# SUPPLY CHAIN DISRUPTION: ALIGNING BUSINESS STRATEGY AND SUPPLY CHAIN TACTICS

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**Introduction**

The topic of **engaging in the process of dynamic business-supply chain strategic alignment** sits within the academic domain of supply chain management, a sub-discipline of operations management (Holweg and Helo, 2014:230), defined as ‘any combination of processes, functions, activities, relationships and pathways along which products, services, information and financial transactions flow in and between enterprises, in both directions, end-to-end’ (Gattorna, 2015:9). The complexity of this discipline has been compounded by globalisation along the dimensions of replenishment, time and distance (Christopher and Towill, 2002:1), and vulnerabilities to disruptions have increased as supply chains ‘become more lengthy and complex due to globalisation and vertical integrations’ (Rajesh and Rao, 2015:238). Recent events have promoted supply chain management to critical importance. ‘During 2008 the world changed in a precipitous way as the global financial crisis (GFC) hit and the ensuing global recession affected people around the world’ (Gattorna, 2009:1). This has led to a volatile operating environment, ‘fraught with greater demand uncertainty, higher risk, and increasing competitive intensity’ (Roh, et. al., 2014:198). ‘Increasingly, organisations are finding themselves at the center of un-plannable events (crises, disasters, breakdowns) that interrupt and threaten their global supply chains’ (Gattorna, 2015:340). The context of this paper is disruption across the full spectrum of supply chain management domains and how the supply chain strategic response is aligned to business goals. The research is part of the early stages of a doctoral thesis. In order to explore strategic alignment issues identified in organisations, the Irish Defence Forces and several transportation organisations have been chosen as initial in-depth case studies to demonstrate this organisational challenge.

**Literature review**

The literature review demonstrates that strategy is a continuous process of power mobilisation within the senior leadership team in relation to dilemmas facing the organisation (Pettigrew, 1977:80). The strategic renewal process can take the form of several journey types such as *directed*, and the response to disruption has a phased approach. There is a degree of *shaping* or *re-framing* of strategies to resolve challenges and to align with situational needs, without moving outside the boundaries of the organisation’s core competencies (Floyd and Lane, 2000:154). Furthermore, the history of globalisation reveals that policy is a(the) source of disruption and introduces the concept of strategic friction, which has not been explored since 1832. This latter strand is the **dominant contribution** of the paper.

**The nature of strategic renewal within the top management team:** Strategic renewal includes the ‘perennially unfinished’ and ‘ongoing journey of activities a firm undertakes to alter its path dependence’ (Iszatt-White, 2010:409; Volberda, et. al., 2001:160) or alternatively the ‘process, content, and outcome of refreshment or replacement of attributes of an organisation that have the potential to substantially affect its long-term prospects’ (Agarwal and Helfat, 2009:281). Strategic formulation is therefore a process of political decision-making whereby strategic demands are ‘politically feasible only if sufficient power can be mobilised and committed to it’ (Pettigrew, 1977:80). How the TMT responds to the tensions of competing demands through their actions, rhetoric and decisions can create organisational context and they must also simultaneously balance strategic exploitation and exploration, profit maximisation and social welfare, integrating globally and adapting globally (Smith, 2014:58). Strategy has also been described as a process, that is both continuous (Pyburn, 1983:3) and dynamic, operating in an open system (Mintzberg, et. al., 1976:263) and this view has remained a constant to the present day.

**Strategic response to supply chain disruption:** Phases such as planning, preparedness, mitigation, detection, response and recovery (Kovács and Spens, 2007:101) necessitate different supply chain management practices (Heaslip and Barber, 2014:61) as organisations urgently mobilise to reduce the ‘gap of pain’. These events are largely un-plannable, but a preparation phase incorporates five supply chain elements of: implementing a disaster management framework, establishing logistic operations and process management, human resource management, knowledge management and preparing financial resources (Heaslip and Barber, 2014:63). The immediate response phase is determined by the nature of the event but should involve structured command and control systems coupled with appropriate asset capabilities. The reconstruction phase aims to bring the disaster under control and return all systems to a normal or better state (Heaslip and Barber, 2014:68). Gattorna (2015:350) describes a prequel phase of ‘*hedge and deploy’* by prepositioning supplies at strategic global locations before any catastrophic event’, the adoption of a fully flexible supply chain during survival phase, an agile supply chain operating in an emergency response phase ‘in the face of extreme disruption’ and re-establishing organisations during the rebuilding and restoration phase. It can therefore be concluded that the response to disruption is a phased and dynamic process. However, being responsive to supply chain disruptions requires strategies that are closely aligned to corporate strategy (Roh, et. al, 2014:200). Multi-dimensional integrations, including socio-technical collaboration with strategic suppliers and customers, and techno-process integration such as advanced manufacturing technologies, all ‘toward time-based outcomes’ represent the most important characteristics of a responsive supply chain strategy (Roh, et. al, 2014:207).

**The nature of strategic alignment:** Borrowing from business-information systems strategic alignment literature, due to an apparent absence of a corresponding perspective in the supply chain management academic domain, the author notes that functional alignment of strategy and enterprise systems operates within the dynamic and complex internal and external confines of this physical, social and political process. One significant challenge in Business-IS strategic alignment is that an information system is ‘not an external object, but a product of ongoing human action, design, and appropriation, which, *over time*, becomes imbricated, embedded, entangled and intertwined’, (Wilson, et. al., 2013:3) subject to social negotiation and sensemaking, ‘materialising through anchoring and objectification’ (Dulipovici and Robey, 2013:107). There is a process of user improvisation and adjustment, due to perception and understanding of technology features that demonstrates that strategic plans are ‘resources for situated action that do not in any strong sense determine their course’ (Iszatt-White, 2010:409; Dulipovici and Robey, 2013:104). A first stage of adjustment is decoupling, whereby organisational members form personal views and interpretations of IS strategies based on their own local context. According to their situational needs, users then reframe the technology, and when the adjusted practices become repackaged and stable, these are then recognised as strategic in relation to the formal strategy (Wilson, et. al., 2013:2).

**The nature of globalisation:** It has been described that the forces of globalisation, technology, climate change, and terrorism, are all accelerating beyond our ability to adapt. However, as leading economists point out, technology is not exogenous, determined by the Gods. Rather, it is endogenous, determined from within the economic and social system. Technological advances have reflected a global race between the demand for educated workers and the expansion of an educated population (Atkinson, 2016), **all determined by policy**. Consider the fact that technology development is localised to production techniques and this is within our power to control. Consider also this notion of acceleration beyond our ability to adapt, true in the sense of the planet’s resources being finite, but all development is relative. Were we ever able to adapt without the risk of dramatic disruption? The 2008 GFC was not new. Friedman (2016) asked, ‘what the hell happened in 2007’, but, what the hell happened in 1800, the period when true globalisation was established? Antoine-Henri Jomini and Carl von Clausewitz founded modern strategy at this time, through first-hand observations of Napoleon’s art of war, influenced by developments in physical infrastructures, logistics and cartography. Also founded was the discipline of economics, or political economy as it was known then, when Adam Smith published the seminal Wealth of Nations in 1776, later supported by David Ricardo (1772-1823) with the introduction of comparative advantage theory, further enhanced by Marx (1818-1883), who advocated accelerating global expansion to increase value, the development of multinational companies, and the promotion of imperialism so that governments could protect indigenous organisations. The policy of Capitalism and Free Trade was consequently established and replaced feudalism in Great Britain, and the dynamism of this policy led to pressure to expand beyond borders (Michie, 2017), enabled by a transportation revolution that emerged in the early 1800s when American Robert Fulton (1765-1815) launched the first steamboat for commercial use, almost simultaneously as the British engineer Richard Trevithick (1771-1833) constructed the first railway steam locomotive. Long-distance international integration was now possible, and further policy changes to break-down monopolies were implemented. Steamboats and railroads made it so much easier to trade and move bulk goods across continents cheaper than domestic prices. This brought other nations such as Russia, India, West Africa and the Ottoman Empire into the global economy, and of course the importance of economic forces led to the 1839-1860 Opium Wars between Britain and China, not just for the opium trade, but for trade rights in general. This gave Hong Kong to Britain. Britain was the dominant power and the international monetary system was based on the gold standard linked to the British pound. A huge increase in global trade, a highly complex age of revolution in Europe, and a scramble for Africa ensued. A great war was the result.

Clausewitz developed several principals: war is a continuation of policy by other means; politicians have an authority over the military; policy is shaped by a trinity of primordial violence, hatred and enmity; strategic plans are based on a series of connected steps; flexibility must be maintained, opportunities seized as they arise; a calculated culminating point of victory must be kept in mind. This is restrained by **Friction**, minor unforeseen incidents causing delays and confusion, resulting in management being doomed to disappointment. For a TMT without personal knowledge or experience, everything in SCM is simple, but ‘through the influence of an infinity of petty circumstances, which cannot be properly described on paper, things disappoint us, and we fall short of the mark’ (Verlag, 1940). The SC network is comprised entirely of individuals, each of whom is faced with their own friction in all directions. The author projects that SCM ‘is movement in a resistant medium. Just as a man immersed in water is unable to perform with ease and regularity the most natural and simplest movement, that of walking, with ordinary powers one cannot keep even the line of mediocrity’. The TMT are swimming masters who teach dry land movements but have never ‘plunged in themselves’. The TMT must know friction and triumph over it and must learn not to expect a precision in results accordingly. Friction cannot be learned theoretically, but experience and tact will enable the SC manager to make decisions based on situational needs, whereby they ‘decide and determine suitably to the occasion’. This warns ‘against excessive strategic ambition’, and Clausewitz acknowledged the impact of policy as a particular form of friction. The ‘strategists chessmen do not have the kind of mobility that is essential for stratagem. Accurate and penetrating understanding is a more useful tool and essential asset for the TMT than any gift of cunning’ (Freedman, 2015). Clausewitz describes the challenge of a ‘positive theory’ on strategy given that the ‘fog of war puts a veil of uncertainty over all information’. Clausewitz also sees strategy as ‘a socio-political mechanism that can be used to educate the mind of the future leader but cannot accompany him on the battlefield’ (Kornberger, 2013).

**Research problem and research approach**

This paper aims to both increase our understanding of SC manager’s engagement in the process of dynamic business - supply chain strategic alignment, within the context of SC disruption, and contribute to the broadening of SCM to an integrated perspective across the TMT rather than a uni-dimensional and dichotomous view. In exploring the research question of *how supply chain managers engage in the process of dynamic business-supply chain strategic alignment*, these aims are expanded to include specific objectives: Determine how SC managers operationally identify, predict, cope and recover from SC disruptions; Identify which phases in the supply chain disruption process require engagement with the TMT to implement strategic solutions aligned to business goals; Consequently, determine whether a categorisation of supply chain strategy exists, such as a tier consisting of strategies that can be implemented autonomously by the supply chain division, and a tier(s) that requires ‘negotiation’ across the TMT prior to implementation; Determine how supply chain managers engage with the TMT in the process of aligning business and supply chain strategies, thereby identifying key enablers and inhibitors; Develop a process model that establishes the phases of supply chain manager engagement in dynamic business - supply chain strategic alignment; Test, refine and validate developing theories in a real case ‘laboratory’ setting, thereby demonstrating the value creation potential of dynamic business-supply chain strategic alignment. The author is in the early stages of a doctoral programme and as the main body of research progresses, grounded theory methodology will enable the author to determine how supply chain managers strategically align to business goals in response to disruption. An initial study was carried out of the Irish Defence Forces and the logistical challenges faced as part of their participation in the Nordic Battle Group and UNIFIL operation in Lebanon, both global strategic responses to the threat of disruption. A second phase includes organsations from the transportation industry, who physically respond to supply chain disruption. To study the full spectrum of our discipline, field research will conclude with humanitarian, corporate and China-based participants, the latter being at the geographical center of globalisation.

**Case Studies:** **Nordic Battle Group and UNIFIL:** *ad omnia paratus - prepared for anything*

The Logistics Branch of the Irish Defence Forces successfully re-framed and aligned *business* strategy to operational readiness as part of Ireland’s rotation of the **Nordic Battle Group**, headquartered in Enköping, Sweden, the objective of which was the capability to set up a theatre of operation anywhere in the world within a seventy-two-hour notice period from its base in Collins Barracks Cork. It was demonstrated how a **senior management strategy** underwent an extensive period of preparation, shaping and re-framing to align with situational needs, while simultaneously maximising stakeholder value and ensuring actions taken were to the benefit of future rotations and missions. However, this preparation phase took many months to complete (gap of pain) due to the fact that strategy was directed by a TMT that did not engage with the Logistics Branch during strategic formulation. The IDFs most recent **UNIFIL** operation in Lebanon was faced with significant disruption due to their strategic partner and joint-battalion of several years, Finland, withdrawing from the mission when their mandate expired, the **strategic renewal** of which was taken for granted. This was a loss of serious operational capability: a mechanised company of 130 Finnish personnel including an integrated Estonian platoon of 38 soldiers, which provided a manoeuvering element that conveyed presence in the area of operation; a 15-tonne armoured personnel carrier fleet of 11 vehicles, a critical asset in the event of threat levels increasing, weapons systems (including ammunition and storage) and ancillary equipment; infrastructure, barrack services, welfare facilities to keep up morale, and a SEPURA communications system with substantial coverage of the area of operation.

**Case Studies: Transportation and Logistics Industry**

This section is not so much about business-supply chain strategic alignment, as it is about sources of policy-driven disruption at an industry level, and how logisticians respond through their art of movement.

**Morrison Express Corporation:** The Regional Director of U.S.A. and Mexico, described a top-three automotive manufacturer in the U.S.A., with a significant divisional operation in Colombia, who implemented an internal policy of holding two weeks of production materials at any one time, and heavy penalties for late shipments were imposed on its logistics partners as a form of risk avoidance. When an ocean container from India to Colombia arrived two weeks late the plant stopped production and the supply chain disruption caused by the transportation delay attracted a penalty. However, a highly detailed standard operating procedure revealed that Indian holiday schedules were included in the planning process and consequently it was the **lean inventory policy** without redundancy that caused the production disturbance. The Netherlands District Manager discussed the Hanjin Shipping Company of South Korea, which was declared bankrupt in February 2017, with a total debt of USD$10.5 billion, due to an **EU policy** to abolish the conference system, under which shipping lines formed alliances and pricing agreements to protect the industry, subsequent to the 2008 GFC, which reduced global demand, forcing shipping costs to fall.

**Woodland Group:** The Managing Director of Ireland described recent disruptions that continue to directly impact his customer network. There is an increasing trend of **manufacturing plant closures** and forced business holidays in China ahead of major events to ensure the subsidence of emissions so that visiting dignitaries can enjoy blue skies. Woodland Group has assisted clients with an alternative solution of sourcing from India, and this has resulted in a new and more desirable state. **Dangerous goods** also threaten our global supply chains. There was a series of catastrophic explosions in August 2015 at Tianjin, the largest man-made port in China, tragically causing the recorded death of 173 people. Government **policy for damage control rather than prevention** led to this situation. Quite often how a government responds is the main cause of disruption rather than the actual event, such as closing borders, shutting down air traffic, or evacuating areas (Sheffi, 2001). The immediate response was to ban the loading and discharging of all DG materials at Tianjin, and the ports of Qingdao, Lianyungang, Dalian, Fuzhou and Xiamen also implemented new regulations to restrict the handling of certain hazardous goods. Woodland observed such disruption at the Port of Ningbo, the busiest in the world in terms of cargo tonnage, due to a change in **government legislation** to reduce the number of licensed DG facilities from eight to one.

**Royal Rotra:** The Netherlands Sales Manager continues the discussion of disruption in international waters. In response to the EU abolishment of the conference system, the industry moved to create **multiple strategic mergers** that were legally posited with the United States Federal Maritime Commission and the European Antitrust Policy. A further significant measure to achieve economies of scale has been the introduction of **super carriers** such as the 400-meter long MV CSCL Globe, which can take 19100 twenty-foot containers, and arising from this, and of particular concern to Dutch 3PLs like Rotra, is that congestion in Rotterdam has escalated in recent months. The Benelux Logistics Manager discussed e-commerce as a force of disruption. Global e-commerce sales are expected to increase from 1.3 trillion in 2014 to 4.5 trillion in 2021 (Forsey, 2018). When you consider that the major organisations in this industry have a **policy of free shipping** to influence consumer purchases, this puts an incredible strain on warehouse and logistics providers, and indeed the environment.

**Kuehne & Nagel:** The Global Senior Vice President of Logistics raises the topic of **protectionism** and a recent policy implemented by U.S.A. President Trump. On 14 June 2018, the office of the U.S. Trade Representative published a list of Chinese origin goods to be subjected to a 25% tariff under Section 301 of the U.S. Trade Act of 1974, becoming effective on 6 July. This represents a charge to the value of USD$34 billion on Chinese imports related to 818 tariff items and USD$16 billion on a further 284 items to be announced later in 2018, a punishment for IP infringements, and a request by Trump to the USTR to ‘address the acts, policies, and practices of China that are unreasonable or discriminatory, and that burden or restrict U.S. commerce’. This is reminiscent of the Smoot-Hawley Tariff Act of 1930, which turned a recession into a Great Depression. **Non-tariff policy measures** are another concern: ‘all non-price and non-quantity restrictions on trade in goods, services and investment. This includes border measures as well as behind-the-border measures flowing from domestic laws, regulations and practices’ (Berden, et. al., 2009). Global trade has also seen an increase in the number of ocean containers arriving at port with internal harmful gases. This can be a cause of random disruption due to customs inspections of contamination levels, but the issue has a much more serious side, with several reported fatalities.

**Crane Worldwide Logistics:** The Regional Logistics Manager brings our attention to Calais in northern France. For almost two decades this port city has been a controversial staging area for refugees seeking asylum in the U.K. This was the coming together of two policies to create supply chain disruption, the **2003 Treaty of Le Touquet** and Syrian governmental policy that produced both terrorists and residents of the Calais Jungle. At the height of the Calais crisis, Crane had been contracted to transport goods from Hungary to a major U.K. technology distributor. Failure to deliver within a three-day transit-time attracted penalties. Similar performance targets became a huge challenge for all road hauliers as **migrants secretly stowed away** on trucks. They came together to move in convoys and use only certain secure stops, ensuring no diversions, and security monitors were attached to vehicles.

**Aramex:** The Country Manager for Ireland considers a changing business model in the oil and gas industry due in part to the **socio-economic movement** of battery-powered electric automobiles, which reduces demand for oil. Consumer demand is increasing on the premise that they are making a positive impact on the environment, but their focus is local usage and a decrease in global warming potential. This is ‘problem-shifting’. Electric vehicles exhibit the potential for significant increases in human toxicity, freshwater eco-toxicity, freshwater eutrophication, and metal depletion impacts, largely emanating from the vehicle supply chain. Their production phase has proven to be substantially more environmentally intensive’ (Hawkins, et. al., 2013). Brent crude oil pricing, the industry benchmark, plunged in 2014 reaching a low in December 2016. OPEC then implemented a production-cut quota of 1.2 million BOPD, which doubled prices. Today, **OPEC’s reversing of this decision** in June 2018, when its technical committee recommended a supply increase of one million BOPD, will send pricing soaring again, simply on the basis that new measures will not create a surplus (Mazodila, 2018). Such political, economic and socio-economic volatility is creating significant bunker fuel surcharges for Aramex and a parallel demand unpredictability that challenges long-term pricing agreements with the now-consolidated shipping lines.

**Conclusions**

A new and eclectic approach to the review of academic literature demonstrates that policy has been a source of major disruption since the establishment of true globalisation in 1800. This theory can be applied to SCM. **Contribution One:** Policy causes supply chain disruption. These can be external policies such as political, economic, social, technological and climatic, or internal policies within the supply chain industry, all of which have adversely affected the transportation and distribution companies that have been empirically researched. **Contribution Two:** This paper also introduces the concept of supply chain strategic friction, which was acknowledged in a militarily strategic sense by Carl von Clausewitz in 1832 but not since explored. The TMT must know friction and factor it into the strategic renewal process in order to triumph over it. Otherwise it will be prone to disappointment. **Contribution Three:** Supply chain disruption can be caused by the misalignment of TMT and supply chain strategies. Consider the Irish Defence Forces alone. Significant logistical challenges were faced during two missions and *at no time was an enemy engaged*. This paper borrows from dynamic business-IS strategic alignment literature in the apparent absence of a corresponding perspective in the SCM academic domain. The transference of certain concepts has already been empirically validated within this research. The IDF successfully re-framed and aligned *business* strategy to operational readiness and it was demonstrated how a senior management strategy underwent an extensive period of preparation, shaping and re-framing to align with situational needs. **Contribution Four:** A 2-tier categorisation of supply chain strategy was evidenced and the author further proposes that the autonomous category exhibits supply chain tactics and the TMT negotiation category is introduced when an investment threshold has been reached and exhibits supply chain network re-design strategies. Negotiation was found to be within the response and recovery phases. The disruptive events empirically discussed were un-plannable. Policy matters.

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