This is especially true in terms of innovation, where the level of innovation of one supply chain partner often influences another. The majority of these shared innovations originate from practices that directly involve or impact other firms. In the Intel Inside program, for example, the supply chain partners observed first hand Intel's streamlined approach to pallet configuration and began to adapt this practice. It is not simply

enough to be a passenger in a supply chain where innovation is being practiced, however. Managers within each participating firm must realize the benefits of the innovation and work to install the facilitating practices and procedures. Along with this, it is necessary for managers to invest in strategic relationships with supply chain partners in order to tap into their innovations. Such innovations are not always as overt as in the Intel example, and may not be gleaned without appropriate communication and collaboration. The concept of shared innovation is impactful because innovation is widely regarded in the literature as being a key source of competitive advantage (Oke, Prajogo, & Jayaram, 2013).

Supply chain relationships can further be conceptualized as social transactions. These transactions require partners to behave in a fair (“just”) manner with respect to one another in order to be truly beneficial. This ties into the idea of social exchange theory (SET), which states that transacting parties deal with each other on the basis of expecting rewards and fearing punishment, or the exacting of “justice”. The concept of justice in this sense has an important impact in a buyer-supplier relationship due to economic and relational considerations. There are three dimensions of justice in this regard: procedural (degree of fairness with which governance decisions are taken in the exchange relationships), distribution (the fairness of rewards in the relationship based on the effort expended), and interactive (the degree of openness shown by the transacting parties in communicating relationship relevant information and in managing conflicts). It has been found that an increase in one of these dimensions will result in a positive improvement of performance only if it is the main justice mechanism in the relationship. Research also suggests that all three of these dimensions are vital in building healthy inter-organizational relationships, and a high level of one type of justice cannot offset a low level of another (Narasimhan, Narayanan, & Srinivasan, 2013).

In the research base the concept of cooperation has been exhaustively studied within firms as the key aspect of supply chain relationships. Hammervoll (2011) proposes that in order to fully understand commitment within supply chain relationships researchers must consider the full range of relationship properties that may impact a supply chain. Though there has been a concerted effort to do more of this in recent times, as evidenced by the preceding discussion on relationship parameters (especially trust), this discourse has overlooked the notion of some important aspects of relational capital. There exists a variety of relational theories on individuals and organizations that can be applied to a supply chain context, leading to new and necessary research efforts. Of paramount consideration are theories of financial, social, and psychological commitment. With respect to finances, the greater financial investment of one firm in another the higher the perceived “commitment to the marriage”. On social commitment it is necessary to consider trust, pre-established beliefs regarding the anticipated success or failure of a relationship, and the degree of goodwill. Psychological commitment is thought to result from escalating commitment and reputation of a decision maker. This poses especially interesting research questions as sometimes supply chain partnerships are less than ideal due to these considerations alone. Hammervoll concludes that there is a honeymoon period following the formation of a new supply chain relationship, where the threat of dissolution is non-existent and many mistakes are forgiven. However, the main takeaway from his work lies in another theory he identifies: due to the seemingly personal nature of key supply chain decisions, the ideal unit of measurement for a supply chain may in fact be the individual with the greatest power or influence on the network.

A lack of proper performance measurements has been one of the greatest hindrances to the understanding and implementation of SCM. In response to this, Chelariu, Asare, and

Brashear-Alejandro (2014) present a “comprehensive” framework for supply chain performance. This framework is known as ROSE, which stands for relational, operational, and strategic, and economic. Supply chain performance has traditionally placed emphasis on the operational and economic performance measures, disregarding the relational and strategic elements— often to the detriment of the organizations studied. By incorporating this four-pronged approach to performance measurement, it is believed that firms will eventually reach new levels of success. Relational in this context is defined as the quality and strength of a relationship between a firm and its partners. Operational refers to the extent to which a firm meets the operational requirements as crafted by its supply chain partners. Strategic is explained as the process through which managers try to ensure the long term success of an organization. Economic performance considers the extent to which a firm realizes economic value for itself or its partners. The type of performance measures typically used within an organization varies based on its governance forms. Market governance structures consider relationships as short-term or transactional. In a unilateral governance structure the balance of power is held by one party in the supply chain and they use said power to exercise their influence over all major aspects. In bilateral governance structures emphasis is placed on relationships and collaboration. Table 14 reflects the usage of the ROSE performance measures on the basis of governance forms. In a market governance structure the emphasis is on economic returns, so only economic measures tend to be used. In a unilateral arrangement, companies are less interested in building long-term relationships so strategic measure usage is low. In a bilateral structure there is a higher incidence of using all performance measures, since all dimensions of business-to-business and business-to-customer relations are considered.

Table 14 – Relationship Between ROSE Performance Measures and Governance Forms

Performance measures and the likelihood they will be used	Governance forms		
	Market	Unilateral	Bilateral
Relationships	Low	High	High
Operational	Low	High	High
Strategic	Low	Low	High
Economic	High	High	High

Adapted from Chelariu, Asare, & Brashear-Alejandro (2014)

Of course, not everything when it comes to supply chain relationships is ROSEY. When the performance of a supply chain dips, relationships for all parties, be they a supplier or buyer of a product, tend to suffer. This is otherwise known as ‘damage’ in the supply chain literature. If these relationships suffer extensive damage, the consequence may even be the dissolution of the relationship. The theory of supply chain damage is composed of a number of related concepts: underperformance (a specific incident where expectations are not matched), transactional change (monetary costs associated with underperformance), destructive reactions to damage (disengagement), constructive reactions to damage (positive voice and change), dependence (on another organization to meet targets), interdependence (the sum of all dependencies across a supply chain), attribution (causal explanations for failures), governance (as described in the previous paragraph), and principles of fairness (equity). In order to properly measure the extent of damage in supply chain relationships, it is necessary to consider and test for all of the damage dimensions. This is especially true in light of the fact that some of these principles are offsetting. Until this point many of the studies on the topic of damage have focused on only one of a few of these related principles, and are therefore considered incomplete (Hammervoll, 2011).

Chapter 7: The Sinaloa Cartel and its Supply Chain

RQ4: What is the Sinaloa Cartel, and how did it come to be the “largest and most powerful criminal network in the world”?

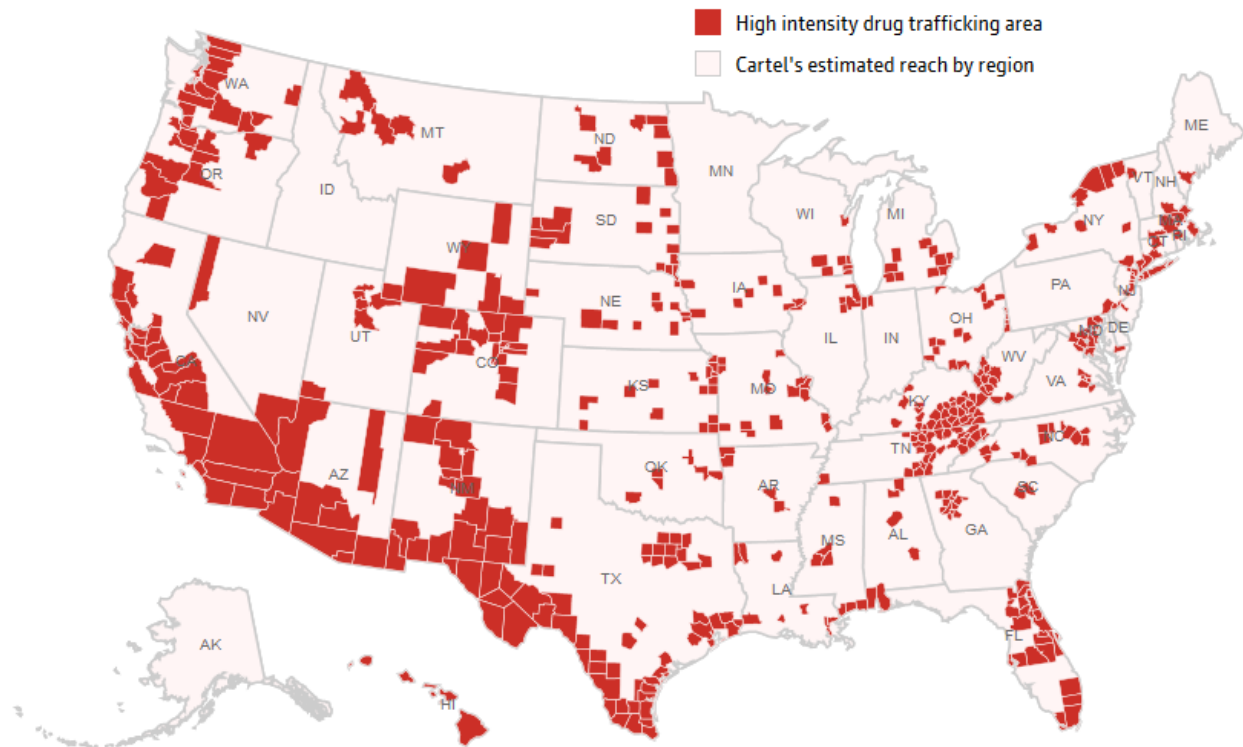
7.1: An Overview and History of the Sinaloa Cartel

The Sinaloa Cartel (SC) is among the largest, most influential, and most connected organized crime syndicates in the world today. The SC deals primarily in the production and distribution of illegal narcotics; its operations are concentrated in the Golden Triangle region of Mexico (across the states of Sinaloa, Durango, and Chihuahua). The SC also holds a dominant presence in cities and towns (“plazas”) along the Mexico-US border, particularly with the area bordering Arizona (Figure 9). Remarkably, the “world’s most powerful gangsters” are also known to have a footprint in every major American city, making the US their largest marketplace (Figure 10).

Figure 9 – The Sinaloa Cartel’s Main Area of Operations



Figure 10 – Footprint of the Sinaloa Cartel Inside of the US



Adapted from The Guardian (2014)

Based on information provided by the National Drug Intelligence Center, the SC deals in a range of controlled substances from largest in volume to smallest including: marijuana, methamphetamine, cocaine, heroin, and an increasingly popular variation of ecstasy known as MDMA (3,4-methylenedioxy-methamphetamine) or Molly (Chokshi, 2014; Mallory 2007). The Federal Bureau of Investigation (2010) provides further information about dealings of Mexican Drug Trade Organizations (DTOs) in the aforementioned narcotics, as summarized in Table 15. All of these findings are directly applicable to the SC as the largest cartel.

Table 15 – The Scope of Drug Trafficking Along the US-Mexico Border

Substance	Description
Marijuana	<ul style="list-style-type: none"> • Mexico is the number one foreign supplier of marijuana abused in the US • According to a 2008 inter-agency report, marijuana is the top revenue generator for Mexican DTOs, a cash crop that finances corruption and the carnage of violence year after year • The profits derived from marijuana trafficking, an industry with minimal overhead costs, controlled entirely by the traffickers, are used not only to finance other drug enterprises by Mexico’s poly-drug cartels (including the SC), but also to pay recurring “business” expenses, purchase weapons, and bribe corrupt officials
Meth-amphetamine	<ul style="list-style-type: none"> • Mexico is also the number-one foreign supplier of methamphetamine to the US • Although the Mexican government has made enormous strides in controlling and even banning the importation of methamphetamine precursor chemicals such as ephedrine, pseudoephedrine, and phenyl acetic acid, Mexican methamphetamine-producing and trafficking organizations are proving to be extremely resourceful in circumventing the strict regulatory measures • There is considerable financial incentive for the Mexican DTOs to sustain a trade they control from manufacture to distribution and, in fact, Mexican authorities seized more methamphetamine labs in 2009 (210) than in the five previous years combined
Cocaine	<ul style="list-style-type: none"> • Mexico is a significant player in the global cocaine trade • Since the 1980s, Mexico has served as a primary transportation corridor for cocaine destined for the US • While Mexico is not a coca-producing country and therefore cannot control the trade from beginning to end, traffickers in Mexico have managed nonetheless to exert increasing control over the trade in exchange for shouldering the greater risk inherent in transporting the

	<p>cocaine and ensuring its distribution in the US</p> <ul style="list-style-type: none"> • In recent years, Mexican trafficking organizations have extended their reach deep into South America to augment or personally facilitate cooperation with Colombian sources of supply, or to develop relationships with alternate sources of supply in other cocaine-producing countries, particularly Peru • Demonstrating an even further reach into global cocaine markets, Mexican drug traffickers have evolved into intermediate sources of supply for cocaine in Europe, Australia, Asia, and the Middle East. • Mexican DTOs dominate the wholesale distribution of cocaine and other drugs of abuse throughout the US
Heroin	<ul style="list-style-type: none"> • Mexico is an opium poppy-cultivating/heroin-producing country • While Mexico accounts for only about 6 percent of the world’s opium poppy cultivation and heroin production, it is a major supplier of heroin to abusers in the United States, particularly in regions west of the Mississippi River • It has been alarming to note that Mexican black tar and brown heroin has appeared increasingly in eastern-U.S. drug markets over the past several years • Mexico was identified as the source country for 39 percent of the samples classified in 2008, the largest representation of Mexican-source heroin in the United States in the past 20 years • As with the production of methamphetamine, Mexican cartels appear to be seeking to maximize revenues from an industry that they control from production through distribution

Adapted from the Federal Bureau of Investigation (2010)

The SC is also heavily involved in money laundering and currency fraud, in addition to dabbling in human trafficking through the sex trade. A hallmark of the SC is the use of extreme violence as a mechanism of ensuring internal and external compliance, and for dispute

“resolution” with rival organizations as well as the authorities. Since its inception the SC has been referred to by many other names as well, including the Pacific Cartel, the Guzmán-Loera Organization, The Federation, and the Blood Alliance (Dean, 2014).

The SC is thought to be responsible for importing approximately 200 metric tonnes of cocaine and heroin to the US between 1990 and 2008 (Vicini & Pelofsky, 2009). In 2014 the SC was believed to ship an estimated \$12 billion worth of illegal drugs to the US; the SC’s smuggling activities is thought to account for 25% of all drugs entering from Mexico (Chokshi, 2014; Forbes, 2014). \$8 billion of this trade was in marijuana. To put these numbers in perspective, the valuation of the entire US drug trade from all sources, both domestic and international, is in the vicinity of \$65 billion per year. In order to disperse this kind of revenue over the years the SC has pioneered and more or less perfected what the Federal Bureau of Investigation (2014) has termed the Black Market Peso Exchange:

“In a BMPE scheme, a peso broker works with an individual engaged in illegal activity, such as a drug trafficker, who has currency in the United States that he needs to bring to a foreign country, such as Mexico, and convert into pesos. The peso broker finds business owners in the foreign country who buy goods from vendors in the United States and who need dollars to pay for those goods. The peso broker arranges for the illegally obtained dollars to be delivered to the United States-based vendors, such as the stores in the Fashion District, and these illegally obtained dollars are used to pay for the goods purchased by the foreign customers. Once the goods are shipped to the foreign country and sold by the foreign-based business owner in exchange for pesos, the pesos are turned over to the peso broker, who then pays the drug trafficker in the local currency of the foreign country, thus completing the laundering of the illegally obtained dollars.”

The SC has also employed a number of onshore and offshore banks to launder their funds, including HSBC as discussed earlier. The SC also employs the practice of buying high-demand consumer goods from within the US with illegal funds, shipping these products to Mexico then selling them to generate legitimate currency (Federal Bureau of Investigation, 2010).

The SC was born out of the activities of Pedro Avilés Pérez in the late 1960s. The then Federation/Blood Alliance began its foray into the world of illegal crime with distribution of “recreational drugs” such as marijuana in 10-ton shipments into the US. In order to deliver such sizeable shipments, Pérez engaged in bribery and exploited the unsecured points of the US-Mexico border. Pérez was not necessarily an innovator, but he recognized a good idea when he saw one: he was the first drug kingpin to make use of airdrops to distribute drugs. Just as the military performs supply drops, Pérez would package together shipments and deposit them at (or as near as possible to) the predetermined collection points (McRae, 2003). Using these tactics Pérez was able to grow the Sinaloa into what today would be a billion dollar organization within just two short decades (Dean, 2014). For this reason, Pérez is largely credited with birthing large-scale Mexican drug trafficking.

Like many kingpins Pérez was killed in a shootout with the Mexican Federal Police in 1978. The entire event was believed to have been set up by the gang's treasurer in an unsuccessful bid for power. Following Pérez's death the cartel splintered somewhat and took different directions depending on the region. Pérez's foreman in Chihuahua, Rafael Caro Quintero, expanded operations in the north by acquiring new marijuana and poppy plantations. Operations within the south (headquartered in Guadalajara) were overseen by two persons, the first being Miguel Angel Félix Gallardo. Gallardo had a particularly interesting work history;

prior to getting involved with the SC he worked as a Sinaloan State Police trooper and as a body guard to the governor of Sinaloa (McRae, 2003). Gallardo chaired the Guadalajara operations alongside Ernesto Fonseca Carrillo, a man from Ecuador with a rich history of international drug smuggling. During his time with the Governor apparently Gallardo learned a lesson or two in diplomacy, because his major contribution to furthering the organization was entering into partnership with the Colombian DTOs, hailing from the Cali and Medellín regions. The agreement was that the SC would distribute cocaine for the Colombian DTOs across their network in the US in exchange for 50% of the sales. This proved to be very lucrative for the then three heads, who were quickly pulling in \$5 billion each annually (Scott & Marshall, 1998). Carrillo used his expertise in managing international supply chains to ensure that the arrangements with Colombia ran smoothly (Nash, 1993).

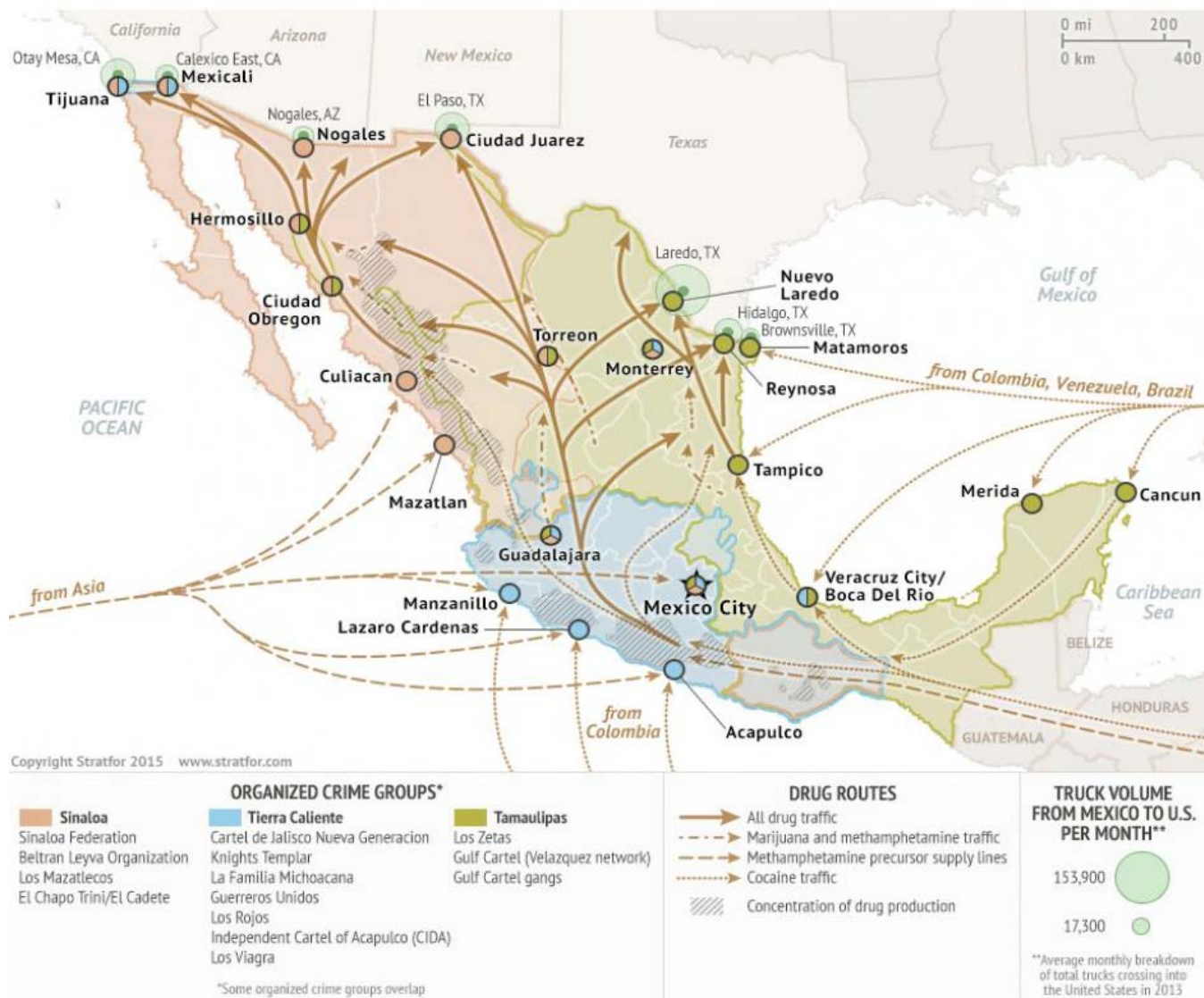
But the most important man of the day, and indeed of the coming decades, would be Perez's nephew: Joaquín "El Chapo" (The Shorty) Guzmán Loera. Guzmán is known as "the godfather of the drug world", surpassing even the infamous Pablo Escobar in terms of reputation. Indeed, Guzmán is a modern Al Capone in many ways— including being the first person to earn the title of Public Enemy Number 1 since Capone himself. He is described as quick as he is charming, and he is glorified by many in Mexico as a folk hero, especially in his home state of Sinaloa. At his peak Guzmán was worth approximately \$1 billion USD, and was considered among the top 100 powerful people in the world (Forbes, 2014). Guzmán is a real rag to riches story: an illiterate boy hailing from a poor rural family that dabbled in marijuana growing, he showed a flair for the family business at a young age, establishing his own marijuana plantation by the time he was 15. In his uncle's eyes it was clear that he would make a fine addition to the Cartel ranks, and Guzmán was invited to join in 1974 when he was 20. Guzmán was quick to

make an impact in the organization, successfully coordinating air shipments between Mexico and the US and displaying a distinctly ruthless approach to business: if the shipper was late in delivering the goods, they were killed on site. Guzmán's then boss, Hector Palma Salazar, saw real potential in Guzmán and introduced him directly to Gallardo who groomed him for leadership. By the 1980s Guzmán was directly overseeing the drug shipments from Colombia by air, land, and sea. Following the arrest of Quintero, Gallardo, and Carrillo, Guzmán became one of the new heads of the SC alongside Salazar. In 1995 Salazar was arrested, positioning Guzmán as the sole leader of the SC. Guzmán sought out an alliance with the Juárez Cartel, in the face of the growing power of the Gulf Cartel. In 2003 Guzmán became the most powerful drug kingpin in all of Mexico, when the leader from the Gulf Cartel was arrested. Guzmán remained in this position of power from 2003 through to his second arrest in February 2014 (Beith, 2010), where he was moved to Mexico's (supposedly) most secure prison, Altiplano. Guzmán was kept in a solitary cell until July 2015 when he escaped through a hole in the bottom of his shower. Using a motorcycle Guzmán sped to his freedom down a 1.5 kilometre tunnel that ran straight under the prison (Neuman, 2015). At the time of this writing, he is still at large.

The modern wave of Mexican drug related violence flared up around 2007. Around this time the temporary alliance between the SC and the Juárez Cartel was dissolved as the two cartels along with many others began to battle. The "others" included the Carrillo Fuentes Syndicate, the Beltran Leyva Organization, the Arellano Felix Organization, and Los Zetas—unique for its military foundations. In the years to come Los Zetas would arise as the SCs top competitor, leading to a bloody conflict that has extended to the present day. The ensuing violence was mainly localized to the northern Mexican states of Baja California, Sinaloa, and Chihuahua. Murders related to cartel activity are not as simple and quick as a Godfather style

drive-by— the goal is not just to kill, but also to intimidate and send a message. Consequently such killings commonly involve beheadings and/or gruesomely dissolving bodies in alkali solutions, which are even sometimes recorded and distributed online to send a very severe warning (BBC News, 2008; FOX News, 2009). The murders between these two factions are only a portion of the Mexican Drug War, whose death toll is in the range of 120000 (including bystanders) between 2006 and 2013 (Duffy, 2014). Figure 11 depicts the current areas of Mexican cartel influence, and their drug pathways. Note that for this depiction STRATFOR (2015) has grouped the cartels according to their regional basis, so supply routes for the SC and some of its competitors are amalgamated. Regardless, this diagram provides a useful perspective on the SCs concentration and supply routes.

Figure 11 – Areas of Cartel Influence in Mexico



Adapted from STRATFOR (2015)

Today the SC remains a significant player in the US-Mexico drug trade. In a 2008 report STRATFOR stated that in last decade the SC has also established new bases of operation in both Central and South America, as far south as Argentina. It would appear that the current strategy for the SC is to expand into new markets. The SC has positioned itself as a major supplier of narcotics in various Latin American and European countries, including cocaine and other party drugs— a strategy reminiscent of the Cartel’s very roots. Additionally, the SC is also known to ship products to Australia, Asia, and the Middle East. With Guzmán, the so-called “master of supply chain management”, once again free to run the Cartel’s operations, it will be interesting to see what direction it takes and how it will handle the increasingly violent threat by its competitors (Brancaccio, 2014).

RQ5: How is the supply chain of the Sinaloa Cartel structured and how does it operate?

7.2: Relationships

Over the course of its history the SC has entered into countless relationships with a variety of organizations or parties who fulfill a specific role or function in its supply network. These organizations can take on a number of roles including product supply, logistics, storage, distribution, and retailing.

In order for these relationships to form, the SC requires loyalty and trust. The concept of loyalty in this ISC is different than in standard business relationships. The SC needs loyalty from its supply chain partners to ensure secrecy of about the organization’s network and its leadership in the event of an arrest. Linked to this is the concept of trust. Trust in this context means that an organization is believed to deliver on the activity it has been contracted for, and that it can keep sensitive information confidential. Trust is most definitely not freely given by the SC. Trust is something that must be earned over time through consistently meeting, and probably even

exceeding, the Cartel's expectations. The SC only established long-term relationships with those organizations that it feels it can trust, and refrains from engaging in business relationships with organizations it knows little about. New business relationships are often the result of family and "friend" referrals, creating an implicit level of trust from the outset. The SC has also been known to test new partners to ensure they are trustworthy. Guzmán would test suppliers by adding unaccounted drugs or money to a shipment to see if his partner organizations, such as logistics providers, would steal. Those who stole and were found to be disloyal were hunted down and killed in horrific fashion.

By outsourcing its activities, the SC is gaining two benefits. Firstly, the SC is getting a service that a supplier can more capably do. The prime example of this is the fact that the SC chooses to buy its cocaine from Colombian DTOs rather than making it on its own. Secondly, the SC gains an added layer of protection. If a supply chain partner is arrested, and there is trust, only a supply chain interruption would occur. The integrity of the organization would remain intact and the SC would be free to contract another party to perform the same service.

Organizations partner with the SC because there is significant financial incentive for them to do so. The balance of power rests entirely with the SC. As soon as a relationship is no longer considered to be beneficial to the Cartel, or falls short of expectations, that relationship is terminated. The SC has embraced the tradition started by Guzmán of violently punishing parties and persons who fail to deliver. This fear of reprisal is a strong factor in ensuring partner compliance. The self-interest of the SC and its parties, the culture of fear, and arrests and captures all contribute to volatility in the SCs supply chain (Beith 2010; Keefe, 2012; Kurrle, 2013).

7.3: Logistics

Over the course of its infamous history the SC has utilized a plethora of different transport modes to move their products both into the US and internationally. If something is capable of carrying a shipment of drugs, the SC has probably used it as a method of transport. The full list of transport modes includes: passenger and cargo aircrafts, rail cars, container ships, high-speed watercraft, narcotics submarines, fishing vessels, buses, tractor trailers, courier trucks, automobiles, horses and mules, and even backpackers (Federal Bureau of Investigation, 2010).

Many of these methods of transport routinely enter the US from Mexico through perfectly legal and legitimate ways. A notable example of these from the air industry relates specifically to Boeing 747s. Traditionally the SC has used this and other large passenger aircraft types simply because the massive size of the vessel(s) means the availability of more hiding places. Narcotics are known to have been smuggled aboard aircraft by passengers, airline staff, and/or most commonly airport ground crew in exchange for remuneration by the SC or its affiliates. The compensation paid to these smugglers varies based on the size of the shipment and also the level of risk involved; during times when security is heightened, compensation is higher. Ground crew in particular is well suited to smuggle narcotics aboard as they have access to the cargo deck and other less conspicuous areas of the aircraft. When a “package” is loaded by ground crew on one end it needs to be offloaded by crew at the destination airport. The contraband will either be stashed at a predetermined location or reactively placed aboard the airplane, in which case the crew will communicate the specifics back to the SCs coordinators who would relay it to ground crew on the receiving end. The SC may also “hijack” (see Ekwall, 2009) cargo aircraft using similar means, but the Cartel also possesses its own fleet of planes that travel into

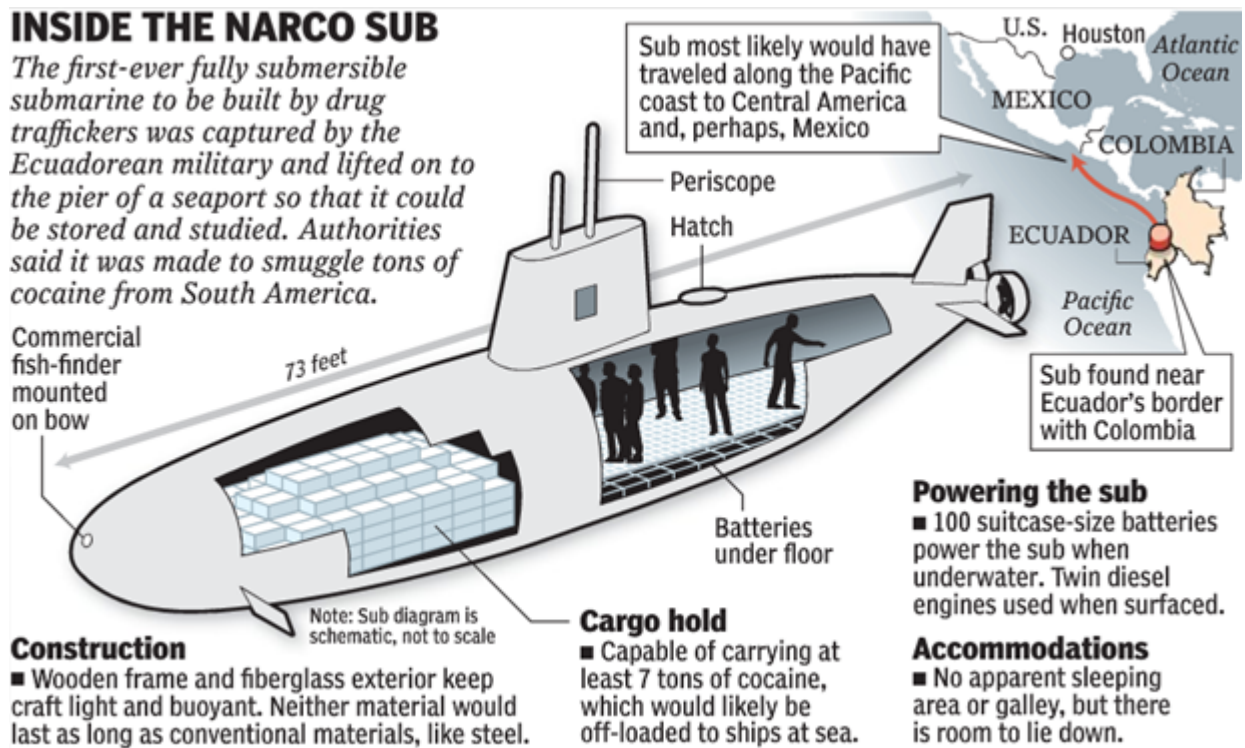
the US under the auspices of transporting legal goods (Beith, 2010; Federal Bureau of Investigation, 2009; Seguin, 2005). Since 2001 airport security has become more stringent, especially in the US. The SC has responded by using a greater number of small aircraft to move their products. The types of aircrafts selected for these movements are typically single-engine planes, which are capable of carrying large loads and are modified to be capable of taking off from and landing in dirt roads, deserts, or other remote locations (Hawley, 2010). Helicopters are also a part of the SCs network despite their high costs. The advantage of using helicopters as opposed to other forms of transport rests in their ability to take off and land virtually anywhere, making it more difficult for authorities to track shipments. This has been leveraged by the SC to move product from one remote location to another, such as between forested areas in South and Central America (Nagy, 2014). Additionally, over the years the SC has continued the practice of using airdrops (Dean, 2014).

Railway transport also suffers from “hijackings” by industry staff, including conductors, engineers, and oftentimes various yard employees. The central difference between rail and air with respect to smuggling lies in the fact that illegal goods do not only have to be loaded prior to departure. There are known cases where trains have been stopped mid-transit, narcotics are then loaded aboard, and then offloaded at another stopping point prior to reaching the final rail yard. Using this tactic helps ensure that the contraband avoids the stringent security procedures present at some rail yards. The SC has also made extensive use of traditional style railcars, where they have hidden large but narrow packages of cocaine inside of the walls. Both by rail and sea, narcotics tend to be smuggled within intermodal containers. This protects the contraband and also allows it to be bundled with cargo that will mask detection of the package by visual inspection, x-ray, or other means. Smuggling drugs in a container bound directly for the intended

destination in certain circumstances also eliminates the need for an extra transshipment step, which in turn streamlines the logistics process. Related to this, the SC has also been known to ship containers filled mostly with legal goods with the sole purpose of creating ideal concealment for narcotics packages (Beith, 2010; D'Amata, 2014; Longhini, 2014).

Narcotics submarines are a particularly fascinating transportation method. This mode is utilized by the Colombian DTOs who supply the SC with cocaine. Up until the 1990s high-speed boats were the preferred method of transport over relatively short marine distances. Shipments would regularly travel between adjacent countries through the Gulf of Mexico or the Caribbean Sea during times when detection would be less likely, such as at night. As sonar technology began to improve it became substantially easier for the authorities to detect such watercraft, largely rendering this mode unfeasible. In response to this the Colombian DTOs innovated, and invented fully-functional mini-submarines designed specifically for transporting drugs. The submarines are under 100 feet in length, are built to carry a small crew of 4-5, and are capable of travelling as much as 2000 miles before requiring refuelling. The level of technological sophistication is impressive—the submarines are powered by an array of 100 batteries, propelled by a twin-diesel engine, and complete with periscope, toilette and even air conditioning system. These vessels remained a thing of legend to authorities in the US, Mexico, and the rest of Central America as they evaded capture for close to two decades. As of 2008, only 13 of these submarines were seized by US law enforcement. Figure 12 shows an infographic of the information obtained in that seizure.

Figure 12 – A Typical Narcotics Submarine



Adapted from Schiller (2011)

An unknown number of narcotics submarines have managed to bypass the authorities. The actual number is postulated to be significant as the Cartels would have strong incentive to send shipments using this method for two key reasons. First, they are very successful in fulfilling their intended purposes. Second, the return on investment for such modality is quite high. The submarines cost around \$5 million to make and the operating costs are minimal, whereas the cargo bays for such submarines are designed to carry 7 tons of cocaine each, which is worth an estimated \$20 million at market. By comparison, only 0.311 tons of cocaine was successfully seized at the El Paso-Ciudad Juárez crossing in 2011, which is one of the busiest border crossings along the US-Mexico border. The main current use of these submarine is to smuggle shipments of cocaine from South or Central America into Mexico for overland distribution into the US, but some shipments are sent directly into the US as they are capable of (literally) slipping underneath the Coast Guard. These submarines either perform shore-to-shore delivery,

or offload their goods to another ship such as a fishing vessel that will transport them the remainder of the marine leg (Beith, 2010; Schiller, 2010; Schiller, 2011; USA Today, 2010).

The usage of narcotics submarines is a strong testament to the resourcefulness of the SC and its partners, but the extent of the SCs naval prowess does not end there. Fishing vessels may also smuggle goods port-to-port for the SC, much the same way that aircrafts are exploited. The SC has also been known to make use of narcotics torpedoes. These are essentially torpedo shells filled typically with cocaine packages that are deployed from fishing vessels near a coastline or in other shallower waters. The torpedoes are equipped with GPS technology so that divers known as “frogmen” can locate and recover the packages within (Mackey, 2010; VBS TV, 2009). Hollowed out torpedoes are also used as underwater shipping containers of sorts. These “dead” shells are attached underneath large vessels as a storage point, and they are loaded and offloaded by frogmen at starting and end points (CBC News, 2006).

Despite using a variety of air and sea delivery methods, the SC moves most of its tonnage via land-based transport. Land transport provides for improved reactivity to threats (to be discussed in 7.4), is more difficult to track, and is less conspicuous than its sea and air counterparts. The SC and its partners use an assortment of differently sized motor vehicles, ranging from semi-trailers to automobiles. In the majority of cases the drivers of these vehicles are willing smugglers (also known as “mules”) of the contraband, as opposed to unwilling participants with stowaway cargo. For the SC’s supply chains ending in the US the goods have to cross the vigilantly watched US-Mexico border. This has forced the SC to be very creative in terms of where it hides narcotics while in transit. The common thread(s) for the SC’s hiding locations is that they should be difficult to access, air tight, or where strong smells may be present. The last two parameters in particular are essential for avoiding detection by drug-

sniffing canines at the border. For this reason fuel tanks have been a popular hiding spot for many years running, sometimes with explosive consequences. Consumer goods carried aboard vehicles, such as fire extinguishers and canned foods, also make for ideal hiding locations.

The list of SCs innovative transportation methods does not end there. The Cartel is especially well known for its construction of elaborate tunnel systems underneath the US-Mexico border, commonly referred to as “super tunnels”. This began in the 1980s when Guzmán commissioned engineers and architects to design the first one; those that came after were also expertly constructed. These tunnels are usually large enough for a person to travel through, and come equipped with lighting and a light rail system for moving goods (Figure 13). As of 2008, 75 of these tunnels had been discovered while countless more continued to operate (though not all of these belonged to the SC) (Beith, 2010; The Telegraph, 2013).

Figure 13 – One of the Sinaloa Cartel’s Super Tunnels



Seales (2011)

The Cartel has also been known to make heavy use of pickup trucks equipped with vaulting machinery to launch packages over the border. These pickup trucks come equipped with

cannons, or in some cases even full ballistae (Figure 14)! When the opportunity presents itself, the SC also moves goods on foot. Backpackers and courier animals smuggle shipments cross the remote, unprotected parts of the border (Beith, 2010; Federal Bureau of Investigation, 2010; Nagy, 2014;). Lastly, the SC is known for its common practice of using smugglers in all forms of transport who are not likely to draw attention. One famous example of this tactic in play is the case of The Grandfather, a 90 year old man with a kind face and an innocent penchant for lily growing who was indicted in 2014. He began work for the Cartel sometime in his 80s, and during his short employ was likely responsible for smuggling in approximately 2000 kilograms of cocaine (Dolnick, 2014).

Figure 14 – The Sinaloa Cartel’s “Geronimo” Delivery Methods
PVC Pipe Cannon



Catapults



Nagy (2014)

It is uncertain exactly how massive the SCs transportation fleet actually is, and how much capital it has tied up in transportation related assets. In 2009 the Drug Enforcement Administration of the US Government conducted one of its largest sting operations, which provides just a glimpse of the scale. During this bust law enforcement arrested 750 gang members, all of whom had direct roles in the transport network ranging from organizers to actual smugglers. At this time over \$59 million in what were mainly transportation assets and cash were seized, including 149 vehicles, 3 cargo planes, and 3 cargo ships. Even with this sizeable blow, the SC was resilient and only continued to expand and prosper (Levine, 2009).

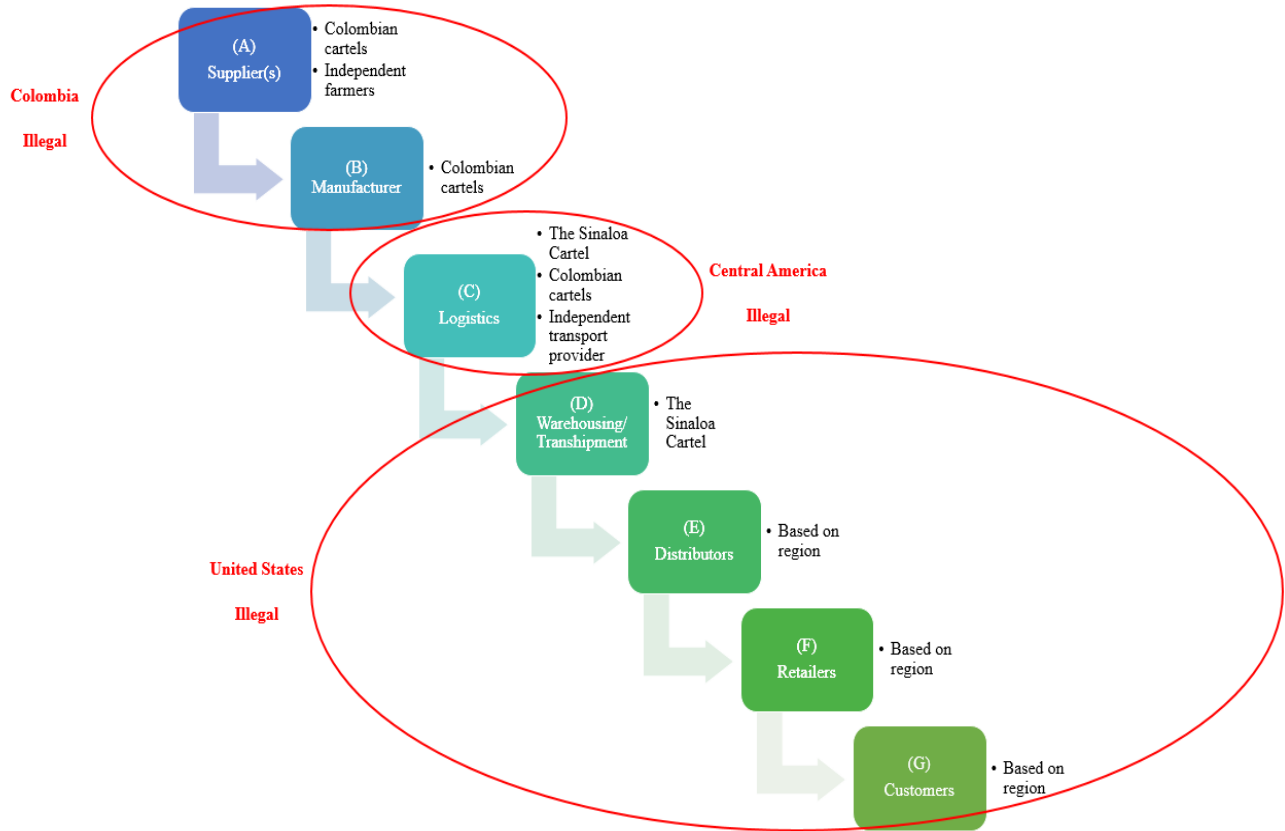
7.3: Supply Chain Structure and Network Presence

Indeed, there is no shortage of intriguing logistics related details about the SC. Overriding all of this is the single most important fact about the Cartel: it has created one of the largest supply networks in the history of the criminal enterprise, and manages it so effectively it is basically a matter of routine. The SC's complete network spans nearly the entire globe, and is

made up of dozens of supply chains, hundreds of organizations, and tens of thousands of individual players. In light of its covert savviness and extensive nature, there is much that remains unknown. The specifics that have been conclusively identified are in the vast majority at a macro level, and oftentimes operational details are left as matters of informed speculation. These details are especially difficult to grasp because of the dynamic nature of the SC. In all of the examples of the Cartel's supply chains there are numerous references to agile practices, alternative transport pathways, and a fluidity in terms of relationships. The greatest sources of information regarding the SC, and for Mexican cartels in general, has been the outcomes of rare indictments of high ranking Cartel members and the even rarer large scale sting operation.

Perhaps the best-understood component of the SC's network is its cocaine supply chain, originating with raw materials suppliers in Colombia and ending with individual consumers in the US market place. The sources cited in this section were used to come up with the diagram representing this supply chain shown in Figure 15. Each role or "step" in the supply chain has been denoted with a letter A to G, and will be explained in the subsequent discussion. For each role in the supply chain a list of the potential organizations handling the activity is also provided for the sake of clarity. The pathway shown in Figure 15 is the normal uninterrupted pathway for the SC to move cocaine into the US. Note that in this example ground-based transportation is the main method of logistics.

Figure 15 – Sinaloa Cartel’s Cocaine Supply Chain



By representing this supply chain at a role level, the intent is to provide an example that can serve as a useful introductory point to the topic of ISCs in general. However, because of the many types of transportation used, the sheer volume of players, and the multitude of unconventional practices required for the goods to reach the final consumer, this supply chain is more complicated than it appears.

Steps A and B: Suppliers and Manufacturer

The supply chain starts with the growth and gathering of the coca plant. As mentioned previously, the SC partners with Colombian DTOs as their chief supplier of cocaine. The Colombian DTOs may either run the coca farms themselves, or buy the plant from independent farmers. Once obtained the coca is moved to a production facility, where it will be chemically transformed to produce cocaine. This transformation process involves diluting the coca with a

number of highly-toxic substances, including cement and petrol. As profit driven enterprises with little care for their customers' well-being, the Colombian DTOs have more or less mastered the art of creating a low cost product that meets the minimum requirements for acceptance by the distributors who buy it.

Once the cocaine has been produced it is not immediately pushed to the SC. Instead it is stockpiled and shipments are sent out on the basis of specific order quantities. Having this inventory on-hand ensures that suppliers can meet the SCs order and send off a shipment as soon as it is requested and mitigates the risk of stockouts. Storage facilities are either located at the manufacturer's site or a more concealed location to alleviate risk. It follows that the back-end of this supply chain is pull-based, or driven by downstream orders.

In a LSC a pull-based system has the benefit of better matching inventory levels to buyer demand, reducing the costs of carrying inventory. The costs of carrying inventory in the context of the SC, as an ISC, would include the standard costs as well as those specific to an illegal context. The largest of such expenses stems the fact that should a storage facility be raided by the authorities all product would be seized; the further along in the supply chain that the product is, the more expensive the seizure. Ultimately, having a lower volume of product in storage would lessen the financial impact of such an event. Pull-based order replenishment systems require timely and detailed communication; this is only made possible through the use of appropriate IT. The SC is well known for its high degree of IT integration and sophisticated data exchange systems, meaning that they are well equipped to operate a pull-system with suppliers. Carrying inventory for the manufacturer does not pose the same level of risk as it does further down the supply chain. Although industrial scale production of cocaine is illegal in Latin American countries, including Colombia, enforcement of the law is quite low. In fact, Colombian DTOs

tend to operate in a fairly brazen fashion. It is only once the product is moved internationally that it begins to be treated as serious contraband.

Step C: Logistics

An order received by the manufacturer will kick-start the international transportation process. This transportation leg is handled by the SC itself, the Colombian DTOs, and even independent third parties. Loads packaged for export by the Colombian DTOs are often in one-ton increments, and tend to be concealed among bags of coffee beans. This legal national export is normally pungent enough to mask the smell of the narcotic. The SC and its partners prefer to move shipments to the US via truck rather than rail. This permits for a certain element of agility, as the truck can react to emergent threats from law enforcement officials while on route, whereas a railcar would be bound to its original pathway and have to face any risks head-on. Moving this product by rail through South and Central America has also become increasingly difficult over the last decade. During this timeframe authorities have implemented new security measures and technologies aimed at detecting drug shipments among rail systems in response to increased cartel activity. When handling their own shipments up to the US the SC is known to make heavy use of digital communications. Truck drivers are equipped with cellular and other communication devices in order to be in constant communication with a “dispatcher” type office, much the same as truck drivers in LSCs. The purpose of this communication is about more than simple road conditions, however; the goal is to provide drivers with real-time information about the presence of legal threats as they travel. The SC has a network of contacts located along the main corridors, including other drivers, who will relay this information back to dispatch and disseminate this onto those who may be effected. If a problem arises that cannot be circumvented via land, the truck is instructed to make for a coastal area where a ship will be waiting to

transload the contraband. After handing off the load the truck will continue to head north, and once it has bypassed the area of risk it will return to the coast where it will re-pickup its shipment and proceed along the route. It is worth stating that this evasive action is more the exception rather than the rule. The SC deliberately selects pathways where law enforcement is known to be weaker, and where the Cartel and its counterparts have a great deal of control. Bribes are also known to be commonly needed at various points throughout the Central American leg, when clearing weigh stations or border crossings in particular. For this reason it is not uncommon for SC truck drivers to carry cash specifically for the purpose of paying off officials (DeRoche & Rodriguez, 2014; Drug Enforcement Administration, 2009; Keefe, 2012; Kelley, 2012; Federal Bureau of Investigation, 2011; United Nations Office on Drugs and Crime 2012). Beaubien (2011) also explains that a portion of cocaine shipments originating from Colombia are first moved to Central America by air and sea, then from there trucked up to the US (Figure 16). The air routes represented in Figure 16 include movements by plane and helicopter.

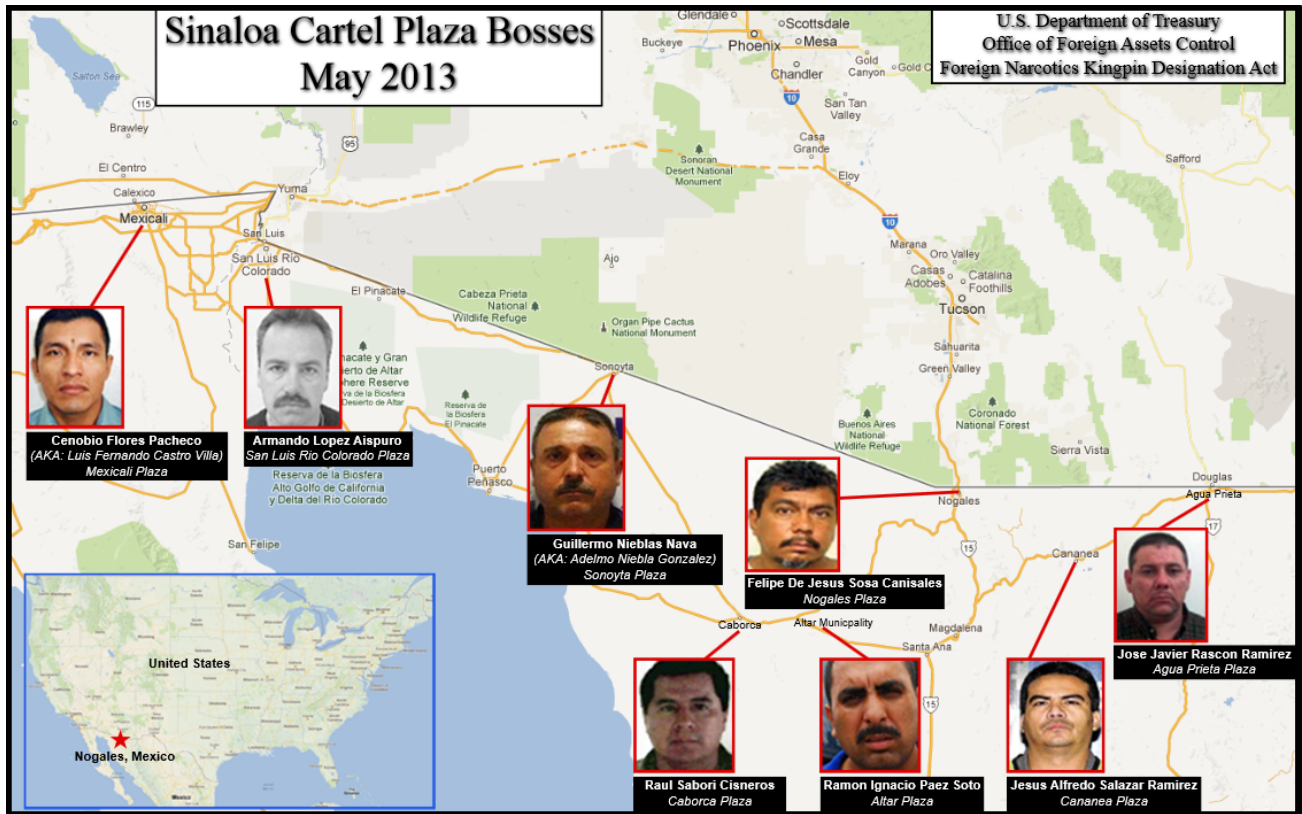
Figure 16 – Map of Drug Trafficking Central America



Beaubie (2011)

Having made its way through the entirety of Central America and Mexico the shipment now finds itself at the US border. In 2006 the SC had gained virtually exclusive control of all of the urban centres along the entirety of the Arizona-Mexico border. This was an important development in the Cartel’s history as it allowed them to have a significant hold on a region where most of their truck shipments travelled. Each town or city on or near the border has its own plaza boss. The plaza boss acts as the ultimate overseer of drugs crossing north into the US, and money and guns flowing south through their respective cities. As an indication of the SC’s presence in the region, in 2013 in the area surrounding the Arizona border there were a total of 8 plaza bosses, including 5 across the border located in in Mexicali, San Luis Rio Colorado, Sonoyota, Nogales, and Agua Preita (Figure 17) (United States Department of Treasury, 2013).

Figure 17 – Sinaloa Cartel Plaza Bosses



United States Department of Treasury, 2013

A driver waits for the signal from the nearest plaza boss or his “office” prior to crossing the border. The office is waiting for the optimal time for the shipment to cross the border unnoticed. The conditions that typically necessitate an optimal window include heavy traffic, a holiday, or poor weather. The goal is to essentially wait for any opportunity where law enforcement officials may be sufficiently distracted and the shipment can slip through. Corruption also plays an important part in sneaking illegal goods through customs. The office may deliberately wait for a certain susceptible border agent or agents to be on shift, and through bribery or regular payouts convince them to look the other way when the truck is passing through. At this juncture the SC will also offload shipments and make use of the tunnels and vaulting machinery when necessary (DeRoche & Rodriguez, 2014; Drug Enforcement

Administration, 2009; Keefe, 2012; Kelley, 2012; Kurrle, 2013; Federal Bureau of Investigation, 2011; United Nations Office on Drugs and Crime 2012).

Evidence suggests that a notable proportion of the drugs reaching the plaza cities will be stored at a collection point and given to individual smugglers to move cross-border. These smugglers try and move the good(s) by using their own vehicles, carrier animals through remote areas, or by proceeding on foot through customs. Smugglers are recruited by the office of the plaza boss from its surrounding urban or geographic area. The drug runners for the SC and Mexican cartels are not typical gangsters. In the vast majority of cases these smugglers are regular civilians with day jobs, usually migrant workers, who are looking to acquire some extra money. It is a harsh reality for many in the SC controlled border cities that economic opportunities are limited save for work for the Cartel. The previously booming tourism industry has all but faded away in the face of continued and extreme violence, leaving many unemployed and desperate. When the chance to make a quick run for the SC arises it is simply too good for many to pass up— the remuneration more than justifies the risks. These “golden handcuffs” and fear of Cartel reprisal mean that many become ensconced in the role of smuggler. Additionally, those who take on the role of smuggler rarely possess a moral objection to participating in such crime. These people have grown up observing their families participate in or complicity condone the drug trade. The drug trade in Mexico is not nearly as stigmatized as within the rest of North America (Marosi, 2011; National Geographic, 2015).

Step D: Warehousing/Transshipment

Upon “clearing customs” the first objective for a truck driver is to put some serious distance between him (and much less frequently her) and the border. From there the truck will act as a delivery van, heading to transshipment points located in cities across the country. These

locations doubly act as distribution centres within their respective regions. Shipments arriving from various sources at these distribution points will sometimes be resized or consolidated prior to sending out (US Department of Treasury, 2013). The would-be warehousing facilities preferred by the SC are rental properties known as stash houses, as well as car dealerships. In the last several years it has been determined that the largest proportion of cocaine being moved into the US first stops off at storage locations in Arizona and Texas. Tucson and Phoenix specifically are known to be the cities in this area with the heaviest traffic (US Department of Treasury, 2013; Ortiz, 2015). Along the West Coast the popular distribution cities by tonnage include San Francisco, Los Angeles, and Las Vegas. Shipments making their way into the northwest region usually stop in Portland, a large city with good transportation access to nearby urban centres. The SC has also established distribution hubs along the northeast, in both Chicago and New York (United States Department of State, Bureau for International Narcotics and Law Enforcement Affairs, 2008b). Chicago has proven an especially valuable strategic location because of the high demand for cocaine across the Midwest, and the city's connections to major transportation corridors throughout the US and Canada. The SC has essentially turned the Little Village area of Chicago into their territory, and from this neighbourhood they sell product to dozens of local street gangs totalling 2 metric tons of cocaine a month (McGahan, 2013; McGahan, 2014). In order to establish a heavier presence in the southeast the SC handles distribution out of Atlanta. This has resulted in an unprecedented wave of gang related violence to the city. In 2008 the Drug Enforcement Administration seized \$70 million in drug related cash in Atlanta, which the most in any city in the US that year (Copeland & Johnson, 2009).

Steps E, F, and G: Distributors, Retailers, and Customers

Within each city a mid-level boss of the SC will oversee the sale of product to various local distributors. These distributors are normally street level gangs. Distributors in general are known to maximize their return on investment by further diluting the product they have received. For every ton of cocaine that these distributors purchase they are believed to produce 5 tons for sale. A popular practice is to cut the product with talcum powder. Talcum powder is used in a number of consumer goods such as baby powders. Of course, the powder used by these distributors is unlikely consumer grade as this would be more expensive; non-consumer grade talcum has been linked to asbestos related cancers. In situations where even talcum powder proves too expensive, chalk is also not an uncommon option. Like the Cartels, these distributors care very little for the health of the end customers. From there these distributors are very quick to turn around the product to market: within a mere 48 hours from this point, this entire load will have been sold by the distributors to dealers, making its way to the final consumers. This distribution pattern is very clear evidence of a hub-and-spoke system, with the collection points of the SC acting as the hubs and the distributors acting as the spokes (DeRoche & Rodriguez, 2014; Drug Enforcement Administration, 2009; Keefe, 2012; Kelley, 2012; Federal Bureau of Investigation, 2011; United Nations Office on Drugs and Crime, 2012).

It is worth noting that there is also a variation in pricing for the distributors based on region. The cost of product being sold through West Coast hubs is less than their East Coast counterparts. This is due to the fact that the western locations are generally closer than those in the east, meaning lower overall logistics costs. The SC as well as other cartels places a sizeable premium on the additional risks involved with shipping each extra kilometer, especially when their goods are travelling down congested, higher-risk corridors such as Eastern trucking routes

into the US. As a result a distributor in the west may pay \$17000 per kilo of cocaine, whereas an eastern distributor will pay in the vicinity of \$22000 (Drug Enforcement Administration, 2009). This price may in fact be on the low end of the spectrum, as some reports suggest that a kilo of cocaine is generally close to \$60000 (Ortiz, 2015). The end consumer price in both areas will include the premiums built in by each middle man up to a maximum of what the market will bear (Drug Enforcement Administration, 2009).

As discussed previously, within the last decade the SC has also entered into new global market places, including Europe, Australia, Asia, and the Middle East. As a staging point for reaching these regions the Cartel primarily uses hidden distribution centres in the Andes region (Figure 17). In these centres the SC consolidates its products— in particular Peruvian and Columbian cocaine as the good with the highest global demand— which it then proceeds to ship. Drugs destined for the Europe and the Middle East typically travel to West Africa, where they are purchased by other organized crime syndicates who control the remainder of the supply chain. Goods destined for Australia and Asia are sold directly to other criminal organizations based in these countries. Such relationships take advantage of these criminal organizations' expert knowledge of the regions they operate in, and the pre-established business relationships of their own that can be leveraged to successfully ensure delivery to the final customer. This is precisely the type of expertise that Colombian DTOs believed they could benefit from when they entered into a relationship with the SC to sell their product in the US (De Mera, 2012; Federal Bureau of Investigation, 2010; STRATFOR, 2008).

Figure 18 – Location of European Staging Distribution Centres



Chapter 8: Case Analysis and Final Propositions

RQ6: Based on the case of the Sinaloa Cartel, how accurate are the propositions from RQ1?

In this chapter the analysis of the preceding case discussion will be performed by analyzing the data presented in relation to the propositions outlined in Chapter 4. On this basis, the propositions will either be supported, rejected, reworked to better reflect the actuality of ISCs on the basis of the SC.

➔ Proposition 1: ISCs are supply chains focused on delivering illegal goods and related services on a repeat basis.

- Supported for use in future research based on case study evidence.

The case of the SC clearly depicts a criminal organization whose core business is managing an illegal supply chain, which includes the movement of illegal products and a breadth of facilitating services. The main products in this case are narcotics, such as marijuana, methamphetamine, cocaine, and heroin; the services include manufacturing, logistics, warehousing, and money laundering depending on the context. The cocaine supply chain of the SC has all of the typical roles one would expect in a normal legal supply chain. Based on the quantity of product it moves, its profitability, and its highly organized and dynamic supply chain(s), the SC clearly stands as a paragon of ISC management.

Over the course of its short history, the SC has created a highly profitable and ever-expanding supply chain network with a global footprint. All of this has been achieved in the face of very powerful opponents, both in the legal sector and from “industry”. The sheer presence of SC in the US, one of the countries in the world with the greatest focus on national security and defense, is a testament to the tenacity, resourcefulness, and ingenuity shown by the SC’s leaders.

The case of the SC demonstrates that supply chain management and organization is just as integral to transnational illegal enterprises as it is to their legal foils.

➔ Proposition 2: ISCs use supply chain strategies to optimize their network and gain competitive advantage. Some of these strategies will be common to LSCs, while others will not.

- Supported for use in future research based on case study evidence.

It would be impossible for the SC to manage its supply chains as effectively as it has without the use of a range of strategies. From the case discussion we see evidence of strategies that are totally unique to the SC and perhaps ISCs, and several other strategies that are borrowed from traditional SCM. To explore this principle, the case evidence will be related back to the concepts covered in the literature review of supply chain strategy in section 6.1. These concepts are summarized in Table 16.

The SC has 4 main areas of unique, overarching supply chain strategy: (1) rather than beating the completion in the marketplace, it is better to intimidate and eliminate them; (2) use a range of transport systems and pathways, even they are costly, to mitigate the risk of disruption because the potential gains justifies the means; (3) running a complex network does not have to be complicated, so long as there is trust, loyalty, and fear of the repercussions for non-compliance; and (4) although running a transnational operation is a massive undertaking involving countless individuals, the ability to make strategic decisions rests with a select few.

Table 16 – Overview of Topics Covered in Literature Review of Legal Supply Chain Strategy

Topic	Definition
Supply chain strategy	<ul style="list-style-type: none"> • The overarching strategy for supply chain operations • Emphasizes competitive priorities, provides guidelines for achieving competing advantage, and is difficult to imitate
Organizational vision	<ul style="list-style-type: none"> • Supply chain strategy is derived from an organization’s vision to support such vision at tactical and operational levels
Integrated supply chain management	<ul style="list-style-type: none"> • The highly coordinated flow of goods and information throughout the entire supply chain • Goal: to manage the supply chain as seamlessly as if it were a single organization through constant, open communication and a high level of IT integration
Postponement	<ul style="list-style-type: none"> • Production of a generic product that can be modified at the final stage in accordance with customer specification
Mass customization	<ul style="list-style-type: none"> • Production that combines low unit costs of mass production with the flexibility of individual customization
Lean/just-in-time production	<ul style="list-style-type: none"> • Goods are produced on an as needed basis in order to minimize inventory holding costs and expose production problems
Agility	<ul style="list-style-type: none"> • Focus on improving supply chain responsiveness to high variability in market demand or other unpredictable events
Leagility	<ul style="list-style-type: none"> • Utilization of lean/agile strategies at different points in the supply chain to get the best of both worlds
Outsourcing/offshoring	<ul style="list-style-type: none"> • Engagement of an external organization to handle a specific supply chain activity that they can do “better” than the parent organization can internally
Best value supply chain	<ul style="list-style-type: none"> • View competition from a supply chain versus supply chain perspective
Green supply chain management	<ul style="list-style-type: none"> • A strategy that focuses on environmental preservation through the efficient use of resources and the reduction of waste • Requires appropriate management support, understanding green market demands, and integrated SCM
Supply chain risks	<ul style="list-style-type: none"> • Risk to the supply chain include supplier failures, loss of talent, changing laws, network failures, inclement weather, IT malfunctions, cyber-attacks, and terrorism
Supply chain resiliency	<ul style="list-style-type: none"> • The extent to which a supply chain can handle said disruptions • Preparedness, supply chain collaboration, and agility are necessary to minimize impact/ensure survivability

The SC's approach to SCM affords it a competitive advantage; arising chiefly out of the fact that their network is more resilient than that of their competitors'. This resiliency is a function of the innovative approaches that the SC uses, particularly to transport goods. Innovate or die is more than just a set of buzzwords to the SC, it is a mantra that they and other ISCs are presumed to live as a matter of necessity. Although this is not discussed, it can also be safely assumed that the SC has a great deal of improvisation in its supply chain activities when conditions fail to go to plan.

The SC does not seem to have a clearly stated organizational vision, or at the very least not one that translates directly into supply chain principles. What they do have however is an implicit doctrine: what we do is right. The SC is seen quite favourably by the public in Mexico, especially within Sinaloa, where it has worked hard to create a positive public image. Indeed, many who participate in the SCs supply chain do not feel that they are committing any moral wrongdoing, from the top to the bottom.

If there was ever an example of integrated SCM in practice, the SC is it. There is evidence of the usage of IT systems for activities ranging from order placement, to shipment tracking, to communicating timely information to individuals within the supply chain so they can react to threats. If it was not for cellular technology, it is extremely doubtful that the SC would be as prosperous and powerful as it is today.

There is no concrete evidence of postponement in the traditional sense within the SC's supply chain, but there is evidence of the cutting of the cocaine prior to it being sold to retailers. This is indicative of a final customization in accordance with customer specifications, or perhaps what customers are willing to tolerate. Mass production is the main means of producing cocaine,

and there is no customization being done to the product at that early stage, partly due to the fact that cocaine is more of a commodity than a custom good in nature.

With respect to lean and just-in-time systems, although the cocaine is being produced in anticipation of the SC's order this is of no concern to them as the Colombian cartels are external parties. What is important to the SC is that its orders can be filled as soon as they are placed. Based on the previous discussion around inventory carrying costs, there would be significant incentive for the SC to reduce inventory levels or "build-up" at any one point in the supply chain to reduce the financial impact of product seizure.

The SC does demonstrate high levels of agility throughout the supply chain. This agility is characterized by the multiple pathways that can be taken to move goods at any point in the supply chain should a threat arise. The most pronounced example of this is the transshipment that occurs when moving goods by truck through South America and a threat arises. Linked to this, leagility practices do not appear to be adhered to, as there is no overt evidence of a lean mindset or lean practices (other than avoiding inventory build-up) within the SC or its partners.

Outsourcing and offshoring is an important component of the SC's supply chain. The SC engages partners all over the world to provide production, transportation, distribution, and retail services. In the cocaine supply chain, we see production being provided by Colombian cartels, transportation, distribution, and retailing handled by various other parties throughout Central America and the US.

A best value supply chain approach accurately describes the way the SC's supply chain operates, except in the realm of competitive priorities. From Guzmán forward, the SC's supply chains have been leveraged as a strategic weapon; the cocaine supply chain is no exception. A high degree of agility, adaptability, and alignment is clearly shown in the SC's cocaine supply

chain. In terms of competitive priorities, the SC places an importance on cost, flexibility, and speed. Quality is less of a concern as the SC and its partners only seek to meet the minimal level of expectation of their customers. For this reason, it is not beyond the realm of possibility that the retailers might try to get away with selling product that falls below these basic requirements.

Related to this, the SC does not seem to place any importance on corporate social responsibility based on the types of product it sells. Similarly, the SC also does not demonstrate using any green SCM practices. This is not to imply that the SC would not realize cost savings if they used such practices, rather that it would have very little incentive to explore this notion in the first place.

Based on the evidence provided in the case study, the idea of supply chain risks in an illegal context includes all of those posed within legal supply chain management as well as two other kinds: risks posed by disruption by law enforcement, and risks posed by violence from competing organizations. The notion of supply chain resiliency also applies to the illegal environment; the SC demonstrates a high degree of resiliency as it is consistently able to rebound from losing its managers, and through its highly agile supply chain practices.

➔ Proposition 3: ISCs are comprised of organizations that form mutually advantageous relationships to fulfill the usual LSC roles.

- Supported for use in future research based on case study evidence.

Similar to the preceding section, in order to explain the nature of the SC's relationships the case data will be connected to the topics covered in the literature review of supply chain relationships in section 6.2 (see Table 17 below).

Table 17 – Overview of Topics Covered in Literature Review of Legal Supply Chain Relationships

Topic	Definition
Supply chain relationships	<ul style="list-style-type: none"> • Essential for a successful (efficient and effective) supply chain
Trust	<ul style="list-style-type: none"> • A vital component of any supply chain relationship • Can only be achieved when one party makes itself vulnerable to another by sharing sensitive information and building mutual dependencies • The benefit of having “trust” must outweigh the costs • Trust is a function of the level of mutual investment, the extent of information sharing, transactional satisfaction, reputation, and perception of conflict
Power	<ul style="list-style-type: none"> • Ability of one party to influence another in a specific way • Benefits of a power imbalance: improved supplier performance, forced adoption of new initiatives • Drawbacks of a power imbalance: misalignment of strategic goals, self-interest, unstable relationships
IT alignment	<ul style="list-style-type: none"> • Creates additional value in inter-organizational relationships • Facilitates timely information exchange (order placement/fulfillment), cost reductions, and increased willingness to accommodate
Collaborative supply chain benefits	<ul style="list-style-type: none"> • When two or more parties work together to achieve competitive advantage • Results in increased sales, improved forecasting, more accurate and timely information, reduced costs, reduced inventory, and improved customer service
Shared innovation	<ul style="list-style-type: none"> • The sharing of innovations among supply chain partners • Hinges on appropriate communication and collaboration; a key source of supply chain competitive advantage
Social transactions	<ul style="list-style-type: none"> • Transactions between supply chain partners are social in nature, and require fair behaviour to be truly beneficial • Fairness needs to exist in terms of unilateral decisions, reward redemption, and communication of information
Relational theories	<ul style="list-style-type: none"> • Financial commitment: the degree of investment by one firm in another • Social commitment: belief about the “success” of a relationship; goodwill • Psychological commitment: escalating commitment; reputation

<p>Measuring the success of supply chain relationships</p>	<ul style="list-style-type: none"> • The ROSE model is a comprehensive approach to measuring success • Includes relational (quality of the relationship), operational (meeting requirements), strategic (focus on long-term success), and economic measurements • The extent to which these performance measures are used varies on the basis of governance structure (market, unilateral, or bilateral)
<p>Relationship damage</p>	<ul style="list-style-type: none"> • When performance of a supply chain decreases, relationships suffer damage • The dimensions of relationship damage include underperformance, transactional change, destructive reactions, constructive reactions, dependence, interdependence, governance structure, and equity

The case reveals that the SC leverages relationships with partners all across the world, much like any highly successful enterprise. Certain services and supply chain functions, such as production, are outsourced to other parties in situations where the business relationship proves to be mutually beneficial. These relationships are founded on trust and loyalty, a necessity for ensuring secrecy and protecting the serious vulnerabilities that come along with information sharing in this context. Because trust is vital for ensuring a functional supply chain, even more so than in a legal context, it is something that is hard earned with the SC.

The literature on power accurately reflects the trends seen in the case of the SC. The SC, being the party with the greatest influence, is ultimately able to generate better performance out of its partners and suppliers. There is numerous evidence to support this, including but not limited to the fact that the Colombian cartels produce product in anticipation of the SC's orders and incur the added costs of higher inventory levels. The fact that the SC holds the power means that they act in their own interests, thus contributing to instability in their relationships (to be discussed further under P4).

Based on the case information, the idea of IT alignment was limited. The SC and its partners do make use of cellular technologies to communicate information, although this is not IT alignment in the truest sense based on the literature. In situations where the SC may have a very close and ongoing relationship with a supply chain partner it is feasible that there will be some degree of IT alignment in the production and order replenishment sense.

In constructing the case there was little evidence to show a collaborative approach to SCM practices, thereby making the benefits of such a relationship beyond reach. This makes sense given the individualistic nature of the SC and those who choose to engage with it. The notion of shared innovations also appears to be a foreign concept to the SC and its partners. This is not to suggest that there is a lack of innovations within the SC's supply chains. Quite the contrary in fact, as there is evidence of many innovative practices and technologies such as narcotics submarines. Although the entire supply chain benefits from such developments, the organizations that create them are unlikely to share the specifics of such innovations so other parties can replicate them. This is again due to the fact that the participant organizations within this supply chain are self-interested. The only circumstance where it would make sense for these groups to share such innovations would be if it directly furthered their own ends, or if this information could be sold at a worthwhile premium.

The case evidence also reflects that the SC does not view its relationships as social transactions. This social transactional approach to SCM implies that there is justice, fairness, and openness. The only "justice" that SC enacts is its own brand, which is based only on what it considers to be acceptable behaviour rather than what is truly fair. Openness is also limited due to the simple fact that the more information that is shared, the more vulnerable the entire supply chain becomes. By only sharing need-to-know information this ensures that if a party exits the

relationship for whatever reason, be it willingly or as a result of arrest, the SC will have improved protection of critical information. Limiting the amount of information shared has the dual benefit of making it quicker to bring a new partner up to speed and ready to function as a part of the supply chain.

Consistent with this, relational theories are not embraced by the SC. The degree of financial investment by the Cartel and its partners would be limited to what is absolutely essential to ensure the functionality of the supply chain. The notion of goodwill appears to be absent from the SC's decision-making process as evidenced by their unforgiving treatment of those parties who fail to meet expectations. One possible exception to this may be where family is involved, but even then the tolerance for error is surely limited. There may be elements of psychological and escalating commitment among the operators of the SC, but this is difficult to discern without being able to survey or interview the brain trust directly.

It is difficult to determine if the SC uses any models for performance measurement, such as ROSE. From the case it appears that economic measures would seem to be the most important indicator of success. Of secondary importance would be operational measures— as long as a contractor is in compliance, the operational criteria would be met. As the governance structure for this supply chain is unilateral, with the SC holding the power, it is able to largely forgo relational and strategic (relationship) thinking and still be successful.

The concept of relational damage is also applicable to the case of the SC. As the SC has relationships with other organizations, these relationships can suffer just the same as legal relationships along the same dimensions. The chief distinction here lies in constructive reactions to damage. It is difficult to imagine the SC reacting positively to a damaging event with a supply chain partner, and carefully analyzing the situation to try and improve the relationship in the

future. Instead, this damage would more than likely result in the termination of the relationship, with extreme prejudice.

- ➔ Proposition 4: ISC relationships are significantly more volatile than LSC relationships.
 - Unverified based on the case study; can be explored in future research.
- ➔ Reworked Proposition 4: ISC relationships exhibit a high degree of volatility.
 - Supported for use in future research on the basis of case study evidence.

Whether or not ISC relationships are in fact more volatile than LSC relationships would need to be the subject of a future study that compares industry-wide data. However, the case of the SC clearly illustrates that at the very least there is a high degree of volatility in ISCs. It is certainly more the exception rather than the rule that the SC will be able to establish any kind of long-term relationship with its partners. These types of relationships appear to be reserved for those parties on whom the SC greatly relies on and hold significant clout in the supply chain, such as the Colombian cartels. Otherwise, relationships are viewed as a means to an end for the Cartel: a party or persons will continue to be used by the SC to further their own ends until such time as this usefulness has run out.

Of course, the parties entering into a relationship with SC are likely well aware of this fact; if not, they are almost certainly likely to be aware of the violence the Cartel is capable of. Yet these parties engage in relationships out of financial self-interest, judging that the benefits outweigh the costs, much the same way as the SC would select its partners. This mutual self-interest means that there is an absence of the true commitment needed for ongoing and healthy relationships. The “culture of fear” that the SC also attempts to build is useful for ensuring compliance, but at the same time sends a message that all “contracted” parties are disposable.

Additionally, as mentioned at several points, arrests mean that supply chain partners change with a fair degree of frequency.

➔ Proposition 5: ISCs can have one of 4 specific orientations: business as unusual, chaotic perseverance, covert operation, or per fas et nefas. These vary based on whether the motivation is for-profit or not for-profit, and whether the environment is interrupted or uninterrupted.

- Supported for use in future research based on the fact that one orientation was definitely proven

The SC can be thought of as having a business as unusual orientation. It has a for-profit motivation and operates in what can be considered an uninterrupted environment. Despite the plethora of threats the SC faces and the complexity of its supply chain, it still manages to function in a routine fashion. As for the other orientations described in this proposition, there is no basis for them in the case study of the SC. However, in light of the fact that they were hypothesized using the same logic and information that was used to create “business as unusual”, they remain a reasonable starting point for categorizing differently oriented ISCs in future studies.

➔ Proposition 6: Each ISC has a specialization on the basis of the type of good and service it is organized to deliver as well as its motivation.

- Supported for use in future research based on the case study evidence.

The basis for the case study was the SC’s cocaine supply chain, which stands as a clear example of a narcotics supply chain. From this discussion it is evident that the construction of this supply chain was heavily based on the product it was dealing with— cocaine being sourced from Colombia requires a number steps, behaviours, and partners to ultimately deliver the good

to customers in the US. Furthermore, there is clear evidence that the impetus for creating this supply chain was that it would be a profit center. Hence, the hypothesized for-profit motivation for narcotics supply chains in general holds true in this case. Using this information research can move forward on the assumption that narcotics supply chains operate for-profit. The case study of the SC implies that the organization oversees a number of different narcotics and munitions supply chains. However, additional research is required to find specific examples of the other types of supply chain specializations, and to confirm if they in fact hold a for-profit or not-for-profit motivation.

➔ Proposition 7: ISCs with the same specialization are strategically similar because they share many of the same practices and approaches.

- Supported for use in future research; evidence for case study can be used as a basis for comparison.

The example of the SC's cocaine supply chain shows us the unique circumstances and structure surrounding a highly-organized narcotics supply chain. There is also significant evidence around the strategies, practices, and approaches that the SC utilizes. From this case there is now a clear depiction of the strategies that a narcotics ISC may utilize in general, such as agility and supply chain integration. This will serve as a useful basis to determine if other narcotics ISCs do indeed share the same strategic outlook and plans, or whether their design and operation is so circumstance specific that generalizations are not possible.

➔ Proposition 8: Independent ISCs may be controlled by a single criminal organization, but run according to their respective motivations.

- Rejected: unverifiable based on the case study; will need to be explored in future research.

Within the case discussion it was mentioned that the SC has an extensive supply chain network, comprised of all of the individual supply chains it operates globally. The SC's supply chains, which are primarily narcotics based, all appear to have a for-profit motivation. Admittedly, this is not the best example to illustrate the principle being proposed in P8. Study of a single organization that runs both for-profit and not-for-profit supply chains would be required to either confirm or deny this proposition. It remains this author's assessment that the underlying hypothesis behind this principle is still well-founded, and warrants testing in future research efforts.

➔ Proposition 9: What is considered legal and illegal is not static. When an ISC becomes legal, its operations will transition to operating in much the same a typical LSC does. When a supply chain is re-categorized as illegal, it will either cease to exist or innovate to survive.

- Supported for use in future research based on difference in circumstances surrounding legal and illegal supply chains.

The preceding case discussion details a supply chain that has been illegal from its creation through to present. Hypothetically this principle would apply to the example of the SC. If for some reason it became legal to grow marijuana in Mexico, this would dramatically impact the entire operation. The SC would be able to grow and produce crop without requiring any special precautions or covert activity. For example, a marijuana farm and production plant would not need to be located deep within the mountain forests of Sinaloa, as they are presently known to be. Instead such facilities could be located just outside an urban center, making every subsequent step in the domestic portion of the supply chain less costly and complicated. This in turn creates a very enticing opportunity for an organization to utilize its competencies in the

realm of legitimate business and build a successful legal enterprise. Because P9 is logically consistent with what is known about the behaviours of legal and illegal enterprise, it can be taken forward and used to explain the illegal-legal paradigm shift if encountered in future research.

→ Proposition 10: ISCs can both operate within a single country or across multiple countries, and be entirely or partially illegal (mixed) based on the laws of the country/countries of operation. Within these mixed ISCs there is a transition point or points where the supply chain moves from illegal to legal or vice versa.

- Supported for use in future research based on the case study evidence.

The case exhibits quite clearly an international pure ISC. As illustrated in Figure 15, this supply chain deals in a good that is considered illegal from its origins in Colombia straight through the delivery to the final customer. Although there are multiple conditional logistics pathways that add a layer of complexity, the core steps in the supply chain and the designation of what is legal and illegal does not change. From this example it would seem that this proposition and the four structures it proposes for ISCs is well-founded. Further research would be required to verify the existence of the other ISC structures, better explain the notions of transitions points, and discern whether or not these principles encompass every potential ISC.

Chapter 9: Conclusion and Limitations

The intent of this paper was to take the first steps towards explaining ISCs and ISC management. Through the case study of the SC, insight has been provided into the structure, strategies, and considerations of an organization with a remarkable ability to effectively operate a concealed global supply network. In taking the first steps to discuss this topic and build a theoretically rigorous framework, scholars now have a foundation to proceed with their own research on the area. Specifically by using the verified propositions provided in the previous section, scholars have a well-founded basis for establishing the preliminary theories regarding ISC management as a whole. It is believed that the topic of ISCs is worth exploring not only because of what can be learned from ISCs, but also because there is something intrinsically fascinating about it.

The content of this study has implications for others as well. To the best of this author's knowledge, this case study exists as the best publically available synthesis of supply chain information about the Sinaloa Cartel. Debatably, this point alone may be the most valuable outcomes of this study. Law enforcement officials in particular will benefit from this cohesive portrayal of the SC's supply chain, and can use this dissertation as a basis for some of their own research (and perhaps even counteraction) efforts. Moreover, because there are many similarities between the SC and other Mexican DTOs, the particulars of the case study may have broader implication to the entire regional industry.

Supply chain practitioners may also have an interest in this topic. Having a better understanding of how ISCs might hijack legitimate shipments will increase awareness of commonly used practices and ultimately increase vigilance. For LSC practitioners operating in an interrupted environment, the actual practices of the SC may be worth investigating and

adopting. Imagine a humanitarian aid organization is trying to deliver goods to a war-torn region. Such an organization may very well find that the practice of supply torpedoes or air drops is safer and more effective than trying traditional land-based transport.

Last but not least, ISC practitioners themselves may also find this study of interest. They may wish to learn about the strategies and tactics the SC uses to move product so that they can adapt them and replicate them in their own network. For competitors of the SC, this study may even prove useful for their own interruption efforts.

Emergent from this study are a plethora of other potential topics and related questions to be answered in future research. Realistically there is no shortage of subjects to be explored in ISC management. In fact, virtually any topic covered in the existing SCM research base could be adapted for an illegal context and studied accordingly. In doing so, a researcher will be able to determine where the findings of previous studies are applicable or not applicable to a specific ISC context, much in the same way that this thesis has. The following is a list of just some of the research questions that have yet to be asked, based on the content of this paper:

1. Are ISC operators cognizant of the fact that they are indeed supply chain managers?
2. What popular supply chain strategies from the legal sphere seem to be most popular among ISC managers and why?
3. To what extent do ISCs possess a clear mission and vision? How precisely does mission and vision translate into supply chain strategy?
4. Is there such a thing as “best practice” in ISC management?
5. What are the unique ISC buzzwords, and is there industry specific acumen?
6. Is there such a thing as integrated illegal supply chain management, and if so how would it work?

7. Are ISCs aware of the lean/JIT philosophy? How could an ISC effectively leverage lean/JIT approaches, and what benefits would be unique to an illegal environment?
8. What are the different practices of agility that ISCs display?
9. What are the full criteria for ISCs making the decision to outsource or offshore?
10. How do ISCs clearly make their expectations known to suppliers, and specifically what are these expectations?
11. How do ISC managers view risks, and what precautions do they take to mitigate these risks?
12. What unique approaches do ISCs adopt to ensure supply chain resiliency?
13. In what ways do new partners in ISCs build trust and convey loyalty to the key operators?
14. Under what circumstances would ISCs seek to build long-term relationships?
15. In what ways does power compliment and contrast with building trust in ISCs?
16. Are ISCs technologically savvy on a whole, based on specialization, or only in specific contexts?
17. In what unconventional ways to ISCs use prevalent digital technologies?
18. Do ISCs utilize any unique IT infrastructure or technologies for facilitating their operations? If so, what are they and how do they work?
19. How do ISCs ensure security of digital information in an age where governments have the capability to closely monitor communications?
20. Do ISCs ever have linked IT systems? If so, in what contexts would such a design make sense?
21. Is goodwill as a concept entirely foreign to ISCs? Under what circumstances would there be goodwill between parties, and how does this impact the relationship?

22. Does the notion of psychological commitment ever mean that ISC operators engage in transactions that they know will be disadvantageous?
23. Has any ISC ever achieved a truly collaborative relationship structure? If so, what kind of advantages has it granted them for operations in an illegal setting?
24. Precisely how much more volatile are ISC relationships compared to LSC relationships?

There are a few research limitations that bear mentioning with respect to this thesis. The first is that this study did not include any primary research. Although a justification was given for this in Chapter 3, primary research on the topic could have potentially provided information or insight that has never before been identified. Of course, gathering such information would not be without risk. To get specific data on the inner workings of the Sinaloa Cartel few options exist apart from interviewing someone directly associated with the organization, or doing some kind of observational study. This would not be unlike the work of Venkatesh (2008), who through a highly unique set of circumstances found himself able to directly study a Chicago crack-dealing gang from the inside. Regrettably, these research conditions would be nearly impossible to replicate. Perhaps the opportunity exists for this author, or some other brave soul, to take a more direct approach to gathering information in future research efforts.

Another limitation exists in the fact that some of the selected sources may have deliberately not provided a complete picture of the Sinaloa Cartel's activities, specifically those affiliated with the US Government. Of course, if such sources were to explain in vivid detail every facet of the Cartel that they know for certain this would make interruption efforts more difficult. In order to try and guard against this in the case discussion, US Government sources were often cross-referenced and complemented with information from other organizations to flesh out the topic being discussed.

Finally, it is necessary for this author to recognize his own limitations in conducting research. It is not beyond the realm of possibility that in constructing the case certain applicable data sources may have been omitted because the appropriate search terms were not used. However, it is the author's earnest assessment that the process used to select the case data ensured inclusion of all key sources of information. Relatedly, a reporting bias cannot be discounted to the extent that some data may have been overlooked for a non-specific reason at the time of the search. In order to try and best guard against this, this author conducted his investigation as if his intended audience was watching him every step of the way— otherwise known as Yin's "over the shoulder" research approach (2010).

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