Summary Report: Lessons Learned

The very first thought when I took this subject on supply networks was that we would be dealing with a lot of new foreign terminologies and that it would be a whole lot of theory-based. This idea that I had was completely changed in the very first class that I attended, as everything was contrary to my beliefs. Weekly practical learning from the lessons and regular discussions with the class, interesting case studies with a whole new meaning to case studies with extensive interesting terminologies and questionnaires, presentations, abstracts, etc. The case studies of industry giants like Hewlett-Packard and Toyota have offered practical examples of how theoretical concepts are played out in the real world. I have to wholeheartedly say that this course has shaped my skills, enhanced my passion for logistics and lean management, and helped me look into a whole new approach to things, whether it is problem-solving or anything else. This entire journey has been an enlightening experience.

Lessons learnt from the lecture:

The very **first chapter** dealt with the basics of supply chain management. A proper understanding of the fundamental concepts of supply chain management was introduced in the lecture. An insight into the development of supply chain management from the 1960s to the present was gained. Concepts like the significance of supply chain management, inventory management, decision-making, and the challenges involved in running an effective supply chain management program piqued my interest. Globalization and its effects, as well as the organizational changes the companies had to make to keep up with the international market and its effects, were also covered in this lecture. The topic of the basic model of a logistic network showed the complexity associated with running a cost-effective and successful logistics team involving so many parameters and elements. An understanding of the standard supply network in Europe and America was developed, which focused on customer value and service quality.

The **Second Chapter** Forecasting and inventory management dealt with forecasting methods to cope with a sudden rise in demand for a particular product at a particular time and season. It deals with the different forecasting techniques, the parameters associated with them, and their accuracy. It shows the types of markets where forecasting is necessary, like seasonal products or high-fashion industries. There is also a focus on the errors in forecasting and methods to look for improvement using the latest technological advancements to improve sales and meet the required demand. At present, companies like Uber and Rapido use real-time data to redirect drivers to a high-demand area so that there is no shortage of supply of drivers. There was also a focus on inventory types, inventory management, and just-in-time inventory reduction to reduce unnecessary inventory costs.

The **third chapter** Sustainability and the Circular Economy I had a deep understanding of the concept of sustainability, the three dimensions of sustainability, and traditional and sustainable supply chain management. There may be arguments regarding the pricing concept of sustainability, as they are a bit on the higher side, and brands have to put in additional efforts to inculcate them in their organizational structure. Few brands, like HM, are introducing sustainable products, and many brands are introducing recyclable straws. We also studied the 6R concept. Circular economy is a concept where manufacturers design products to be reusable. Products and raw materials are also reused as much as possible. The three pillars of the circular economy were interesting. The challenges in moving towards sustainability and sustainability thinking in supply networks. We had a very healthy discussion in class regarding Walmart's sustainability strategy, where we learned new concepts and the process of the food supply chain.

The **Fourth Chapter on** Digital Supply Chain dealt with the implementation of digital methods in the supply chain, whose foundation is built on web-enabled capabilities. Companies with digital supply chains are better able to move resources, assets, people, and inventory to where they are needed at any given time in order to reduce costs by responding proactively to transportation and manufacturing risks. The additive manufacturing process will benefit the supply chain as it will be 50% cheaper and will help eliminate rigid and inflexible working environments. All areas of the supply chain will benefit from digital technologies. A well-known example of this is the Shein clothing brand, which, with the help of digitalization, collected data based on high demand and moving fabrics and accurate forecasting methods and released 1000s of new garments every day.

The **Fifth Chapter,** Supply Network and Logistics Service Provider, highlighted the importance of logistics service providers in process chains and third-party logistics providers. I also learned about the development of logistics service providers and the services they provide in the supply chain market. Third-party logistics providers vary for different industries. I also learned about 1PL, 2PL, 3PL, and 4PL and the differences between them in terms of value-added services. I got an idea about the development of the structure of the logistics service providers.

Lessons Learnt from Literature Analysis:

The first task of the literature review we got was a case study on inventory-driven costs. The case study helped me analyze and understand Hewlett-Packard inventory management and how they were able to sustain themselves in the ever-changing electronics market. Analyze how they were able to convert their losses into profits by implementing inventory-driven cost metrics in their supply chain levels within the organization and emerge as top players in the PC unit market.

During the initial approach, while studying the case study, it was found out that HP PC units were facing difficulty even though the demands were increasing in the 1990s. In order to cope with the increasing demands of the customers, they revamped their production process, design process, and planning process. Although all these changes were made, reducing PC pricing and streamlining its production methods, HP's supply networks faced sustainability challenges due to narrow profit margins, quick technological advancements, and poor accounting measures.

HP had to give all managers access to information about the total financial impact of their choices to guarantee a sustainable supply chain. A mismatch between demand and supply leading to excess inventory costs was found to be the major source of costs in the PC business by HP's Spam group after inspection. It was found out that there was a lot of mismatches between pieces of products that were wrongly scattered all over. This part of the paper had me understand the need for proper and organized metrics while meeting supply for a product when there is demand.

The main cause of HP's inventory costs was component devaluation. I had a proper understanding of the four different types of inventory costs, namely component devaluation costs, price protection costs, product return costs, and obsolescence costs. Any product in particular will have these four types of inventory costs. Price protection costs arose from the market price declines. Product returns lead to inventory and operational costs. Obsolescence costs arise during product retirement, which is the saturation phase in the product life cycle, including inventory deductions, component prices, and marketing expenses. I also got to know about new topics such as vendor-managed inventory (VMI), collaborative planning, and approaches to reducing these costs. I also came to the conclusion that IDC components may be different for different products.

In 1998, the Mobile Computing Division (MCD) of Hewlett-Packard addressed costs associated with inventories. MCD thought about combining direct customer shipments and production to increase profitability while weighing potential and risk. Mobile Computing Division (MCD) managers firmly believed that HP units could not be profitable unless and until they integrated all the world-wide manufacturing units into a single location and shipped the concluded products directly to the customers. HP examined five distinct supply chain design options to find the lowest-cost operation. There was a careful analysis of five scenarios, and their results and comparisons were carried out in real time as to which scenario was feasible given the current changing market conditions. Although there were many similarities between a few scenarios, scenario 5 came to be known as the better solution for the problem.

But after doing an analysis, they concluded that the best course of action was to establish a centralized, one-step manufacturing model and adapt it to meet the specific requirements of regional markets. With the adoption of the above model, MCD started gaining benefits with a great decrease in inventory costs. Other PC units adopted this approach, leading to impressive results, and HP integrated these metrics across all PC operations. HP now efficiently manages value chains, coordinating product groupings with IDC goals.

By substituting return on net assets (RONA) for return on sales and coordinating managerial interests, these metrics connect operational decisions to shareholder value. HP had large cost and inventory reductions, which prompted the company to implement IDC measurements across the board.

Implementation of the IDC metrics was very valuable for HP units as they saved the managers from making decisions that would be very costly to the firm; they helped them think of their actions. There were a great number of financial benefits to the firm due to IDC metrics and a worldwide inventory decline of 50%. Consumer electronics, fashion producers, and fresh-goods retailers all face the same challenges. Companies with low margins, short life cycles, highly perishable or seasonal products, and sudden demand need to track components of inventory-driven costs. Without proper metrics and standards, these firms will not know where they are leaving money behind.

On the whole, I learned a very valuable lesson on the implementation of standardized metrics in such high-demand, changing technological industries. Inventory management plays a very huge role in supply chain management and, if not taken proper care of, will prove to be very costly for the firm and lead to higher expenses. The firm should be able to meet demand based on the collection of real-time data and avoid excess inventory, and supply should meet demand.

Lessons learnt from Business case analysis:

In the task of business case analysis, we got the topic of Toyota Motor Manufacturing, U.S.A., Inc. I must say that I feel it is really nice that I got this topic for our business case analysis. I got to know about TMM principles like Andon cords, Heijunka, Jidoka, Kaizen, and Kanban just in time. I also got to know about the supplier and the distribution process of seats in an automotive company. To know about how a very well-established company like Toyota maintains and handles problems and how it treats its employees by treating them as a team and aligning them with TPS principles increased my interest. The very well-organized structural organization consisting of team leaders and team members working under them in regular shifts, maintaining sequential flow of the cars in the assembly by following the sequential pull system even though there were a huge variety of specifications in the model, shows how planned their assembly line system really is, even though there were some flaws.

From the case study, I learned about Toyota TPS principles and how the main aim was cost reduction by thoroughly eliminating waste. The concept of Muda is that there are seven types of waste: overproduction, excess inventory, unnecessary motion, waiting time, needless transportation, waiting time, overprocessing, and defects. TPS aims at the identification and elimination of these. The principles of just-in-time production (JIT) and the Jidoka principle gave a clear-cut understanding of efficient ways of eliminating waste and unnecessary production and producing only when there is a demand. The entire process of the sequential pull system, with the example of the door assembly, gave a deeper meaning to the TPS principles.

The Toyota company's way of finding the root cause of a problem by questioning until the issue is resolved shows the critical thinking capabilities of the firm. TMM's schematic organizational structure with its 769 members and the way the assembly line was functioning with all the marked areas for smooth functioning of the assembly process made me appreciate the company for sticking to its principles. Jidoka and kaizen tools at every station, and standardized work charts and colored tape marking on the areas of the floor promoting the 5s (sift, sort, sweep, spic, and span). All these show that they truly cared for the welfare of their employees, and this was reflected in their effective work results.

The use of Andon cord pulls near the assembly line when a defective seat is identified, and the board indicates the station number so that the team leaders can come and look into the problem. Kanban card usage triggered part production as the parts were manufactured or sent only when they received a kanban card. This card would have the exact number of parts, receiving area and installation area, part size, and precise parameters to avoid unnecessary confusion and excess parts or wrong parts being sent.

The fact that they were able to keep up with the sequential pull system in spite of having extensive sedan models with extensive interior and exterior designs shows that they have done extensive forecasting and planning to meet the necessary demand. Treating the suppliers as part of them and informing them about cost reductions in the manufacturing process where necessary adds value to it.

KFS was the sole supplier to TMM; they functioned like an extension of TMM. As there were more model changes, this led to more challenges. Defective seats were being sent by the supplier, and upon inspection by the quality control at the TMM, they were sent back to the supplier, but the seats sent again were either defective or of the wrong combination, which led to an excess flow of defective seat car assemblies in the overflow area. The line stoppage was expensive. This ultimately resulted in team leaders investing more time and resources in the inspection of one particular car assembly instead of splitting the time and resources equally and effectively, which ultimately led to deviation and stagnation in TPS principles. All these lead to a 10% decrease in the run ratio.

During the meeting, they found out certain key issues, and a few of them could have been solved at the assembly lines, while the major problem was the quality control and inspection of the supplier, who kept on sending defective and mismatched seats. Based on the data provided in the exhibit and the paper, we came to a question: Why were the Andon pulls at the rear seat installation much higher in the first shift than the second shift? We conducted a root analysis using the 5Y's and identified the real problem facing Dough Friesen, looking out where the TPS principles were deviating and what could be done in a real-time ideal situation. We also gave recommendations for short-term and long-term problem-solving options and came to the conclusion that TMM focused only on internal issues and did not analyze issues at KPS like they were an extension of their production system.

Conclusion:

As I conclude, I am grateful for the opportunity given to explore the field of supply networks in good detail. I have gained a profound interest in the connectivity between sustainability, digitalization, and lean manufacturing principles. During the entire duration of this business case study, we had extensive discussions, had healthy arguments, and looked over the internet for various terms and topics that we could have a better understanding of. All the TPS principles and the terms associated with them pointing towards lean manufacturing have increased my interest in this field of the manufacturing sector. I wish to use the knowledge I have gained from this to upskill, add value to growth, and move towards the next step in exploring lean manufacturing.

The course Supply Networks on the whole has built my confidence and leveled up my public speaking and presentation skills, strengthening my critical thinking. I feel truly honored that I had the opportunity to explore a new subject that was entirely new to me and whose basics I had zero knowledge about. Looking ahead, I am looking forward to contributing meaningfully to the field of logistics. I can confidently say that I have developed a new interest in lean manufacturing and logistics and am looking forward to the next phase of my academic and professional journey.

References:

Toyota Motor Manufacturing, U.S.A., Inc. (n.d.). Retrieved February 3, 2024, from https://hananhayat.ucoz.com/_ld/0/24_ToyotaCaseStudy.pdf