

# A Study on Customary Practices in Iron Ore and Steel Product Shipping Contract

## - Case of Long-term Shipping Contracts in Korea

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**Abstract** : Long-term shipping contracts represent the cooperative and coexisting relationships between the shipping and steel industries. Yet, differences between the contract forms for iron ore and steel products have emerged. Specifically, the large proportion of consecutive voyage charters (CVC) is being applied in the iron ore trade, whereas the contract of affreightment (COA) is proportionally higher for shipping steel products. The literature review and in-depth interviews in this study identified through the research model, the characteristics of the shipping and market structure in both markets have significantly contributed to the preference of different long-term contracts. It has been determined that the mutual oligopoly market structure and the characteristics of shipping such as, the small number of suitable vessels in the market, the single fixed load/discharge ports, the long-distance voyages, and the potential risks for fatal accidents because of cargo liquefaction, for the iron ore trade, provide higher contribution to the preference of CVC contracts. In contrast, the consignor oligopoly market structure and the shipping characteristics, such as the greater number of suitable vessels available in the market, the variation in ports, the cargo quantity per shipment, the various load/discharge ports, and the need for experienced carriers for steel product loading in the steel product trade has shown higher preference on the COA contracts as the consignors with superiority over the shipowners, resulting in favorable contract types and conditions for the consignors.

**Key words** : Long-term Shipping Contracts, Contract of Affreightment (COA), Consecutive Voyage Charter (CVC), Iron Ore Transportation, Steel Product Transportation.

### 1. Introduction

Iron ore is an essential raw material for producing steel products and continuous and stable supply of the Iron ore is the core element and competitiveness of the steel company. (POSCO Newsroom, 2019) However, the Korean steel industry must rely on imports of iron ore from foreign countries and therefore the shipping contracts terms play key role in efficient and stable supply of iron ore.

This study focuses on long-term shipping contracts, which represent the cooperative and coexisting relationships between the shipping and steel industries. The main purpose of the long-term shipping contract is to minimize the risk derived from unpredictable changes in market conditions, which can result in unpredictable charter rate, freight, and unexpected limited vessel supply at the time of shipping for consignors and to enable shipowners to predict future income so that practical planning for the future business is available. The contracts for both iron ore and steel product share a common concept and purpose in long-term shipping contracts—namely, the longer period.

Yet, despite the long-term contract, differences between the form of contracts for iron ore and steel products have emerged. Specifically, the time frame between the two contracts showed big gap and proportion of CVC was higher in iron ore trade and COA showed a higher proportion for steel products trade. (Lee, 2009)

Table 1 Characteristics of CVC & COA

Types of contract	Consecutive Voyage Charter	Contract of Affreightment
Time frame of the contract	Long-term 5 ~ 20 years	Medium Long-term 1 ~ 3 years
End point of the contract	At the end of contracted voyage	At the end of contracted period
Vessel Nomination	Designated Vessel	Non-designated Vessel (Minimum requirement provided)
Changeability of nominated vessel	Positive, upon negotiation	Positive
Ocean freight	Private or public bidding	Private or public bidding
Ability of combining/loading other cargoes	Negative	Positive
Obligation of return in a ballast condition	Obligated	Not obligated, may secure new shipment or redeliver the chartered vessel.

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The Table 1 has briefly enumerated the characteristics of Consecutive Voyage Charter contract and Contract of Affreightment. In addition to the above differences, CVC designates the specific vessel to perform shipment whereas COA does not and therefore the COA allows more flexibility of vessel nomination and more options of vessel operation upon completion of the appointed shipment. On the other hand, the designated vessel of CVC must come back to the load port to perform next shipment of the contract, which allows limited options to the vessel operation.

The study focuses firstly on determining the factors that contribute to the preferences of different contract types in the two markets studied by analyzing each market structure and their shipping characteristics. Secondly, the study determines why CVC and COA are contracted with different time frames when the two contracts represent as long-term shipping contracts. Finally, due to COA's short duration, some shipping companies find it difficult to maintain or expand their business and therefore, the study seeks to find ways of solution for both parties.

To meet these objectives, this study adopts the following approaches. The study conducts a literature study and in-depth interviews. It reviews Korean and foreign dissertations, scientific treatises, research reports, specialty publications, and related articles to develop an understanding of the shipping market structure and shipping characteristics of the steel industry. In addition, the study includes in-depth interviews with a small group of experts in the steel and shipping industries to understand the preference-affecting elements, reasons for the different durations of the two long-term contracts, and the opinion of shipping companies and consignors on the duration of the COA. With the result of the interview, further literature review has been carried out to organize and strengthen the logic behind.

## 2. Shipping characteristics and market structure of the steel industry

### 2.1 Characteristics and market structure for the Iron ore shipping

Iron ore has relatively limited trade routes and hence it results in relatively few load ports. The main iron ore exporting countries are Australia and Brazil, which consist

of 61% of world production. As per the Table 2, Australia and Brazil has the highest production and export figures and China, Japan and Korea are the major importers in the market. Although India produced 201.8 million tonnes in year 2017, it exported only 28.1 million tonnes and rest were consumed by the domestic. Therefore, there are only few load ports in iron ore trade as majority of exports are from Australia and Brazil.

Table 2 Iron ore trading countries and figures  
(Unit: Million Tonnes)

Country	Production	Exports (-)	Imports (+)	Assumed Consumption (=)
Australia	883.4	872.8	0.3	10.9
Brazil	435.5	383.5	0.0	52.0
India	201.8	28.1	5.4	179.1
China	115.0	5.5	1,075.4	1,184.9
Japan	0.0	0.0	126.5	126.5
Korea	0.4	0.0	72.4	72.8
Others	531.0	348.8	298.0	480.2
<b>World Total (Million Tonnes)</b>	<b>2,167.1</b>	<b>1,638.7</b>	<b>1,578.0</b>	<b>2,106.4</b>

Source : World Steel Association, 2019

Iron ore is also known to be notorious for its characteristics in aspects of marine transportation. Due to its nature of liquefaction, there is potential risk during the marine transportation. In 2007, nine vessels have sunken and took 29 lives away. (Mohajerani, Dean and Munro, 2019) According to Susan Gourvenec, a professor of offshore geotechnical engineering at the University of Southampton stated during the interview with 'Ship Technology Global' that when there is cargo liquefaction during the navigation, it is assumed that the loss of the vessel and life is significant and no other types of vessel lost or incidents have such a high fatality rate. The cargo liquefaction has been a concern of seafarer for over a century. To minimize the risk of the liquefaction, the shipper, shipowner, the captain and the crew of the vessel must abide by the International Maritime Solid Bulk Cargoes (IMSBC) Code regulated by the International Maritime Organization. All related parties must comply with the Transportable Moisture Limit (TML) when it is loaded and the captain shall be able to halt the loading operation and request the moisture test if TML is suspicious. Also, the liquefaction often occurs during the sea passage and therefore, the captain and the crew shall adjust to secure adequate metacentric height to protect the stability of the vessel. Although iron ore is not a complicated method-loading cargo or in needs of special care, but due to its nature of liquefy, the clear understanding of its behavior and experience by the

shipper, shipowner, and the crew of the vessel are required.

The market of iron ore transport in Korea is structured as oligopoly on both parties. Assumed that consumer (demand) is the steel company and supplier (supply) is the shipping company, the both parties are consist of minority of market players. As of 2019, the steel companies that imports iron ore in Korea are POSCO and Hyundai Steel and hence it is assumed that there are only two consumers of the transport service. The consistent transport service providers for iron ore in Korea are less than 10 companies. There are only four shipping companies that have signed a long-term shipping contract with POSCO and they are H-Line shipping, Panocean, Polaris Shipping and Korea Line Corp. These are the shipowners that can provide stable transport service. Although there are middle-sized shipping companies that provide transport service for iron ore, it is difficult to enter the Capesize market without long-term shipping contract.

The iron ore is often transported by the Capesize vessel or above sizes to secure stable supply of core raw material of steelmaking and therefore intention of large volume in one shipment is inherent. (Beresford, Pettit & Liu, 2011) However, the entry barrier of iron ore market is too high for many shipping companies. First of all, operating/owning a fleet of Capesize or above is difficult for the middle/small-sized shipping companies because the cost of the vessel is higher than handysize vessels, and it is difficult to secure stable voyages if long-term shipping contract is not signed prior to owning. The new building cost of capesize vessel is exorbitant compare to that of the handy and panamax. According to Clarkson Research Services in March, 2019, the cost of new-built handysize vessel is USD 21.55 million, panamax is USD 27.5 million and capesize is USD 51.0 million. It provides high burden to a shipping company with unstable financial status or without long-term shipping contract secured. Moreover, the capesize vessels have lesser purposes of cargo to transport compare to that of smaller vessels, such as handysize, handymax or supramax. The handysize or handymax sized vessels have th most purposes in aspects of cargo transport due to its size. Most of the ports in the world are constructed to fit at least handymax sized vessels and therefore the handymax or below sized vessels have the least restriction of transporting any type of cargo. This means more opportunities of service and voyages for the vessel. Whereas, the capesize can only call permitted, regulated ports, which are limited and also have limited

choice of routes for trade due to its size. Therefore, the shipowners tend to expand their fleet with handysize and handymax sized vessels as they provide more purposes. (Park, 2019) Referring to the Figure 1, the number of handysize and handymax vessels take about 60% of the total number of the vessel in the world, whereas capesize is only 17%.

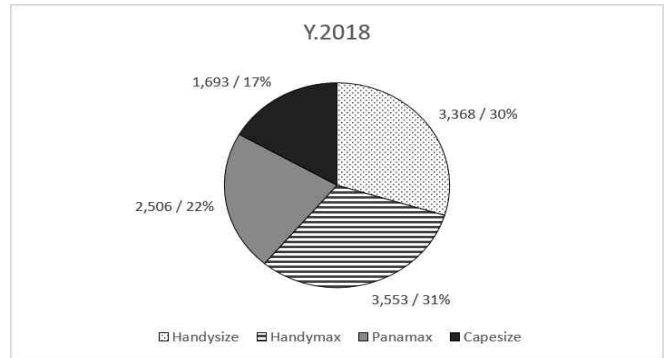


Fig. 1 Bulk carrier tonnage by types  
Source : Clarkson Research Services, 2019

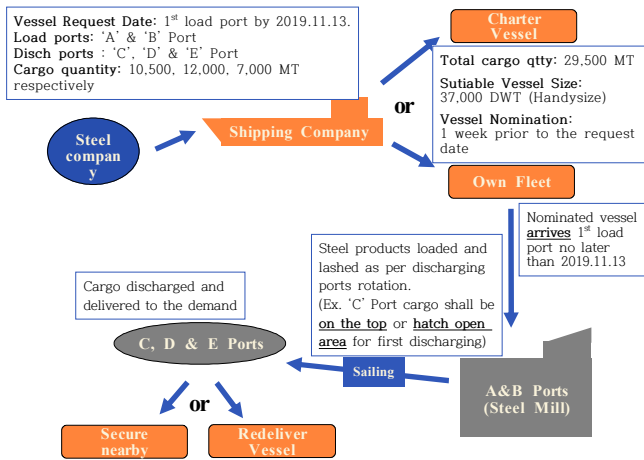
Although the world shipping market is in intended trend of delivering larger vessels, due to its limited purposes in dry-bulk, the smaller vessels are preferred by the shipowners.

## 2.2 Characteristics and market structure for the Steel product shipping

The steel products can be grouped by six big categories Cold rolled coil (CRC), Hot rolled coil (HRC), Stainless Steel coil (STS), Steel plate, Wire rod and Electrical Steel sheet and others such as H-beam, etc. Each type of cargo requires specific method of loading/discharging and the shipowners must be aware of the product type and loading sequence and shall appoint supercargo prior to commencement of loading to prevent potential cargo damage or vessel damage. These loaded products are exported to all over the world with multiple discharging ports in one shipment unlike that of iron ore. However, due to existing variables in terms of demand by ports, the nature of marine transportation is not as simple as iron ore. The routes of the voyage and cargo volume of each port varies every shipment. The figure 2 is an example of one shipment procedure for Southeast Asia region bound shipment to help comprehension of the procedure based on shipping company's perspective.

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Marine Transportation Diagram for steel products (in shipping company's perspective)



The steel product require strategic loading procedure as it cannot be dropped like other dry-bulk cargoes. Since it is a product, not a raw material, the quality of the cargo at the time of delivery is important. Therefore, the supercargo of the shipping company is often appointed to be present at the scene of loading to protect the interest of shipping company in terms of the quality of the cargo. Steel product does not have chemical reaction that severely affects the safety of the vessel, such as liquefaction or free surface effect. However, it is very sensitive to the condensation issue during the sea passage which results in rust scale. Therefore, ventilation and visual check of the cargo hold by the cargo officer during sea passage is critical. Moreover, the heavy weight of the steel product (a coil can weight up to 30MT) occasionally causes serious damage to the vessel's tanktop strength. This can lead to severe safety issue, but with the limitation of the tiers in loading product by the vessel's classification society, it is often prevented to go beyond the tanktop strength. For example, the cargo quantity in Figure 2 is 29,500MT, but nominated vessel size is assumed as 37,000DWT vessel. The maximum weight the vessel can transport at once is not important in terms of loading steel product as the tier is limited, but the bottom space of the cargo hold is essential. Wider and longer cargo hold can load more steel product and therefore, 'Open Hatch Box Type' vessels are most preferred when loading steel products.

The market structure of steel product is consignor-oligopoly. Assumed that consumer is the steel company and supplier is the shipping company, there are small numbers of consumers in Korea compare to that of supplier, the shipping companies. Although there are more

steel companies that manufactures steel product that iron ore import companies, many of them does not have large and consistent enough volume of cargo to export. In contrast, it is free competition market for the supplier, in which allows many shipping companies to provide service. As the marine transportation of steel products are performed mostly by the COA and spot contract, the vessel is not specifically nominated to commit in particular contract. In addition the requirement of shipping company to provide transport service in steel product sector is more flexible than it is for the iron ore. The shipping company can enter the market with only one owned small vessel and the satisfactory credit rating is not too high that most of middle sized companies can provide. However, the shipping company must have experience of shipment of the region that is applying for. For example, if a shipping company intends to apply for bidding of USA/Mexico region, the company shall have experienced the steel shipment bound to USA/Mexico. These experiences are often covered with spot shipment with foreign steel companies as there is no such requirement for spot contracts. When the steel shipment is secured, the shipping company is not obliged to nominate its own vessel and it is permitted to charter vessel in the spot market. Therefore, it is structured to provide opportunities to small-middle sized firms to compete in providing service.

The vessel performed in steel product transport are normally from Handysize to Ultramax and those types of vessels take over 60% of the vessels in the world. Therefore, it is relatively easier to find and charter those sized vessels in the market and the vessels are concentrated in Far East Asia due to volume of loading cargo in the area. These elements provides lower entry barrier to the market than it is for the iron ore.

### 3. Interview and Analysis of shipping contract

#### 3.1 Outline of the Interview

In-depth interviews were conducted to identify the factors contributing to the selection of different types of long-term shipping contracts and the opinion of each party in regard to the future modification of shipping contract terms. The interview questions were used to gather profound opinions of the field experts of 13 individuals of

steel and shipping industry. The confidentiality was maintained as the selected interviewees play substantial roles in the shipping contract sections of their companies to protect their interest.

### 3.2 Research Model

The research model is shown in figure 3. The research model is to assist comprehend this study’s major findings of the first objective. The interview along with the literature review helped analyze the identified factors’ influence on the type of contract.

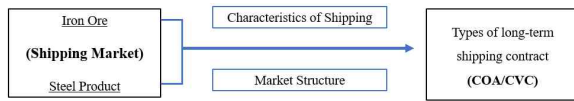


Fig. 2 Research Model

### 3.3 Selection of interviewees

The interviewees were specifically narrowed down to individuals who had or have played substantial roles in decision-making related shipping contracts. As the shipping contract section is not familiar to the public, even to personnel working in the related fields, it was more valuable to interview a few substantial influencers of contracts instead of having many interviewees with insufficient or misleading information. The pool of selected interviewees is listed in table 3 and the company names have been anonymized to ensure the confidentiality of the interviewees.

Table 3 Interviewee Pool List

#	Company Name	Consignor (C) Shipowner (S)	Title	Participation (Y/N)	Date of the Interview (YY/MM/DD)	Interview Approach
1	'A' Steel Mill	C	Team Leader	Y	19/11/22	Phone Call
2	'A' Steel Mill	C	Managing Director	Y	19/11/22	Phone Call
3	'B' Steel Mill	C	Team Leader	N	N/A	N/A
4	'C' Steel Mill	C	Team Leader	Y	19/11/18	E-Mail
5	'D' Shipping	S	Manager	Y	19/11/27	Mobile Messenger
6	'E' Line	S	Managing Director	N	N/A	N/A
7	'F' Merchant Marine	S	Department Head	Y	19/11/25	E-Mail
8	'G' Line	S	Manager	N	N/A	N/A
9	'H' Ocean	S	Managing Director	N	N/A	N/A
10	'I' Shipping	S	Team Leader	Y	19/11/23	E-Mail
11	'J' Shipping	S	Executive Director	Y	19/11/23	Meeting & E-Mail
12	'K' Shipping	S	Team Leader	Y	19/11/18	E-Mail
13	'L' Shipping	S	Team Leader	Y	19/11/25	Phone Call & Mobile Messenger

### 3.4 Implementation of the interview

The interview questions were produced into two different forms. One form was for steel companies while the other was for the shipping companies, although they ultimately produced identical information. The questions were selected to determine the most commonly used types of shipping contracts in iron ore and steel products, and whether the nature of the shipping and market structure affected the preference of contract type by the consignors as well as shipowners’ perspective. The interview was conducted between November 14 and November 27, 2019. As table 3 indicates, 13 interviewees were included, but only nine participated as some interviewees believed the questions asked were confidential information and were not comfortable to disclose such information. The interviews were performed via e-mail, phone calls, mobile messenger and by face-to-face meeting.

### 3.5 Findings from the interview

The interviews with individuals in both the steel and shipping industries provided data that could be used to develop the research model by incorporate the factors that have a significant influence on the types of the contract.

#### 3.5.1 Iron ore

Firstly, the influence of shipping nature for iron ore trade is that iron ore is essential for steelmaking procedure and the steel industry requires a certain amount, about 50%, of the annual iron ore volume to be secured for a stable supply. If not secured and the steel company faces a shortage of iron ore, furnace operations cannot be continued; when furnaces close, subsequent processes in the steel product are suspended. As a result, the steel company will lose its competency, leading to a high cost of resumption. Therefore, a large volume of iron ore trade is regularly maintained, which is why the industry targets large vessels for iron ore trade.

Secondly, when large vessels are committed to transporting iron ore, they generally require a long voyage as the trade routes for iron ore are fixed and considered long distance. The ordinary trade routes for iron ore traverse from Brazil to the Far East, such as China, Japan, Korea and Australia. Therefore when company needs to secure a spot vessel for iron ore, it is difficult to charter a spot vessel for the voyage as the corresponding vessel is

already engaged with an iron ore shipment. The loading regions are usually Brazil and Australia, but most vessels for iron ore will be freely open in the Far East and securing a vessel from the Far East to load iron ore in Brazil and discharge in the Far East again, will cause high increase in the ocean freight due to the cost of ballast sailing.

The CVC timeframe is normally about 20 years, and the CVC designates a vessel and allows for a change in the committed vessel if the shipping company requests such changes for its business strategy. However, in COA, the timeframe is one to three years, and no specific vessel is designated, meaning any suitable vessel—either owned or chartered can be used. The committed vessel also has no return obligations, which allows it to carry other shipments upon discharging the iron ore. Therefore, to secure the stable supply of the iron ore at large volumes while overcoming challenges such as high ocean freight due to market changes and less available tonnage in the market, the nature of iron ore transportation induces and affects the preference for CVC over COA.

The small number of steel companies and potential shipping companies constructs a mutual oligopoly market in iron ore transportation in Korea. Only two steel companies import iron ore in Korea and although the dry-bulk sector of the maritime industry is a free competition market that any shipping companies can enter, a similar context is unlikely in the marine transportation of iron ore. To be a potential shipping company to transport iron ore, the company must have a suitable vessel (i.e., capesize or larger vessel). However, the cost of building a new capesize vessel, as of 2019, is USD 51.0 million, which is twice the cost for handysize or panamax vessels. Therefore, shipping companies must have sufficient financial power to enter the market. Such costs could be covered if a long-term contract is secured prior to ordering a new built ship, but it is unlikely to happen without a pre-secured vessel due to inconsistency. Therefore, to provide marine transportation service in the iron ore trade, a shipping company should have sufficient funds as well as experience in the iron ore trade. These factors increase the barriers to entry for other shipping companies; hence, only a small number of shipping companies have long-term contracts with steel companies, such as POSCO and Hyundai Steel. This market structure induces and increases the preference for CVC. As it is also an oligopoly among

shipping companies, the number of suitable vessels available is limited. Consignors can reach out to foreign shipping companies, but the mutual understanding of interest and communication can be limited, and there is also a possibility of strategy leaks to foreign countries, which can lead to a loss of national competitiveness. Therefore, it is essential for consignors to get a hold of national carriers in consistent terms for longer periods to stabilize the cost of steel products by maintaining low and stable ocean freight over the long term. Through above findings, the research model for iron ore is depicted as Fig. 4.

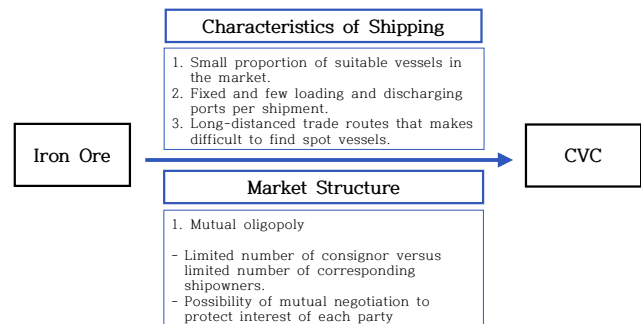


Fig. 3 Research Model with findings for iron ore

### 3.5.2 Steel product

Having more tonnages available for steel product transport reduces consignors' burden in securing the immediate fixture of vessels, which suppresses freight increases due to the supply and demand of the vessel. This does not induce the consignor to prefer CVC in this case. Rather, to lower the transportation cost for steel products, COA is preferred because steel products have various regions of demand and each region has many ports. Not every port is called on in one shipment, and the ports of call are determine not long before the shipment is carried out. Therefore, if the consignors utilize a spot contract, the cost of transportation may increase depending on the number of ports called on as it would require an extra bunker and time consumption due to deviation. If the shipment is carried out through COA, the ocean freight per metric ton is fixed by each port. Thus, regardless of the number of ports, the cost of transportation remains the same and the extra cost of the bunker and time consumption due to deviation is on the shipowners' account.

In addition, steel products are a complex cargo to load and discharge compared to other types of bulk cargo. It requires the shipping companies' know-how, especially in

terms of loading. Thus, it is essential for the supercargo of each company to be on the scene during loading and provide direction in terms of strategical loading to load as much as possible in a safe manner. Otherwise, many claims can be received stemming from cargo damage as it is a product of demand. Therefore, consignors prefer COA as they can immediately access a group of experienced and skilled shipping companies employed in steel product transport.

The market structure of steel products is indicated as a consignor oligopoly. Although the consignors require experienced carriers in transporting steel products, the increased barriers to entry into the market are minimal. For iron ore, it is a burden for shipowners to possess a vessel, but possessing a handysize or ultramax vessel is not a burden for small shipping companies even with unstable funding power. Vessels of this size can be used to transport various cargoes and are not limited to steel products. Therefore, there is greater opportunity to experience steel products from foreign spot cargoes and gain the required know-how. As a result, there are up to 12 shipping companies in one region of a COA pool. With this background, there is no reason for consignors to sign a CVC contract as they will have to select a specific company to provide service for a long period of time with the committed vessel. As there are many qualified candidates in the pool, it is more profit securing to sign a COA contract.

If they sign a CVC, the consignors are responsible for the ballast voyage of the returning vessel and fully laden cargo volume of the committed vessel on every voyage. However, if they sign a COA, the consignors do not have such burdens as the vessel nomination is the shipowners' responsibility and the consignors do not have to deal with the pressure of preparing full cargo for the vessels as long as consignors meet the contracted quantity during the time frame. Through above findings, the research model for steel

product is depicted as figure 5.

### 3.5.3 Contrasting perspectives of the COA

The main contrasting points identified in the analysis of the interview data were the contract period for COA of the steel product trade and the entry allowance of inexperienced carriers for lower freight rates for the steel product COA pool. This section discusses each perspective and identifies the main contrasting issues between the two parties in the contract period.

The consignors believed that the timeframe for the steel product COA, which is currently one year for all major steel companies in Korea, is sufficient. This is because the consignors provide such a large volume annually, more than 400 to 500 million tons, that they provide substantial shipments each year. The consignors determine the timeframe-to-annual volume ratio to calculate the lowest possible ocean freight per annual volume. When the annual volume is 400 to 500 million tons, the ratio for one year of COA can bring the best balance between the lowest freight and safest transport. If the annual volume is less, the timeframe will be longer to match the ratio and secure the balance.

On the other hand, however, The shipowners were not satisfied with the timeframe of the current COA, which contrasts with the consignors' perspective. The shipowners believe that one-year contracts limit the shipping companies' ability to strengthen their business portfolio because it is too short to prove that the company has stable enough contracts to expand its business sector or fleet. This limits the company's ship financing power and, hence, slows the growth of the company.

Finally, shipowners complained that, because of the disproportionate number of suitable vessels for steel products in the market, the consignors are abusing the superiority of the market structure to reduce the prime cost. They explained that consignors have recently started lowering the entry barrier conditions for the COA carrier pool, allowing carriers with limited expertise in the steel product trade in order to lower the freight rate of COA. The carriers cast doubt on the possibility of potential hindrances in stable and safe transport due to the alleviation of entry barriers. Allowing amateur carriers into the industry may cause severe cargo damage due to accidents or cases of abandonment when securing the requested vessel during poor market conditions to protect their own interests. Abandonment occurred in the past for one of the major steel companies in Korea, resulting in a

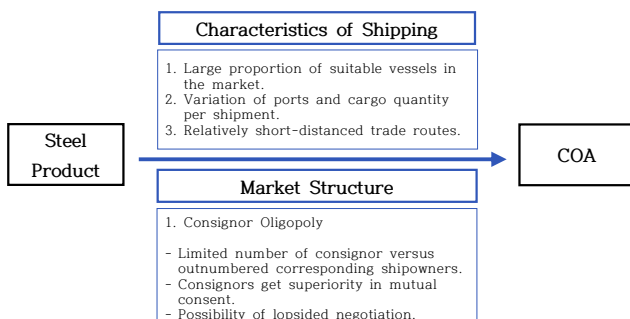


Fig. 4 Research Model with findings for steel products

loss of brand image to Japanese customers, who needed the steel product in a timely manner for construction.

Several key contrasting points emerged between the two parties. The consignors believed that the current contract period of COA is enough for both consignors and shipowners to evenly share the profits; however, the shipowners considered this system to limit their efforts to grow and expand their business in the future. In addition, the shipowners believed that maintaining high entry barriers for the COA pool is essential for both parties to protect and secure the stable and safe transport of steel products, yet the consignors did not agree that the entry barriers are so low as to allow inexperienced carriers to participate.

#### 4. Conclusion

The literature review and in-depth interviews in this study identified the characteristics of shipping and market structure in both fields, showing that the iron ore and steel product trades, have significant influence on the form of shipping contract.

With the influence of the market structure and shipping characteristics of each type of cargo, the CVC contract is more applicable for iron ore whereas COA is more applicable for steel products.

Finally, Many shipowners made similar complaints in terms of contract period, but they are afraid to raise their voices to the consignors, who have superiority in the market. The interviews demonstrated that most consignors are open to the voice of the customer (VOC) and some consignors encourage shipowners to provide VOC. The consistent request to extend the duration of COA via VOC may encourage consignors to consider and review the possible scenarios. However, the VOC must be submitted with a sound basis as well as realistic and probable suggestions for a win - win strategy.

Moreover, to reduce the possibility of potential hindrance in stable and safe transport, the alleviation of the entry barriers to the COA pool for the steel product trade should be kept to a minimum. Expertise related to specific cargo loading should be maintained at a high level so that the consignors can also maintain or strengthen their brand image globally. In doing so, the consignors can comply with customers' requested delivery date and provide satisfaction. In addition, consignors will be less involved in fatal accidents from cargo damage due to inexperienced loading procedures.

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