

Running
university presented
to dr. amir
gharehgozlinovember
29, 2017by



**ASSIGN
BUSTER**

Running head: SUPPLY CHAIN COORDINATION 1 Supply Chain Coordination: A

Hanjin and Maritime Industry Case Study Taylor Benson & Clayton

Gregory MARA 650-901 Texas A&M University Presented to Dr. Amir

Gharehgozli November 29, 2017 By affixing my name to this document, I

hereby acknowledge and assent to the TAMU honor statement: " An Aggie

does not lie, cheat or steal nor tolerate those who do." SUPPLY CHAIN

COORDINATION 2 SUPPLY CHAIN COORDINATION 3 Coordination in a Supply

Chain The intended result of maximizing coordination throughout the supply

chain is an increase in the total supply chain surplus (Chopra, Meindl, &

Kalra, 2017). Supply chains have various owners for each stage, this can

mean there are conflicting goals which ultimately diminish overall surplus

(Chopra, et al., 2017). Improving communication and increasing

collaboration between each stage in the supply chain is the key strategy

behind improving supply chain performance (Chopra et al.

, 2017). The Bullwhip Effect Fluctuations in order quantities between retailers

and wholesalers (or wholesalers and distributors and so on) can distort

demand information and predictions of demand throughout the supply chain

(Chopra et al., 2017).

Without communication, each stage of the supply chain is exposed to

increasingly more extreme order quantities with the greatest fluctuations

taking place between the manufacturer and their supplier (Chopra et al.,

2017). Figure 1 provides visualization of the erratic changes in order

quantities that may arise from unpredictability of demand.

The greater variability in order quantities in each successive stage going up the supply chain is known as the bullwhip effect. Why the Bullwhip Grows. As discussed above, erratic ordering is a result of poor communication between different stages in the supply chain. The phenomena occurs when natural fluctuations in demand are exaggerated in the order quantities. However, instead of replenishing with an accurately forecasted amount, the intermediary reacts to the sold goods by amplifying their replenishment. If the replenishment exceeds demand, the subsequent replenishment will again be irrespective to consumer demand however this time the order will be low since there is excess inventory.

This cycle of ordering an amount greater than demand followed by an amount less than demand is not self-correcting, therefore it repeats until corrective measures are taken. Each intermediary going up the supply chain has the same tendency to react to the erratic orders by amplifying their replenishments (Li, Yu, Wang, & Yan, 2017). The Detrimental Effects. The result of inconsistent and highly variable ordering throughout the supply chain has an overall deleterious effect on supply chain surplus (Chopra et al., 2017). The bullwhip is associated with increased manufacturing, inventory, transportation, and labor costs (Chopra et al.

, 2017). Additionally, it has a tendency to increase replenishment lead time, decrease the level of product availability, and damage relationships between the entities involved in the supply chain (Chopra et al., 2017). In order to avoid a decrease in profitability, supply chain managers must avoid and/or

mitigate the bullwhip effect. Supply Chain Integration in the Maritime
<https://assignbuster.com/running-university-presented-to-dr-amir-gharehgozlinovember-29-2017by/>

Industry Maritime logistics can be defined as the process of planning, managing, and implementing the movement of cargo involved in waterborne carriage of cargo (Yuen & Thai, 2017). Supply chain coordination in the maritime logistics sector takes place between firms to integrate physical, economic, and organizational structures between shipping lines, port operators, and freight forwarders (Yuen & Thai, 2017).

Although it has been demonstrated that supply chain coordination has many benefits, studies show the level of coordination has remained low across the maritime industry (Yuen & Thai, 2017). Barriers to Supply Chain Coordination. Without supply chain coordination taking place on a high level, companies are competing in a zero-sum game where each is focused solely increasing their profits at the expense of supply chain partners.

Shipping companies are often not willing to or not interested in integrating their processes and activities with logistics partners for reasons outlined below (Yuen & Thai, 2017). This reluctance on behalf of shipping companies is why SUPPLY CHAIN COORDINATION 5 analysis can aid in revealing the root causes of the maritime industry's supply chain inability to thrive (Yuen & Thai, 2017). Dysfunctional Behavior.

Individualism, opportunism, change aversion, and incredulousness are noted as characteristics of behaviors that are dysfunctional and disruptive to the coordination of the maritime supply chain (Ketkar, Kock, Parente, & Verville, 2012). Other research has indicated that personnel involved in integration activities are largely responsible for such a persistent negative environment (Yuen & Thai, 2017). Strides towards improving supply chain coordination

seemingly cannot be successful without the cooperation and promotion of personnel within a company culture that seeks to improve supply chain surplus. Inconsistent Management.

Firms within the maritime supply chain sometimes have competing interests. For instance, coordination between shippers, carriers, and logistics service providers may increase their collective surplus at the expense of a warehouse whose revenues would decrease because of lowered demand for holding (Yuen & Thai, 2017). This exemplifies how management that is only focused towards their respective bottom line has an impact on willingness to create a surplus through coordination. The Case of Hanjin Shipping Company Hanjin Shipping Co., Ltd. provides shipping logistic services internationally. Hanjin is headquartered in Seoul, South Korea and was founded in 1949.

The company provides logistic container services, including intermodal service by rail, truck, and reefer services for perishable commodities (Dodwell, 2016). Other specialized services included transportation of dangerous goods, heavy lift cargo, and other various containerized goods. Hanjin also owned subsidiary companies that transported bulk cargoes, such as crude oil, iron ore, coal, and LNG. Along with transportation, Hanjin Shipping Co. offered port and terminal services along with providing SUPPLY CHAIN COORDINATION 6 warehousing, sales, management services, and leased terminal equipment.

Hanjin consisted of eleven container terminals, two logistic centers, and one hundred fifty vessels. The Demise of Hanjin The impending bankruptcy of

Hanjin has been on the brink since the global financial market crash in 2008. As global trade faltered to about 2% a year compared to previous double-digit growth from the three previous decades. Shipping giants such as Maersk have been adding massive amounts of capacity to larger and larger vessels (Power, 2013).

The capacity race continued at about 6% annually and data shows an estimated 30% capacity surplus in the world's shipping routes (Randall, 2016). The combination of capacity surplus and stagnant growth led to a ruthless price war the boasted cheap freight rates for exporters, but prevented all of the profits to the shipping lines. Freight prices today are about half of what the prices were two years ago (Randall, 2016). When Hanjin filed for bankruptcy the company had greater than 5 billion U. S. dollars of debt with and reported losses of 2 million U. S.

dollars daily (Randall, 2016). The bankruptcy immediately caused major upheaval in global freight shipments as ports around the world refused to handle cargo from Hanjin ships over concerns about the shipper's ability to pay docking fees. The company had roughly eighty vessels stranded at sea with an estimated 500, 000 containers waiting to be discharged along with an estimated 14 billion U. S. dollars frozen within the supply chain (Rodrigue, 2016).

Hanjin's Bankruptcy caused shipping rates to sky rocket by as much as 40% on shipping routes from Asia to North America (Rodrigue, 2016). Solutions to Hanjin and Industry Bullwhip Problem

SUPPLY CHAIN COORDINATION 7 Actions that propagate supply chain coordination increase supply chain surplus

(Chopra, et al., 2017). It requires each stage of the supply chain to consider overall impact individual actions have on other businesses in the chain. Lack of coordination occurs because different stages have conflicting objectives or delayed and distorted information between the stages. Game Theory By analyzing the container shipping through the lens of game theory, the market can be perceived as a zero-sum game. Game theory suggests that players in the market can compete in a way where the benefit of one company only comes at the expense of another company.

Shipping companies, like Hanjin, have attempted to grow their market share by increasing capacity aiming to take business from competitors. The unintended result, however, is a surplus of capacity which has driven down prices. Forming an Alliance. In some ways, carriers already coordinate with each other to avoid loss through pricing. Price announcements, known as general rate increases (GRIs), signal a carrier's intentions to change shipping rates to competing carriers (Manders, 2013).

Research done by other carriers GRIs provides insight on relative price position in each trade lane. This enables other market players to determine a competitive price without disrupting business or starting a price war. A game strategy other than wiping out competitors through high capacity and low price is a the solution to Hanjin's downfall. In order to avoid profit loss driven by supply surplus, Hanjin would have to coordinate with other competitors to reduce orders placed for containerships. A shipping alliance is an excellent example of how companies prevent supply saturation. Alliances lead to Success. A.

P. Moller-Maersk is one of the carrier market leaders. They utilize GRIs and play the game well by investing outsized profits for long-term, low-cost SUPPLY CHAIN COORDINATION 8 positions (Manders, 2013). As international trade grows carriers search to fill additional demand for larger fleets (Manders, 2013).

Prior to AP Moller and Maersk merging, both companies were dominant players in the market and neither under threat of insolvency. However, prices and profits were slumping as global containership supply was increasing. Their merger sets and example of how the strategic supply limitations, as opposed to uncontrolled growth via competition, can lead to market success. Consolidation was used as an engine of growth to advance market share and help manipulate market container costs (Power, 2013).

Rationing Rationing schemes that allocate a limited quantity of production that proportionately reflect orders placed by retailers amplify this effect. This can occur when a high demand product is in short supply.

Rationing scheme is used to allocate the available supply of product based on order placed. Under the rationing scheme, if supply is available at 75% of the total orders received, each retailer only receives 75% of its orders (Chopra, et al., 2017). This rationing scheme can result in a scenario in which the carrier tries to increase the lot size of orders to obtain more than competitors. Shipyards can Increase Supply Chain Surplus.

For rationing to work, shipbuilders would have to aggregate data from carrier demands and to find an appropriate production quantity that would satisfy overall demand for carrier's customers without drastically increasing global

supply to a point that price competition diminishes carrier's bottom lines. Ultimately, this strategy will inhibit the bullwhip effect. In effect, the shipbuilders would have to implement shortage gaming. This measure would have suppressed the price depression during of the market crash in 2008 (Power, 2013).

SUPPLY CHAIN COORDINATION 9The equilibrium price of a ship is determined by supply and demand. This law suggests that ships are more valuable when ordered during times of high demand, but that price lowers when the market demands fewer ships. Rationing would stabilize price fluctuations and a lower supply in the market would allow the shipbuilder to obtain a higher price.

If shipbuilders coordinate with carriers and lower the supply of ships, the rate for shipping increases. Figure 2 suggests that globally, carriers are pursuing a chase strategy as opposed to a level strategy. The cost carriers absorb on ship disposal during times of low demand would be mitigated through rationing. According to figure 2, ship disposal generally inversely reflects ship order activity. This strategy will benefit both the shipbuilder and the carrier, since both will receive a higher price for their good or service, respectively, a supply chain surplus is achieved while the bullwhip is minimized.