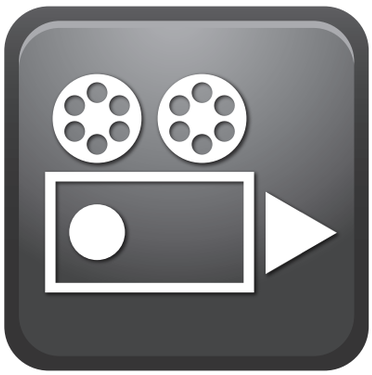
CHAPTER 9 **ACHIEVING OPERATIONAL EXCELLENCE AND CUSTOMER INTIMACY: ENTERPRISE SYSTEMS**

CASE 1 Maersk Develops a Global Shipping Management System



SUMMARY: Maersk, the world's largest container shipping company, turns to the Internet of Things (IoT) and business analytics to develop a global enterprise system.

Maersk Line: Using the Internet of Things, Data, and Analytics to Change Their Culture and Strength

URL https://www.youtube.com/watch?v=KEC5DQqCykI L= 4:11

CASE A.P. Moller-Maersk is a Danish shipping, logistics, and energy which operates the largest container fleet in the world with over 600 ships, moving 13 million containers a year, with 340 port facilities in 36 countries, and offices in 130 countries. Standard steel shipping containers revolutionized world shipping in the latter half of the 20th Century because they could be used to bundle cargo into unitized loads in a single steel box that could be easily moved, stored, and re-used. Also called "inter-modal containers", they can be moved from ship to rail and trucks without re-loading or breaking up the contents by hand, greatly adding to the efficiency of world trade. The standard container is 8.5 feet high, and 20 or 40 feet long. Containers are more than just steel boxes. With the growth in global shipments of food and produce, specialized reefer containers refrigerate their contents to levels of temperature and humidity needed to preserve food. Maersk ships 25% of the refrigerated containers in the world.

Maersk refers to itself as the world's largest shipping company. Founded in 1904 by steamship captain Peter Maersk Moller, in 2018 it accounts for about 15% of the

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world's $80 trillion global domestic product, which amounts to an estimated $12 trillion in goods. Today it operates as two separate divisions: transport and logistics, and energy logistics. In 2017 it exited the oil exploration business, but retained its energy logistics business. In 2017 it generated $31 billion in revenue, up 7% from the previous year, and cut its 2016 losses of nearly $2 billion down to $1.1 billion, a 40% improvement. Maersk has 88,000 employees worldwide.

While most industries and firms have undergone extensive changes and disruptions in the last 25 years as digital technology and the Internet have developed, this has not been true of the global shipping industry. The underlying business processes involved in shipping today are still largely manual paper-based transactions although individual companies have made extensive digital investments in ship systems, navigation, communications, and container tracking. The culture of global shipping firms has focused primarily on the process of shipping, and not on the processes needed to manage millions of containers, or provide digital services to their customers. The lack of industry- wide and government-wide standards has been a major impediment to improving performance using digital systems. In part this is because of the complexity of shipping goods among 130 countries, each of which has different kinds of documents like bills of lading, different export-import documents and procedures, and different legal and financial systems. Firms that use international shipping also have their own unique shipping systems developed by a variety of enterprise software companies. There are no industry or inter-governmental standards that address the business processes for managing global container shipping.

Standardization typically comes about in industries when either one or a few companies dominate the industry, and establish standards (as in the telephone industry), or through some government intervention that forces standards on industries (as in the automobiles and pharmaceutical industries). The Internet is an exception to this rule: the Internet grew out of university and private efforts at first, and then was developed by both non-government engineering groups, and government agencies within the United States. None of these conditions apply to global shipping firms where no one firm dominates the industry, and international standards have not been imposed by international organizations such as the United Nations. This is a problem for an industry with over 200 million shipping containers, six million of them onboard vessels, and making 200 million trips a year! For each container shipped, there may be up to 30 different parties involved such as government agencies, the shippers and the receivers of goods, port authorities, and tax authorities, communicating up to 200 times for each container being shipped. The result is costly and inefficient industry-wide business practices, with significant opportunities for improvement.

Maersk is one global shipping firm that has built an enterprise-wide digital shipping management system that can reduce fuel consumption of its fleet by optimizing voyage routing, optimize utilization of its containers, enhance the tracking of containers on its ships, as well as manage the empty containers waiting to be deployed. One

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foundation of this effort involves the Internet of Things (IoT): using sensors on every container to continuously monitor its location, and movement, along with the temperature and humidity of its contents for reefers. A second foundation of Maersk's system is using business analytics to achieve optimal fuel and voyage management. Longer term, Maersk is planning to commercialize this capability by enabling shipping customers to access the system to track their cargos directly, and to reserve containers for their use based on their own production and shipping plans. The goal, in the end, is to make global shipping as convenient as domestic UPS or FedEx shipping. Changing the culture at Maersk involves in part becoming a digital services company with a customer-friendly system, while maintaining its fleet of ships and containers.

VIDEO CASE QUESTIONS

1. Why is Maersk's business model "complex"?
2. What role do IoT sensors play in Maersk's systems?
3. Why is tracking empty containers so important to efficient operations?
4. What is the "data driven culture" that Maersk is trying to strengthen?
5. Why does Maersk want to give their customers access to their system?

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