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Vertical integration and servitization strategies for a container liner

How to compete for customers in a market of overcapacity

Master thesis in Quality and Operations Management

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SUMMARY

Shipping industry is cyclical in nature and freight rates can fluctuate volatily. There is also a risk for sudden overcapacity, especially if lag in construction of new vessels results in release at a time when demand is lower. There are reports from 2019 that show an overcapacity within the industry and it has been reported that vertical integration is increasing in favor of building more and larger size container vessels. Media is reporting that major container liners are investing in terminals, forwarding companies, airlines and service companies worldwide. They have also started offering more and more services and initiated digital platform within supply chain. There are also reports on automation and efforts to automate ships and cargo handling to an as large extend as possible. This is in line with what other industries are doing today within digitalization, automation and servitization. However, the question remains what their strategies with vertical integration and servitization are, and how will container shipping evolve. Using qualitative methods and observations, this study aims to discover the strategies followed by the container liners today to enhance their competitiveness in an oversupplied market. Findings in this study indicates that the major container liners are seeking competitive benefits from buyer selection. This implies that the customer ultimately loses bargaining power and that, for example, high negotiation costs can be reduced or kept at a minimum. Buyer selection is a relatively broad subject and it is elaborated in various theories about competition and competition strategies. It means that the customer loses bargaining power, however increased buyer selection does not necessarily have a direct negative impact for the customer.

Keywords: Container liner, Sea freight, Container freight, Container services, Automation, Digitalization, Servitization, Vertical integration, Competition

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1 Introduction

1.1 Background

Shipping is a cyclic industry where freight rates and demand vary over time, according to Stopford (2005). It is also a global industry subjected to international politics such as trade embargoes etc. which can cause volatility. There are several container liners today competing for the freight on routes between America, Asia and Europe operating from various countries, according to United Nations Conference on Trade (2019).

Due to the lag when ordering container vessels, the liner needs to plan years in advance and utilize the economy of scale when ordering vessels to boost their freight capacity in order to meet the expected demand. This can lead to an oversupply of freight capacity worldwide reducing the freight rates and creating competitive environment on the freight routes among the liners. Just having vessels in traffic on the routes might no longer be enough to compete on the market.

United Nations Conference on Trade (2019) mentions that container liners are involved in vertical integration today where they for example buy or enters into agreements with port terminals to secure the link between land and sea so they can as effectively and with as short time as possible load and unload the freight carried.

In addition, liners seem to opt for more services on offer to provide a competitive offer for carrying the customers' goods. Adding services either by own development or acquiring existing related services through acquisitions is one of many different ways for a container liner to add value to their customer by diversifying their services on offer. This is similar to servitization of business where value is added by adding services, according to Vandermerwe & Rada (1988). A strategic map of servitization was created by Rabetino, Kohtamäki, & Gebauer (2017) in which learning & growth perspective, internal perspective, customer perspective and financial perspective are illustrated and could be used to identify what happens in the industry and to look for the value creating process within the organization or strategy to create value.

This can enable competition in other dimensions than price and building strategies to handle the five forces that shape industry (not only shipping industry) competition as mentioned by Porter (2008).

1.2 Purpose

The purpose of this master thesis is to identify possible and used vertical integration and servitization strategies for a container liner operating in a market with overcapacity and their effect on competitiveness.

1.3 Clarification of customer value

For a container liner, it is not possible to add value directly to the goods being carried. In this case, the customer values the minimization of the loss of value (depreciation of goods carried) due to the duration of time under which the goods are being transported. In this case, we call this Δ_{loss} defined as $\Delta_{loss} = \text{Competitors time in freight} - \text{Own time in freight}$ where a positive Δ_{loss} can be considered as value added for the customer compared to the competitor. This can be done by increasing the capacity of faster sailing and larger container ships to ensure as short time as possible at sea and a short waiting time for a place on a ship. Adjusting a

container liners freight capacity by modifying their fleet is outside the scope of this master thesis and will not be discussed further.

To add value for the customer without increasing the freight capacity, new capabilities or increased capacity of existing capabilities needs to be achieved. Servitization and digitalization, as used in many other industries is one way to further value offerings to the customer. Vertical integration is one way to build the required capacities within the capabilities required to compete.

Value for the customer could also be the possibility to show that their product has been produced in a sustainable manner, for example, the carbon footprint as a result of freight has been minimized.

Another aspect is to achieve perceived exit barriers keeping the customer from switching to the competitor even though they have a similar or slightly better offer. This can, for example, be achieved by offering values beyond the economic aspects ensuring that changing might be perceived by the customer as a risk that outweigh a potential financial gain.

Previous paragraph can also be related to quality where meeting the expected quality retains the customer and achieving attractive qualities could attract further customers and increase the existing customers' use of the service. For a container liner, we look on service quality rather than product quality. In theory, total service quality consist of the product (hardware) and services attached to the product. In this case, we only consider services added to the carrying of freight that is seen as a service itself with no physical product attached.

1.4 Effects on business and society

Vertical integration can have the effect of raising the entry barrier of any industry and it can also lift the exit barrier for any organization. For this topic, raising the exit barrier should be of little concern since a container liner with a certain number of vessels should theoretically already have a high exit barrier. Lifting the entry barrier could have societal effects by reducing the number of jobs and elevating the freight rates due to fewer container liners. It could also lead to violation of laws in the countries they are conducting business in.

Servitization and digitalization could lead to more effective handling of freight across borders shortening the lead times. This could lead to a reduction of jobs within one sector while on the other hand increase the number of jobs in another sector.

An example of vertical integration that could have effect on business and society in Sweden is the acquisition of a toll service company in Gothenburg by a Danish container liner, according to Botsjö (2020).

2 Literature review

A review of relevant literature was carried out with focus on current direction within the industry and vertical integration in general. Collected literature is relevant to both the industry (container liner) and industries in general. Reviews are presented in the sections below.

2.1 Industry today and competition

Porter (2008) mentions that competition in other dimensions than price is less likely to erode profitability since it improves customer value. Porter (2008) also relates focusing on other dimensions to a potential increase of entry barriers for new competitors within an industry. Value can be added by servitization of businesses, according to Vandermerwe & Rada (1988). Rabetino, Kohtamäki, & Gebauer (2017) created a servitization strategy map that shows different perspectives, including internal and customer perspective that gives a sense of how servitization strategies can manifest themselves in the industry.

Siu Lee Lam & Zhang (2019) investigates seven innovative solutions to retain customer and deliver customer value. According to their research, service innovation is not as sensitive for customer value as process innovation. Siu Lee Lam & Zhang (2019) further claim that digitalization and automation is part of process innovation, however digitalization can be seen as an enabler for creating service innovations, according to Coreynen, Matthyssens, & Van Bockhaven (2017).

United Nations Conference on Trade and Development (2019) sees a deceleration in trade worldwide. Based on Porter (2008), this should increase competition among rivaling container liners putting more pressure on retaining customers without eroding profitability. United Nations Conference on Trade and Development (2019) reports that vertical integration is increasing and there is no effort in developing new and larger container vessels, focus is rather on additional services on land. *“The future is not about ships, it’s about improving global transport”*, says Stopford (2017), it implies that new thinking is needed within the industry. Stopford (2017) mentions four challenges that the industry needs to respond to and presents a long-range vision. The challenges are managing the “shipping cycles” better, adapting to a new regional trade structure, engaging with the emerging global B2B market place and evolving smart shipping management systems. Siu Lee Lam & Zhang (2019) are in line with these four challenges and vision.

Lai, Su, Tai, & Ching-Chiao (2020) suggest that a container liner should use IT infrastructure and applications to share information with their supply chain partners in order to increase performance. Lai, Su, Tai, & Ching-Chiao (2020) further suggest that jointly making decisions regarding transportation, warehousing, customs clearance, insurance, and value-added services can enhance the container liners logistic service performance. Lu & Ching-Chiao (2010) concludes that customer response and innovation capabilities oriented international distribution center firms have the best performance. This is in line with the statement of Siu Lee Lam & Zhang (2019) and can be useful for the container liners to take into consideration as they change their operation as reported in United Nations Conference on Trade and Development (2019).

Regulators have also taken steps to increase automated reporting between ships and ports by amending the FAL convention (Facilitating of international maritime traffic 1965) adopted in 2016. Objective with this convention is to achieve the most efficient maritime transport as possible according to International Maritime Organization (2019).

Yuen & Thai (2015) concludes that reliability and speed are the main predictors for customer satisfaction for a shipping liner. Sun, Chung, Choi, Sheu, & Ma (2020) suggest that improving

schedule reliability is still a critical issue in competing for customer. Sun, Chung, Choi, Sheu, & Ma (2020) also suggest joint efforts among the multiple parties involved in container shipping. This is in line with the conclusions of Lai, Su, Tai, & Ching-Chiao (2020), Yuen & Thai (2015), United Nations Conference on Trade and Development (2019), Rabetino, Kohtamäki, & Gebauer (2017) and Stopford (2017).

Vertical integration can be a way for a container liner to diversify themselves in order to align with and build value by adding services, according to Siu Lee Lam & Zhang (2019), Lu & Ching-Chiao (2010), Lai, Su, Tai, & Ching-Chiao (2020), Sun, Chung, Choi, Sheu, & Ma (2020) and Vandermerwe & Rada (1988). United Nations Conference on Trade and Development (2019) states that shipping liners are currently involved in vertical integration activities.

Porter (2008) mentions that thinking comprehensively about the structure of an industry can uncover opportunities that could form strategies for superior performance. This can be applied to a container liner together with buyer selection/bargaining power of buyers, supplier selection/bargaining power of supplier, threat of new entrants and threat of substitute products or services, also known as the five forces that shape industry competition, according to Porter (1998).

2.2 Vertical integration

Breadth, degree and form are three measurements mentioned when it comes to vertical integration, according to Harrigan (2001). Breadth of integration is the amount of transformation and activities a company take on. Degree of integration look into how much internal transfer that reassure a specific need while form of integration describes its ownership by the categories; contract, joint venture or totally owned. What form the vendor should take, how much should be done internally and how widely integrated a company should be at a specific time are three major factors that explain how well companies use vertical integration, according to Harrigan (2001).

It is important to consider effects on competitive posture while performing vertical integration because it makes companies more responsive in market changes and reduce the amount of exposure to competitors' actions. Another factor to consider is internal benefits due to its effect on a strategy's profitability, states Harrigan (2001).

Four vertical integration strategies are appropriate in different situations, according to Harrigan (2001). The strategies are full integration, tapered integration, quasi-integration and contracts. Full integration means buying or selling all requirements for a specific material or service internally. Tapered integration are dependent on outsiders for a part of their requirements. In other words, this means that companies produce or distribute a part of their requirements but buy or sell the rest through suppliers or distributors. Quasi-integrated companies do not own adjacent business unit fully but consume or distribute all, some or none. Contracting highlights the importance of mapping the responsibilities in documents. It has no internal integration and is best used in highly volatile industries, claims Harrigan (2001).

Companies that have monopoly conditions and the opportunity to limit competitive incursions by raising entry barriers can successfully perform high degree of integration that reduce volatile competition. On the other hand, less integration is more suitable under volatile conditions, according to Harrigan (2001).

Vertical integration in the shipping industry has been researched many times, mostly based on qualitative and descriptive analysis, according to Zhu, et al. (2019). Container lines invest in

terminal operations, including dockside equipment and well-trained labour force. Control of freight and cost reduction are two main improvements by investing in ports. Container lines can also reduce their risks and meet their infrastructural requirements for terminals, according to Zhu, et al. (2019).

Zhu, et al. (2019) mentions that port authorities gain more investment to accommodate traffic volume growth, infrastructural requirements and financial risks by vertical integration. At the same time, terminal operators can strengthen their global competitiveness by increasing their global scale. Using dedicated terminals improve productivity and throughput while not having own dedicated terminals and only using public ones leads to higher port dues. Asgari, Farahani, & Goh (2013) researched the competition and cooperation strategies of two competing ports and their container lines. Findings in the short term were that ports should adopt dynamic pricing strategies based on their competitors port dues and that in the medium and long term it was preferable to form strategic alliances with container lines and other ports to gain more market share and profit.

3 Methodology

Research methodology used for this thesis is a qualitative method based on Corbin & Strauss (2015). Analysis used were based on established methods for qualitative analysis found in literature. For data collection of primary and secondary data, established methods found in literature were used. This is described in this chapter.

3.1 Grounded theory

For the purpose of this thesis, according to the Corbin & Strauss (2015), three levels were selected varying in abstraction. According to Corbin & Strauss (2015), highest level is the core category, second level are the categories and lowest level are the lower-level concepts. In this research, these levels correspond to strategies; vertical integration, servitization, digitalization and automation, and competitiveness: various practices manifested within the industry. These are illustrated in Figure 1.

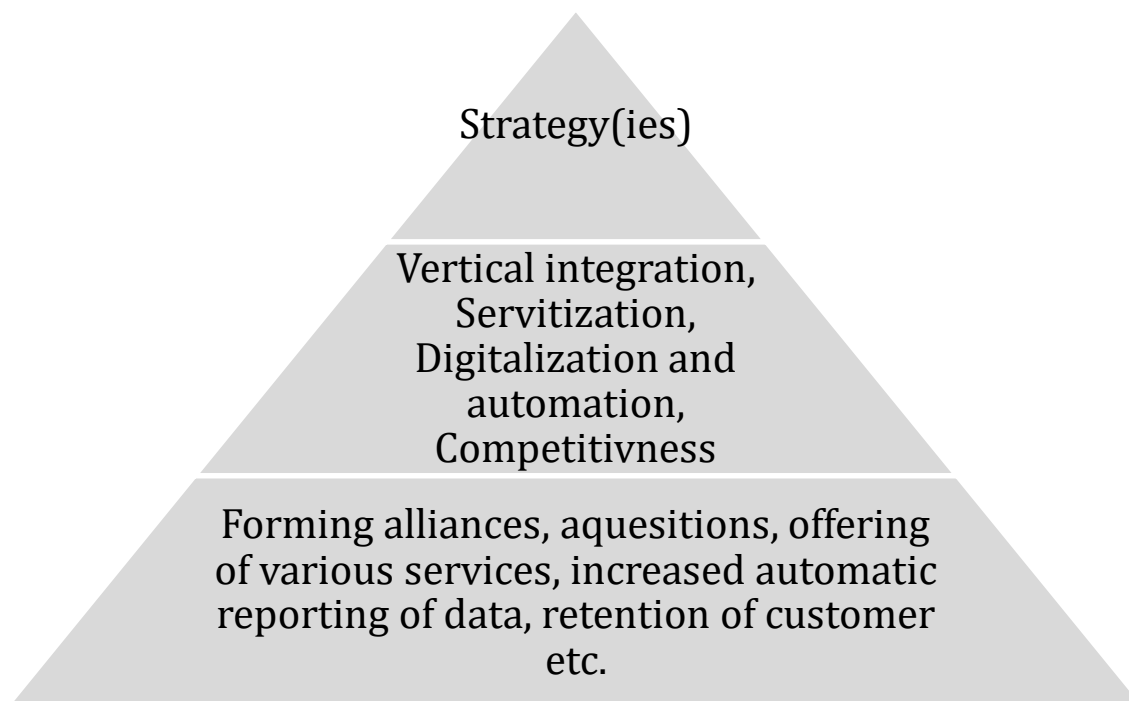


Figure 1 Core category, Categories and Concepts

Raw data collected during this research was related to the lower-level concepts so they could be theoretically integrated to develop the core category.

3.1.1 Depth of analysis

Before undertaking any analysis, the required level of depth was determined. This was done to ensure that the level required to form a meaningful research project was not higher than the level that the students of this thesis could achieve.

Factors taken into consideration were the level of training and resources available. Other factors were direction and priority. Since this thesis should be considered as novice research, a shallower depth is to be expected. To counteract this direction, supervision was given by highly experienced and trained personnel from the university. Priority lowers the possible depth of this research since this is a master thesis that focuses on training in the use of the scientific

methods rather than focusing on the result. Therefore, it is logical to assume that this research will have low priority from an academic and industrial standpoint.

It was judged that depth required for a meaningful research in this context could be achieved.

3.1.2 Sensitivity

According to Corbin & Strauss (2015), qualitative research aims for sensitivity rather than objectivity. This means that the students of this master thesis need to have insight in order to find relevant issues during data collection and analysis. This is however not the same as forcing a meaning on data.

According to Corbin & Strauss (2015), sensitivity grows during research and one way to enhance sensitivity is to familiarize with relevant literature. Therefore, it was decided to carry out a thorough, brainstorming literature collection approach and review session in the beginning of the project. Knowledge and previous experience also play a role in sensitivity.

3.1.3 Strategies and techniques

According to Corbin & Strauss (2015), several strategies could be used for analysis. This section describes the one being used for this master thesis. In section 3.2, methods for coding and analysis are further described. To begin with, the students chose a brainstorming approach when going through various data and taking field notes before writing memos as described in sub-section 3.1.4.

Another strategy used was *questioning* as described by the Corbin & Strauss (2015) in order to probe, familiarize with the data, enabling thinking outside the box and develop answers. Two other additional strategies used were *so what?* and *what if?* These are described by Corbin & Strauss (2015) and are self-explanatory. Therefore, they are not described in detail under this subsection.

Theoretical comparison technique as defined by the Corbin & Strauss (2015) was used. The students compared the concepts that were derived from data to situations found in literature that were different and where the same concept could have been applied. Comparison with actions taken by other industries was also included in this.

3.1.4 Research journal, memos and diagrams

It was decided that a research journal should be kept for this project. This journal can be found in Appendix A and it contains memos, research summary memo and descriptive summary memo. Field notes were not included in the research journal and information in them was either transferred to a memo or discarded. Diagrams were created and used for visualizing the data, to show relationship between concepts and for the theoretical integration.

3.1.5 Theoretical sampling and context

According to Corbin & Strauss (2015), data collection is followed by an analysis, which leads to concepts. From the concepts, questions arose that needed to be answered until all categories were fully developed. This iterative process was carried out until saturation had been reached. According to Corbin & Strauss (2015), saturation is when no new concepts are emerging.

According to Corbin & Strauss (2015), two analytical tools used for aiding in the coding are the paradigm and the conditional/consequential matrix. Paradigm assist in carrying out coding around a category. For detailed description of coding, see section 3.2. Using the paradigm, the students linked the lower-level concepts around the higher-level categories, illustrated in

Figure 1. By doing this, the students could reduce the number of categories by identifying the ones that were overlapping.

According to Corbin & Strauss (2015), there are three main categories to the paradigm:

- Conditions that answer the questions about what, when, and how come
- Actions-Interactions that are the response to events and situations within the context
- Consequences that are anticipated or actual outcome of Action-Interactions

To aid in bringing complexity into the analysis, a conditional/consequential matrix in accordance with Corbin & Strauss (2015) was initially created. This matrix is shown in Figure 2 and each area of the circles are presented in the most abstract form.

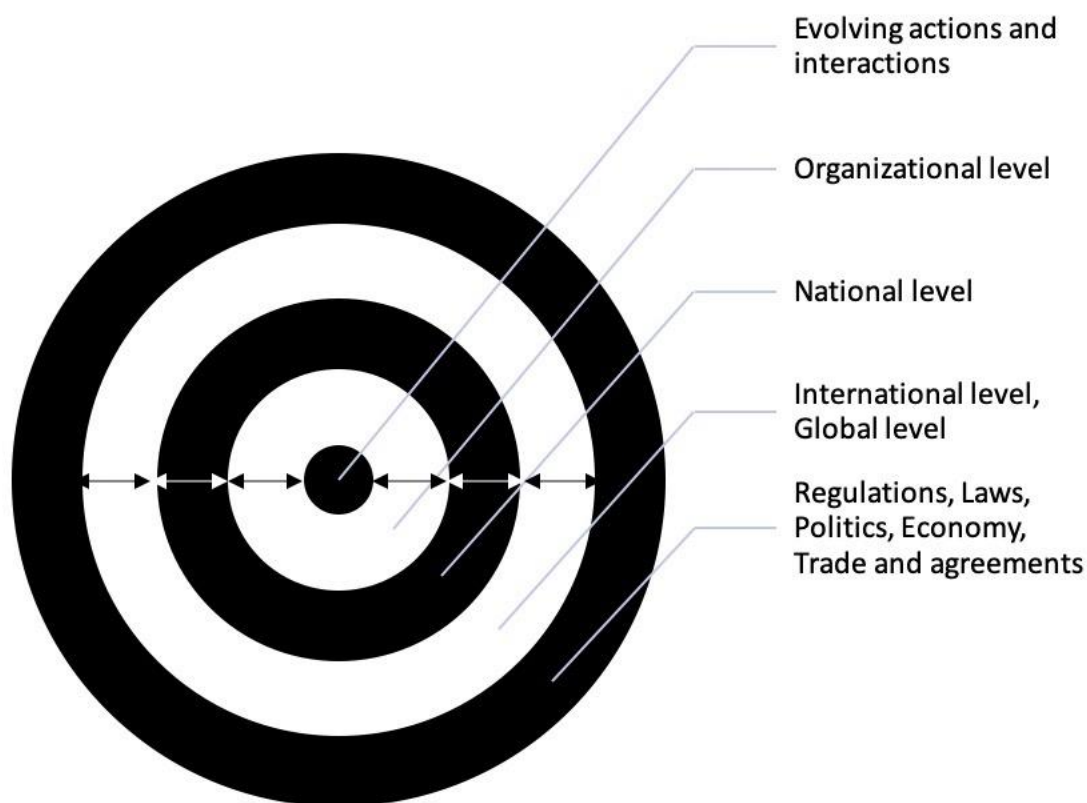


Figure 2 Conditional/consequential matrix derived from theory

3.1.6 Theoretical integration

According to Corbin & Strauss (2015), theoretical integrations is linking the categories around a core category to form a theory. Theoretical integration was also handled by using the methods described in section 3.2 and by writing a descriptive and summary memo as described in sub-section 3.1.4.

3.2 Observations, Coding and Data analysis

To ensure accurate coding and analysis, the students used predeveloped methods and coding systems in Miles, Huberman, & Saldana, (2014). These are described in the subsections below. Memos described in sub-section 3.1.4 were used as an additional narrative tool for the analysis.

Primary data consists of a questionnaire and coded events (observations) from non-technical literature, for example, newspaper and articles. Secondary data consist of technical literature presented in scientific journals and books. A data log was created and can be found in Appendix B.

3.2.1 First and Second cycle coding

For first level coding, the students found that process and causation coding were most suitable for this research. Deductive and inductive coding was used. In Appendix B, both the deductive and inductive code list can be found.

For second level coding, the students looked for patterns utilizing the following summarizers:

- Categories/themes
- Causes/explanations
- Relationships
- Theoretical constructs

To create the pattern codes, the students clustered the first level codes based on the summarizers. Each cluster was then given a pattern code based on the mutual interpretation of the students. These codes are presented in Appendix B.

3.2.2 Displaying data

To display the data, both matrix and network displays were used. A matrix display in this case resembles a table and the network display shows a map. Illustrations were also created when deemed appropriate.

3.3 Questionnaire

It was decided that a digital (MS Forms) questionnaire with open questions should be sent to nine selected container liners. Based on literature, a response rate of 10-25% was expected. Questionnaire was created after the interim case summary, described in section 3.4 was completed. The design of the questionnaire and the questions are described in sub-section 3.3.2 and the questionnaire can be found in Appendix E.

3.3.1 Companies selected

Companies were selected based on the following criteria:

- Company shall not be a subsidiary
- Company shall not be an alliance
- Company shall operate container traffic on intra continental trade routes
- Selection of companies shall be spread across the world i.e. not only companies from Europe

Based on the selection criteria, nine companies were unsystematically identified and contacted. In Table 1, number of companies that wished to participate are indicated.

Questionnaire was sent to their general inquiry email to ensure that none of the students could through prior contact influence the response of the questions. Drawback with this approach is that it most likely leads to a lower response rate.

Table 1 List of companies, participation and replies

Company	Participated
Company 1	No
Company 2	No
Company 3	No
Company 4	No
Company 5	No
Company 6	No
Company 7	No
Company 8	No
Company 9	No

3.3.2 Creation of Questionnaire

Questionnaire was designed with five to ten open-ended questions. Objective with the questionnaire was to capture plans and thoughts around vertical integration, digitalization and automation, and offering of new services.

Structure and design of the questionnaire had the following design criteria and considerations:

- Single mode in the form of an online form that can be used on mixed devices
- Open ended questions were selected since they can lead to a greater level of discovery and should be less bias than structured closed questions
- Try to understand how the respondent will interact with questions
- Avoid a cluttered look
- Questions are to identify thoughts, plans and choices/decision

Questionnaire structure and questions were reviewed by each student and one-third party to ensure the quality of the questionnaire.

3.4 Analysis

An interim case summary was created during week 41-42 to find the gap between what was known and what needed to be investigated further. This was done before finalizing the questionnaire and deciding on feasibility to carry out the analysis. Interim case summary is described in section 4.1 can be found in Appendix C.

Strategies and techniques that were used are described in sub-section 3.1.3. Models and analysis were selected based on their suitability for this thesis and are described in Table 2.

Table 2 Analysis selected and brief description

Analysis	Description
Explanatory effects matrix, section 4.2	Broad first analysis of the data to get an overview of the situation and find explanations to causes and outcomes.
Decision model network, section 4.3	Used to map yes/no decisions made by the various container liners according to the data collected.
Composite sequence analysis, section 4.3	To illustrate different paths of events and actions through time to get a chronological overview.
Causal chains and causal networks, section 4.5	To illustrate the causal influences and to find predictions
Causal-prediction model, section 4.6	To connect the core category to the categories. In this case to find the plausible strategies used (based on the data).

3.5 Drawing and verifying conclusions

Sensitivity as described in sub-section 3.1.2 lead the students to investigate the effect on the research and how the research affected the students. A discussion of the investigation of biases can be found in section 5.1. Triangulation was used as a method to confirm the findings and a discussion can be found in section 5.2. Data from the questionnaire, non-technical literature and technical literature were checked to see if they all matched the findings. Different opinion regarding a finding between the students was also used for triangulation.

When determining the validity of the relations, the students tried to identify the intervening variables to ensure that the correct connections were made in the network. Spurious relations were also investigated to find faulty connections in the network results, this is discussed in section 5.3.

4 Vertical integration and servitization strategies

To find the vertical integration and servitization strategies, six different analysis were chosen from Miles, Huberman, & Saldana (2014). Selection was based on their description in literature and suitability for this case. Running the analysis in sequence lead to the development of a plausible strategy of container liners vertical integration and servitization strategies. Each analysis is described in the following sections and the ordering follows the sequence.

4.1 Interim case summary

An interim case summary was carried out and reported upon in Appendix C. Result from the summary was in the form of a gap analysis presented in Table 3. Conclusion drawn from the interim case summary were:

- Additional primary data needs to be collected in the form of a questionnaire and observations from newspaper articles
- In the event of no replies to the questionnaire, other data collected can be used to compensate
- All planned analysis can be carried out

Table 3 Gap analysis

Gap Analysis	Purpose	Required data	Data collected	Action required
Explanatory effect matrix	A broad first analysis	Action taken by container liners, documented outcomes	Data collected (primary and secondary), written memos	None
Decision model network	Identify thought and plans	Thoughts and plans	FOS webinar on digitalization (observation(s))	Create and submit questionnaire
Composite sequence analysis	Finding common features along a timeline	Time of events (sequence), narratives	Primary data consisting of date and time of events from newspaper and articles coded, memos (narratives)	If there is time, seek more data for theoretical comparison.
Causal chains and causal networks	To explain causation	Chains of events, causal network variable list, process and causation codes, memos and summaries	Primary data, causation and process codes, memos	Brainstorming session to derive the variables
Causal prediction model	Find a plausible strategy	Variables, outcomes, predictors, existing research and theory, results from previous analyses	Primary and secondary data	Following analysis to be carried out: explanatory effect matrix, decision model network, composite sequence analysis, causal chains and causal networks

4.2 Explanatory effects matrix

An explanatory effects matrix was created as a broad first analysis based on the data collected up to the interim case summary. This matrix was created by using the second cycle codes and presents the data as a broad overview. Causes and outcomes were made clearer and inspired confidence to continue with the other analysis. It was also valuable when designing the questionnaire and formulating the questions. Explanatory effect matrix is presented in Table 4 and details on how the explanatory effect matrix was created can be found in Appendix A.

Table 4 Explanatory effect matrix – Result of the analysis

Explanatory effects matrix					
Causes:	Vertical integration	Servitization	Digitalization	Competition	Researchers explanation
Outcomes:					
Diversification	<p>Within the supply chain extending to operate freight forwarding companies, terminals, warehouses and other means of goods transportation.</p> <p>By offering and operating digital platforms through alliances and acquisitions.</p>	Offer more services than just sea transport within global transport.	-	To compete beyond transportation by sea container liner needs to diversify.	For container liners to compete in global transport they need to diversify themselves. This is done through vertical integration by contracts, acquisitions and alliances to enable servitization and diversification of services on offer within global transport.
Process improvement	-	-	<p>Just in time sailing</p> <p>Reduced time in port</p> <p>Reduced environmental impact through optimization</p> <p>Increased handling capability</p>	Reducing freight time of goods and increased reliability of service without enlarging the environmental impact.	Container liners today are aiming for digitalization and automation for their process improvements.

Explanatory effects matrix

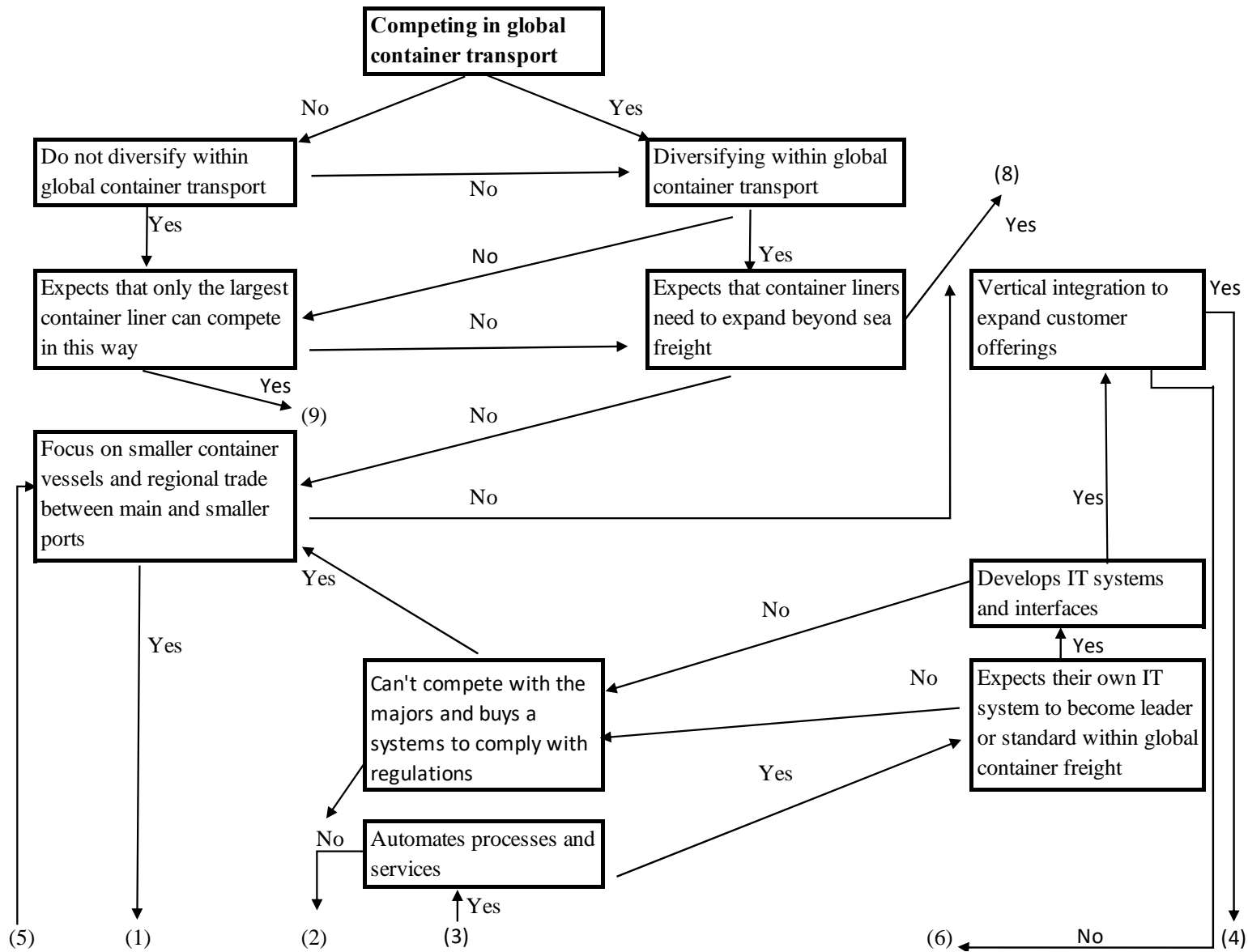
Causes:		Vertical integration	Servitization	Digitalization	Competition	Researchers explanation
Outcomes:						
Service improvement	-		New and more efficient ways of providing services.	E-platforms and automated electronic reporting.	Improve services on offer and deliver new services to stay competitive.	Improving service quality is done through E-platforms and automated electronic reporting to build value for the customer in order to compete.
			New ways of delivering, enhancing and reporting on service quality.			
			New environmental impact assessments.			Adding service offerings builds value for the customer by increasing the capability to compete in other dimensions than price.

Explanatory effects matrix

Outcomes:	Causes:	Explanatory effects matrix			
	Vertical integration	Servitization	Digitalization	Competition	Researchers explanation
Innovation	-	New types of services offered by a container liner.	Unmanned ships. Unmanned port operations. Automated administration. New standard interfaces (digital). Cybersecurity. Digital versions of ships for simulations and analyses.	To compete in a changing global environment, container liners need to build innovation capabilities.	Invention of new services will add value for the customer enabling the container liner to compete in other dimensions than price. Invention in the form of automation will build value for the container liner when competing. Container liners need to build innovation capabilities in order to compete.

4.3 Decision model network

A decision model network was created to map the choices/decisions made and actions taken. This model is based on data collected and is limited to yes/no alternatives. Timeline was not taken into consideration when constructing this model. It is also designed in a way that if you try to provoke an erroneous outcome (a choice/decision and action not taken according to the data), you will end up in a loop to ensure that model fits the data. The model is presented in Figure 3 and a description on how it was created can be found in Appendix A. Numbers in Figure 3 are used to interrupt the line, for example, continue on the next page, so when an arrow ends at a number, one needs to look for the number at another location where the arrow continues.





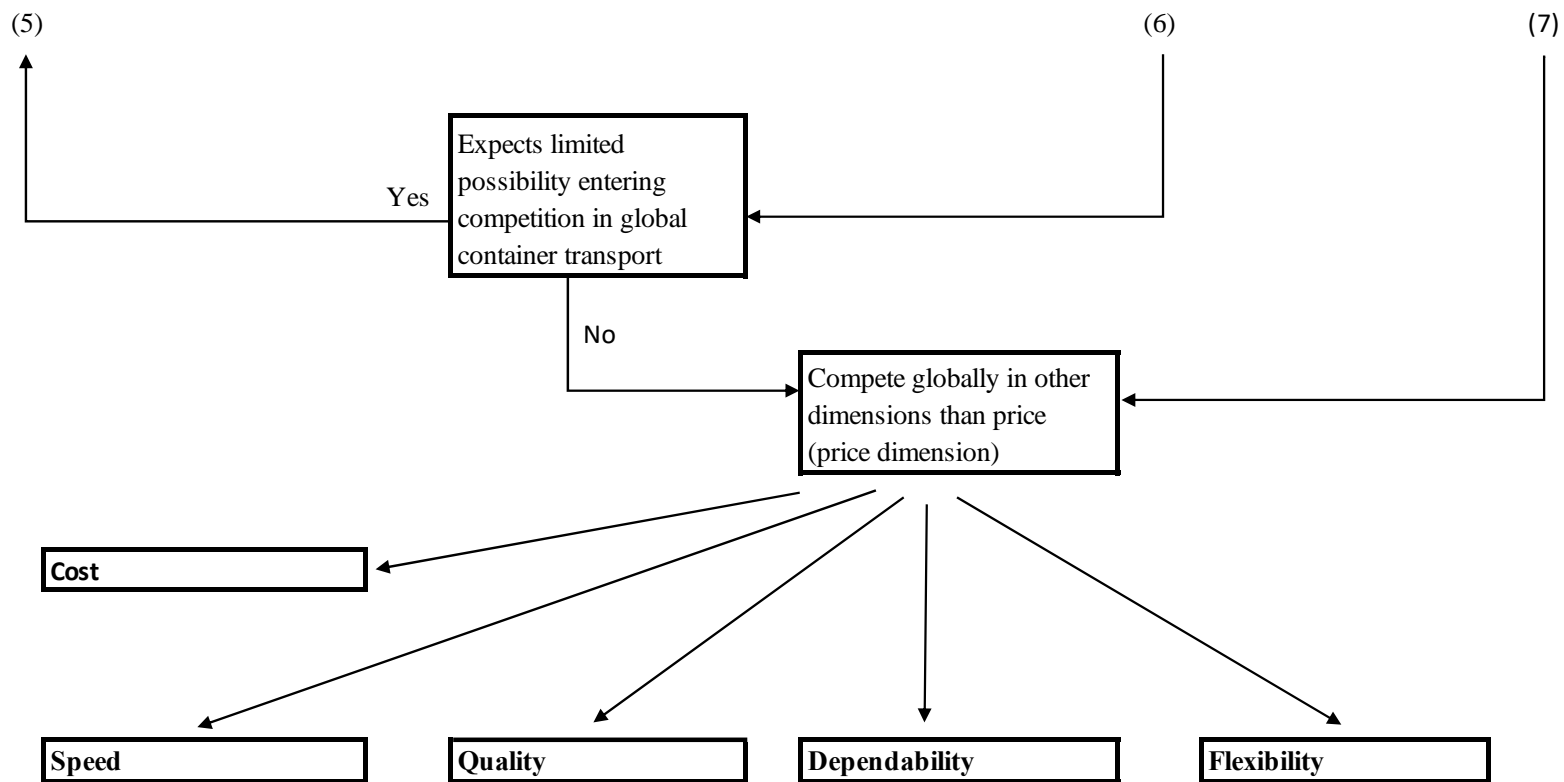


Figure 3 Decision model

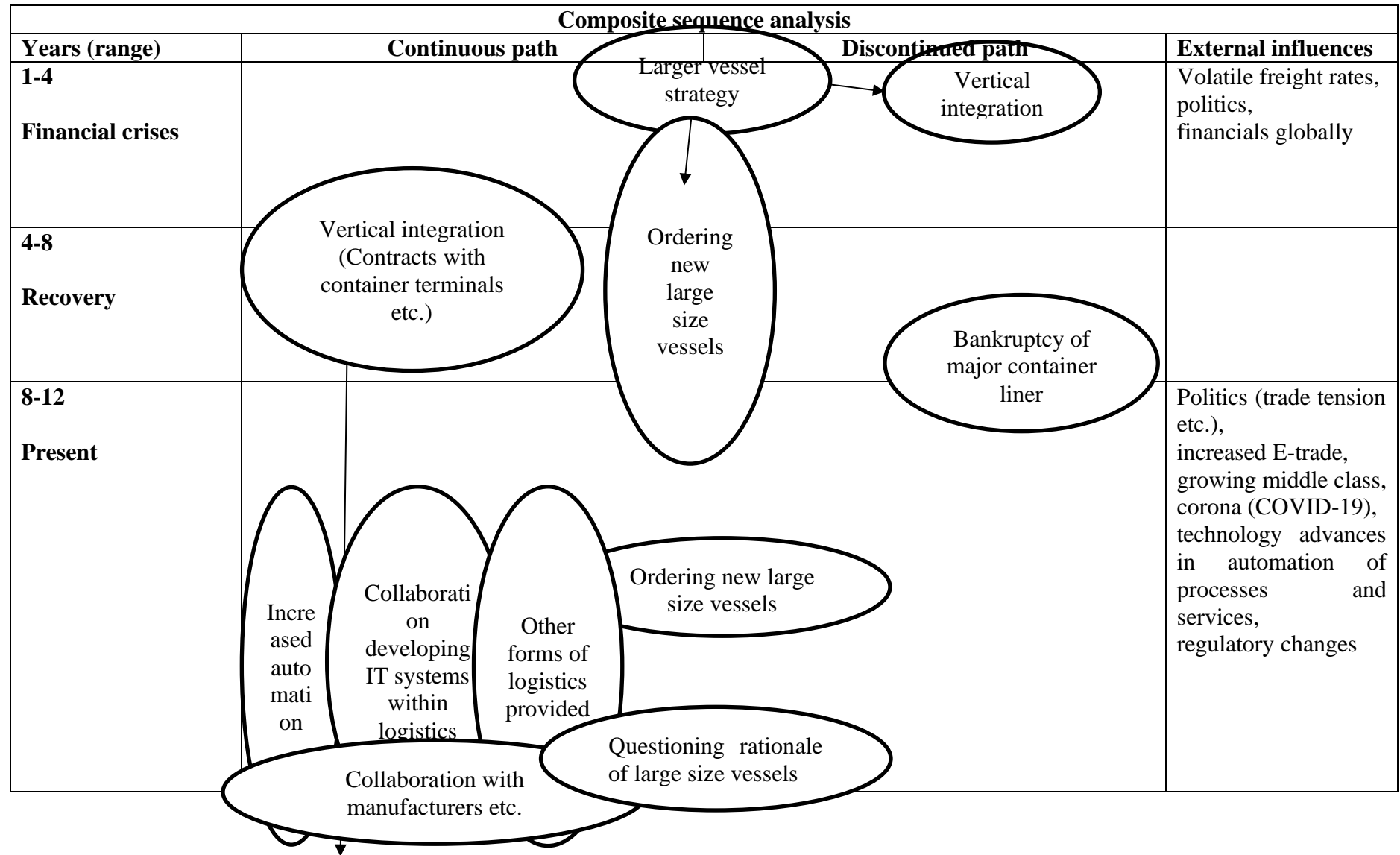
4.4 Composite sequence analysis

A composite sequence analysis was created based on the data collected to visualize the paths and collective journeys of the container liners through time. It should be noted that the resolution is low but enough for this purpose. Two parallel paths through time were created and called continuous and discontinuous. Ovals indicate point and period of time. Starting point for the paths is 2008 and they stretch too today. Along this range of time, three phases were defined; financial crisis, recovery and present. Each phase spans over four years which is a rough estimate, based on history and was judged accurate enough for this analysis.

Composite sequence analysis is presented in Table 5 and gives a picture of actions taken and plausible path through time. Interactions and consequences are indicated only when there is data to support the connection. There are only three such indications, these are emanating from larger vessel strategy and vertical integration starting at the end of the first time phase (financial crisis). It should be noted that vertical integration has been discontinued in the early part of the first-time phase (financial crisis). Another discontinuation found was the bankruptcy of a major container liner. This is only an event and there was no data to support any interaction or consequence from the bankruptcy and therefore no connections are indicated.

It can be interesting to note the cluster at the end of the last time phase (recovery). Another interesting thing to notice is that based on the data collected, there are ovals in between continuous and discontinuous. This symbolizes that there is uncertainty, however they will continue through time or be discontinued based on the data collected.

Table 5 Composite sequence analysis



4.5 Causal chains and Causal networks

At the end of the data collection phase, causal network variable list was created. Each of the variables were based on the data collected. A brainstorming session was held where results from first and second cycle codes and memos were used to create the variables. These variables can be found in Appendix D. The brainstorming session, containing an explanation for each variable is documented in Appendix A.

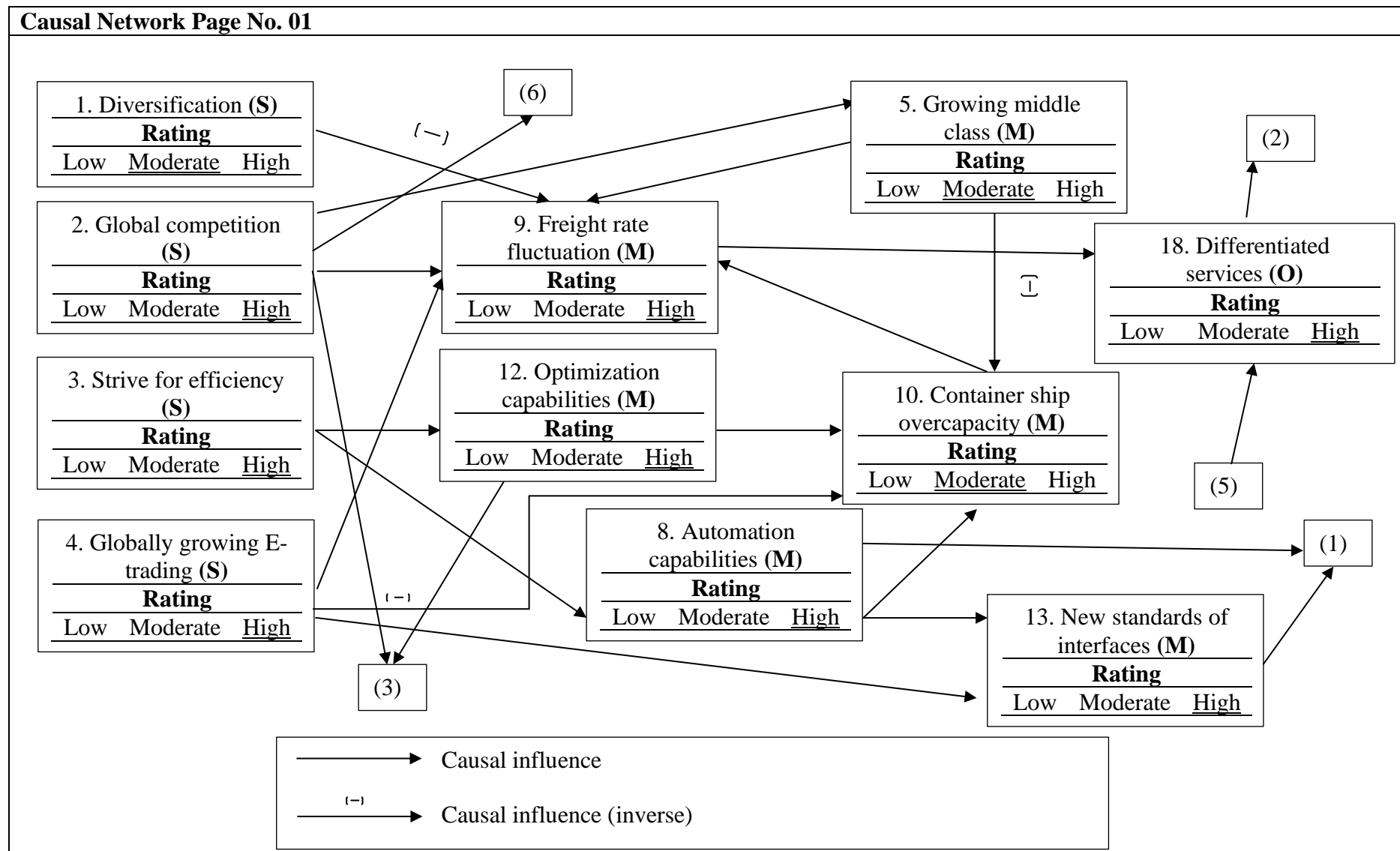
Next step was to create the causal chains based on the data collected. These are simplified and linear assumptions that creates an easy-to-read summary of the data collected and displays what leads to what. Causal chains can be found in Appendix D. It is possible to grasp the mechanism behind vertical integration and increasing services on offer. It shall be noted that causal chain no. 2 found in Appendix D, displays a mechanism that seems to contradict the other chains. A possible explanation for this can be found by looking at the composite sequence analysis, Table 5.

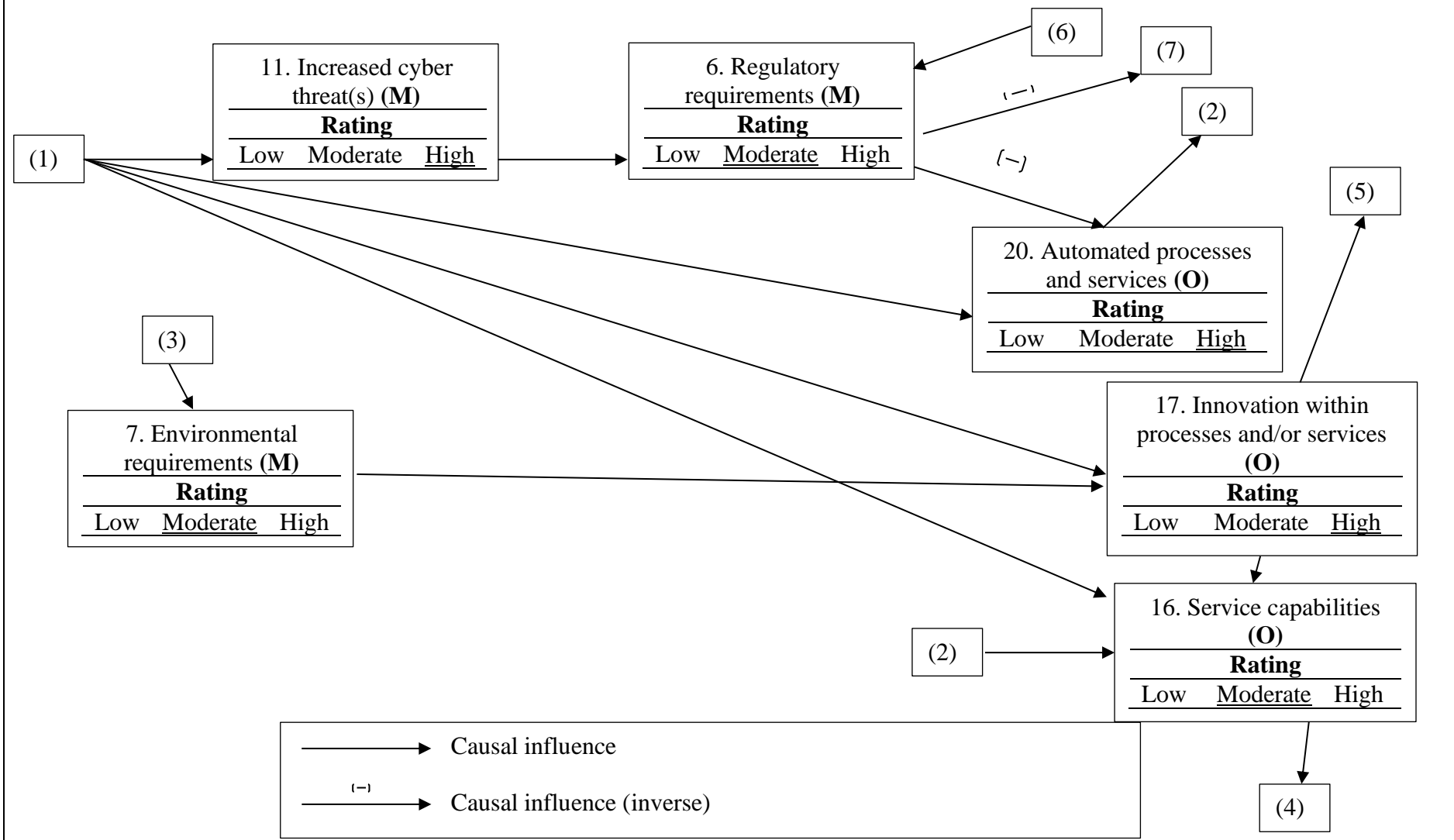
After the causal chains were created, a causal network was created, Figure 4. Streams and their labels are presented in Appendix D together with any prediction made based on the streams. Variables were connected based on their causal influence where a start variable can affect a mediating variable, which in turn affects an outcome variable. In this network, an outcome variable can affect another outcome variable. From these connections, the previously mentioned streams, which are sequence of variables, emerges and are listed in Appendix D. These streams together with the network are used to find predictions. A summary of the predictions can be seen in Table 6.

Based on the predictions, a model was constructed, see section 4.6. In this model, the predictions are used to find possible vertical integration and servitization strategies. It shall be noted that the predictions only tell what could possibly happen if two or more variables occur in sequence and if the effect has a positive or negative influence on the outcome variable.

Table 6 Summary of prediction made based on the analysis

Prediction	Explanation
If differentiated services increase service capabilities, then the variable buyer selection could be increased.	This prediction implies that a container liner how differentiates it service with the objective to increase service capabilities will increase the possibility of increased buyer selection, for example, customer loses bargaining power.
If automated processes and services increase service capabilities, then the variable of buyer selection could be increased.	This prediction implies that a container liner how automates processes and services to increase service capabilities will increase the possibility of increased buyer selection, for example, customer loses bargaining power.
If innovation within processes/services increase service capabilities, then the variable of buyer selection could be increased.	This prediction implies that a container liner how is innovative within processes and services to increase service capabilities will increase the possibility of increased buyer selection, for example, customer loses bargaining power.
If global competition increase regulatory requirements and/or if new standards of interfaces increase the cyber threats, which in turn increases regulatory requirements, then there could be a negative influence on the buyer selection variable.	This predication implies that if a government or other legal bodies see a necessity to enhance regulations regarding competition and cyber threats originating from new standards or interfaces then they can have a jointed or individual negative influence on buyer selections variable.





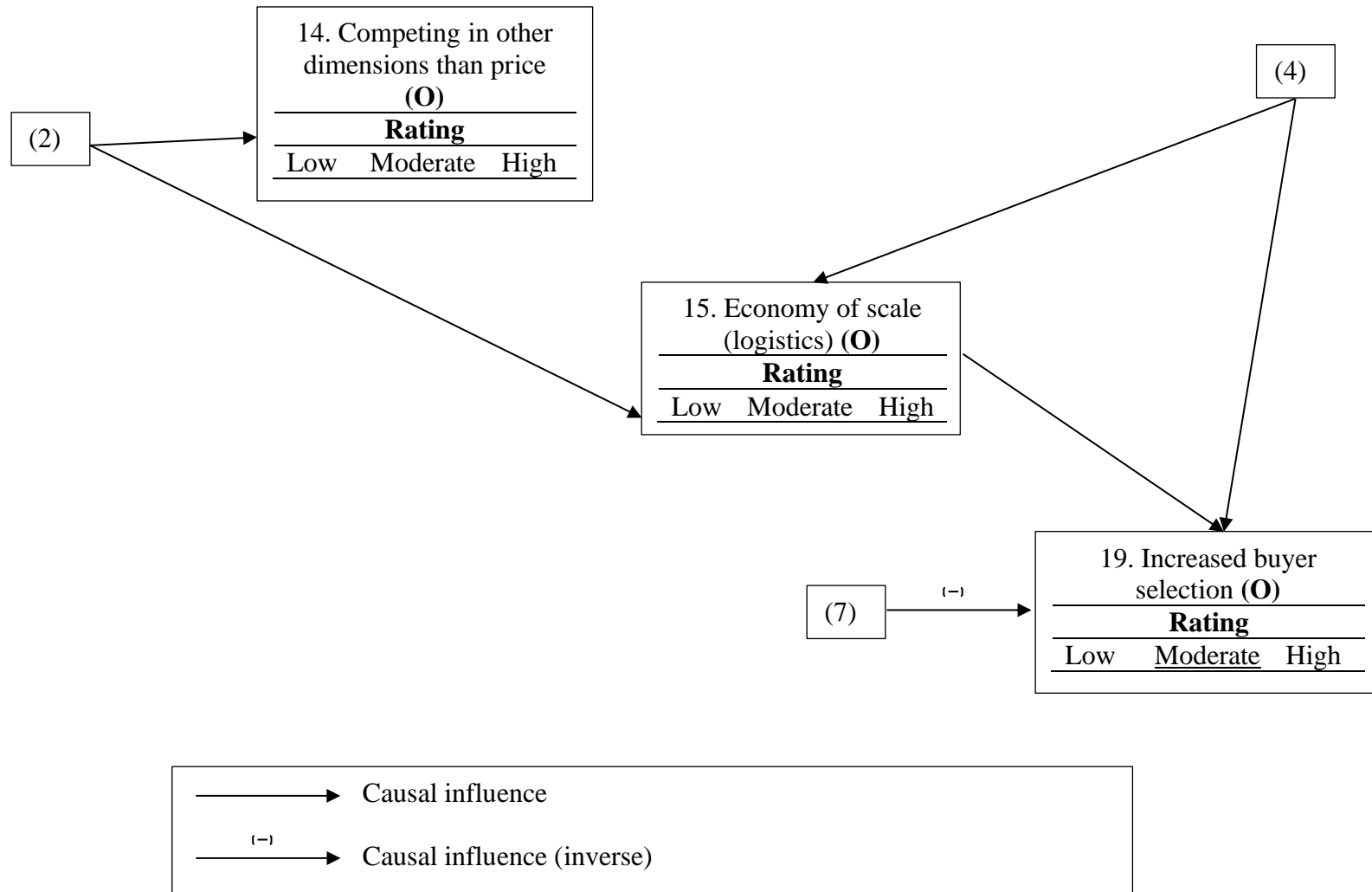


Figure 4 Casual Network

4.6 Causal-Prediction model

A prediction-outcome matrix, Table 7, was created as the first part of the analysis. This matrix displays four states, which are given three levels. The levels are low, medium and high. Moving from left to right in the matrix, influence on predictors and if there is a strong or weak connection is being presented. Predictors (sequence) are indicated by interrupted arrows to visualize the antecedent variables' connections and predicted influence on the outcome variable within each level of the four states.

Next step was to create a network to display, Figure 5, the variables and outcomes as an illustration of Table 7. This network builds on the prediction-outcome matrix and it is possible to see both the weak and strong connections emanating from each state. It graphically summarizes the result from the prediction-outcome matrix.

Based on predictions found in Table 7 and illustration of the connection in Figure 5, a possible strategy for vertical integration and servitization emerges. Since the model builds on data collected on what has been done within the industry to this day, it can together with theoretical comparison towards other industries and by using existing theories be used to find plausible strategies. Plausible strategy identified is as follows:

Increase buyer selection in order to become more competitive and reduce competition by the use of vertical integration to differentiate the services on offer and limit own development of new services to increase service capabilities. Use digitalization and automation to digitalize and automate processes and services to increase service capabilities, also use innovation within processes and services to increase service capabilities.

It should be noted that innovation within processes and services is not the same as developing new services to enhance service capabilities. To further clarify the above, differentiating services means, for example, acquisition of a forwarding company or airline to enable land-based or air-based freight service or a contract to operate a terminal for a period of time. Full list of variables and explanations to them can be found in Appendix A.

Another note to be added is the link between competition and competitiveness in this case. There are many ways to become more competitive and in this case, the use of buyer selection, which in short leads to the customer losing bargaining power. This can be beneficial due to, for example, lowering the expense of negotiations. From Table 7, it can be seen that the predictions give a negative influence on buyer selection if competition is at level high, therefore based on the predictions, you want to lower competition. Differentiated services, automation and innovation within processes and services are all within the service of supplying container freight and surrounding services. Relations to existing theories are further elaborated in sub-section 5.4.

Table 7 Prediction - Outcome matrix

S t a t e	Antecedent variables																Outco me
	Differentiate d services —————◆		Automated services and processes —————●		Innovation within processes and service -----●		Global competition —————◆		New standards of interfaces —————→		Increased Cyber threats		Regulatory requirements ◆————→		Service capabilities ◆————→ ●————→ ●-----→		Buy ers selec tion
	Eff ect (+/ - /0)	Strengt h (weak/s trong)	Eff ect (+/ - /0)	Strengt h (weak/s trong)	Eff ect (+/ - /0)	Strengt h (weak/s trong)	Eff ect (+/ - /0)	Strengt h (weak/s trong)	Eff ect (+/ - /0)	Strengt h (weak/s trong)	Eff ect (+/ - /0)	Strengt h (weak/s trong)	Eff ect (+/ - /0)	Strengt h (weak/s trong)	Eff ect (+/ - /0)	Strengt h (weak/s trong)	+/ 0/ -
Vertical integration																	
Hig h	+	Strong	0	Weak	0	Weak	-	Weak	0	Weak	0	Weak	0	Weak	+	Strong	+
Med ium	+	Strong	0	Weak	0	Weak	0	Weak	0	Weak	0	Weak	0	Weak	+	Strong	+
Low	0	Strong	0	Weak	0	Weak	0	Weak	0	Weak	0	Weak	0	Weak	0	Strong	0
Servitization																	
Hig h	0	Weak	0	Weak	+	Strong	+	Weak	+	Strong	0	Weak	+	Weak	+	Strong	0
Med ium	0	Weak	0	Weak	+	Strong	+	Weak	+	Strong	0	Weak	+	Weak	+	Strong	0
Low	0	Weak	0	Weak	0	Strong	0	Weak	0	Strong	0	Strong	0	Strong	0	Strong	0
Digitalization and automation																	
Hig h	0	Weak	+	Strong	+	Strong	0	Weak	+	Strong	+	Strong	+	Strong	+	Strong	+
Med ium	0	Weak	+	Strong	+	Strong	0	Weak	+	Strong	+	Strong	+	Strong	+	Strong	+
Low	0	Weak	0	Strong	0	Strong	0	Weak	0	Strong	0	Strong	0	Strong	0	Strong	0

Competition																	
High	0	Weak	0	Weak	+	Weak	+	Strong	+	Weak	0	Weak	+	Strong	0	Weak	-
Medium	0	Weak	0	Weak	0	Weak	0	Strong	0	Weak	0	Weak	0	Strong	0	Weak	0
Low	0	Weak	0	Weak	-	Weak	-	Strong	0	Weak	0	Weak	-	Strong	0	Weak	0

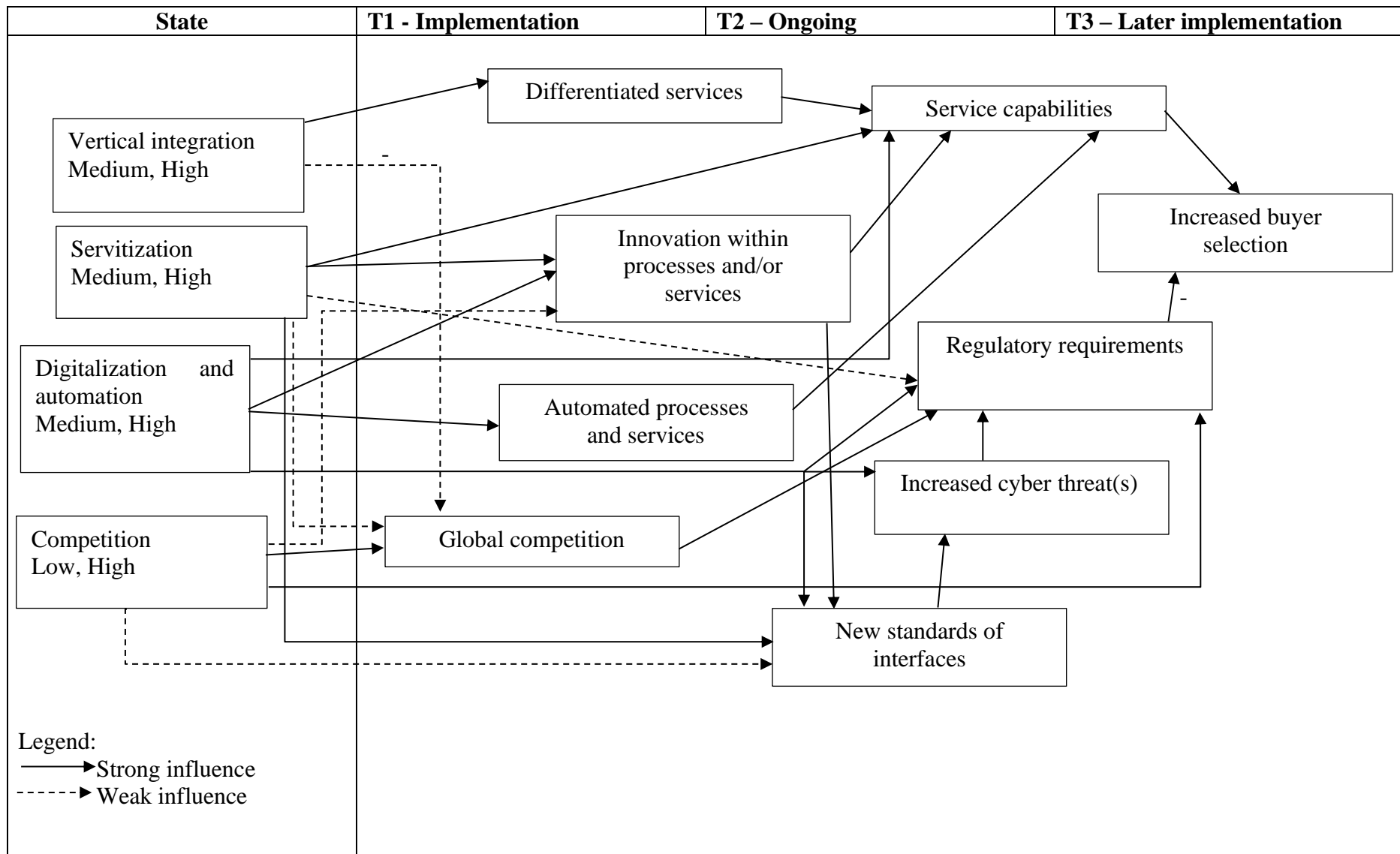


Figure 5 Causal prediction model

5 Discussion

In this chapter, a discussion regarding results and validity is presented. Discussion includes investigation of biases, triangulation, intervening variables and spurious relations. Theory in addition to chapter 2 that further supports the findings is also discussed.

5.1 Investigation of biases

During the course of the project, the students have tried to avoid introducing biases. Examples of this is to keep the questions in the questionnaire as open as possible to avoid steering the answer. The students also avoided talking to people before sending the questionnaire and used a general email address from the selected companies' homepage. This was done to prevent the students from steering the answers. It should be noted that the students did not receive any answers.

During the data collection phase, it is easy to be led by the data and try to collect data that matched the opinion of the students. The students avoided this by having it in mind and by using the codes created from theory and known actions from other industries. In the beginning of the project, a brainstorming data collection approach of secondary data was conducted to ensure an as broad background at the start of the project as possible. A broad background together with the codes should reduce the tendency to steer the data collection in any direction and avoid missing data that could be relevant to the case. Negative evidence found was not discarded but included in the analysis.

There is evidence in the research journal's memos to support that the students have changed direction during the analysis based on the ideas and thoughts recorded and stored in the memos during the data collection. This implies that the data collected has not steered the students in any direction during the analysis. Another source of bias can be the newspaper articles collected and the events they report upon coded as primary data. Even though coding the events should filter out much of the opinion of the author to the newspaper article, there could still be bias in how news and press releases are released and communicated to the public. The students recognize that even though trying to avoid biases, it will always be present when performing an investigation like this, especially on a novice level.

5.2 Triangulation

For this thesis, triangulation by data source, by method, by students and theory are used. These can be found in Table 8 and by summarizing the table, it can be said that the findings and conclusion in this report are supported. No further elaboration was deemed necessary.

Table 8 Triangulation

Triangulation \ Result	Agree	Contradicts
Data source	More than three newspapers support the same pattern. Press releases from ports, manufacturers and container liners support the same pattern.	Reports on new large container vessels being built could potentially contradict. Can be included in a more general higher-level strategy.
Method	No reply on the questionnaire. Triangulation not possible.	No replies on the questionnaire. Triangulation not possible.
Students	Findings made by both students does not contradict each other.	-
Theory	Secondary data found during the literature review and existing theory regarding competition strategies supports the findings. See also chapter 2 and sub-section 5.4.	-
Σ	Findings and conclusions in this report are supported.	

5.3 Intervening variables and spurious relations

Search for intervening variables and spurious relationships are illustrated in this section. Basically, the objective is to find, if A leads to B, a variable in-between that can explain the connection more accurately or determine if that connection is accurate. Identified connections of concern were service capabilities, increased buyer selection, global competition and regulatory requirement. Trying to find the intervening variable, a revisit was made to section 4.5.

After careful consideration, no intervening variable could be found between service capabilities and increased buyer selection. Motivation for this is that a container liner can be seen as a service company providing freight services. Therefore, it is plausible that no intervening variable exist in this case.

Between global competition and regulatory requirement, using the same contemplation as in previous paragraph and looking at the definition of the variable *regulatory requirement* (Appendix A), no intervening variable could be found. This is plausible since regulatory requirement includes politics and both variables are on a global scale. Illustration of this search is presented in Figure 6.

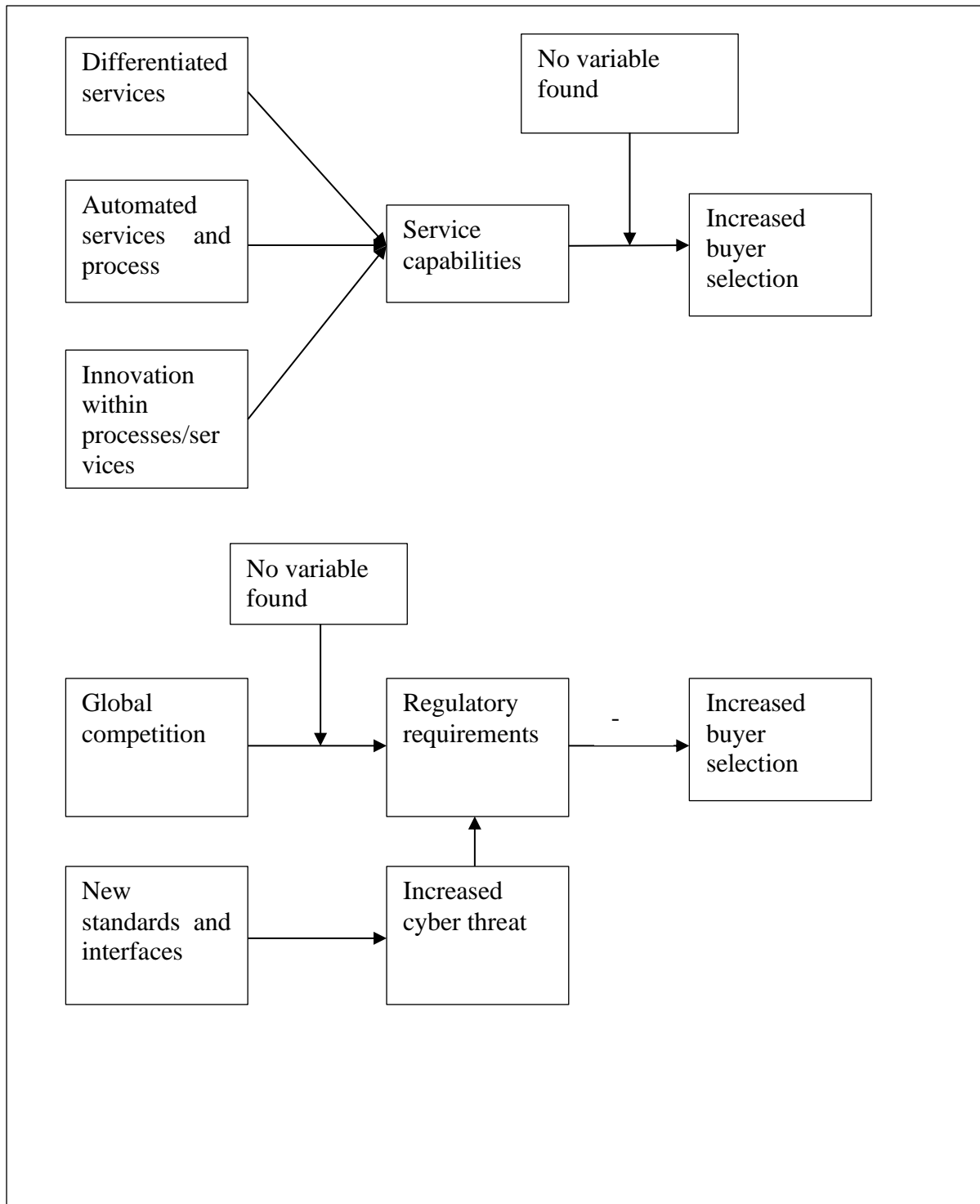


Figure 6 Search for intervening variables in the predictions

Based on Figure 6 and the reasoning in previous paragraphs in this section, it is plausible that no intervening variables or spurious relations exist.

5.4 Existing theory regarding competitive strategies

In addition to the literature review in chapter 2, this section describes existing theory described by Porter (1998), which further validates the result of the analysis in chapter 4. There are many options when selecting strategies to compete and increase competitiveness. Container liner industry was in this case considered a global industry. A number of strategies and strategic advantages of vertical integration are already known and the plausible strategy developed in this thesis is in line with applicable scenarios. Buyer selection strategy is described in Porter (1998) and findings from this thesis and plausible strategy derived are in line with applicable parts of this.

Since shipping industry is well known for overbuilding and new entries can be one cause for this, it is beneficial to keep the entry barriers to the industry high in order to avoid overcapacity, according to Porter (1998). A large number of companies can, according to existing theory, be a severe contributor to overcapacity if many can add substantial capacity to the market. With today's sizes of the container vessels, this can be considered true. Therefore, one can argue that there is an incentive to keep number of actors at a lower level within the industry. Plausible strategy derived in this thesis is in line with this. Avoiding overbuilding is also a reason, according to existing theory, to differentiate product in the case of manufacturer. Plausible strategy derived in this thesis is in line with this since one can say that avoiding overcapacity can give a competitive edge.

5.5 Comments on lack of response on the questionnaire

One organization replied and declined while others did not reply. Some organization had left out the possibility to contact them regarding generic issues through their webpage. This was interpreted as they were not interested to be contacted with generic questions and questionnaires. Due to this and previously mentioned reasons (see sub-section 3.3.1), no further attempts were made to contact them.

5.6 Environmental and societal implications

There are several environmental impacts emanating from this finding. Actors within the industry are actively trying to reduce pollution to achieve a high level of environmental sustainability. Societal implication could, for example, be more efficient transportation of containers and easier transfer from land to sea and vice versa. Buyer selection, according to Porter (1998) does not necessarily come with drawbacks for the majority of the customers even though, for example, bargaining power can be lost. There are regulations in place and this study presumes that all actors abide by the law and wants what is best for the environment and society.

6 Conclusion

Based on the discussions in chapter 5, the result of the analysis in chapter 4 and especially section 4.6 can be considered plausible. From the results, a strategy could be formulated. Plausible vertical integration and servitization strategy to add value by adding services derived from the analysis is as follows:

Increase buyer selection in order to become more competitive and reduce competition by the use of vertical integration to differentiate the services on offer and limit own development of new services to increase service capabilities. Use digitalization and automation to digitalize and automate processes and services to increase service capabilities, also use innovation within processes and services to increase service capabilities.

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Appendix

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Appendix A Research journal

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1. Introduction

This research journal and its memos were written during the course of the project. To summarize the research, a descriptive and summary memo was created. Memos were created, kept and indexed during the different phases of the project.

2. Summary memo

Following methods were used for creating diagrams and matrixes:

- Explanatory effects matrix
- Decision model network
- Compositive sequence analysis
- Causal chains and causal network
- Causal-prediction model

Diagrams and matrixes are presented in the main report together with the findings.

From the causal network, predictions were found in the streams. These predictions were then used to link the categories to the core category. Analysis carried out before the causal network gave validity to the prediction through their link to the collected data.

Existing theory and comparison with other industries when collecting the data also gave validity to the predictions.

These predictions where then used to evaluate the outcome for different states of the categories with the intention to see how they affected the outcome through influencing the variables included in the predications. From this, a core category could be found and a plausible strategy regarding the strategy used by the major, globally operating container liners could be created.

Plausible strategy found has support in both data and existing theory.

3. Descriptive memo

Major container liners today are diversifying their service offering to more than carrying containers across the oceans. Range is for example from financial and insurance services to forwarding, warehouses and airfreight. There is evidence of vertical integration, digitalization and automation and competitiveness. However, there seems to lack evidence to support that servitization (developing new services) is practiced.

There are many ways to link these categories to a core category, in this case a strategy. To perform theoretical integration, five methods that could be performed with the data collected were selected. With these methods, a link between a core category and the categories could be created.

4. Memos

First section of this chapter contains an index with links (each title is a link) to each memo.
Second section contains all memos in numbered order.

4.1. Index of Memos

No	Date	Memo title (linked)	Created by
1	8-sep-20	Choice of coding	leikje
2	10-sep-20	Company 1 - Container terminal Gothenburg, Sweden	leikje
3	17-sep-20	Alliances (clarification)	leikje
4	17-sep-20	Financial crisis 2008 and effect on VI	leikje
5	17-sep-20	Company 05 – Intentions in Europe and globally	leikje
6	18-sep-20	Renewing of fleet or other strategy, relate to Memo 4	leikje
7	22-sep-20	Questioning larger vessel strategy	leikje
8	22-sep-20	Corona effect	leikje
9	22-sep-20	Competing with service offerings	leikje
10	23-sep-20	Digitalization in global logistics	leikje
11	23-sep-20	Amendment to FAL Convention	leikje
12	24-sep-20	Politics affecting Vertical integration	leikje
13	24-sep-20	Container liner buys airline	leikje
14	24-sep-20	Note regarding entry barriers and competition	leikje
15	25-sep-20	Note regarding competing in the price dimension	leikje
16	29-sep-20	Other cases identified as suitable for theoretical comparison	leikje
17	29-sep-20	Losing money to match competitor - for theoretical comparison	leikje
18	1-oct-20	Investing in local shipping liners for competitiveness	kasger
19	1-oct-20	Joint venture between large shipping company and logistics enterprise	kasger
20	1-oct-20	Block exemptions in the shipping industry (EC)	kasger
21	1-oct-20	Competition is shaping shipping	kasger
22	1-oct-20	Market consolidation in container shipping	kasger
23	1-oct-20	FOS - Digitalization Webinar 2020	leikje
24	1-oct-20	NYSHEX - carriers push for more binding ocean shipping contracts	kasger
25	1-oct-20	Applying digital twin in shipping and maritime	kasger
26	1-oct-20	The creation of integrated digital ship	kasger
27	1-oct-20	How industrial IoT will disrupt the shipping industry	kasger
28	1-oct-20	Ship shape for the future	kasger
29	1-oct-20	Swiss shipping line and African car carrer Joint Ventures	kasger
30	1-oct-20	Why container liner profits remain elusive despite alliances	kasger
31	13-oct-20	Explanatory effects matrix - notes on analysis	leikje
32	15-oct-20	Developing questions for the questionnaire	leikje
33	28-oct-20	Alliance and delivery of IT standard announced	leikje

34	4-nov-20	SOL Lines takes a vertical step as it gains control of Scanlog	kasger
35	4-nov-20	SOL Lines formed joint venture with Wallenius Line	kasger
36	4-nov-20	Qwyk has reached a deal to provide ocean sailing schedules to DB Schenker	kasger
37	4-nov-20	Partnership agreement between Hamburg Port and Tanger	kasger
38	10-nov-20	Maersk builds distribution facility to speed up cargo flows	kasger
39	10-nov-20	Maersk intends to buy warehouses, container terminals to enhance its logistics services	kasger
40	10-nov-20	Leading global container carriers joins TradeLens platform to digitize their supply chain	kasger
41	13-nov-20 16-nov-20	Brainstorming session - Variables	leikje kasger
42	14-nov-20	Decision model - notes on analysis	leikje
43	15-nov-20	Composite sequence - notes on analysis	leikje

4.2. Memos in numbered order

Memo No. 01	
Choice of coding	08-Sep-20
<p>Concept:</p> <p>Coding was selected based on initial research to formulate the basis for the thesis. Qualitative Data Analysis A Methods Sourcebook was used for selection of the First cycle and Second cycle codes.</p> <p>Based on the literature following codes were selected for first level coding:</p> <ul style="list-style-type: none"> • Process coding • Causation coding (Code 1>Code 2>Code 3) <p>It was decided that Deductive coding should be used were the code can be revised during the course of the research.</p> <p>Process code was chosen so we could connect action in the data to identify how they become strategically implemented with respect to time. Causation coding was chosen to see how and why the outcome occurred.</p> <p>Second level of coding was defined as follows (based on literature) (see also grounded theory)</p> <ul style="list-style-type: none"> • Categories • Causes/explanations • Relationships • Theoretical constructs 	
Comments:	

Memo No. 02	
Company 1 - Container terminal Gothenburg, Sweden	10-Sep-20

Concept:

October 2011 a subsidiary to Company No. 1 signed an agreement spanning over 25 years. This contract was approved by the authorities in December 2011.

On 10-mar-17 it was announced that a new investment had been made to the container terminal. It ensured market share and provided an investment of 26 million euro focusing on enhanced customer service and productivity.

In the local newspaper it could be read that the regional authorities had approved the deepening of the shipping lane and that they were awaiting approval from the national authorities. This increase in depth would enable the largest container vessels to arrive in port fully loaded. At this time, they have to unload parts of the cargo in European ports outside Scandinavia before arriving in Gothenburg which means longer freight times for some cargo due to unloading and loading on to new means of carrying.

Even if there is no approval (which seems unlikely) they are still competitive in reducing freight time due to other measures.

These events together form the following Process and Causation code

VI-CG,CI-RGEB,CI-VCRF,SI-PS

VI-CG>CI-RGEB+CIVCRF+SI-PS

In an article from the local newspaper, it was announced that a Swedish custom service company was bought by Company 1 alternatively one of their subsidiaries or owners (unclear from the newspaper article but it is clear that the event is related to the container liner). Adding the previous events following Process and Causation code were established

VI-EEAQ, SI-PSDC, SI-PS, CI-VCSG, VI-CG, CI-RGEB, CI-VCRF

VI-CG+VI-EEAQ>CI-RGEB+CI-VCRF+SI-PS+SI-PSDC+CI-VCSG

Based on this they used both contracts and acquisitions to increase competitiveness and service offerings. Waiting the approval from the authorities they can also increase the entry barrier due to that their largest vessel can enter fully loaded to the Scandinavian peninsular.

No evidence of Digitalization was found in these events.

These actions have been approved by the authorities and based on the length of the contract further events are likely to occur.

Comments:

Keep monitoring the local newspaper and press releases issued by the port.

Memo No. 03

Alliances

17-sep-20

Concept:

It is noted that container liners form different alliances between each other resulting in, for example, “new” liners. These alliances are not taken into consideration in this thesis.

Alliances taken into consideration are newly formed that are specifically for enabling vertical integration with shore facility, servitization, digitalization, process improvement (sea to land processes), improvement of existing services and diversification etc.

Alliances formed with other than another container liner will be taken into consideration.

Comments:

This memo is for clarification only.

Memo No. 04

Financial crisis 2008 and effect on VI

17-Sep-20

Concept:

As an effect of the financial crisis 2008 the container liners began building larger vessels in order to retain customers by lowering the freight rates.

Previous vertical integration strategies were changed to the benefit of increasing the fleets carrying capacity. This led to an overcapacity in vessel capacity within the industry

This had negative results and one of the major effects would be the bankruptcy of Hanjin.

This could explain why the container liners start to follow Porter’s idea (again) with competing on other dimensions than reducing freight rates.

Shows that the strategy of vertically integrating for diversification and increase of services offered to the customer might be the way forward to compete in the oversupplied market.

Comments:

Further strengthens the argument for vertical integration strategies and competition in other dimensions than freight rate.

Memo No. 05

Company 05 – Intentions in Europe and globally

17-Sep-20

Concept:

Evidence of vertical integration and increased service offerings within Europe from Company 05 (government owned) based on their government's strategies in Europe.

Company 05 is trying to become a dominant container liner globally as per the intention of the government that owns it. Based on the articles found so far only evidence of increasing the exit barrier for the customer by becoming dominant on the shipping routes and in the ports exist. Further investigation in increased service offerings etc. needs to be carried out.

No conclusion drawn with this memo.

Comments:

This is only a motivation and explanation for coding and no conclusion.

Memo No. 06

Renewing of fleet or other strategy, relate to
Memo 4

18-sep-20

Concept:

In Memo No. 4 it was noted that vertical integration had previously been abandon. It was then re-initiated after the strategy of building larger and more container vessels was abandoned (see Memo No. 4).

In an article in Financial Times Aug 2017 it is announced that Company No. 2 ordered eleven (large) new container vessels.

What if this is another strategy? Or cold it just be renewal of their fleet with eleven existing vessels being replaced? Could this mean that Company No. 2 is reducing or stopping vertical integration in favor of building new and larger container vessels? (relate to Company No. 1 in Memo No.4) Could this mean that there are different strategies used among the largest container liners and how does this affect competition?

So, what if this is another strategy? Would it affect the competitors in their decision to diversify through vertical integration and compete in other dimensions than price?

However, in Financial times Nov 2018 *"... Five of the world's largest container shipping groups are joining forces to create new IT standards for the industry that could allow them and ports to use digital technology such as blockchain to make global trade cheaper and safer."*

"... work on standards that would be openly and freely available to all third parties such as customers, ports and customs authorities. "It's really important. What we are talking about is simply having standards for how we communicate with each other and with our customers. We will make hooking up our customers digitally much more cost effective if we can agree common standards," said Soren Skou, Maersk's chief executive."

This indicates that Company No. 3 is following the others and are competing in other dimensions than price. Therefore, it was assumed that this purchase of vessel was made with the intention of replacing older vessels. Assumption stands until evidence that shows otherwise emerge.

Comments:

Memo No. 07

Questioning larger vessel strategy

22-Sep-20

Concept:

Relating to Memo No. 6 were evidence was found of a Container liner ordering eleven new large container vessels.

In an article from April 2020 the Corona pandemic has made some liners seem doubtful regarding the strategy/rationale for the large container vessels.

This further supports what was said in Memo No. 6.

Based on this article there will be an overcapacity of large container vessels. This implies that container liners will have to compete in supply chain effectiveness and offer additional value to the customers and compete in other dimensions than price. In line with Porter (2008).

Paris, C. (2020) *"If you had a blank sheet of paper and planned from scratch, you probably wouldn't order these ships," Mr. Jensen said. "But the big liners have invested way too much to sideline them and with the scrapped sailings, cargo owners will have to adjust to slower and less efficient service."* further strengthens the argument that competing is about delivering the most efficient service during these circumstances.

Based on this the notion of there being another strategy that involves increasing vessel capacity and competing in the price dimension has been discarded.

Paris, C. (2020, Apr 17). Megaships proving a drag on ocean carriers in trade downturn; collapsing demand from coronavirus pandemic restrictions adds pressure to container lines operating half-empty ships. *Wall Street Journal (Online)* Retrieved from <http://proxy.lib.chalmers.se/login?url=https://www-proquest-com.proxy.lib.chalmers.se/docview/2390493822?accountid=10041>

Comments:

This was in line with previous research found and the assumption made for this thesis. Question that arose in Memo No. 6 is considered permanently closed.

Memo No. 08

Corona effect

22-sep-20

Concept:

Due to the Corona effect container volumes has gone down.

Paris (2020) *"The falling demand has pushed ocean shipping lines to sharply retrench their operations, a departure from previous downturns that have seen carriers fight for diminishing container volumes by offering lower prices, sending ships out with freight rates that barely covered operational costs."* implies that competing any further in price is not economically sustainable.

What if a container liner could offer more value to the customer in this situation? They would most likely have a competitive edge and maintain a more economical sustainable operation since they might be able to charge the same or slightly higher rate than their competitors. So, what if they don't offer more value to the customer? Competing by lowering of the price is no longer economically sustainable. This can lead to the loss of customers as well as profit which in turn could lead to bankruptcy.

Based on this the logic points towards a long-term strategy where you compete for customer by offering more value to the customer rather than price. In doing so you will be better off in shorter time spans of low freight demand, like today with the Corona effect.

It should be noted that the drop-in oil prices have led to a sudden drop in fuel cost. This sudden drop has turned an expected loss into an unexpected profit. Paris (2020) *"Now, 15 senior industry executives polled by The Wall Street Journal expect on average that the world's top dozen carriers will collectively make a profit of around \$11 billion this year. It's a complete reversal of expectations of at least \$5 billion in losses, when volumes collapsed in March and April from the virus-imposed shutdowns."* This statement implies that year 2020 is highly volatile and there can be even more drastic changes during this thesis project. Profits are made even though there are double-digit drop in shipping volume.

Paris, C. (2020, Aug 30). Shipping lines learn to make money by balancing supply and demand; the trade downturn in the wake of the coronavirus pandemic has pushed ocean carriers to cut capacity and focus on profitability rather than market share. *Wall Street Journal* (Online) Retrieved from <http://proxy.lib.chalmers.se/login?url=https://www-proquest-com.proxy.lib.chalmers.se/docview/2438391043?accountid=10041>

Paris, C. (2020, Jun 16). Peak shipping season runs aground as ocean lines pull capacity; bloated inventory levels and low import expectations have container lines canceling sailings when carriers and retailers are usually bulking up for the fall. *Wall Street Journal* (Online) Retrieved from <http://proxy.lib.chalmers.se/login?url=https://www-proquest-com.proxy.lib.chalmers.se/docview/2413709787?accountid=10041>

Comments:

For this discussion it is assumed that the time span of the Corona effect is short compared to the time span of an overall strategy.

Memo No. 09

Competing with service offerings

22-sep-20

Concept:

Company 01 and Company 09 are competing in the service area.

Evidence are that Company 09 bought a Switzerland based freight service provider and Company 1 absorbed their freight forwarding company.

This generated the following Causation codes

- VI-EEAQ>CI-RG+CI-VC
- CI-RG+CI-VC>VI-IETR

Sequence of the codes can be reversed depending on how acted first. This is however irrelevant, most important is that it shows that they recently (around 2019-2020) took action (in form of vertical integration) in order to diversify and compete with additional services.

Comments:

Memo No. 10

Digitalization in global logistics

23-sep-20

Concept:

Interesting article in Forbes.

Evidence has been found previously.

Digitalization is not a choice for a container liner today. Actions have been taken, for example five of the major container liners joined in digitalization efforts (Financial times Nov 2018).
DI>VI-CGAL+VI-COAA>SI-SS

For theoretical comparison the logistic industry globally
CI-RG+CI-VC>DI-AUPS

This generates a new Causation code, based on logic and observed behavior:
CI-RG+CI-VC>DI-AUPS>VI-CGAL+VI-COAA>SI-SS

Comments:

Based on primary data collected at this time.

Memo No. 11

Amendment to FAL Convention

23-sep-20

Concept:

Automated reporting has been entered into the FAL Convention.

A port in Europe has developed a new process for more secure and efficient handling of container and their release.

This could be connected with both the convention and local regulations.

Comments:

Memo No. 12

Politics affecting Vertical integration

24-sep-20

Concept:

Long beach container terminal was owned by a Hongkong based Container liner. Federal government forced them to sell the terminal to another actor outside the container liner business.

This demand from the federal government is a result of Company No. 5 acquiring the Hongkong based Container liner and the tensions between the two governments.

Comments:

Memo No. 13

Container liner buys airline

24-sep-20

Concept:

Company No. 9 buys an airline.

They have previously bought a forwarding company, see Memo No 9.

Action taken by Company No. 9 suggest that they want to be able to provide services throughout the entire supply chain. They are using vertical integration to diversify their business and gain market shares. This will increase their exit barriers and it will do the same to their customers.

Indicates that the larger container liners have started to compete in more areas than just ocean shipping.

Comments:

Memo No. 14

Note regarding entry barriers and competition

24-sep-20

Concept:

Company No. 9 has opened a new line between two ports in Europe. They are using the larger ports in Europe for their intercontinental trade.

Company No. 1 has a contract to invest in and operate the container terminal at one of the ports.

Company No. 1 connects the port with their largest container vessel used on intracontinental trade. Today the lane into the port is too shallow to enter fully loaded. In Memo No. 2 it is documented that the shipping lane will be made deeper to facilitate for the larger vessels. In theory this could lead to Company No 9 leaving the port due to competition since they are only operating a continental trade route. Reflecting on the fact they chose a continental route one could contemplate that an entry barrier exists for bringing the larger vessels in for intracontinental trade.

Another aspect is the need for smaller feeder container ships can be reduced since there are investments to connect land and sea more easily. Both Company No.1 and No.9 are actively investing in forwarding companies extending their reach inland and in other means of transporting goods.

It should also be noted that Company No. 5 operates a route between one of the ports mentioned in this memo to another larger port for reloading to intracontinental transport.

Comments:

See also Memos No. 2, No. 9, No. 13

Memo No. 15

Note regarding competing in the price dimension

25-sep-20

Concept:

It is evident from newspaper articles and industry magazines that competing in the price dimension is not economically sustainable.

Some example from newspapers and magazines Q1 - 2009

- Børsen Online 06-Mar-2009 "*Som følge af faldende efterspørgsel og stigende kapacitet sejler containerskibene på visse ruter med fragtrater nær nul, fraregnet brændstofudgifter og andre afgifter.*"
- Business.dk 09-Mar-2009 "... hæver raterne mellem Europa og Asien, oplyser rederiet i en e-mail mandag. Prisstigningerne på ruter fra Asien er på mellem 300-350 dollar per TEU, og de indføres i to omgang, den sidste den 1. juli. Fra Europa stiger priserne med 50 dollar per 20 fods container og 100 dollar per 40 fods container. De prisstigninger gælder fra 1. april." "*... oplyser, at de højere rater er nødvendige for at give kunderne den service, de forventer fra selskabets side.*"

It should be noted that this is just a sample of articles. Originals were not available in some cases.

Comments:

This is just a note from Q1 2009 after the financial crisis of 2008. Some would argue that this information is history and common knowledge. Memo created just to support the fact.

Memo No. 16

Other cases identified as suitable for theoretical comparison

29-sep-20

Concept:

Cases that could be suitable for theoretical comparison:

Amazon with E-commerce, warehouse automation and logistics

Comments:

Memo No. 17

Losing money to match competitor - for theoretical comparison

29-sep-20

Concept:

It is well known that missing a trend can cause losses in a competitive situation. This can lead to loss of business unless the organization is willing to invest or diversify.

In this case it is interesting to think of what comes first. Are the actions taken initiated by competition against a rival or by innovation?

Innovation should in case be considered action taken to add value to the customer that does not originate from matching existing offers from a rival.

In this example there is loss of several billion dollars just to start and compete in e-market offers. Another interesting aspect is that the rival is doing the opposite and moving from focus on e-commerce to distribution creating logistic supply chains via vertical integration and other types of partnerships in order to increase capacity and shorten delivery times.

Comments:

Memo No. 18

Investing in local shipping liners for competitiveness

2020-10-01

Concept:

Pakistan's Merchant Marine Policy are encouraging residents to step up towards competition in the shipping industry. They are sponsored by Pakistan's national bank.

This event forms following process code:
CI-RI

Comments:

Governments and authorities support local companies to make them competitive in order to fight monopolies.

Memo No. 19

Joint venture between large shipping company and Logistics enterprise	2020-10-01
Concept: The companies will exchange their expertise within supply chain and technology in order to build a global logistics network and supply chain service network. This event forms following process code: VI-CGAL, VI-EE, SI-SS > VICGALEE>SI-SS	
Comments: Large shipping company join forces with logistics enterprise in order to provide new effective services.	

Memo No. 20	
Block exemptions in the shipping industry (EC)	2020-10-01
Concept: Shipping companies slams the European Commission's decision to renew the consortia block exemption regulation (CBER) for 4 years. This event forms following process code: VI-CGAL, VI-IETR, VI-COLW, VI-COAA, CI-VC	
Comments:	

Authority decision leads to destructive competition in a market with overcapacity.

Memo No. 21

Competition is shaping shipping

2020-10-01

Concept:

Merging or buying other company is a classic process of consolidation. It has been done for many years and is currently increasing.

These events together form the following Process and Causation code:
VI-CGAL

Low freight rates and improved shipping connectivity is beneficial for global trade.

These events together form the following Process and Causation code:
VI-IETR

Policymakers has a challenge on ensuring that benefits from lower costs and improved connectivity passes on to the smaller ports and shipping liners.

These events together form the following Process and Causation code:
VI-COCV, VI-COAA

It is very important for authorities to analyze acquisitions, mergers and alliances but also vertical integration between carriers and terminals.

Factors shaping the shipping industry are monitoring and strengthening, trade and transit, domestic shipping markets and bigger seaports.

These events together form the following Process and Causation code:
VI-COLW, VI-COCV, SI-SSTG, SI-SSMG

Comments:

Several factors that are shaping the shipping industry are being explained.

Memo No. 22

Market consolidation in container shipping

2020-10-01

Concept:

There is potential for more consolidation. Industry becoming an oligopoly is a question that has been raised.

These events together form the following Process and Causation code:
VI-CGAL, VI-IETR

By consolidating, container lines can expect to reduce costs, better manage ship capacity and enhance efficiency.

These events together form the following Process and Causation code:
VI-CGAL, VI-EEAQ

Some of the factors driving consolidation and new alliances are mergers and acquisitions, ports of call experience changing relationship with carriers.

These events together form the following Process and Causation code:
VI-CGAL, VI-EEAQ

Markets becoming more concentrated is a major concern.

These events together form the following Process and Causation code:
VI-COCV, SI-SSMG, SI-FSIN

Comments:

Factors driving consolidation and new alliances are explained and what initiatives competition authorities must observe in the market.

Memo No. 23

FOS - Digitalisation Webinar 2020

08-oct-2020

Notes from webinar held by IMO-Singapore Future of Shipping.

Summary:

In line with the secondary data collected. Slides from Stopfords presentation 2017 are interesting.

General:

Digitalization can be used for reducing time in port, reducing administrative burden, regulate cargo flows, create port networks.

Standard in communication and interfaces needs to be achieved. Talked about Digital single window.

This needs to go beyond just sea transport and integrate with the land transport to improve global transport. See also Memo 10.

FAL Convention as amended mentioned.

Cybersecurity is an issue with attacks against large container vessel operators and ports. PACC-Net created; network consist of the larger ports in the world.

E-commerce and growing middle class put pressure on global transport and puts pressure on the port community to increase digitalization.

Ship digitalization and automation:

By using live data from the ship one of the vessel operators tried to improve schedule accuracy and deliver just in time. However, the crew ignored the data received since they want to arrive as fast as possible (before schedule so they are sure there is no delay). This is mindset and culture issue that needs to be changed in order to adapt to digitalization.

Another reason for adjusting speed with the help of digitalization is to reduce the amount of CO2.

Autonomous ships are a future vision with Manned-autonomous ships as a waypoint reaching the vision.

Regulatory framework needs to be changed before ships can become fully automated.

Challenges are many stakeholders, and some have already started developing their own system (potential interface problems etc.).

Comments:

Notes from the seminar are not included, only a summary.

Memo No. 24

NYSHEX - carriers push for more binding ocean shipping contracts.

2020-10-09

Concept:

Funding is being used through NYSHEX to bring more retail shippers into its system and to expand into Europe. There are six carriers currently participating in NYSHEX: CMA CGM, Hapag-Lloyd, Maersk, ONE, COSCO and HMM.

This event forms following process code:

VI-CG

Comments:

COVID upside for the attractiveness of binding contracts.

Memo No. 25

Applying digital twin in shipping and maritime

2020-10-09

Concept:

Simulating a ship's performance without running any test is a crucial attribute. This offers flexibility but also reduce costs.

Performance, Shipbuilding, and Maintenance of the vessel are three crucial areas where a digital twin can support in.

These event forms following process code:
SI-SSNG, SI-SSMG, SI-PSAC

Comments:

Several benefits from digital twin are being described.

Memo No. 26

The creation of integrated digital ship

2020-10-01

Concept:

IT is being seen as difference maker in the shipping industry.

Artificial intelligence (AI) can be used to tackle both shipboard and external data to optimize shipping performance but also reduce excess fuel consumption and emissions.

These event forms following process code:
VI-ET, VI-AU

Comments:

IT is becoming a major asset for shipping companies.

Memo No. 27

How industrial IOT will disrupt the shipping industry

2020-10-09

Concept:

IoT will lead to several benefits for the shipping industry, for example lower operating and capital cost, customers can track their cargo in a better way and also see the conditions of their cargo.

Comments:

Benefits and challenges with IoT in shipping industry.

Memo No. 28

Ship shape for the future	2020-10-09
<p>Concept: Shipping companies as part of their services will implement big data, digital twin, AI and machine learning for condition monitoring purposes.</p> <p>Future ships will most likely most likely involve interconnected devices presenting several benefits for seafarers and the environment.</p> <p>These event forms follwing process code: SI-SS, SI-PS, DI-AU</p> <p>Comments: Servitization being introduced to shipping industry.</p>	

Memo No. 29	
Swiss Shipping Line and Africa Car Carrier announce their joint venture company under the name "Blue Alliance Shipping"	2020-10-09
<p>Concept: Improved sailing schedules, perfect frequency and more loading terminals are some of the benefits from the alliances.</p> <p>These event forms following process code: VI-CGALEE>SI-SS+CI-RGCR+CI-VCRF+CI-VC</p> <p>Comments: Servitization being introduced to shipping industry.</p>	

Memo No. 30	
Why container liner profits remain elusive despite alliances	2020-10-09

Concept:

Following years of consolidation, which resulted in the top liners control 80% of the global container shipping trade, consolidation has slowed and a new normal has emerged. It has turned out that the net results of the synergies, economies of scale etc. is not that beneficial.

These event forms following process code:
VI-CGAL

Comments:

Alliances is not always beneficial. This article explains the disadvantages towards alliances.

Memo No. 31

Explanatory effects matrix - notes on analysis

13-Oct-2020

Concept:

This memo contains notes regarding the Explanatory effects matrix.

Memos referenced/used 02, 06, 07, 09, 10, 11, 13, 14, 15, 17, 23.

Codes within the data log is also a source of data.

Explanation to the analysis and thoughts and ideas are presented. They have been numbered and the numbers are indicated in the matrix and cross-referenced (links).

Explanatory effects matrix					
Causes: Outcomes:	Vertical integratio n	Servitizatio n	Digitalizatio n	Competitio n	Researcher s explanation
Diversificatio n	1.a	2.a	3.a	4.a	5.a
Process improvement	1.b	2.b	3.b	4.b	5.b
Service improvement	1.c	2.c	3.c	4.c	5.c
Innovation	1.d	2.d	3.d	4.d	5.d

1. Vertical integration column

a. Vertical integration-Diversification

Two diversifications Digitalization and within the Supply chain (warehouses, terminals at ports, freight forwarding etc.). Different ways of vertical integration found are contracting, acquisition and alliances.

b. Vertical integration-Process improvement

No indication/evidence that vertical integration directly caused process improvement

c. Vertical integration-Service improvement

No indication that vertical integration directly leads to service improvement.

d. Vertical integration-Innovation

No indication that vertical integration directly leads to innovation.

2. Servitization column

a. Servitization – Diversification

Services offered increases and the container liner can offer more services than just sea transport within the supply chain. Enables them to compete in other parts of the supply chain.

b. Servitization – Process improvement

There is no evidence found in this research that links servitization to process improvement.

c. Servitization – Service improvement

For example, faster forwarding of goods and environmental impact assessments. Better ways to enhance service quality (see data log).

d. Servitization – Innovation

New type of services on offer within the supply chain from the container liner.

3. Digitalization column

a. Digitalization – Diversification

No evidence that digitalization leads to diversification.

b. Digitalization – Process improvement

Automation of ships enables just in time sailing. Sailing can be made more environmentally friendly. Time in port decreases due to automated physical handling, automated reporting reducing paperwork.

c. Digitalization – Service improvement

E-platforms and reporting

d. Digitalization – Innovation

New standard interfaces, cybersecurity, unmanned ships, unmanned port operations

4. Competition column

a. Competition-Diversification

Container liners today are diversifying themselves in order to compete. Trying to compete in price is not a viable alternative. In order to fit in the global supply chain, they need to diversify.

b. Competition – Process improvement

Reducing freight time of goods without increasing environmental impact in order to stay competitive.

c. Competition – Service improvement

Improve services on offer and deliver new services to stay competitive.

d. Competition – Innovation

To compete in a changing global environment, container liners need to build innovation capabilities.

5. Researchers explanation

a. Researchers explanation – Diversification

Diversification within the global supply chain is happening in other industries as well. An example is Amazon that owns airlines. This is in-line with some container liners that owns and operates airlines and forwarding companies (Memo 09, 13). To compete with larger ships (economy of scale) and more efficient ships can be considered as not sustainable since it leads to overcapacity and reduction of freight rates (Memo 07, 15). These are reasons for diversification and the way to achieve this is through vertical integration

through contracting, acquisition and alliances (see data recording log). By becoming, for example, an operator of a terminal at a port through contracting can strengthen the container liners position and push smaller competitors' traffic away. This increases the exit barrier for the customer who can no longer choose which operator at sea and in some circumstances at land (Memo 14) to get their goods from point A to B.

b. Researchers explanation – Process improvement

Based on the data collected the Container liners are using digitalization and automation to improve their processes. This is in-line with the global logistic industry (Memo 10). There is also requirement to start with automated reporting between ship and port (Memo 11). They need to improve their processes in order to meet the increasing demand from E-trading and growing middle class (Memo 23). Improving processes can be both on land and at sea and can help the environment as well by streamlining steaming to reduce the amount of fuel consumed (Memo 23).

c. Researchers explanation – Service improvement

For improving services liners seems to develop E-platforms in order to simplify and enhance their service offerings. They also want to improve service quality by digitally reporting their current performance to match expected and perceived service quality in order to achieve higher service quality (see data recording log).

d. Researchers explanation – Innovation

Innovation today is more focused on digitalization and automation than on the design of the container ships (Memo 06, 07, 23; UNCTAD 2019). Innovation can be divided into automation, standardizing communication (interfaces), cybersecurity and new types of services originating from diversification and servitization. Invention of new services will build value for the customer while automation will build value for the container liner.

Comments:

Memo No. 32

Developing questions for the questionnaire

15-Oct-20

Concept: Developing questionnaire

To complete the Decision model analysis a questionnaire should be sent to selected companies.

Objective with the questionnaire is to identify thoughts, plans and choices/decision for developing a container liner.

For design of the questionnaire MS Forms was used as base supported by the following literature Ideas for Developing a questionnaire, Bill Gillham 2nd edition 2007 and The Palgrave Handbook of Surveys, David L. Vanette & Jon A. Krosnick 2018, Research Note: Linguistic Analysis of an Open-ended Questionnaire in an Organizational Study, Lars Engwall, Organization Studies 4(3) p. 261-270, 1983

Following was considered for the design:

- Single mode in the form of an online form for mixed devices
- Open ended questions were selected since they can lead to a greater level of discovery and should be less bias than structured closed questions.
- Try to understand how the respondent will interact with the questions
- Avoiding a cluttered look
- Questions are to identify thoughts, plans and choices/decision

Thoughts leading to the design and questions

1. Title of the analysis *Decision model for developing as a container liner*
2. Identified actions (see Explanatory effects matrix)
 - a. Vertical integration (expanding into the global supply chain)
 - b. Digitalization and automation
 - c. Offering new services
3. Goal is to figure out their plans and thoughts around the decision that they have already made and to use other industries decisions within vertical integration, servitization and digitalization.
4. Identified goal with their actions is to compete in other dimensions than price

Questions and sequence (first version)

1. How can container shipping improve global transport?
2. How is the organization assessing environmental impact and how do you feel that the organization can contribute to a greener environment both at sea and on land?
3. What is the organizations experience with operations that is handled manually compared to areas that have been automated?
4. Do you feel that your organization delivers a good service and how can services on offer be expanded or, if needed, improved?
5. Do you feel that the organization has an innovating spirit, or do you feel forced by regulators and other factors?

Comments:

Memo No. 33

Alliance and delivery of IT standard announced

28-Oct-20

Concept:

Should be read together with Memo No. 10, 11, 23

Launch of Tradelens

DI-AUCS+DI-AUPS+VI-CGAL>SI-SS+CI-RG+CI-VC

Most likely the result of the alliance between five major container liners and IBM (Financial times 2018).

Based on the press release published on 15-oct-2020 they were three major container liners that integrated onto Tradelens.

Tradelens is run on IBM Cloud and Blockchain.

This should also be related to Cybersecurity.

Indicates intention to move further into the supply chain providing more services and diversifying themselves through vertical integration.

Question remains if this will become a dominant platform or if other major/players from other parts of the supply chain will form their own to compete.

What if another platform originating from another background or part of the industry is launched?

Competition could increase, international standards could be set based on the other platform

So what, just another competitor

If the developed platform is not in accordance with international standards or the international standards are set based on the competitors' platform, there is a risk of rework and loss of customers using the own developed platform. Exit barrier has also increased, it becomes more difficult to switch to another platform if international standards can't be met with the developed platform or if the potential customers chose the other platforms.

Comments:

Memo No. 34

SOL Lines takes a vertical step as it gains control of Scanlog

2020-11-04

Concept:

SOL Lines has increased its role in 3PL which in turn leads to better opportunity to provide end-to-end solutions.

This event forms following process code:

VI-IETR>SI-SS+SI-PSDD

Comments:

Vertical integration provides better services and process improvements.

Memo No. 35

SOL Lines formed the 50:50 joint-venture with Wallenius Line

2020-11-04

Concept:

50:50 joint venture between the companies will reduce greenhouse gas emissions by 60% and fuel consumption by 50% per transported unit.

This event forms following process code:
VI-CG>VI-COLW+SI-SSEI

Comments:

Joint venture reduces gas emissions.

Memo No. 36

Qwyk has reached a deal to provide ocean sailing schedules to DB Schenker

2020-11-04

Concept:

Schedule database of 90 container lines will be integrated to Ocean 4.0, which is the ocean freight component of Schenker's Connect 4.0 platform. This will allow shipping liners to check instant rates and make instant bookings.

DB Schenker is investing a lot in digitalization.

This event forms following process code:
VI-CGAL -> SI-PS+SI-SS

Comments:

DB Schenker invests in digitalization which leads to process and service improvements.

Memo No. 37

Partnership Agreement between leading Hamburg

2020-11-04

Port Authority and Tanger Med Port Authority	
Concept: Exchanges on questions about digitalization or port cyber security will be beneficial for both companies. This event forms following process code: VI-CGAL>CI-VCSG+CIVCSP	
Comments: Partnership regarding digitalization leads to process and service improvements.	

Memo No. 38	
Maersk builds a distribution facility to speed up cargo flows through Canadian port	2020-11-10
Concept: Maersk builds distribution facility in Vancouver in order to speed up cargo flows. Canadian port warehousing and distribution unit will operate it. “We can now offer more responsiveness to the pace of business by giving supply chain leaders more control of order timing/fulfillment through inland routing flexibility, better velocity gained from one-day savings of rail versus truck and cost savings through seamless transload operations into domestic 53ft trailers,” says Maersk Canada president Omar Shamsie.	

Comments:

Vertical integration between Maersk and CP creates competitiveness.

Memo No. 39

Maersk intends to buy warehouses, container terminals and Customs brokerage firms to enhance its logistics services

2020-11-10

Concept:

In an interview with WSJ, Mærsk CEO Søren Skou said that 80% of the company's earnings currently come from container shipping, but he hopes that it will be a 50-50 scenario between ocean and non-ocean services.

“By structurally adding inland services to Maersk, customers will have seamless access to a wider range of logistics and services offerings”, says Søren Skou.

This event forms following process code:

VI-CGAL>CI-VC+CI-VCSG+CI-VCSP+CI-VCRF

Comments:

The market is focusing on vertical integration in order to be more competitive.

Memo No. 40

Leading global container carriers have joined the TradeLens platform to digitize their supply chain.

2020-11-10

Concept:

Several major companies have joined TradeLens network in order to complete digital transformation of their supply chains. Accessing data while keeping sensitive information private is a real asset for the organizations.

This event forms following process code:

VI-CGA>VI-AUPS+CI-VCSP

Comments:

The market is digitizing their supply chain to gain competitive advantages.

Memo No. 41

Title Brainstorming session - Variables

13-Nov-20

Concept: Brainstorming session to create the variables

A brainstorming session was held to create the list of variables to be used in the analyses. Variables and an explanation to each are presented in the table below.

Variable (S)=Start, (M)=Mediating, (O)=Outcome	Explanation
1. Diversification (S) <hr/> Rating Low <u>Moderate</u> High	Increasing number of logistic and service offerings, moving away from only operating container ships. Memos 2, 9, 13, 19, 29, 33, 34, 39 See data log for raw data
2. Global competition (S) <hr/> Rating Low Moderate <u>High</u>	Retaining customer. Maintain their position in the market. Memo 18 See data log for raw data
3. Strive for efficiency (S) <hr/> Rating Low Moderate <u>High</u>	Automation of various processes and services. Connection between sea and land. Optimization for example ship efficiency and process efficiency (faster and more accurate shipping) Memos 10, 11, 22, 23, 26, 36, 38 See data log for raw data
4. Globally growing E-trading (S) <hr/> Rating Low Moderate <u>High</u>	Higher demand for IT systems facilitating E-trading leading to increased digitalization. Memo 23
5. Growing middle class (M) <hr/> Rating Low <u>Moderate</u> High	As global economy expands the middle class is increasing globally affecting trade. Memo 23
6. Regulatory requirements (M) <hr/> Rating Low <u>Moderate</u> High	Increased requirement on trade to protect from example smuggling and theft of cargo etc. Politics, for example change in agreement/relationship between states forces a sale of, for example, stake/contract in a port or port terminal. Anti-trust regulations Regulations regarding global and national trade in general. Regulations regarding alliances and vertical integration.

	Memos 5, 11, 12, 20, 21, 22, 23
7. Environmental requirements (M) Rating Low Moderate High	Requiring organizations to reduce for example CO2 emissions. Common knowledge. Container liners striving to reduce fuel consumption and gas emissions. Memo 23, 26
8. Automation capabilities (M) Rating Low Moderate High	Increased capabilities in automation could help the industry to automate processes and services that currently can't be automated. Memo 23 See raw data log
9. Freight rate fluctuation (M) Rating Low Moderate High	Freight rates fluctuate and can have a negative impact on profit. Memo 15, 39
10. Container ship overcapacity (M) Rating Low Moderate High	Increments of capacity can be considered as large which leads to a risk of overcapacity. Economy scale. Memo 7
11. Increased cyber threat(s) (M) Rating Low Moderate High	As digitalization increases so does cybercrime. Shipping is no exemption and global transport is no exemption. Alliances for port cyber security. Memos 23, 37.
12. Optimization capabilities (M) Rating Low Moderate High	As technology advances and data collection possibilities increases so does the capability to optimize processes, services and physical components of the process chain. Investing in 3PL for optimized processes. Memos 19, 23, 25, 29, 34, 36, 38, 40
13. New standards of interfaces (M) Rating Low Moderate High	Can be any type of interphase from hardware to software. Memo 23
14. Competing in other dimensions than price (O) Rating Low Moderate High	For instance, better end-to-end solutions for customers and a wider range of logistics and service offerings. Memos 7, 9, 13, 15, 29, 34, 39 Raw data, see data log
15. Economy of scale (logistics) (O) Rating Low Moderate High	Supplying more than sea freight (globally), i.e. once unloaded the container continues with their own regional/national/local freight solutions (train, airplane, truck etc.). Storage and handling is included. Memo 2, 9, 13, 23, 33, 38, 39 See data log for raw data

16. Service capabilities (O) Rating Low Moderate High	Providing new effective services. Interconnected devices, improved sailing schedules, wider range of loading terminals. End-to-end solutions. Memos 19, 28, 29, 34, 36, 39
17. Innovation within processes and/or services (O) Rating Low Moderate High	Innovations within processes and services. Memos 2, 26, 36, 40 See data log for raw data
18. Differentiated services (O) Rating Low Moderate High	Airfreight, land freight, insurance, financial, custom declaring etc. See homepage of shipping liners. Memos 2, 9, 10, 13, 29, 39 Raw data, see data log
19. Increased buyer selection (O) Rating Low Moderate High	Customer loses bargaining powers and possibility to select and retain (lock in) customer increases. Raw data, see data log
20. Automated processes and services (O) Rating Low Moderate High	Striving for self-sailing ship, automated loading and unloading of containers, automated cargo handling, self-driving truck/trains/airplanes etc. Memo 23 Raw data, see data log
Comments:	

Memo No. 42	
Decision model - notes on analysis	14-nov-20

Concept:

This memo describes how the decision model was created with explanations and motivations. According to Miles, Huberman, Saldana (2014) *Qualitative Data Analysis A Methods Sourcebook 3rd edition* a very focused task should be selected. For this analysis the task *Competing in global container transport* was selected. This can seem very wide however for this task, considering all the other possibilities (competing with ship efficiency/design, number of ships on certain routes, structure alliances, other types of transport (oil, bulk, general cargo) etc.), it was considered to be a focused task.

Only Yes or No were used as alternatives. Some of the outcomes from selecting Yes or No were not in the data. However, one of them was always supported by the data and the other was considered to lead in the nearest opposite direction.

It should be noted that there are loops in the model. These originates from either impossible Yes or No choices, for example choosing not to comply with the law etc and non-documented choices. Another option would have been to draw arrows indicating for example intention to leave Container shipping, but this intention cannot be proven with current data. Therefore, there is a loop that can be broken by making the documented choice.

First choice in the decision model is if they are to diversify within global container transport or not. Two thoughts and ideas that could be contributing to their choice are *Expects that only the largest container liner can compete in this manner* and *Expects that container liners need to expand beyond sea freight*. From here the model evolved into seven endpoints (five of them connects to *Competition in other dimensions than price*).

All endpoints were documented in the data collection and/or common knowledge. Following endpoints are defined in Slack and Lewis (2017) *Operations Strategy 5th edition* *Speed, Quality, Dependability, Flexibility and Cost* they all matched data collected.

This Decision model was completed in two iterations

It should be noted that the resolution, due to the limited data, is enough for this Master's thesis but needs to be taken into consideration when reading and drawing conclusions from the analysis.

Comments:

Memo No. 43

Composite sequence - notes on analysis

15-Nov-20

Concept:

For this analysis the starting point is the financial crisis of 2008 and 2011. Between the present (fall 2020 excluded) and the financial crisis a period of recovery is defined for this analysis.

It should be noted that the aim of this analysis is to visualize a journey through time. In our case we are limited by data and multiple individual cases. However, it is still believed that this analysis can be carried out and give some input to the further analyses.

Two paths were created and called continuous and discontinued following how the collective (major container liners) evolved and how individual elements went on the different paths. Discontinued path means that the event stopped at the indicated timespan. If the event restarted it reappears in Continuous path at the timespan where it starts again.

Connections found in the data indicated.

Known external factors were entered. In the Recovery phase there was no certain/known external factors, and therefore none were entered.

During the Present phase there is a clear influence of Digitalization, Automation and Servitization which is reflected by the ovals.

As mentioned previously it should be noted that the resolution of this analysis is low but enough for the purpose of this Master's thesis.

Comments:

Appendix B Coding

In this Appendix, the deductive and inductive codes used are presented. First code lists are the deductive and the second lists the inductive.

Category:	Vertical Integration	Abbreviation VI-Action (ing):
VI: Contracting Alliance		VI-CG
VI: Internal expansioning		VI-CGAL
Over taking (Becoming majority owner)		VI-IE
VI: External expansioning		VI-IETR
Acquisitioning		VI-EE
VI: Complying		VI-EEAQ
Complying with law (local approval)		VI-CO
Complying with convention (international approval)		VI-COLW
Waiting for authority approval		VI-COCV
		VI-COAA
Category:	Servitization	Abbreviation:
SI: Smart servicing		SI-SS
Tracking		SI-SSTG
Notifying		SI-SSNG
Monitoring		SI-SSMG
Scheduling		SI-SSSG
Providing environmental impact		SI-SSEI
SI: Financial servicing		SI-FS
Leasing		SI-FSLG
Options for carrying		SI-FSOC
Payment planning		SI-FSPP
Insuring		SI-FSIN
SI: Process servicing		SI-PS
Declaring (Custom service)		SI-PSDC
Delivering to doorstep		SI-PSDD
Automated collecting		SI-PSAC
Fast carrying		SI-PSFT
SI: Complying		SI-CO
Complying with law (local)		SI-COLW
Complying with conventions (international)		SI-COCV
Waiting for authority approval		SI-COAA
Category:	Digitalization	Abbreviation:
DI: E-trading		DI-ET
Creating E-trading		DI-ETCR
Expanding E-trading offers		DI-ETOF
DI: Automating		DI-AU
Automating servicing		DI-AUCS
Automating processes		DI-AUPS

DI: Complying		DI-CO
Complying with law (local)		DI-COLW
Complying with conventions (international)		DI-COCV
Waiting for authority approval		DI-COAA
Category:	Competitiveness	Abbreviation:
CI: Retaining		CI-RG
Customer		CI-RGCR
Shipping routes		CI-RGSR
Port slots		CI-RGPS
Quality ensuring		CI-RGQE
Increasing exit barrier		CI-RGEB
CI: Value creating		CI-VC
Reducing time in freight		CI-VCRF
Servicing		CI-VCSG
Processing		CI-VCSP

>	Leads to
+	And

An example:

VI-X1 + VI-X2>DI-X1>SI-X3>CO-X1+CO-X2

Cluster	Cluster name	First level codes
Cluster 1	Diversification	VI, SI
Cluster 2	Process improvement	DI, VI
Cluster 3	Service improvement	DI, SI
Cluster 4	Innovation	CI, DI, SI

Inductive codes (added)

Category:	Digitalization	Abbreviation:
DI: Optimizing		DI-OPT

Cluster	Cluster name	First level codes
Cluster 1	Diversification	VI, SI, CI
Cluster 2	Process improvement	DI, VI, CI
Cluster 3	Service improvement	DI, SI, CI
Cluster 4	Innovation	CI, DI, SI

Appendix C Interim case study

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1. Introduction

This interim case summary is an evaluation of the data collected before initiating the analysis, formulating the questions and sending out the questionnaire. Both primary and secondary data collection were reviewed and assessed against the planned analysis in order to identify any knowledge gap.

2. Knowledge gap

First step was to identify the knowledge required to carry out the analysis. Second step was to review the data collected and assess the acquired knowledge. These two steps are described in section 2.1 and 2.2. A gap analysis was carried out and described in section 2.3.

2.1 Knowledge required for analysis

Analyze methods chosen from literature are presented in the sections below. Knowledge required to carry out these was identified and used in a gap analysis presented in section 2.3.

2.1.1 Explanatory effect matrix

An Explanatory effect matrix is to be created. Intention with this matrix is to move through the data collected to find how it relates to concepts and to get an initial understanding of the causal mechanisms. Preliminary matrix can be found in Table 1.

Explanatory effects matrix					
Causes: Outcomes:	Vertical integratio n	Servitizatio n	Digitalizatio n	Competitio n	Researcher s explanation
Diversificatio n					
Process improvement					
Service improvement					
Innovation					

Table 1 Explanatory effect matrix

2.1.2 Decision model network

To describe choices and actions taken by container liners in the process to become more digitalized, automated and diversify in service delivery enabling them to compete in other dimensions than price.

To carry out the analysis thoughts, decisions and plans need to be identified. An example of the analysis is presented in Figure 1.

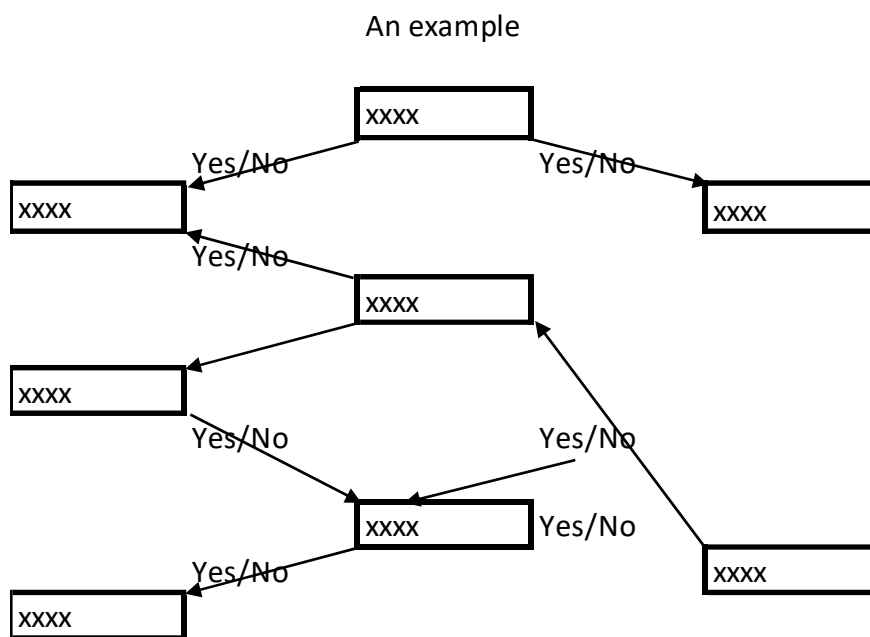


Figure 1 Decision model network

2.1.3 Composite sequence analysis

Finding common features among multiple individual cases and scenarios through time. Cases and scenarios can be from data collected for theoretical comparison as well. A preliminary template is presented in Table 2.

Composite sequence analysis					
Years (range)	XXX	XXX	XXX	XXX	XXX
X-Y					
Y-Z					

Table 2 Composite sequence model

2.1.4 Causal chains and causal networks

In order to explain causation causal chains and networks are created based on the causation codes found during the data collection phase. Causal chains are to be used as a first stage in the analysis. A preliminary template can be seen in Figure 2.

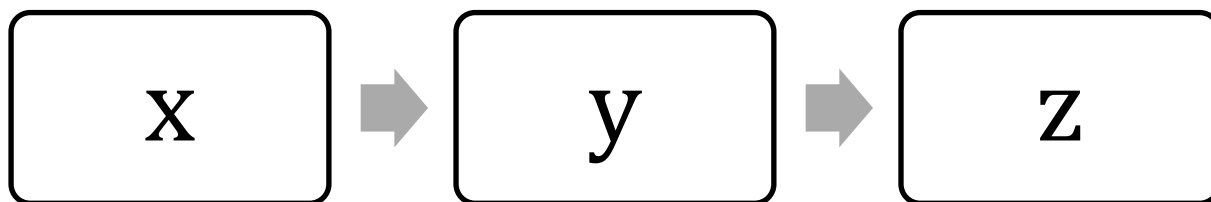


Figure 2 Causal chain

Before the causal networks are created, a list of variables need to be created. This is done through a brainstorming session late in the data collection. Variables in the list has their origin in the data collection. A preliminary template is presented in Table 3.

Initiating variables	Mediating variable	Outcomes

Table 3 Variable list

Causal network analysis is done by identifying streams of the variables. Drawing the network is done in the same way, stream by stream. A network narrative is not to be created for this analysis. A preliminary template can be found in Figure 3.

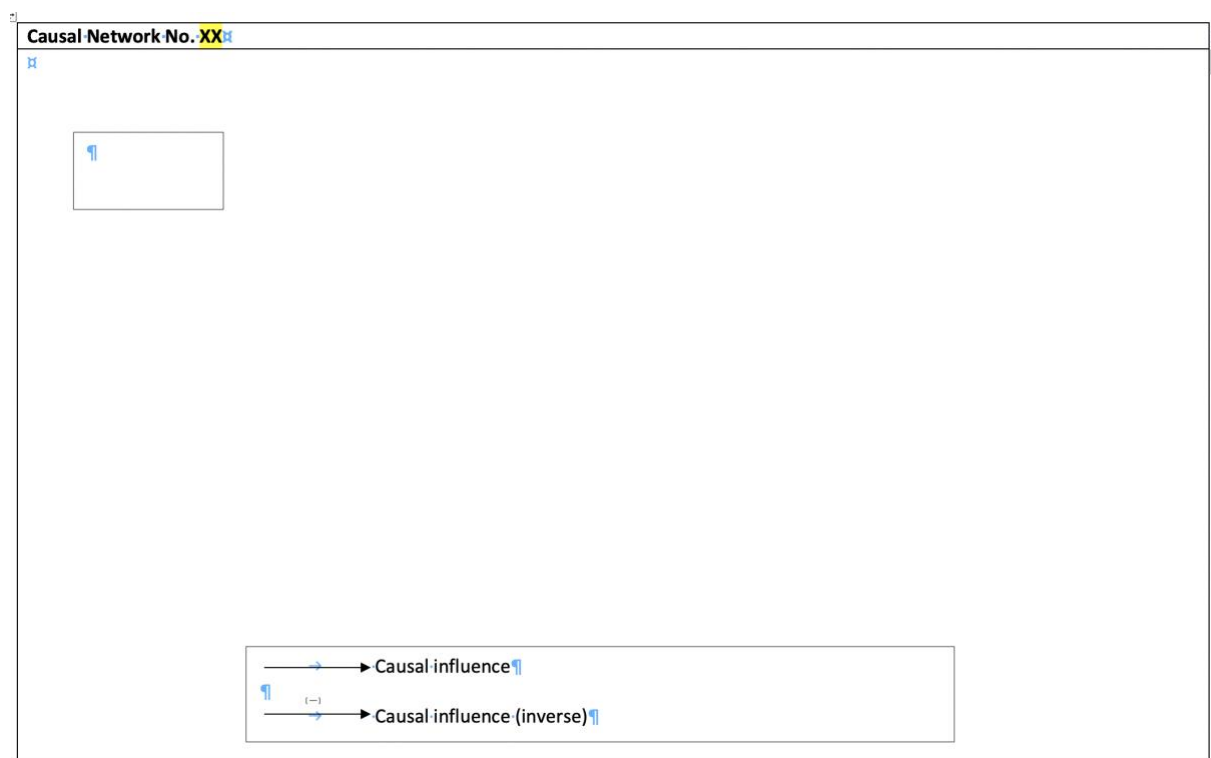


Figure 3 Causal network

2.1.5 Causal prediction model

To build a theory, a causal prediction model needs to be created. In this model, the variables are ordered in a time sequence as demonstrated in Figure 4.

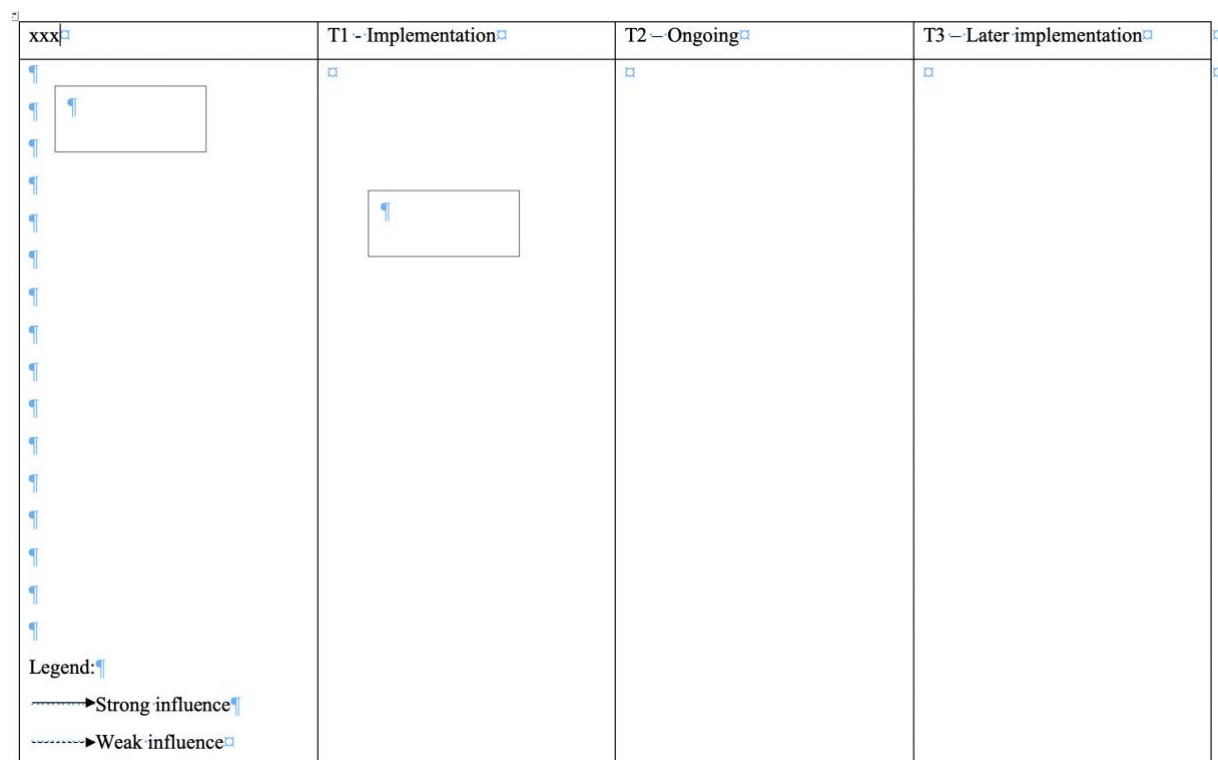


Figure 4 Causal-prediction model

2.2 Acquired knowledge

Data has been acquired through collecting both primary and secondary data. Primary data is currently in the form of events, coded with the use of process and causation codes, from newspaper articles.

Secondary data is in the form of various, scientific papers presented in journals and various reports. This data is presented in the form of a literature review.

Sensitivity has increased since the start of the project, thoughts and ideas have been documented through memos filed in a research journal.

2.3 Gap analysis

A gap analysis was carried out to identify missing data needed for the analyses presented in section 2.1. Analysis was carried out as a workshop and is presented in Table 4.

Gap Analysis	Purpose	Data required	Data collected	Action required
Explanatory effect matrix	A broad first analysis	Action taken by container liners, documented outcomes	Data collected (primary and secondary), written memos	None
Decision model network	Identify thought and plans	Thoughts and plans	FOS webinar on digitalization (observation(s))	Create and submit questionnaire
Composite sequence analysis	Finding common features along a timeline	Time of events (sequence), narratives	Primary data consisting of date and time of events from newspaper, articles coded, memos (narratives)	If there is time, seek more data for theoretical comparison
Causal chains and causal networks	To explain causation	Chains of events, causal network variable list, process and causation codes, memos and summaries	Primary data, causation and process codes, memos	Brainstorming session to derive the variables
Causal prediction model	To build a theory	Variables, outcomes, predictors, existing research and theory, results from previous analyses	Primary and secondary data	Following analysis to be carried out: explanatory effect matrix, decision model network, composite sequence analysis, causal chains and causal networks

Table 4 Gap analysis

3. Conclusion

Based on the gap analysis, there is additional primary data that needs to be collected. Data to be collected is in the form of a questionnaire and newspaper articles.

In the event of no replies to the questionnaire, other data collected can be used to compensate. All planned analysis can be carried out.

Bibliography

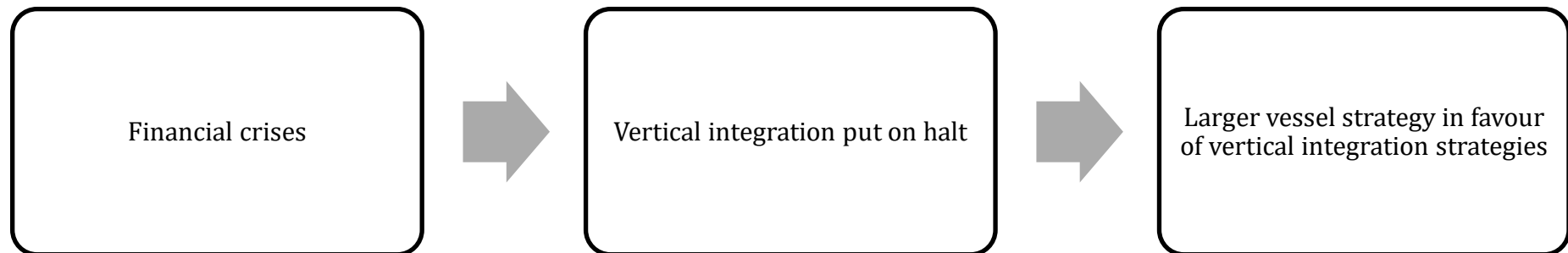
Miles, M. B., Huberman, M. A., & Saldana, J. (2014). *Qualitative Data Analysis A Methods Sourcebook*. Thousand Oaks, California: SAGE Publications, Inc.

Appendix D Causal chains, Variables and Table of streams

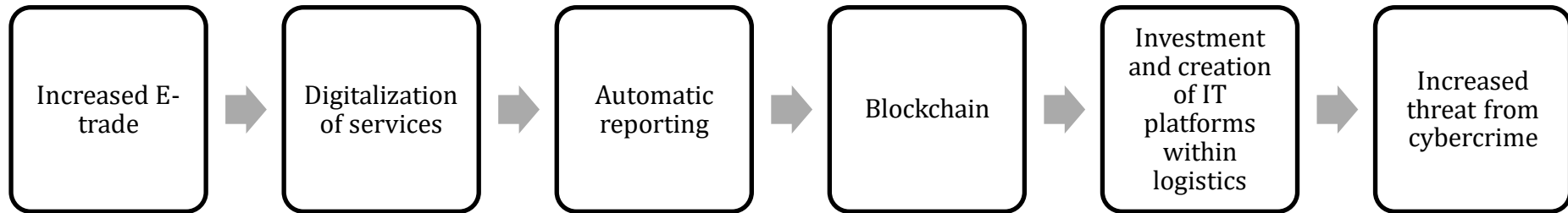
Causal chain No.1 – A Scandinavian affair



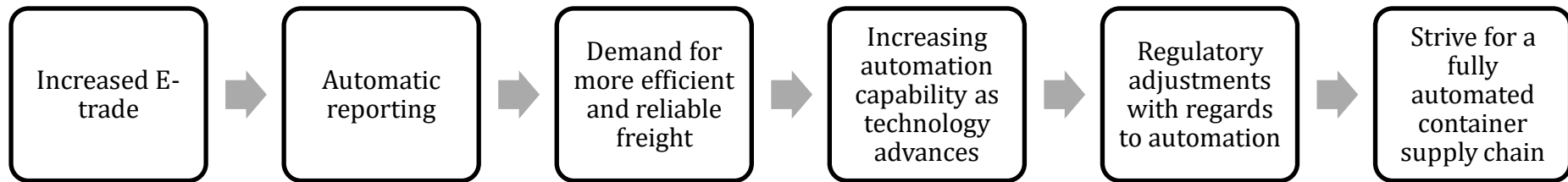
Causal chain No.2 – Financial crises and strategies for one of the companies



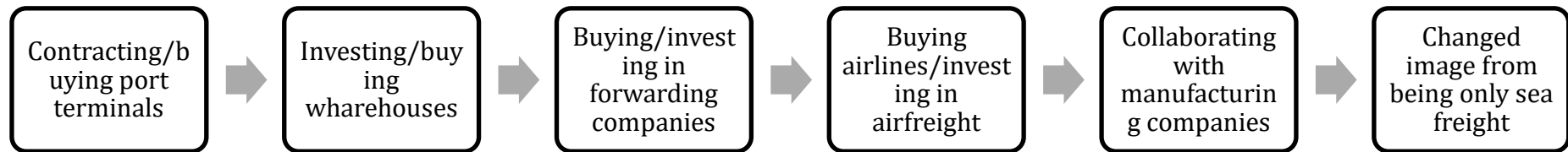
Causal chain No. 3 – Digitalization and E-trade



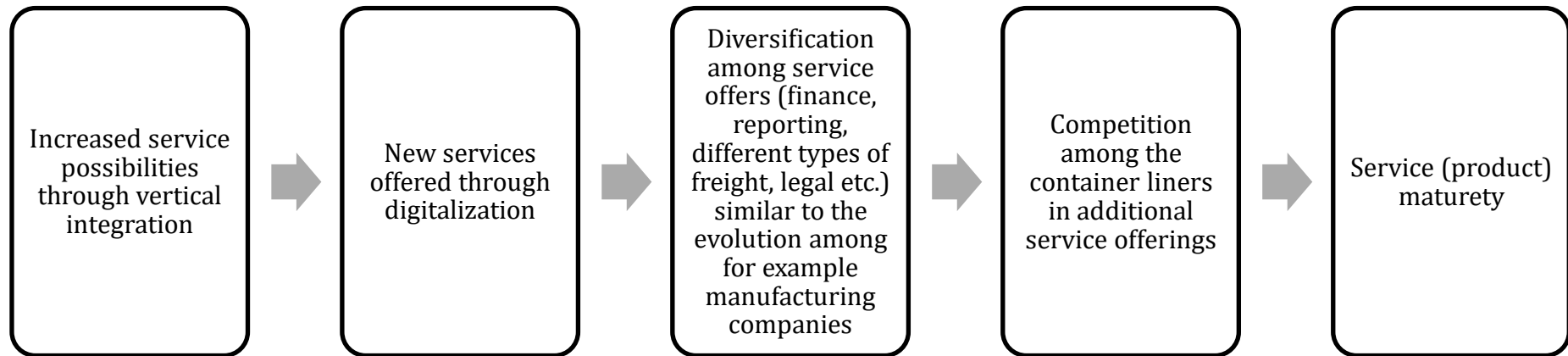
Causal chain No. 4 – Increased automation



Causal chain No. 5- Moving further into container supply chain and collaboration with manufacturer



Causal chain No. 6 – Service evolution from a container liner perspective



Casual chains

Start variables	Mediating variables	Outcomes
1. Diversification (S)	5. Growing middle class (M)	14. Competing in other dimensions than price (O)
Rating	Rating	Rating
Low Moderate <u>High</u>	Low Moderate <u>High</u>	Low Moderate <u>High</u>
2. Global competition (S)	6. Regulatory requirements (M)	15. Economy of scale (logistics) (O)
Rating	Rating	Rating
Low Moderate <u>High</u>	Low Moderate <u>High</u>	Low Moderate <u>High</u>
3. Strive for efficiency (S)	7. Environmental requirements (M)	16. Service capabilities (O)
Rating	Rating	Rating
Low Moderate <u>High</u>	Low Moderate <u>High</u>	Low Moderate <u>High</u>
4. Globally growing E-trading (S)	8. Automation capabilities (M)	17. Innovation within processes and/or services (O)
Rating	Rating	Rating
Low Moderate <u>High</u>	Low Moderate <u>High</u>	Low Moderate <u>High</u>
	9. Freight rate fluctuation (M)	18. Differentiated services (O)
	Rating	Rating
	Low Moderate <u>High</u>	Low Moderate <u>High</u>
	10. Container ship overcapacity (M)	19. Increased buyer selection (O)
	Rating	Rating
	Low Moderate <u>High</u>	Low Moderate <u>High</u>
	11. Increased cyber threat(s) (M)	20. Automated processes and services (O)
	Rating	Rating
	Low Moderate <u>High</u>	Low Moderate <u>High</u>
	12. Optimization capabilities (M)	
	Rating	
	Low Moderate <u>High</u>	
	13. New standards of interfaces (M)	
	Rating	
	Low Moderate <u>High</u>	

Table of streams

Label	Stream	Prediction
Diversification 1	1>9>18>16>15>19	In diversification, if No. 18 and 16 are in sequence, then effect 19 is likely to occur.
Diversification 2	1>9>18>16>19	
Diversification 3	1>9>18>15>19	
Diversification 4	1>9>18>14	
Global competition 1	2>6>20>16>15>19	In global competition, if No. 18 and 16 are in sequence, then effect 19 is likely to occur.
Global competition 2	2>6>20>15>19	
Global competition 3	2>6>20>14	In global competition, if No. 6 is positively influenced, then it will have a negative influence on No. 19 and No. 20 (see globally growing E-trade for continuation)
Global competition 4	2>5>10>9>18>16>15>19	
Global competition 5	2>5>10>9>18>16>19	
Global competition 6	2>5>10>9>18>15>19	
Global competition 7	2>5>10>9>18>14	
Global competition 8	2>9>18>16>15>19	
Global competition 9	2>9>18>16>19	
Global competition 10	2>9>18>15>19	
Global competition 11	2>9>18>14	
Global competition 12	2>7>17>18>16>15>19	
Global competition 13	2>7>17>18>16>19	
Global competition 14	2>7>17>18>15>19	
Global competition 15	2>7>17>18>14	

Strive for efficiency 1	3>12>10>9>18>16>15>19	In Strive for efficiency, if No. 18 and 16 are in sequence, then effect 19 is likely to occur.
Strive for efficiency 2	3>12>10>9>18>16>19	
Strive for efficiency 3	3>12>10>9>18>15>19	In Strive for efficiency, if No. 20 and 16 are in sequence, then effect 19 is likely to occur.
Strive for efficiency 4	3>12>10>9>18>14	
Strive for efficiency 5	3>8>11>6>19	In Strive for efficiency, if No. 17 and 16 are in sequence, then effect 19 is likely to occur.
Strive for efficiency 6	3>8>11>6>20>16>15>19	
Strive for efficiency 7	3>8>11>6>20>16>19	
Strive for efficiency 8t	3>8>11>6>20>15>19	
Strive for efficiency 9	3>8>11>6>20>14	
Strive for efficiency 10	3>8>20>16>15>19	
Strive for efficiency 11	3>8>20>16>19	
Strive for efficiency 12	3>8>20>15>19	
Strive for efficiency 13	3>8>20>14	
Strive for efficiency 14	3>8>17>18>16>15>19	
Strive for efficiency 15	3>8>17>18>16>19	
Strive for efficiency 16	3>8>17>18>15>19	
Strive for efficiency 17	3>8>17>18>14	
Strive for efficiency 18	3>8>17>16>15>19	
Strive for efficiency 19	3>8>17>16>19	

Strive for efficiency 20	3>8>16>15>19
Strive for efficiency 21	3>8>16>19
Strive for efficiency 22	3>8>10>9>18>16>15>19
Strive for efficiency 23	3>8>10>9>18>16>19
Strive for efficiency 24	3>8>10>9>18>15>19
Strive for efficiency 25	3>8>10>9>18>14
Strive for efficiency 26	3>8>13>11>6>19
Strive for efficiency 27	3>8>13>11>6>20>16>15>19
Strive for efficiency 28	3>8>13>11>6>20>16>19
Strive for efficiency 29	3>8>13>11>6>20>15>19
Strive for efficiency 30	3>8>13>11>6>20>14
Strive for efficiency 31	3>8>13>20>16>15>19
Strive for efficiency 32	3>8>13>20>16>19
Strive for efficiency 33	3>8>13>20>15>19
Strive for efficiency 34	3>8>13>20>14
Strive for efficiency 35	3>8>13>17>18>16>15>19
Strive for efficiency 36	3>8>13>17>18>16>19
Strive for efficiency 37	3>8>13>17>18>15>19
Strive for efficiency 38	3>8>13>17>18>14

Strive for efficiency 39 3>8>13>16>15>19

Strive for efficiency 40 3>8>13>16>19

Globally growing E-trading 1	4>9>18>16>15>19	In globally growing E-trading, if No. 18 and 16 are in sequence, then effect 19 is likely to occur.
Globally growing E-trading 2	4>9>18>16>19	
Globally growing E-trading 3	4>9>18>15>19	In globally growing E-trading, if No. 20 and 16 are in sequence, then effect 19 is likely to occur.
Globally growing E-trading 4	4>9>18>14	
Globally growing E-trading 5	4>10>9>18>16>15>19	In globally growing E-trading, if No. 17 and 16 are in sequence, then effect 19 is likely to occur.
Globally growing E-trading 6	4>10>9>18>16>19	
Globally growing E-trading 7	4>10>9>18>15>19	
Globally growing E-trading 8	4>10>9>18>14	In globally growing E-trade, if No. 13, No. 11 and No.6 are in sequence, then there will be a negative effect on No. 20 and No. 19 (see also Global competition for stream to be added to predictor)
Globally growing E-trading 9	4>13>11>6>19	
Globally growing E-trading 10	4>13>11>6>20>16>15>19	
Globally growing E-trading 11	4>13>11>6>20>16>19	
Globally growing E-trading 12	4>13>11>6>20>15>19	
Globally growing E-trading 13	4>13>11>6>20>14	
Globally growing E-trading 14	4>13>20>16>15>19	
Globally growing E-trading 15	4>13>20>16>19	
Globally growing E-trading 16	4>13>20>15>19	
Globally growing E-trading 17	4>13>20>14	

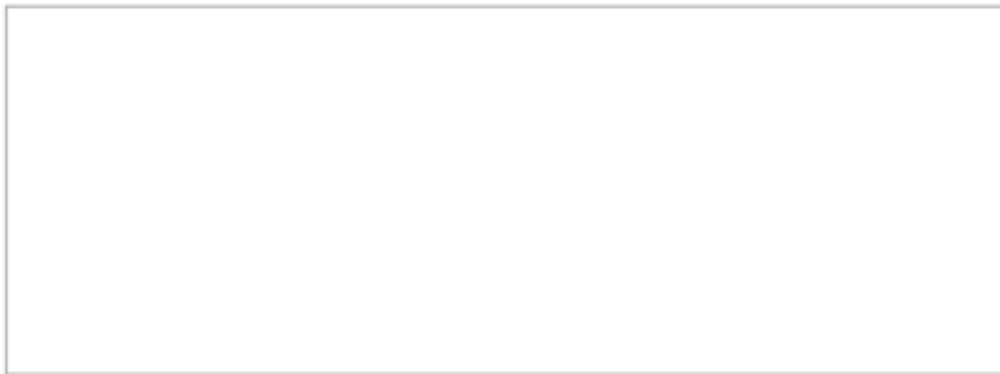
Globally growing E-trading 18	4>13>17>18>16>15>19
Globally growing E-trading 19	4>13>17>18>16>19
Globally growing E-trading 20	4>13>17>16>15>19
Globally growing E-trading 21	4>13>17>16>19
Globally growing E-trading 22	4>13>17>18>16>15>19
Globally growing E-trading 23	4>13>17>18>16>19
Globally growing E-trading 24	4>13>17>18>15>19
Globally growing E-trading 25	4>13>17>18>14
Globally growing E-trading 26	4>13>16>15>19
Globally growing E-trading 27	4>13>16>19

Appendix E Questionnaire

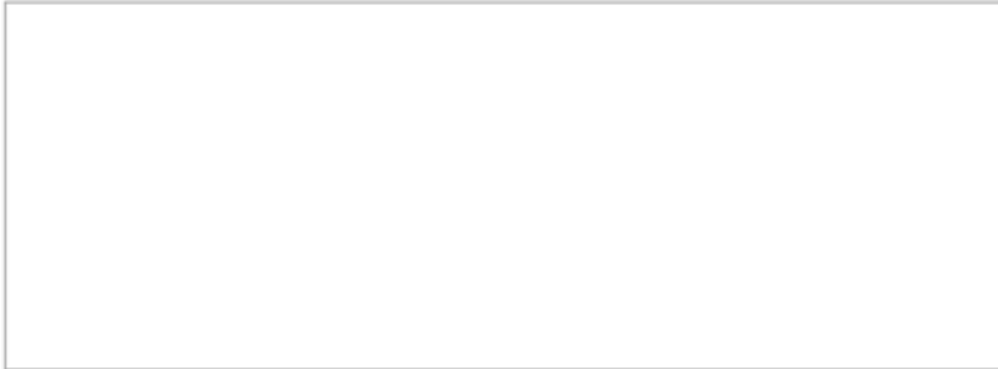
Developing as a Container liner in a digital era

Questions regarding thoughts and ideas around digitalization and increased service offerings

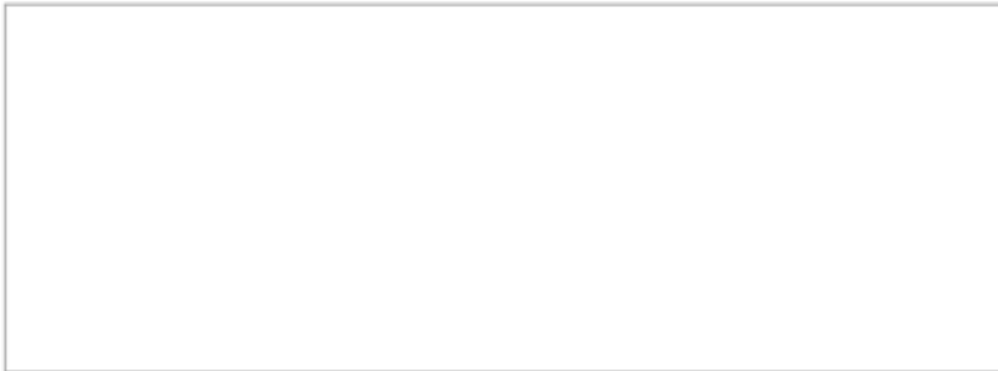
1. How can container shipping improve global transport?

A large, empty rectangular box with a thin black border, intended for the user to provide their answer to the question.

2. How do you feel that the organization can contribute to a greener environment both at sea and on land?

A large, empty rectangular box with a thin black border, intended for the user to provide their response to question 2.


3. What is the organizations experience with operations that is handled manually compared to areas that have been automated?

A large, empty rectangular box with a thin black border, intended for the user to provide their response to question 3.

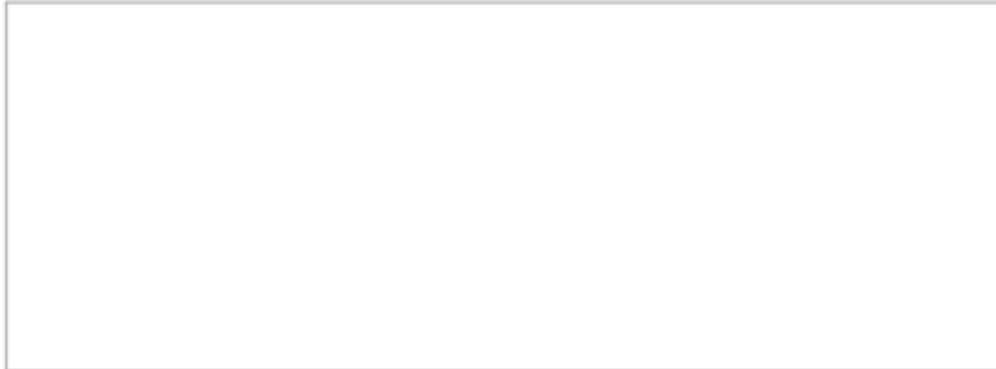
4. Do you feel that your organization delivers a good service and how can services on offer be expanded or, if needed, improved?



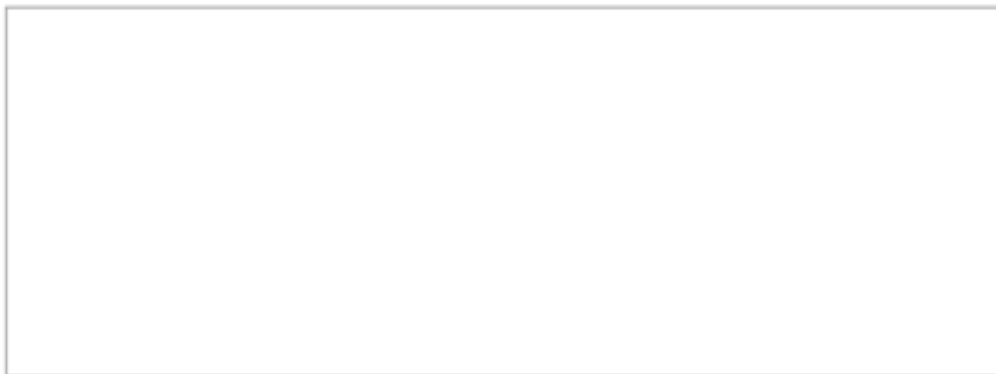
5. Do you feel that the organization has an innovating spirit, or do you feel forced by regulators and other factors?



6. When it comes to Process and Service improvement, do you benchmark other industries?



7. What areas of competence do you consider to be important in the coming years within Container Shipping Industry?



Det här innehållet har inte skapats och stöds inte av Microsoft. Data du skickar kommer att skickas till formulärets ägare.

 Microsoft Forms

<https://forms.office.com/Pages/DesignPage.aspx?origin=Office...ZzqpnrzxP7pGtsvg4KuPW6tUNVAxUVBYUFpTRIQ2VTISWE9RS0NDMJJE3Uy4u> Sida 4 av 4

Dear Sir/Madame

We are two MSc students from Chalmers University of Technology studying Operation and Quality management and are currently writing our MSc thesis.

Our thesis handles Container liners and how they are adapting to a digital era and what other services they might start to provide as all industries are undergoing changes.

In light of this, we are asking for a short moment of your time to answer a brief questionnaire with open questions regarding your view of the industry. Questionnaire is in Microsoft Forms format and if you wish to participate, a link is provided in this email and it can be accessed from computers, tablets and smartphones.

All participants will be kept anonymous.

Thanks in advance for your participation.

"Insert link"

Best Regards

Kastriot Gerxhaliu & Leif Kjellberg

Appendix F Data log

Type of data	For theoretical comparison (Yes/No)	Process code	Causation code	Date retrieved	Memo No. (linked)	Link website/document	Short description
Newspaper article	Yes	VI-EEAQ, VI-IETR, VI-COAA, DI-ETOF, SI-SS, CI-VCSG	VI-EEAQ+VI-IETR>DI-ETOF+SI-SS+VI-COAA+CI-VCSG	8-Sep-20		https://www.gp.se/ekonomi/volvo-cars-jattesatsning-koep-aterforsaljare-1.33778375	Volvo cars buys Uppland motors and wants to take control over the remaining 50% of bra Bil to increase their e-commerce platform. They are waiting approval from authorities.
Newspaper article	No	VI-EEAQ, SI-PSDC, CI-VCSG	VI-EEAQ>SI-PSDC+CI-VCSG	6-Jul-20	2	https://www.gp.se/ekonomi/transportjatten-koep-goteborgsforetag-for-miljarder-1.30950150	Mearsk buy custom service company located in Gothenburg, Sweden with offices around the world.
Pressrelease	No	VI-CG, CI-RGEB	VI-CG>CI-RGEB	10-Sep-20	2	https://www.portofgothenburg.com/news-room/press-releases/apm-terminals-takes-over-the-container-terminal-at-the-port-of-gothenburg/	APM terminals, owned by A.P.Möller-Maersk signs agreement for 25 years to take over the container terminal. Signed October 2011 and approved december 2011.
Pressrelease	No	VI-CG, SI-PS, CI-VCRF	VI-CG+SI-PS>CI-VCRF	10-Sep-20	2	https://www.portofgothenburg.com/news-room/news/apm-terminals-invest-a-further-26-million-euro-at-the-port-of-gothenburg/	APM terminals invest in a new agreement (pressrelease 10-mar-17) which ensure market share while running a investment program of 26 million euro focusing on enhanced customer service and productivity.

Website	No	CI-VCRF		10-Sep-20	2	https://www.portofgothenburg.com/about-the-port/the-port-is-growing/deeper-fairways-at-the-port-of-gothenburg/	SKANDIA GATEWAY – A DEEPER FAIRWAY OFFERS ACCESS TO THE WHOLE WORLD, shipping lane gets deeper so the largest container vessels can arrive fully loaded. Now adays they need to unload in Europe before entering the port of Gothenburg.
Newspaper article	No	CI-VCRF, CI-COAA		10-Sep-20	2	https://www.gp.se/nyheter/göteborg/fullmäktige-godkände-farledsfördjupning-1.33938858	Regional Swedish authority approved the deepening of the shipping lane. Awaiting approval from the national authorities.
-	-	VI-EEAQ, SI-PSDC, SI-PS, CI-VCSG, VI-CG, CI-RGEB, CI-VCRF	VI-CG+VI-EEAQ>CI-RGEB+CI-VCRF+SI-PS+SI-PSDC+CI-VCSG		2	-	-
Newspaper article	No	CI-RGCR, CI-RGPS, VI	CI-RGCR+CI-RGPS>(-)VI	17-Sep-20	4	https://search-proquest-com.proxy.lib.chalmers.se/docview/250109584/22182382D73F4798PQ/4?accountid=10041	Financial times 27-may-2008 mentions that Maersk is moving away from vertical integration to simplify business and make sure the business is competitive.

Newspaper article	No	CI-RG	CI-RG>(-)VI	17-Sep-20	4	https://search-proquest-com.proxy.lib.chalmers.se/docview/2421650375/F5F3B065D2CD43D6PQ/1?accountid=10041	Financial times june 2020, "...In an effort to secure greater economies of scale following the 2008-09 crash, companies continued to invest in ever larger ships. But when combined with tepid growth in world trade, it resulted in an excess of capacity. ..."
Newspaper article	No	VI-CG, CI-RGSR, CI-RGPS, CI-VCRF	VI-CG>CI-RGSR+CI-RGPS+CI-VCRF	17-Sep-20		https://search-proquest-com.proxy.lib.chalmers.se/docview/2359052605/12BA2E17B2ED4662PQ/7?accountid=10041	Financial times jan 2020 "... China's state shipping company, Cosco, and Shanghai International Port Group are among companies that have expressed interest in the 50-year contract to build and operate a second container terminal at Sines, which requires an investment of more than €640m. ..." evidence of vertical integration intentions

Newspaper article	No	CI-RGEB, CI-RGSR, CI-RGPS, VI-CG, VI-EEAQ	CI-RGEB+CI-RGSR+CI-RGPS>VI-CG+VI-EEAQ	17-Sep-20	5	https://search-proquest-com.proxy.lib.chalmers.se/docview/1928375561/12BA2E17B2ED4662PQ/56?accountid=10041	Financial times July 2017 "... <i>At a time when Chinese regulators are asking for a cooler, more rational approach to foreign acquisitions, the deal - which is being funded by a bridging loan from the Bank of China - underlines Beijing's desire to see Cosco become a dominant participant in shipping and port operations. ...</i> " supports goal for domination ad retaining customer by increasing exit barriers for the customer rather than aim for retention through customer happiness, at this time.
Newspaper article	No	VI-EEAQ, CI-RGPS	VI-EEAQ>CI-RGPS	17-Sep-20	5	https://search-proquest-com.proxy.lib.chalmers.se/docview/2243180557/D5B10651BAE84F48PQ/9?accountid=10041	Financial times May 2019 " <i>For example, Cosco, the Chinese state shipping operator that acquired a two-thirds stake in Piraeus port at Athens, plans to invest €300m in building a cruise-ship terminal and other amenities.</i> " expanding services on offer through other amenities. Which types are not mentioned in this article.

Newspaper article	No	VI	-	17-Sep-20	5	https://search-proquest-com.proxy.lib.chalmers.se/docview/2416749002/EE6E9E535ECF45A4PQ/67?accountid=10041	Financial times May 2020 <i>"...China's Belt and Road Initiative, a project of long-term infrastructure investment spanning the Eurasian continent, lies at the heart of China's global industrial strategy. ..."</i> implies that there can be several vertical integration initiatives followed by extended service offerings from Cosco in Europe.
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Newspaper article	No	VI-CGAL, VI-COAA, DI, SI-SS	DI>VI-CGAL+VI-COAA>SI-SS	17-Sep-20	10	https://search-proquest-com.proxy.lib.chalmers.se/docview/2157205536/C202EC35CA7A45B6/PQ/11?accountid=10041	Financial times Nov 2018 "... <i>Five of the world's largest container shipping groups are joining forces to create new IT standards for the industry that could allow them and ports to use digital technology such as blockchain to make global trade cheaper and safer.</i> " "... <i>work on standards that would be openly and freely available to all third parties such as customers, ports and customs authorities. "It's really important. What we are talking about is simply having standards for how we communicate with each other and with our customers. We will make hooking up our customers digitally much more cost effective if we ... "</i>
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Newspaper article	No	-	-	18-Sep-20	6	https://search-proquest-com.proxy.lib.chalmers.se/docview/1944740205/C202EC35CA7A45B BPQ/77?accountid=10041	<p>Financial times Aug 2017 <i>"Samsung Heavy and Daewoo near deal to build container ships for MSC"</i></p> <p><i>Two South Korean shipbuilders are poised to win a combined \$1.5bn order to build container ships for Mediterranean Shipping Company in the latest sign that the industry is recovering from a prolonged global slump.</i></p> <p><i>Samsung Heavy Industries and Daewoo Shipbuilding & Marine Engineering, two of the world's three biggest shipbuilders, are in the final stages of talks with the Switzerland-based shipping group to build 11 vessels, according to people close to the negotiations."</i></p>
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Newspaper article	No	-	-	22-Sep-20	7	https://search-proquest-com.proxy.lib.chalmers.se/docview/239049382/2/BC19E8BE4E144506PQ/5?accountid=10041	<p>Wall street journal Apr 2020 <i>"...Now even some liner companies seem to be questioning the rationale for the ships.</i></p> <p><i>Rodolphe Saadé, chief executive of France's CMA CGM SA, said in a video message Thursday that global trade will change after the pandemic recedes, with production spreading out to more countries, giving rise to more regional trade.</i></p> <p><i>"This crisis will impact world economic flows and necessitate that we all rethink our supply-chain models," said Mr. Saadé, whose company ordered nine 23,000-container ships in 2017. "Supply chains will need to adapt to sharp fluctuations between supply and demand." ..."</i></p>
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Newspaper article	No	DI-AUPS, CI-RGQE, CI-VCRF, CI-VCSP	DI-AUPS>CI-RGQE+CI-VCRF+CI-VCSP	22-Sep-20		https://search-proquest-com.proxy.lib.chalmers.se/docview/2158480187/BC19E8BE4E144506PQ/14?accountid=10041	<p>Wall street journal Dec 2018 <i>"To get everyone in place on a recent call at Antwerp, the captain transmitted the ship's data to the port from an app on his mobile phone and got live feedback for the docking process. A countdown then began to bring the ship in and move its containers. The live data are processed by what are called liner operations clusters in eight global ports.</i></p> <p><i>"At sea, we are looking to install flow meters and fuel sensors and integrate them with weather and sea current forecasts to save fuel," Mr. Toft said. "At port, we are automating gangways for port officials to come up faster."</i></p>
Newspaper article	No	-	-	22-Sep-20	8	https://search-proquest-com.proxy.lib.chalmers.se/docview/2413709787/BC19E8BE4E144506PQ/17?accountid=10041	<p>Wall Street Journal June 2020 <i>"The falling demand has pushed ocean shipping lines to sharply retrench their operations, a departure from previous downturns that have seen carriers fight for diminishing container volumes by offering lower prices, sending ships out with freight rates that barely covered operational costs."</i></p>

Newspaper article	No	-	-	22-Sep-20	8	https://search-proquest-com.proxy.lib.chalmers.se/docview/2438391043/BC19E8BE4E144506PQ/56?accountid=10041	Wall Street Journal Aug 2020 <i>"Now, 15 senior industry executives polled by The Wall Street Journal expect on average that the world's top dozen carriers will collectively make a profit of around \$11 billion this year. It's a complete reversal of expectations of at least \$5 billion in losses, when volumes collapsed in March and April from the virus-imposed shutdowns."</i>
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Newspaper article	No	Vi-EEAQ, CI-RG	VI-EEAQ>CI-RG	22-Sep-20		https://search-proquest-com.proxy.lib.chalmers.se/docview/1884963943/A14903AF2CD84A58PQ/47?accountid=10041	<p>Wall Street Journal Apr 2017 <i>"Chinese state-run shipping companies are investing billions of dollars in ports world-wide to ease the movement of Chinese goods, as the ocean-freight industry emerges from a slump and as Beijing becomes a vocal promoter of globalization.</i></p> <p><i>The moves are paying off financially for the likes of Cosco Group and China Merchant Holdings International Co., but the overriding objective, Chinese officials say, is to control one of the world's busiest trade loops. Ports on the route, running from Asia through the Suez Canal to Europe, would give priority to Chinese vessels.</i></p> <p><i>The so-called Maritime Silk Road, the brainchild of Chinese President Xi Jinping , is part of One Belt, One Road, a \$4 trillion undertaking to connect China and Europe by land and sea. With the Trump administration looking askance at global trade deals, Mr. Xi has become a champion of globalization."</i></p>
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Newspaper article	No	VI-EEAQ	VI-EEAQ>CI-RG+CI-VC	22-Sep-20	9	https://search-proquest-com.proxy.lib.chalmers.se/docview/2247788914/FD4D8CE7B1E549FBPQ/2?accountid=10041	Wall Street Journal 2019 <i>"France's CMA CGM SA, the world's fourth-largest container ship operator, this year bought Switzerland-based freight services provider Ceva Logistics AG for \$1.7 billion."</i>
Newspaper article	No	-	-	22-Sep-20	2	https://search-proquest-com.proxy.lib.chalmers.se/docview/2247788914/FD4D8CE7B1E549FBPQ/2?accountid=10041	Wall Street Journal 2019 <i>"Maersk already is a big player in port-to-port transportation for retail and lifestyle supply chains. Mr. Skou said he is looking for rapid growth in automotive logistics and chemicals, where Maersk would run the process from customs clearance to distribution center deliveries. The carrier won't be a last-mile supplier, so it isn't looking to invest in trucks. Instead, Mr. Skou said he is on the lookout for brokerage firms and supply chain management companies in the automotive industry."</i>

Newspaper article	No	VI-EEAQ, DI-AUCS, SI-PSDC, CI-VCSG	VI-EEAQ>DI-AUCS+SI-PSDC>CI-VCSG	22-Sep-20		https://search-proquest-com.proxy.lib.chalmers.se/docview/2247788914/FD4D8CE7B1E549FBPQ/2?accountid=10041	Wall Street Journal 2019 " <i>The company bought U.S. customs house brokerage Vandegrift Forwarding Co. earlier this year, and Mr. Skou said there may be more such acquisitions.</i> <i>The company also invested in a freight-booking startup, Loadsmart Inc., last year, and this month launched an online tool called Maersk Spot aimed at simplifying booking with the shipping line.</i> "
Newspaper article	No	VI-IETR, CI-RG, CI-VC	CI-RG+CI-VC>VI-IETR	22-Sep-20	9	https://search-proquest-com.proxy.lib.chalmers.se/docview/2441596883/7F1D783DE23E41EBPQ/4?accountid=10041	Wall Street Journal Sep 2020, CMA-CMG has Ceva for freight forwarding and Maersk Line absorbed Damco for freight forwarding

Magazine (industry)	Yes	DI-AUCS, CI-RGEB, CI-VCSG, SI-SSNG, SI-SSMG	DI-AUCS>SI- SSMG+SI- SSNG>CI- RGEB+CI-VCSG	22-Sep-20		https://www.dackdebatt.se/nyheter/e/442/digitalisering-ska-hjalpa-vianor-att-forandra-dackbranschen/	Däckdebatt Sep 2020 " <i>Vianor vill förändra arbetet inom däckbranschen genom att börja med ett nytt servicekoncept. Traditionellt är det kunden som kontaktar en bil- eller däckverkstad om det blir något fel på bilen. Vianors mål är att få det att fungera tvärtom. Med hjälp av digitalisering kan Vianor samla information om kundens däck och bil och sedan rekommendera kunden däck- och bilservice. Nya tekniska lösningar gör det möjligt att digitalt samla information om bilens däck och fordonet generellt i realtid vilket gör livet enklare för företag med stora fordonsflottor och för enskilda bilägare. Även trafiksäkerheten förbättras när eventuella fel kan upptäckas innan de orsakar skador.</i> "
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Newspaper article	Yes	DI-AUCS, SI-FS, CI-VCSG	DI-AUCS>SI-FS>CI-VCSG	22-Sep-20		https://web-retriever-info-com.proxy.lib.chalmers.se/services/archive/next Page	Cisionwire Sep 2020 <i>"St1 investerar i digitalisering och mobila tjänster. Pålitlig drift av pro.. HiQ väljs som nordisk partner för support av St1:s mobila tjänster och applikationer. St1 erbjuder sina kunder omfattande mobila tjänster vilket inkluderar betalning, mobil tankning, olika nationella lojalitetsprogram och korttjänster inklusive ApplePay."</i>
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Magazine (industry)	Yes	SI-SSEI, CI-VCSG	SI-SSEI>CI-VCSG	23-Sep-20		https://www.breakbulk.com/Articles/no-turning-back-now	<p>Breakbulk 11 Sep <i>"Customers can compensate for emissions from the transport of their cargo by financially contributing to selected projects that reduce emissions. South Pole cancels the same amount of carbon credits generated by these projects, which are audited and third-party certified."</i></p> <p><i>The carbon neutral program is open to all MSC's customers, including those who use the shipping line for project cargo solutions. "No matter whether clients have a requirement for heavy-lift cargo, or for oversized cargo, we make it simple for our customers to offset unavoidable carbon emissions for their cargo," Luotola said."</i></p>
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Magazine (industry)	Yes	DI-AUPS, CI-RG, CI- VC	CI-RG+CI-VC>DI- AUPS	23-Sep-20	10	https://www.forbes.com/sites/harrybroadman/2020/06/30/digitalization-is-upending-global-logistics-now-augmented-by-covids-social-distancing-imperative/#758c0cae313a	<i>In Forbes Jul 2020 "he diminished competitive edge of traditional versus automated logistics networks means the latter are slated to become a permanent fixture of the global economy. Logistics firms who fail to automate and digitalize system-wide or do so only partially, rather than throughout their entire network, will quickly become relics. "</i>
		DI-AUPS, CI-RG, CI- VC, VI- CGAL, VI- COAA, SI- SS	CI-RG+CI-VC>DI- AUPS>VI- CGAL+VI- COAA>SI-SS	23-Sep-20	10		

Magazine (industry)	Yes	DI-AUPS, DI-COCV	DI-AUPS>DI- COCV	23-Sep-20	11	http://www.bunkerportsnews.com/News.aspx?ElementID=95e119c2-c18c-456e-8008-84465135e148	<p>Sep-2020 <i>"To make this process more secure and efficient, a new process for the release of containers, referred to as "Certified Pick up" (CPu), comes into force on January 1st 2021. CPu is a neutral, central data platform which connects all stakeholders involved in the container import process.</i></p> <p><i>Digital key</i></p> <p><i>The CPu platform receives and processes container information to generate an encrypted digital key, with which the eventual carrier can pick up the container. This digital key is only created when the final carrier is known. The time between the creation of the digital key and the collection of the container is therefore minimal."</i></p>
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Magazine (industry)	No	DI-AUPS, DI-CO, CI-VCSG	DI-AUPS+DI-CO>CI-VCSG	23-Sep-20		https://www.interpressnews.ge/en/article/109335-apm-terminals-poti-continues-upgrade-of-equipment-fleet/	<p>Interpressnews Sep 2020 <i>"This brand-new Terminal tractors are computer equipped, and wirelessly connected to the Port's operating system, supporting real time tracing of container movements.</i></p> <p><i>This latest step of updating Poti Port with state-of-the-art equipment is another example of proactively preparing for the future challenges and aspirations, developing Georgia's largest port, and providing increased service levels to our clients."</i></p>
Magazine (industry)	Yes	DI-AUPS, CI-VCRF	DI-AUPS>CI-VCRF	24-Sep-20	12	https://web-retriever-info-com.proxy.lib.chalmers.se/services/archive/search	<p>Transport nytt Jul 2020 <i>"Konecranes har fått en order på 30 autotruckar för hantering av containrar från Long Beach Container Terminal.</i></p> <p><i>Long Beach Container Terminal (LBCT), som är en del av USA:s största containerhamn i Los Angeles - Long Beach, har lagt en tilläggsbeställning på hamnautomation."</i></p>

Newspaper article	No	VI-COLW, VI-EEAQ, VI(-)	VI-EEAQ>VI-COLW>VI(-)	24-Sep-20	12	https://search-proquest-com.proxy.lib.chalmers.se/docview/2219934339/5F53E33722114E22PQ/1?accountid=10041	<p>Wall Street Journal May 2019 <i>"LBCT is one of the best-performing cargo-port operations in North America. It more than doubled its container volumes from 2014 to 2018, when more than 1.6 million boxes passed through its gates.</i></p> <p><i>The prime property was available because of the rampant consolidation in the container shipping industry that left its owner, OOIL, in the hands of Cosco Shipping Holdings Co. The Chinese shipping behemoth bought the Hong Kong company last July for \$6.3 billion in its drive for a bigger share of the world-wide container shipping market.</i></p> <p><i>Cosco and OOIL had to shed the terminal, however, to allay U.S. national-security concerns about a Chinese state entity running a major U.S. gateway."</i></p>
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Magazine (industry)	No	DI-AUCS, DI-AUPS, SI-SSTG, SI-SSEI, CI-VCSG, CI-VCSP	DI-AUCS+DI- AUPS>SI- SSTG+SI-SSEI>CI- VCSG+CI-VCSP	24-Sep-20		https://www.infrastrukturnyheter.se/20200512/23208/viktigaste-branschfragorna-sveriges-hamnar-del-2	<p>Infrastrukturnyheter maj 2020 "APM Terminals Gothenburg</p> <p><i>APM Terminals Gothenburg är en viktig del av Sveriges godsförsörjning. För att ta ansvar för vårt klimatavtryck är ett första steg att bli fossilfria under 2020. Nylanserade klimatstrategin Green Gothenburg Gateway syftar till att göra containerhanteringen fossilfri samt bidra till Sveriges och våra kunders klimatmål. Vi vill ligga i framkant när det gäller digitalisering och automatisering. Kunderna kan se status på sitt gods via vår Track & Trace-funktion. Det kommer ske en förflyttning från lastbil till tåg och fartyg under de närmaste åren. Befintlig infrastruktur behöver planeras och nyttjas på ett mer flexibelt och effektivt sätt."</i></p>
Magazine (industry)	No	VI-EEAQ, CI-RGSR, CI-RGPS, CI-RGQE	VI-EEAQ>CI- RGSR+CI- RGPS+CI-RGQE	24-Sep-20		https://www.lloydsloadinglist.com/freight-directory/news/CMA-CGM-consortium-to-take-over-Greek-port/69203.htm#.X2xjii9yrLs	<p>lloyd's loading list Apr 2017 "The consortium of Deutsche Invest Equity Partners, Belterra Investments and CMA CGM's Terminal Link will acquire a 67% stake in the port of Thessaloniki for an initial €231.9m (\$252m), with the concession running until 2051."</p>

Magazine (industry)	No	VI-EEAQ, CI-VCSG	VI-EEAQ>CI- VCSG	24-Sep-20	13	https://splash247.com/cma-cgm-buys-into-french-airline/ <p><i>Splash 247 "Marseille-headquartered CMA CGM continues to diversify from its liner origins under the leadership of Rodolphe Saade.</i></p> <p><i>The company revealed yesterday it is buying a 30% stake in French airline company Groupe Dubreuil Aero. CMA CGM will acquire the EUR70m stake via a capital increase and acquisition of ordinary shares and will obtain two seats on the board of Dubreuil Aero.</i></p> <p><i>Dubreuil Aero owns the Air Caraibes and French Bee lines, which operate primarily between mainland France and overseas French territories.</i></p> <p><i>"The acquisition of this stake will enable the CMA CGM Group to strengthen its position in air freight," Saade said in a statement."</i></p> <p>Reports were also found in French newspapers (in French)</p>
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Newspaper article	No	-	-	24-Sep-20	14	https://web-retriever-info-com.proxy.lib.chalmers.se/services/archive/search	GP Aug 2020 <i>"Nu aviserar hamnen att man också får en ny containerlinje mellan Göteborg och Hamburg.</i> <i>- Det är väldigt roligt att CMA CGM fortsätter att satsa offensivt och vi är förstås extra glada över att man väljer att satsa på Göteborgs hamn, säger Claes Sundmark, försäljningschef på Göteborgs hamn AB."</i>
Magazine (industry)	No	VI-CGAL, CI-RGCR	VI-CGAL>CI-RGCR	24-Sep-20		https://container-news.com/ikea-to-enjoy-logistics-solution-thanks-to-maersk-and-ib-cargo-partnership/	Container news Sep 2020 <i>"A.P. Moller – Maersk and IB Cargo, a Romanian freight forwarding and logistics provider, have launched their partnership for the operation of a 75,000m2 regional distribution centre for IKEA Supply AG, located in CTPark Bucharest West industrial park."</i>

Magazine (industry)	No	DI-AUCS, CI-RGQE	DI-AUCS>CI- RGQE	24-Sep-20		https://www.logistics-manager.com/hapag-lloyd-unveils-new-customer-dashboard/	<p>Logistics manager Sep 2020 <i>"Hapag-Lloyd has unveiled its new "Customer Dashboard". The carrier's customers can now access performance information based on their business with Hapag-Lloyd.</i></p> <p><i>"Our customers now have a clear and consistent visualization of our performance. With the introduction of the Customer Dashboard, we can finally prove to our customers that we keep our promises and continue to deliver the best quality possible. Giving our customers this full visibility of our quality performance provides them with a direct added value and makes us unique in the container shipping industry," said Jesper Kanstrup, Senior Director Customer Quality at Hapag-Lloyd."</i></p>
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Magazine (industry)	No	DI-ETOF, DI-AUPS, CI-VCSP, CI-VCSG	DI-ETOF+DI- AUPS>CI- VCSP+CI-VSG	25-Sep-20		https://web-retriever-info-com.proxy.lib.chalmers.se/services/archive/next Page	<p>Forbes Mar 2009, <i>"INTTRA, the leading e-commerce platform for the ocean freight industry, has entered into long-term agreements with Maersk Line, MSC, CMA CGM,</i></p> <p><i>...Hapag-Lloyd and Hamburg Sud for e-commerce and professional services worth more than \$100 million over the next three years. This significant commitment from carriers represents an endorsement of INTTRA's new vision and provides the foundation for carriers to continue to receive cost savings and efficiencies from the INTTRA platform. The new contracts are part of a longer term strategy to expand INTTRA's e-commerce services and products for carriers and their shipping partners. This commitment from INTTRA's leading carriers in part will fund new product development, while underpinning INTTRA's unwavering focus on continuous business process innovation for ocean carriers."</i></p>
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		-	-	25-Sep-20	15, 4	https://web-retriever-info-com.proxy.lib.chalmers.se/services/archive/nextPage	
Magazine (industry)	No	DI-AUPS, CI-VSCG, CI-VCSP	DI-AUPS>CI-VSCG+CI-VCSP	25-Sep-20		https://web-retriever-info-com.proxy.lib.chalmers.se/services/archive/nextPage	Sjofart Mar 2017 <i>"Containerrederiet Maersk Line har indgået aftaler med blandt andet Alibaba og IBM, der skal hjælpe det digitale på vej, og satsningen på området vil fortsætte for fuld kraft, ..."</i>
Magazine (industry)	No	CI-VCSG, CI-RGCR	-	25-Sep-20		https://lloydslist.maritimeintelligence.informa.com/LL1121987/Carriers-and-forwarders-chart-a-course-through-troubled-waters	Lloyd's list Mar 2018, <i>"Carriers and forwarders chart a course through troubled waters As container shipping emerges from its recent round of consolidation, carriers, forwarders and shippers are seeking new ways of improving the industry. But in the rush to avoid commoditisation of box shipping, lines may start competing with some of their biggest customers in an effort to get closer to end users"</i>

Magazine (industry)	No	VI-EEAQ, CI-RG	VI-EEAQ>VI-RG	25-Sep-20		https://web-retriever-info-com.proxy.lib.chalmers.se/services/archive/previousPage	ShippingWatch Jan 2017, <i>"Container: Sydkoreas største shippinggruppe efter Hanjin Shippings frafald, Hyundai Merchant Marine (HMM), satser på at overtage terminaler i flere asiatiske vækstlande, siger rederiet topchef. "</i>
Newspaper article	Yes	DI-AUCS, SI-FSIN, SI-SSSG	DI-AUCS>SI-FSIN+SI-SSSG	27-Sep-20		https://web-retriever-info-com.proxy.lib.chalmers.se/services/archive/previousPage	Khaleej Times Feb 2015 "... initiatives launched by Dubai Trade — Tradeshield, the online cargo insurance platform, and Cargo Booking, a service that allow traders and freight forwarders to send cargo bookings to shipping agents. Al Saleh said: "Electronic services are an indispensable 21st century tool for driving growth in trade, which is the central pillar of our national economy. Such services play an integral role in providing enhanced facilities by significantly lowering costs, time and effort."

Magazine (industry)	Yes	DI-AUCS, DI-AUPS, CI-VCSG, CI-VCSP	DI-AUCS+DI-AUPS>CI-VCSG+CI-VCSP	27-Sep-20		https://www.computerweekly.com/news/252489126/Nokia-accelerates-Industry-40-with-Digital-Automation-Cloud-additions-digitises-5G-deployments	Computer weekly Sep 2020 <i>"In a major enhancement of its 5G assets and general offer, Nokia has announced new added-value features and digital automation enablers for its Digital Automation Cloud (DAC) private wireless networking platform and has digitised all its 5G network deployments around the world. ..."</i>
Magazine (industry)	Yes	DI-ET, DI-AUPS, VI-CG, VI-IE, VI-EE,	VI-CG+VI-IE+VI-EE>DI-ET+DI-AUPS>CI-RGQE	27-Sep-20		https://web-retriever-info-com.proxy.lib.chalmers.se/services/archive/nextPage	Forbes Aug 2020 <i>"• Vertical integration: If supply and demand, the two most critical pieces of a brand's business, aren't integrated to work in lockstep, brands can expect disconnected operations, lost opportunities and, worse, a poor customer experience. To help with this, brands can consider enlisting partners to manage e-commerce or wholesale supply processes. Brands should also execute a marketplace sales strategy, which a marketing agency can also help with."</i>

Magazine (industry)	Yes	DI-AUPS, CI-RG, VI	VI+DI-AUPS>CI-RG	27-Sep-20	16	https://web-retriever-info-com.proxy.lib.chalmers.se/services/archive/next Page	Forbes Aug 2020 <i>"Their earlier investments in e-commerce, their ability to quickly shift inventory and resources online, and their rapid scaling of options like "buy online, pick up in store" and curbside pickup have enabled them to compete with Amazon AMZN during the COVID-19 crunch."</i> <i>"Those companies making use of digitized sourcing have been better able to flex production and logistics across their supply network and are ahead of the game."</i>
Magazine (industry)	Yes	VI-EEAQ, VI-IE, DI-ETOF, DI-AUPS, CI-VC, CI-RG	DI-ETOF>VI-EEAQ+VI-IE+DI-AUPS>CI-VC+CI-RG	27-Sep-20	16	https://www.forbes.com/sites/enriquedans/2019/07/02/the-logistics-war-enters-a-newphase/#1b7e44b1228a	Forbes Jul 2019 <i>"Amazon is no longer hiding its plans to integrate vertically and become its own logistics company: ..."</i>

Magazine (industry)	Yes	DI-AUPS, CI-VCRF, CI-VCSP	DI-AUPS>CI- VCRF+CI-VCSP	29-Sep-20	16	https://www.dcvelocity.com/articles/47172-e-commerce-growth-sparks-demand-for-warehouse-automation	DC Velocity Sep 2020 <i>"Dutch online supermarket Picnic is a prime example of how this trend is playing out. A relatively new player in the European e-grocery market, Picnic has embarked on a project with global systems integrator TGW Logistics Group that it says will revolutionize operations at its Utrecht, Netherlands, fulfillment center, creating a highly automated, robotic facility that will speed delivery, help eliminate waste across its supply chain, and allow the company to more quickly expand its customer base across The Netherlands and Germany. Underway now, the project is scheduled for completion next year." "[Our] robot-assisted distribution center in Utrecht, in combination with our electric cars, is the foundation of our unique 'farm to fork' strategy ..., " explains Picnic co-founder Frederik Nieuwenhuys, emphasizing the company's technology-driven approach to delivering fresh products to consumers. ..."</i>
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Magazine (industry)	Yes	DI-AUPS, CI-VCSP	DI-AUPS>CI-VCSP	29-Sep-20		https://www.digin.com/opinion/how-coronavirus-changed-insurance-digital-transformation	Digital insurance Sep 2020 <i>"First is digitizing the workflow—so instead of having three underwriting professionals touching a physical file and walking it from desk to desk, the file is digitized; though the three professionals have to look at it, the process is no longer manual. The second, more sophisticated step is fully digitizing the process—so you don't need as many middle and back office underwriting professionals touching the file—that's all done automatically by leveraging data and using robotic process automation (RPA). The old school, non-digital, manual process is inaccurate and clunky. Leading carriers are moving away from email submissions that need to be entered into an underwriting system by a UA and then re-entered again into a booking system by the processing team. The ultimate goal in a full end-to-end digitization of an insurance company is to have as fast and seamless a data cycle as any leading technology company, like Amazon. Part of that evolution is automation through RPA."</i>
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Magazine (industry)	Yes	DI-ETOF, VI-EEAQ, VI-CG, CI- VCSP, CI- VCRF	DI-ET>VI- EEAQ+VI-CG>CI- VCSP+CI-VCRF	29-Sep-20	16		Forbes Jun 2019 "... Morgan Stanley's Ravi Shanker told CNBC that Amazon will pay about \$6 a box to move this themselves on their own air network, versus an estimated \$8 or \$9 per box paying UPS (NYSE: UPS) and FedEx. "Given Amazon's scale, that could be a couple of billion dollars at least in savings." FedEx wasn't ignorant to this fact, as Amazon has been broadcasting news of its growing transportation infrastructure, cobbling together agreements with airlines and shipping partners, pursuing drones, and even recruiting its own employees to deliver packages. ..."
Newspaper article	Yes	VI-EEAQ, DI-AUPS	VI-EEAQ>DI- AUPS	29-Sep-20	16		Business telegraph Sep 2020 "... Amazon has long invested in warehouse automation technologies, having acquired Kiva Systems back in 2012 to create a subsidiary now called Amazon Robotics."

Newspaper article	Yes	VI-EEAQ	-	29-Sep-20	16		International Business Times Sep 2019 <i>"Just beginning to flex its muscles in the logistics and transportation industry in the U.S., Amazon.com(NASDAQ:AMZN) is now making a big move up north by acquiring a minority stake in Canadian freight cargo carrier Cargojet (OTC:CGJTF)."</i>
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Newspaper article	Yes	VI-CG, CI-RG	VI-CG>CI-RG	29-Sep-20	16		<p>The Economic Times Aug 2019 <i>"Amazon has announced signing a lease with GMR Hyderabad Airport City to expand its India's largest fulfillment center at Hyderabad.</i></p> <p><i>In a statement, Amazon said the existing fulfillment center is spread across four lakh square feet and it has expanded it by adding 1.8 lakh sft.</i></p> <p><i>With this, Amazon has three fulfillment centers in Telangana with a total processing area of over 8.5 lakh sft.</i></p> <p><i>"In line with our vision to transform the way India buys and sells, we have been co .. “</i></p>
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Newspaper article	Yes	DI-ETOF, CI-RG, CI-VCSG	CI-RG+CI-VCSG>DI-ETOF	29-Sep-20	17		<p>USA TODAY Jul 2019 <i>"That led to bold offerings such as free two-day shipping, in-store pickup kiosks for online orders, and curbside grocery pickup. Those innovations, however, did not come cheap, and with recent reports that forecast Walmart's e-commerce division will lose \$1 billion this year on sales of between \$21 billion and \$22 billion, some within the company want changes. What's happening at Walmart?"</i></p> <p><i>Traditional retailers like Walmart do not generally choose a strategy of losing money steadily in order to make a profit at some vague point down the line. Competing with Amazon, however, means doing that."</i></p>
Website	No	CI-RG, VI-IE	CI-RG>VI-IE	1-okt-20	18	https://www.brecorder.com/news/40017459	<p>Pakistan has launched the State Bank of Pakistan (SBP)-sponsored policy of refinancing of the ships and all floating vessels for the indigenous investors/Pakistan residents to incentivize the private sector shipping through loans and certain subsidies and incentives in line with the amendments of Merchant Marine Policy.</p>

Website	No	VI-CGAL, VI-EE, SI-SS	VICGALEE>SI-SS	1-okt-20	19	https://kr-asia.com/jd-com-forms-joint-venture-with-global-logistics-giant-cosco	Joint Venture in China between large shipping company and logistics enterprise. The two companies' cooperation goes back to 2015 when JD.com opened an office in Hong Kong and partnered with COSCO Logistics to import international goods into China, with the latter providing JD.com with warehousing, customs clearance and shipping services from Hong Kong to Mainland China.
Website	No	VI-CGAL, VI-IETR, VI-COLW, VI-COAA, CI-VC		1-okt-20	20	https://theloadstar.com/shipper-anger-at-ec-extension-to-shipping-consortia-block-exemption-regulation/	Decision made by European Commission to renew the consortia block exemption regulation (CBER) for four years -> "Destructive competition" at ports and increased bargaining power, leading to "declining rates for port services, carriers requesting additional public infrastructure and vertical integration by carriers, in particular in terminal operations".

Website	No	VI-CGAL		1-okt-20	21	https://unctad.org/en/pages/newsdetails.aspx?OriginalVersionID=1810	Shipping companies have for many years increasingly merged or bought each other in a classic process of consolidation that is having profound effects on the efforts of developing countries to better engage with global trade.
Website	No	VI-IETR		1-okt-20	21	https://unctad.org/en/pages/newsdetails.aspx?OriginalVersionID=1810	Global trade benefits from low freight costs and improved shipping connectivity that result from economies of scale and technological advances, yet on the other hand the mergers among shipping lines and their investments in ever larger ships also pose serious challenges to smaller trading nations and their seaports.
Website	No	VI-COCV, VI-COAA		1-okt-20	21	https://unctad.org/en/pages/newsdetails.aspx?OriginalVersionID=1810	Policymakers ensure that the benefits of lower costs and improved connectivity will be passed on to the smaller shippers and ports, while also responding to concentrated markets so that players are discouraged from abusing dominant positions

Website	No	VI-COLW, VI-COCV, SI-SSTG, SI-SSMG		1-okt-20	21	https://unctad.org/en/pages/newsdetails.aspx?OriginalVersionID=1811	Other factors shaping shipping are: bigger seaports, domestic shipping markets, hinterland connections, trade and transit, monitoring and strengthening.
Website	No	VI-CGAL, VI-IETR, VI-EE		1-okt-20	22	https://www.hellenicshippingnews.com/market-consolidation-in-container-shipping-what-next/	Potential for more consolidation, which raises the question as to the implications for market concentration levels, and whether the industry is becoming an oligopoly on certain routes
Website	No	VI-CGAL, VI-EEAQ		1-okt-20	22	https://www.hellenicshippingnews.com/market-consolidation-in-container-shipping-what-next/	Advantages and disadvantages with consolidation.
Website	No	VI-CGAL, VI-EEAQ		1-okt-20	22	https://www.hellenicshippingnews.com/market-consolidation-in-container-shipping-what-next/	Factors that drive consolidation and new alliances.
Website	No	VI-COCV, SI-SSMG, SI-FSIN		1-okt-20	22	https://www.hellenicshippingnews.com/market-consolidation-in-container-shipping-what-next/	Authorities need to regularly monitor container market concentration levels and the potential for market power abuse by large container lines.

Newspaper article	No	VI-CG		9-okt-20	24	https://www.hellenicshippingnews.com/nyshe-x-carriers-push-for-more-binding-ocean-shipping-contracts/	NYSHEX is using funding to bring more retail shippers into its system and to expand into Europe. COVID-19 make contracting more attractive.
Magazine (industry)	No	DI.ET, DI-AU		9-okt-20	25	https://splash247.com/the-creation-of-the-integrated-digital-ship/	A survey of upcoming tech trends carried out for our new Shipping in 2030 magazine.
Newspaper article	No	SI-SSNG, SI-SSMG, SI-PSAC		9-okt-20	26	https://seanews.co.uk/features/applying-digital-twin-in-shipping-and-maritime/	Several benefits from digital twin are being described.
Newspaper article	Yes	SI-SS, SI-SSTG, SI-SSMG, DI-AUCS		9-okt-20	27	https://www.iotevolutionworld.com/smart-transport/articles/442702-how-industrial-iot-will-disrupt-shipping-industry.htm	Benefits and challenges with IoT in shipping industry.
Newspaper article	Yes	Si-SS, SI-PS, DI-AU		9-okt-20	28	https://www.hellenicshippingnews.com/ship-shape-for-the-future/	Servitization shaping the future for shipping industry.

Newspaper article	Yes	VI-CGAL, VI-EE, SI-SS, CI-RGCR, CI-VCRF, CI-VC	VI-CGALEE>SI-SS+CI-RGCR+CI-VCRF+CI-VC	9-okt-20	29	https://www.prnewswire.com/news-releases/foundation-of-blue-alliance-shipping-acc-and-swiss-shipping-line-announce-joint-venture-company-to-strengthen-us-based-ro-ro-service-300173481.html	Foundation of Blue Alliance Shipping; ACC and Swiss Shipping Line Announce Joint Venture Company to Strengthen US-Based RoRo Service
Newspaper article	No	VI-CGAL		9-okt-20	30	https://www.hellenicshippingnews.com/why-container-liner-profits-remain-elusive-despite-alliances/	Why container liner profits remain elusive despite alliances.
Pressrelease	No	VI-CGAL, DI-AUCS, DI-AUPS, SI-SS, CI-RG, CI-VC	DI-AUCS+DI-AUPS+VI-CGAL>SI-SS+CI-RG+CI-VC	28-Oct-20	33, 10	https://www.maersk.com/news/articles/2020/10/15/cma-msc-complete-tradelens-integration-to-improve-data-sharing-across-industry	Press release regarding Tradelens

Newspaper article	Yes	DI-OPT, CI-VCRF, CI-VCSG, SI-FS	DI-OPT+SI-FS>CI-VCRF+CI-VCSG	2-Nov-20		https://search-proquest-com.proxy.lib.chalmers.se/docview/2419238161/768448D874C246FFPQ/7?accountid=10041	<p>Financial times Jun 2020 "<i>The group, founded by former Uber executives Fraser Robinson and Dmitri Izmailov, combines supply chain finance with technology to find the most cost-effective shipping routes for cargo.</i></p> <p><i>The company hopes that offering the services together will help it to gain a foothold in two industries worth \$13tn annually.</i></p> <p><i>Manufacturers from carmakers to furniture groups use "freight forwarding" companies such as DHL to handle complex global logistics, from booking ships to arranging onward transport afterwards.</i></p> <p><i>The industry is heavily fragmented and many companies are behind in using live data to determine the best or most cost-effective routes.</i></p> <p><i>Beacon uses real-time data to track cargo, as well as a marketplace service that allows it to view shipping costs and prices, overlaid by an algorithm that projects the best routes to take."</i></p>
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Magazine (industry)	No	DI-AUPS, DI-AUCS, SI-FS, CI-VC	DI-AUPS+DI-AUCS+SI-FS>CI-VC	2-Nov-20	10, 33	https://search-proquest-com.proxy.lib.chalmers.se/docview/2312430999/62B37A2A7B4247E6PQ/52?accountid=10041	Journal of Commerce Nov-2019, One of the shipping lines did not follow through with trade lens. Instead, they joined with two banks and formed CargoSmart.
Newspaper article	Yes	VI-IETR	VI-IETR>SI-SS+SI-PSDD	4-Nov-20	34	https://theloadstar.com/sol-lines-takes-a-vertical-step-as-it-gains-control-of-scanlog/	Gothenburg-based carrier SOL Lines has taken a majority stake in Swedish freight forwarder Scanlog, in another example of vertical integration in the supply chain.
Newspaper article	Yes	VI-CG, VI-COLW	VI-CG>VI-COLW+SI-SSEI	4-Nov-20	35	https://theloadstar.com/sol-lines-takes-a-vertical-step-as-it-gains-control-of-scanlog/	SOL Lines formed the 50:50 joint-venture Wallenius SOL with Wallenius Line and reduces gas emissions by 60%.
Newspaper article	Yes	VI-CGAL	VI-CGAL>SI-PS+SI-SS	4-Nov-20	36	https://www.joc.com/international-logistics/logistics-providers/db-schenker/schenker-turns-startup-liner-schedule-data_20191210.html	Freight forwarding software startup Qwyk has reached a deal to provide ocean sailing schedules to DB Schenker to underpin the third-party logistics provider's (3PL's) digital booking tools.

Newspaper article	Yes	VI-CGAL	VI-CGAL>CI-VCSG+CI-VCSP	4-Nov-20	37	https://www.hellenicshippingnews.com/partnership-agreement-between-leading-hamburg-port-authority-and-tanger-med-port-authority/	Partnership regarding digitalization leads to process and service improvements.
Newspaper article	Yes	VI-CGAL	CI-VC+CI-VCSG+CI-VCSP+CI-VCRF	10-Nov-20	38	https://theloadstar.com/maersk-gets-on-board-with-cp-rail-to-move-inland-with-new-transload-facility/	Maersk builds a distribution facility to speed up cargo flows through Canadian port
Newspaper article	Yes	VI-CGAL	CI-VC+CI-VCSG+CI-VCSP+CI-VCRF	10-Nov-20	39	https://www.heavyliftprofi.com/business/maersk-sets-ambitious-logistics-goals/15898.article	Maersk intends to buy warehouses, container terminals and Customs brokerage firms to enhance its logistics services
Newspaper article	Yes	VI-CGAL	VI-AUPS+CI-VCSP	10-Nov-20	40	https://cointelegraph.com/news/global-shipping-leaders-join-ibm-and-maersk-blockchain-platform	Leading global container carriers have joined the TradeLens platform to digitize their supply chain.

Appendix G Search terms

Search engines and databases:

Chalmers library

Google scholar

ProQuest (through Chalmers library)

- General
- Financial times
- Wall street journal

Retriever (through Chalmers library)

- Both International and local

Search terms:

Vertical integration, Digitalization, Servitization, Competitiveness, Container liner, Terminal, Vertical integration container liner, Digitalization container liner, Maersk, MSC Container liner, Hapag-Lloyd, ACL, Atlantic container liner, COSCO, Emirates shipping line, Evergreen line, NYK line, CMA CGM, Container liner service, Container liner buys terminal, Port, buying terminal, E-service shipping, Vertical integration logistics, Digitalization logistics, Block chain, Block chain logistics, Amazon, Amazon logistics, Amazon vertical integration, Amazon buys warehouse, Digitalization shipping



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