



Sustainable



INDUSTRY STUDY MISSION REPORT

- 2022 -



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REPORT 1: COPENHAGEN BUSINESS SCHOOL (CBS)

Introduction

With a #7 ranking for master's in management and a #14 ranking for Business and Management Studies, CBS is considered the largest and most prestigious business school in Denmark, and always ranks in the top tiers in Europe. It was established in 1917, by the Danish Society for the Advancement of Business of business education and research. It started out with accounting as its first degree and went on to offer several degrees, in Business, Economics, International Trade, IT, Philosophy, Law, Politics and Sociology, and more. The degrees offered include 3-year bachelor's degrees, 2-year master's and 3-year Doctorates. With a large campus located in Frederiksberg, CBS houses about 15000 students and over 400 researchers. With EQUIS, AMBA and AACSB accreditations, CBS has acquired a triple crown status, which is shared by only another university in Denmark (Aarhus University) and by only 59 universities worldwide. CBS is also part of the 8 Danish and Swedish universities in the Oresund University network, as well as a member of CEMS (Global Alliance in Management Education) and PIM (Partnership in International Management). Some notable alumni from CBS include Soren Skou (CEO of A.P Moller-Maersk); Kasper Rorsted, CEO of Adidas; Jacob Schram, CEO of Norwegian Air, and many more such notable people.



Brief Summary of Visit

We spent the first 30-40 minutes touring the huge campus, from the lobby area to its corridors, to its library, which very much reminded us of our own KGC Law Library. Then we moved on to one of the classrooms, where Professor Henrik Sorn-Friese, Director of CBS-Maritime (Department of Strategy and Innovation), gave us a primer on key trends and developments in the shipping industry, explained the importance of innovation in certain areas in the industry and how CBS contributes to these innovations through its research and academic programs.



Then Professor Liping Jiang, the Director of the Bsc International Trade and Shipping program took us through the program's offerings and curriculum. The key skills focused on were developing analytics and digitalisation skill sets and better understanding of markets and regulations to make students competitive for jobs in the industry. She also told us about an interesting internship attachment, where students work part-time for a company while they study, which helps them gain practical knowledge in their subjects, to supplement the theory and understand what additional skills they would need.

Finally, Thomas Roslyng Olesen, Head of Maritime Research Alliance, a network of Maritime Researchers in Denmark, took over, to tell us more about what MRA does, its key role in bringing together researchers from several Danish universities and other key industry partners such as companies and legislators, to work towards solving key business problems in the industry. He explained the role of CBS in MRA, as well as how MRA fits into the big picture of the maritime industry's future strategy and upcoming innovations, as explained by Prof Henrik earlier.

Key Takeaways and Learnings

Being exposed to the CBS curriculum for International Trade and Shipping has made us think more deeply about how our own similar programmes compare. For example, CBS offers various degrees and programmes in this area, each of which are carefully tailored and all-rounded. Although SMU has similar internship programs such as the Work-Study-Elective (WSE) which encourages students to experience a full-time internship while completing their academic modules, we feel that there is a slight disconnect between the program at SMU and CBS. Firstly, the WSE is optional which means students might not have the opportunity to understand how the industry really works. Secondly, CBS places a larger emphasis on helping students connect with the industry with a tailored networking / career fair session which SMU lacks. Finally, there has to be a larger emphasis placed on tailoring the SMU curriculum to the changing needs of the industry. For instance, there are gaps in the SMU curriculum as it does not teach students about risk management which is a key concept in the shipping and commodities industry.



REPORT 2: OLDENDORFF CARRIERS

Introduction

Oldendorff Carriers was established in 1921 in Germany and has since grown into one of the world's largest dry bulk owners and operators. They are currently the largest user of index chartered vessels (operating between 150 and 180 vessels on such floating charter time charters (TC).

It focuses on dry bulk shipping and they carry about 380 million tons of bulk cargo and utilised cargo around the world each year. In total, they have performed 15,000 port calls in 125 countries and operate 750 chartered and own ships at any one time. They have prided themselves on the success of one-stop shipping services with guaranteed service and quality and responsiveness for bulk transportation.

They transport commodities such as ore, coal and agricultural products. With this, they sell themselves as a company which reduces bulk freight costs to and from restricted ports with a customized transshipment system.

They also provide services to ship steel products such as aluminum (i.e., in forms of bars and ingots) as well as other industrial metals.

In light of sustainability efforts around the world, Oldendorff Carriers has been pursuing this as well. Since 2013, they have ordered around 90 "Eco" newbuilding bulk carriers. This fleet features very low fuel consumption and significantly reduced carbon footprint. This environmentally friendly fleet now composes about 95% of it's ships.



Sustainability

They have launched an investment programme of about USD\$3 billion channeled into environmentally friendly vessels (i.e., Eco-ships) for transportation.

Decarbonisation

They have pledged to achieve zero emissions (i.e., reduce fuel consumption and fuel emissions by 2050).

Digitalisation

They have always been investing in Digitalisation solutions. It had an agreement with BMT SMART in 2017, currently owned by GreenSteam since 2019, provides automated analytics proactively highlighting areas of concern either technical or operational and in-depth analysis support under a managed fleet performance agreement. It recently invested in maritime digital solutions provider Alpha Ori Technologies (AOT) where many of AOT's solutions are increasingly adopted by the industry.



Brief Summary of Visit

We went to visit their office in Hamburg, Germany. The presentation included introduction to their company, operations and their decarbonisation & digitalisation initiatives. The information shared by the company allowed us to understand the current situation of Oldendorff Carriers in the micro and macro environment.

Key Takeaways and Learnings

Oldendorff reported an annualized 2022 cargo volume of 376.4 Million Tons (MT) with 66.7 of its cargo carried mainly Iron ores, other ores, coal and petcoke. Other than the usage of technology and renewable fuel sources, the company uses 56 floating platforms such as 4 transloaders, 2 transhipment platforms, floating cranes and many more to reduce the possible fuel consumption. This has allowed them to carry more cargo volume.

Their transhipment of cargo is a key aspect of its successful operations and implemented in countries like Turkey, Abu Dhabi, Saudi Arabia, Qatar and Trinidad. Transhipment Platform at Bay of Iskenderun in Turkey used as a transhipment of coal from Puerto Bolivar, Colombia to Richard Bay, South Africa which is used to overcome the 6 meter restriction at the jetty.

Transhipment operations in Guyana are no longer in service.

The Challenges faced by them are similar to what we researched prior to the visit. The company faces challenges from the European Union (EU) and International Maritime Organisation (IMO) with IMO Regulation such as IMO-Carbon Intensity Indicator (IMO-CII), IMO - Energy Efficiency Design Index (IMO-EEXI) and EU Fit for 55. The company will be implementing Annual Efficiency Ratio (AER) instead of Energy Efficiency Operational Indicator (EEOI) in the evaluation of the performance of their fleet with regard to CO2 emissions as the company sees AER as a better fit for their company.

The company has its own research team and innovation desk to provide unbiased data (Market/Commodities research) and research of new technologies in its operations respectively. This has allowed them to further streamline their operations and some solutions such as Mewis duct, Hull Coatings and flettner rotors have been implemented and is effective in cost saving. This shows it is possible to further save fuel with more efficient and effective solutions.

The visit to Oldendorff was very meaningful as we were able to understand the challenges and strengths that the company faced and was able to see and hear firsthand the initiatives and the thought process behind every decision made. The usage of more efficient technologies and willingness to use and research renewable fuel sources like biofuel, ammonia and methanol has allowed the company to kick-start their road to IMO 30/50. The maritime industry is always full of uncertainty and it is our responsibility to be proactive in such changes like decarbonisation and digitisation.

REPORT 3: DS NORDEN

Introduction

DS Norden is one of Denmark's oldest shipping company, which was founded in 1871. It has businesses in 3 areas, namely asset management & logistics, Freight trading and tanker pool service.

Norden is a global leader in the dry cargo and product tanker segments, with offices in 11 locations worldwide where they made decarbonisation a key focus area and continuously seeks to reduce emissions by improving the energy efficiency of its vessels.

Norden has also been at the forefront of testing alternative low-carbon fuel solutions such as biofuel. Norden's climate and environment goals are aligned with the United Nations International Maritime Organisation's (IMO) carbon reduction strategy, Paris agreement targets as outlined by the Sea Cargo Charter, as well as the climate ambition defined by the Danish government's climate partnership with the Danish maritime sector of achieving carbon neutrality in 2050. Norden provides great transparency with regards on the emissions of voyages and they have launched a 100% carbon-neutral biofuel sailing option for customers looking to decarbonise their supply chains.



Brief Summary of Visit

Mr Christian Vinther Christensen, Chief Operating Officer of DS Norden hosted us and provided very insightful information on the direction of the company.

During our research, we found that the Norden website focus heavily on the green initiatives that they have embarked on. Ironically,

Mr Christiansen deliberately left out the issue of sustainability during his presentation and focused on their business strategies. His rationale was that Norden, as one of the biggest market players in the industry, inherently had a role and responsibility in driving towards sustainability and it should be a given that they are doing their part.





IN THIS PICTURE, THE COO OF NORDEN, CHRISTIAN VINTHER CHRISTENSEN, AND FORMER SMU STUDENT MICHELLE LEE SHARE THEIR PERSONAL OPINIONS AND THOUGHTS ABOUT THE SHIPPING INDUSTRY TO THE GROUP.

We were appreciative of Mr Christian sharing with us information regarding the business and its competitors.

Key Takeaways and Learnings

- Soft-skills more important than hard-skills
 - People-orientated
 - Adaptability

Norden has been a traditional shipping company all along, but they have pivoted, or expanded, towards trading as well. The reasoning for this was that they are able to control more assets with less leverage. This allows Norden to be able to easily let go or acquire more vessels with less commitments and the opportunity to seize good opportunities in the tankers/dry bunk market.

Throughout his sharing, Mr Christiansen continually highlighted the importance of soft skills and values. Soft skills are essential in improving the team's ability to work alongside each other and it is an essential tool that will help improve the team's career.

When asked about their strategy in view of the Russia-Ukraine conflict and its consequent disruption to the industry, he specifically mentioned that Norden's strategy was driven by values and there was no doubt as to whether Norden should compromise on their values for the sake of profit. Furthermore, this would solidify their reputation as a leading ethical market player and set an example for others, ultimately benefiting the company in the long run.

REPORT 4: MAERSK

Introduction

Maersk is a Danish shipping company active in ocean and inland freight transportation and associated services, such as supply chain management and port operations. The largest operating unit in A.P. Møller – Mærsk A/S is Maersk Line, who is the second largest container fleet in the world as of November 2022 with a market share of 16.3%. Its strategic vision is to become the global logistics integrator, offering truly integrated logistics solutions that connect, protect, and simplify customers' supply chains.

Maersk Oil Trading is the world's largest commercial buyer of marine fuel, focusing on innovation and setting new industry standards. The company's line of business includes the wholesale distribution of petroleum and petroleum products. Maersk Oil Trading consists of 90 employees located in a handful of offices around the world - from New York and Singapore to Rotterdam and Copenhagen. They are a mixture of talented and passionate academics, traders, and industry experts dedicated to delivering superior business results while improving their environmental footprint. They purchased between 10 - 12 million MT of fuel per year over the last couple of years. They are responsible for sourcing marine fuel for the entire fleet of the A.P. Møller – Maersk Group. They work throughout the marine fuel supply chain and handle storage, blending and transportation in select locations. They also do derivatives trading and the hedging of the price risk for the group's combined oil activities.



The Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping is a not-for-profit, independent, research and development centre embarking on an ambitious journey driven by real action to steer the shipping sector on the course to zero carbon emissions. With partners from leading organisations across the world, they are mobilising the best minds from science, engineering and business into one powerful alliance, committed to accelerating the development and implementation of new energy systems and technologies.

Brief Summary of Visit

We visited Maersk's office in Copenhagen and attended a sharing session by Maersk Line and Maersk Oil Trading, where the speakers talked about what they do and placed an emphasis on alternative fuels and carbon emission regulations. After a lunch break, we attended another sharing session by Maersk Mc-Kinney Moller Center for Zero Carbon Shipping, where we learned about the Green Corridor and other sustainable initiatives.

Key Takeaways and Learnings

Sydney's first take away is that everyone has a part to play in making the shipping industry more sustainable. Example, while Maersk's ECO delivery contract offerings provide a holistic approach towards decarbonization, for it to be put into use, and therefore make the shipping industry greener, the customers must be willing to pay for that option.

Her second take away is that while becoming sustainable and going green will cost companies in the short run, there perhaps may be huge scope for gains if they are successfully able to lead this "green revolution". Example, since customers are increasingly more conscious about going green, they may choose a shipping company at the frontier of this "green revolution".

This may also one of the differentiating factors between the companies.

Natasha feels that Maersk is a key player in the industry. They exercise its influence through offering sustainability solutions to its customers. Its ECO Delivery contract offerings provide a holistic approach towards decarbonisation. From sourcing to operations and regulatory compliance, Maersk can leverage its capabilities to help its customers effectively reduce emissions in their own supply-chain related activities. By consolidating sustainability efforts, Maersk plays a critical role in the acceleration of meeting carbon reduction targets in the maritime industry.

Min Hye felt that the visit to Maersk was filled many opportunities ties to learn and talk to professionals in their respective fields. I like how the company is working hard create a sustainable and net zero future by 2050. Apart from their in-house efforts, it was interesting to see how Maersk has sponsored a research centre that is able to lobby for a future that is clean.

Ethan learned that Maersk is currently investing in more eco-friendly carriers for the future, improving their economies of scale.

James gathered that the Fit for 55 Package (which includes the EU ETS), CII (carbon intensity indicator), and EEXI (Energy Efficiency Existing Ship Index) regulations are major developments in the maritime industry. Though the Fit for 55 Package is only applicable to ships with trading activity in EU waters, the CII and EEXI regulations will be enforced worldwide starting 2023. We will definitely witness the industry undergo a revolutionary change moving forward.

REPORT 5: HAPAG-LLOYD AG

Introduction

Hapag-Lloyd AG is an international shipping and container transportation company. Based in Germany, the company was formed in 1970 through a merger of the Hamburg-American Line (HAPAG) and North German Lloyd. Hapag-Lloyd has experienced successful and significant growth since then, expanding its operations to Asia, Middle East, Europe, Africa, Latin America and North America. It now serves over 20,000 customers worldwide, with a fleet of 252 ships transporting over 11.9 million TEU of cargo annually. The company has 14,500 employees in over 400 offices in 137 different countries and is currently the largest member of the Transport High Efficiency Vessel Slot Sharing Alliance.

They transport machinery, metals, textiles, automobiles, furniture, chemicals, paper and forest products, food and beverage, plastics and rubber, electronics and various other goods. It transports these products through reefer cargo, dry cargo, dangerous goods and special cargo. The company also provides various other services including bilateral electronic data interchange (EDI), online business, e-Mail, mobile, verified gross mass (VGM), security information and US flag. Its online business services include schedules, bookings, shipping instructions, documentation draft cycle, container tracing and invoice processing.



Brief Summary of Visit

The students attended a presentation on Hapag-Lloyd's business model and challenges faced by the company in recent years. The presentation also covered Hapag-Lloyd's Digitalisation and Sustainability efforts to deal with the increasingly competitive business environment as well as the achieving their sustainability goals with respect to EU regulations. The students had the opportunity to understand Hapag-Lloyd's business ideas and strategies in a insightful and in depth manner.

Key Takeaways and Learnings

Hapag-Lloyd is a global shipping company that has developed a number of digital capabilities to support its operations and improve the customer experience. They developed digital platforms allowing customers to access shipping and logistics services online. Others include Mobile apps for iOS and Android devices, which allow customers to access shipping and logistics services on the go, and data analytics to improve the efficiency and effectiveness of its operations.

Hapag-Lloyd has set several environmental targets to reduce its environmental impact and operate in a more sustainable way. They target to reduce its carbon emissions by 30% by 2030, compared to a 2018 baseline. They have implemented EMS on its ships, which are designed to monitor and control the environmental impact of ship operations. These systems include procedures and protocols for reducing emissions and other environmental impacts, as well as monitoring systems that track the performance of the EMS.

Sustainable procurement: Hapag-Lloyd has implemented a sustainable procurement policy, which requires the company to consider the environmental impact of the goods and services it purchases.

Waste reduction: Hapag-Lloyd has set a target to reduce its waste generation by 15% by 2025, compared to a 2015 baseline. The company is working to achieve this target through initiatives such as implementing waste management systems on its ships and encouraging the use of reusable containers and packaging.

Fuel-efficient engines: Hapag-Lloyd has invested in fuel-efficient engines for its ships, which help to reduce fuel consumption and carbon emissions.

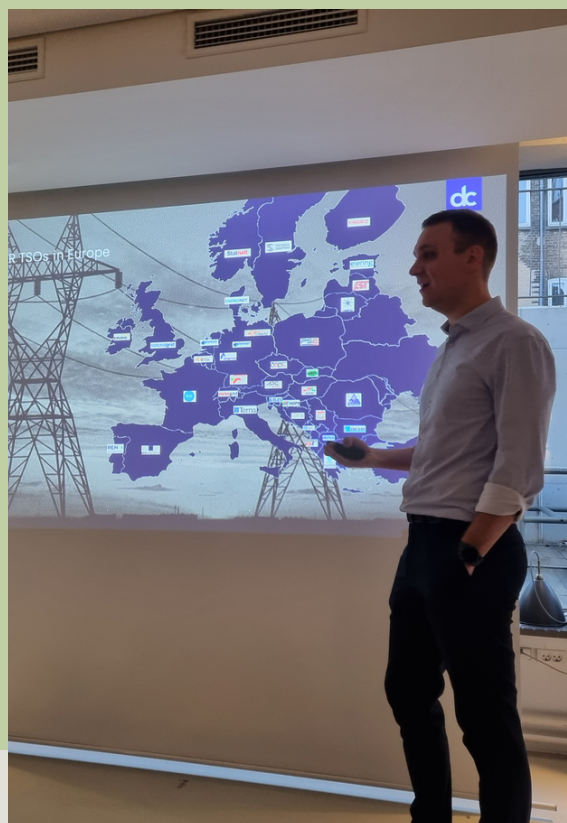
Overall, Hapag-Lloyd's environmental targets help the company to reduce its environmental impact and operate in a more sustainable way.



REPORT 6: DANSKE COMMODITIES (DC)

Introduction

Danske Commodities (DC) is a tech driven leading energy trading company. The firm was founded in 2004 by a Danish Banker and was acquired by a major energy company known as Equinor in 2019. The company is an international trader of energy-related commodities such as electric power, gas and climate market products with activities in 40 countries. DC seeks to connect producers as well as large scale consumers to wholesale markets with the ultimate goal improving the efficiency of the various commodities markets that the firm partakes in. Over the years, DC has garnered extensive experience in the market. Today, they execute approximately 15,000 trades per day with a lean team of 375 dedicated staff. In 2021, DC traded 366 TWh of power. DC dominates the power trading market where it specialises in short-term and forward power trading. Through extensive use of technology in their trading, DC has the capacity to process and analyse vast amounts of data on a daily basis with the intention of optimising their strategies and relocating energy from regions that have excess capacity to regions that have a need for additional energy. In order to improve DC's capacity to meet energy demands, DC recently signed a power purchase agreement with Cory Group, one of the largest energy-to-waste facilities in the UK.



For gas trading, DC expertly moves along the curve and optimisation flows close to delivery. Through a portfolio of gas storages, DC provides the flexibility needed to meet energy demand and intermittency of renewable power generation in real time. The size will matter to succeed in evolving gas markets. DC's market presence and expertise in asset-backed trading complement their parent company Equinor's position as the second-largest natural gas supplier to Europe. With Equinor in their corner, they have the vision and financial strength to break down doors and unlock the potential of energy.





Brief Summary of Visit

The visit to their Headquarters at Aarhus, Denmark was a very insightful and memorable experience. After a long and arduous journey to their HQ, we were greeted by their staff who gave us a tour of their facilities and the trading floor, which are typically not open to the public. We were shown an impressive view: dozens of display monitors per trader that showed how DC executes its trades and to track any changes in market prices. One of the interesting takeaways was the DC traders explaining how different variables affect price fluctuations and how DC uses algorithms and weather forecasting to anticipate price fluctuations. Additionally, we learnt that DC takes advantage of its superior technology to leverage its trading positions in real-time. Since trades are performed 24/7, they have split shifts and they further provided us with an astonishing fact that the electrical power currently used in their office was being traded up to 5 minutes ago.

After the tour of the trading house, we continued into a room where two DC traders presented insights into their company and how they execute intraday trading. After the presentation, we were able to ask various questions about intraday trading and company information, to which were answered with rich insight and earnest.

Key Takeaways and Learnings

We left the DC HQ with a great understanding of the power trading industry and what DC does. The explanation about intraday trading gave us incredible insight into how DC executes its trade.

We learnt that the difference between the traded amount and actual production is imbalance volume which then DC can buy and sell through short and long positions respectively. These trades will ensure DC will make profits even when the market is in surplus or shortage of power. We also learnt how DC is committed to their sustainability initiatives and joined Global Compact Denmark, pledging to be an active participant in pushing the world towards a more sustainable future. DC is also committed to adopting all UN sustainable development goals and aims to reduce its carbon footprint by 70% before 2030.

Lastly, we learnt that DC is forward thinking and looks into improving its algorithms to maximize the efficiency of their trades. Additionally, they believe that being completely gas neutral from Russia and developing other forms of technologies will revolutionize the power industry. This forward perspective also gave us an insight into the prediction of the rise in sustainable energy markets and future technologies.



International Trading Institute

The International Trading Institute at Singapore Management University (ITI@SMU) was formed as part of a tripartite initiative between the government, industry partners and the Singapore Management University. The first trading institute in the world to be set up within a university, it is Singapore's premier platform for leadership and talent development in the arena of international trading and maritime.

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