



UNIVERSITY OF WISCONSIN, PLATTEVILLE

UNITED STATES OF AMERICA

The attached educational project, by TIMOTHY PAUL NERSTAD, entitled AVOIDING COMPLACENCY WITH SUPPLY CHAIN DIVERSIFICATION, when completed, is to be submitted to the Graduate Faculty of the University of Wisconsin- Platteville in partial fulfillment of the requirements for the (MASTER OF SCIENCE IN INTEGRATED SUPPLY CHAIN MANAGEMENT) degree.

Approved: *Xiaotong Liu* Date: 1/21/2020

Project Advisor

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Suggested content descriptor

keywords:

supply chain diversification, tariff mitigation, trade war

A Seminar Paper

Submitted to

the Graduate Faculty of the

University of Wisconsin - Platteville

in Partial Fulfillment

for the Degree of

MASTER OF SCIENCE IN INTEGRATED SUPPLY CHAIN MANAGEMENT

By

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Year of Graduation: Fall 2019

Abstract

This seminar research paper will focus on the benefits of incorporating diversification strategies into global supply chains for risk mitigation. Avoiding complacency in operations through continuous assessment of supply chain objectives and overall design can assist firms to stay competitive. When world events bring adversity to the operating environments of firms and their supply chains, those that have adequately prepared can use the opportunity to thrive relative to peers as they strive to surpass marketplace expectations and provide goods and services of value to customers. This idea is only affirmed in the current environment with the ongoing trade war between the United States and China as conducted by the Trump Administration. And just as there are varying competitive strategies of individual firms, there is also different risk mitigation strategies and combinations possible which may include aspects of sourcing and supplier diversification, manufacturing locations and operational flexibilities, or even some short term countermeasures in light of policy uncertainty during extended and highly volatile trade negotiations. There are also countless unique challenges that arise with each supply chain design decision and degree of diversification chosen. The research and conclusion from this paper will demonstrate the importance of supply chain diversification for mitigating risk and also that it be the result of active engagement and planning after consideration of global conditions.

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Avoiding Complacency With Supply Chain Diversification

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Introduction

The Trump administration's concern for distortions in global trade and subsequent retaliation against China for theft of intellectual property, subsidies of state-owned enterprises, and forced technology transfers (Katz, 2018) among other grievances has led in part to the current trade war. The trade war has the potential to affect the lives of countless Americans. This could occur as rising retail costs lead to tough choices for U.S. consumers with their discretionary purchases or similarly within the critical consumer staple product category, or even the suspension of capital expenditure at the corporate level ultimately serving as a catalyst for economic slowdown and job cuts due to uncertainty as to the direction of future policy. A trade war includes the imposition of tariffs, quotas, or both on imported goods and the subsequent retaliation by trading partners and further acts of escalation (Bown, 2019). For the casual observer, what may be dismissed as being a macro-level political or economic skirmish with constrained consequences is actually a very serious event with countless repercussions and worthy of immediate attention.

The history of the current trade war with China showed some signs of emergence dating back to the 2016 Presidential Campaign. President Trump has often used protectionist rhetoric when describing the perils of trade deficits and globalization that he feels produces poverty and heartache for American workers (Lesh, 2018). During his first term, the Trump

Administration has taken an increasingly protectionist stance with regard to trade policy in what can now be described as nothing less than a trade war. Some of the significant events of escalation from the U.S. side include approval of safeguard tariffs on \$8.5 billion in solar panels, 25% steel and 10% aluminum tariffs, a first phase \$34 billion from a list of Chinese top sector products and later secondary phase of \$16 billion for a total of \$50 billion (Bown & Kolb, 2019). A further phase of tariffs included \$200 billion in imports taxed at 10%, which was later raised to 25%, followed ultimately by planned tariffs on almost all remaining imports from China for later this year (Bown & Kolb, 2019). For each threat or implementation deemed necessary by the U.S., a reciprocal and proportional response was delivered by a capable and determined Chinese adversary, which included some intermittent delays and agreements for a truce by both sides along the way.

Any discussion of President Trump and his administration's policies can often stoke heated emotions regardless of political affiliation. However, the purpose of this research is not to make any judgement as to the value of tariffs in general or as a tool of leverage and pressure to achieve economic or political objectives by the current administration. Rather, the scope will be limited to analysis of how corporations are able to conduct operations in such an environment and the preparation or lack thereof as a contributor to their current performance and operational execution in such an environment. More specifically, the research parameters will fall within the areas of supply chain performance and the role of a diversified supply chain on outcomes during times of external threat as seen during political and policy uncertainty.

As firms make decisions as to the sourcing, warehousing, transport, and other functions that may fall within the sphere of supply chain operations, there are many variables to consider. Depending on the particular firm and nature of the goods sold, there are countless

options ranging from the use of multiple overseas parts suppliers as well as overseas manufacturing of the final end item, to perhaps use of regional or more local suppliers combined with domestic suppliers for final assembly here in the United States. Despite the need for extensive foresight and planning that can be both timely and costly, firms that seek the benefits of a diversified and flexible supply chain well in advance of unpredictable external events will often find themselves in a strategic advantage relative to peers, and their efforts in an increasingly competitive landscape will bear fruit.

Literature Review

The work of Hout (2016) provides important context to the current trade war. There have been benefits to both sides since the Chinese and American trading relationship first began. But America's trade deficit to China has risen by approximately 50% in the recent past and China's imports since their entry into the World Trade Organization (WTO) have resulted in an estimated loss of two million U.S. domestic jobs (Hout, 2016). In order to combat the grievances, President Trump could influence supply chains and corporate investment and buying decisions (Hout, 2016). According to Hout (2016), Trump's tools of influence in various areas could influence supply chains, particularly in cases where offshore logistics are expensive or unreliable, response time is critical, and where there is changing demand and consumer preferences. Although Hout's analysis was conducted in 2016 and lacks the more recent developments, it paints an important introductory backdrop to the kinds of issues supply chain managers were soon to confront.

Gott and Monahan (2017) conduct an effective overview of the changing landscape for supply chain managers of global U.S. companies facing the political risk referenced by Hout (2016). Their work serves as a warning in that although there is an increasing array of tools available with the help of technology in areas like data analytics, freight management, or

inventory management, there is still supply chain risk due to a void in information regarding how trade policy scenarios will play out. Their analysis leads to the recommendation that managers must avoid complacency in such an environment and actively conduct scenario planning and do it in a timely manner relative to peers to stay competitive in this environment. Similar sentiments regarding the need for advanced planning ahead of large multinational trade and policy uncertainty was described by Ghemawat (2016). While these works contribute to the body of literature on the matter, one area that could further understanding is the inclusion of examples of supply chain mitigation or transformation as a result of the base case scenarios resulting from their war-gaming and scenario planning techniques.

Maidment (2018) praises the business logic of forward-looking companies that have started to reconfigure their value chains away from their exposure to China due to the current political environment. It is suggested that moving production to markets in countries such as India, Indonesia, Malaysia, the Philippines, and Thailand would make a lot of sense (Maidment, 2018). One of the benefits of Maidment's analysis as a contributor to the literature on this subject is that it distinguishes between different types of products and the unique difficulties that may exist and act as a roadblock to shifting the supply chain outside of China. For example, U.S. technology companies that rely on Chinese higher skilled production that require automation, advanced precision tooling, or process engineering would not be easily transferable to the South and Southeast Asian countries previously listed (Maidment, 2018). Maidment's analysis offers optimism and praise for impacted firms willing to confront the difficult challenges and seek the needed supply chain diversification.

Reconfiguring supply chains for diversification as a result of growing policy uncertainty has emerged as a common theme throughout the body of published literature. Berman (2018)

reinforces this theme in his work and criticizes poorly managed supply chains that, in some cases, may source entirely from a single country. Apparel retailers such as Macy's and J.C. Penney have conceded the need to relocate their sourcing from China due to tariffs, and countries like Vietnam, Myanmar, Bangladesh, Cambodia and Sri Lanka have emerged as viable alternatives as included in the work of Moin (2019). A benefit of Moin's contribution (2019) aside from furthering understanding by including worthwhile examples, is that it makes the noteworthy distinction of how firm size and budget can contribute to the ultimate success or failure of the quest for supply chain diversification. Mid-range to small-sized firms may not have the ability, budget, and buying clout to figure out where to go in light of the many challenges, which include managing quality control, productivity, time, relationship building, finding factories, or negotiating new contracts (Moin, 2019).

As the trade war has developed over time, the literature increasingly points to Vietnam being used as the top sourcing and production alternative to China for firms looking to offshore. This is seen in the work of Russell (2018), which analyzes the supply chain transformation of Legacy Classic Furniture and their production shift from China to Vietnam. Similarly, in the electronics, solar panel, and footwear sectors, much of the shift has been to Vietnam despite its infrastructure and other capacity related challenges as described by Coates (2019). However, offshoring to an alternate distant overseas country is not the only solution given in the published literature. Ghemawat (2017) describes protectionist pressures as an opportunity to reevaluate strategy and perhaps become more region-based. Survey results included in Ghemawat's (2017) work show that people underestimate the constraining influence of things like culture and distance on global commerce, and more localized interactions, sourcing, and manufacturing could result in this anti-globalist environment. The work of Braw (2019) similarly suggests that

despite downsides which include things like higher labor costs, the lower overall risk to the supply chain from more local sourcing could often be a wise choice. And although in circumstances that are outside the norm, although clearly in line with the goals of the current administration as described by Hout (2016), some firms are reestablishing manufacturing capability in the U.S. as applauded by Coates (2018).

Widmer (2018) includes the possibility of firms waiting it out until the policy picture becomes more clear. Lack of supply chain redesign as mitigation could be correlated to things like the buildup of inventory as described by Cottrill, Rice, & Trepte (2019) and the extensive frontloading container data from the international ports as laid out clearly in the work of Berman (2019). What becomes clear from the body of literature is that there are many ways the problem could potentially be dealt with. But when dealing with this type of adversity, rather than sitting idle and wishing things were different, one must navigate the landscape and try to foresee upcoming problems and their respective solutions as discussed in the work of Ruvo (2019). Similar themes were disclosed in the work of Braw (2019), which compared the current environment with that of armies needing to succeed by staying engaged and war-gaming out various scenarios as they prepare for a multitude of threats.

Discussion

When tariffs are added to products as they are imported into the United States from China, it can have a sobering effect on impacted firms. The tariffs are essentially a tax, and one of the more pressing matters for firms to assess is how they are going to pay for this additional expense. If they absorb it internally then their margins shrink and they experience a reduction in profits (Ruvo, 2019). On the other hand, passing the cost onto consumers might reduce demand for the product and that could also be pretty damaging to the bottom line. Firms could also

combine both approaches as a way to share the burden, however, regardless of the approach taken, it becomes clear pretty quickly that having a way to avoid the tariffs entirely would be a significant advantage.

By expanding the supplier base and having multiple sourcing alternatives for the necessary inputs to their unique processes, firms can experience a higher level of diversification and find themselves better able to face risks like the tariffs that emerged during the current trade war. This occurs, of course, as able firms avoid the tariffs altogether, or to the largest extent possible, by shifting demand away from China and relying on the other alternatives that they have developed and nurtured over time. There are many potential obstacles to establishing this diversification and operational flexibility. Exposure to a new country could mean time and costs associated with things like achieving similar levels of quality control, new customs procedures, language and cultural factors, infrastructure and other transportation-related constraints, labor law or other legal issues, or competition for the finite labor pool or other production-related capacity limitations (Moin, 2019). For these reasons, it is all the more impressive when a firm like Cisco which due to their earlier foresight and investment already possessed a distributed supply chain with capabilities in multiple countries able to support a needed shift such that with the mere anticipation of the Trump Administration's tariff policy they were able to successfully reduce exposure to China (Cottrill et al., 2019). Vera Bradley is a retailer that is also adjusting well in the current environment as diversification groundwork, the need for which was recognized and initiated in past years, supports the current shift away from China (Moin, 2019). Vera Bradley still sources about 20 percent from its Chinese partners, but its top countries by volume are now Vietnam, Myanmar, and Cambodia (Moin, 2019).

One of the benefits of establishing diversification within the supply chain, despite the aforementioned challenges, is that it can provide remedies for countless scenarios that may arise. These include events such as natural disasters, geopolitical uncertainty, port or customs delays, currency fluctuation, or terrorism (Chupra and Meindl, 2013). Having options built into the supply chain design, the ability to utilize an additional supplier or increase throughput from an in-house manufacturing facility located away from the source of trouble, becomes understandably very useful. One classic example took place in March of 2000 when a fire to a cell phone chip supplier plant in New Mexico caused the plant to be shut down for an extended period of time (Federgruen and Yang, 2009). Ericsson is a firm that had relied entirely on this supplier, and as a result suffered major reductions in market share, loss of sales volumes, as well as profits (Federgruen and Yang, 2009). Nokia, on the other hand, had a variety of options for this chip supplier, and as a result avoided the same fate as Ericsson (Federgruen and Yang, 2009). Similar historical incidents highlighting supplier risk include automotive and electronic supplier capacity being compromised during the 2015 Japanese Sendai Disaster (Cottrill et al., 2019), contamination at a flu vaccine supplier leading to a severe shortage in 2004, or when firms with suppliers consolidated in Western Europe experienced currency exchange losses as the euro strengthened significantly in 2008 (Chupra and Meindl, 2013). There are countless risks that could potentially materialize, and many that have occurred, rendering all the more justification for supply chain diversification aside from the current trade war as conducted by the Trump Administration.

When considering mitigation alternatives for the risks in the supply chain, managers should assess the possibility of a shift to higher degrees of localization. This could include both manufacturing facilities of end items and the procurement of needed inputs closer to one's own

facilities and home markets as defined in the concept of near-sourcing (Knemeyer & Murphy, 2015). This possibility could help with managers who may be weary that by solely expanding and diversifying risks with suppliers or their facilities in alternate but still distant regions, there could remain many risks that are simply associated with being an extended and global supply chain. And data shows that distance does play a role in dampening interactions of international activities due to things like language, culture, administrative, or other economic dimensions as described by Ghemawat's (2017) Law of Distance. So although costs of operating locally may be higher when considering things like price of labor or environmental standards, supply chain disruption could end up even costlier (Braw, 2019). In fact, tariffs as a disruption to the calculus of firm decisionmakers and a shift towards localization, including in its purest form sourcing and producing domestically, is in part what the Trump Administration wanted to achieve. In the current tariff environment, Walmart has committed to strive for \$50 billion newly added U.S. made products spread out over the next ten years, a move that has been attributed to their recognition of the sometimes hidden costs of offshore sourcing (Hout, 2016).

Another factor for consideration when making risk mitigation decisions needs to be the levels of flexible capacity in production facilities. Supply chains designed with flexible capacity allow production to be shifted to more beneficial locations given varying macroeconomic conditions (Chopra and Meindl, 2013). The flexibility could relate to the volume of products able to be manufactured or the ability to produce a variety of types of products in a particular facility. But the main idea is that if the tariffs cause weakening demand for products coming out of China, facilities already operating outside of China could have the ability to pick up the workload. One of the main downsides, however, is that flexible facilities are understandably more costly to maintain. This is because they may require a higher skilled workforce, and also

because having more types of production equipment and their maintenance would be more costly. The potential for flexibility to go unutilized could be financially damaging and is why risk mitigation strategies should be evaluated in terms of their long-term value (Chopra and Meindl, 2013).

When facing the prospect of tariffs, firms often try to get ahead of the tariffs by frontloading impacted products and stockpiling prior to the tariffs going into effect. Retailers have done this in recent years as the Global Port Tracker report showed increases at the nation's major retail container ports ahead of deadlines (Moin, 2019). Although firms may at times avoid the taxes on these limited amounts of goods, it isn't a viable longer term option and doesn't address possible underlying diversification inadequacies and risk mitigation that should be built into the supply chain. This doesn't mean that there couldn't be justification at times for some short term actions or even a tactical pause when facing an unclear and volatile policy picture. After all, building a new automotive or semiconductor assembly, for example, could take years and billions of dollars (Cottrill et al., 2019). If such an undertaking had not previously been initiated after analysis as to future operational strategic direction, it would be hard to blame a firm for holding off until future policy becomes more stable than the tit-for-tat negotiations often displayed daily on various social media platforms.

Conclusion

Firms that avoid complacency with respect to their supply chain operations are likely to have an advantage over their industry competitors. Staying engaged during times of continuous change can at times seem a daunting task. However, as world events unfold, firms that have analyzed their competitive position and considered how they intend to bring products and services of value to customers in a manner that distinguishes themselves from competitors-will

be rewarded in the marketplace. More often than not, these firms will have supply chains that have the diversification to face a multitude of risks. Some risks being the black swan type of events that aren't currently on anyone's radar. After all, it wasn't more than a few years ago when few on earth could have predicted the election of Donald J. Trump as the 45th President of the United States or that the two largest world economies would be engaged in a lengthy global trade war.

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