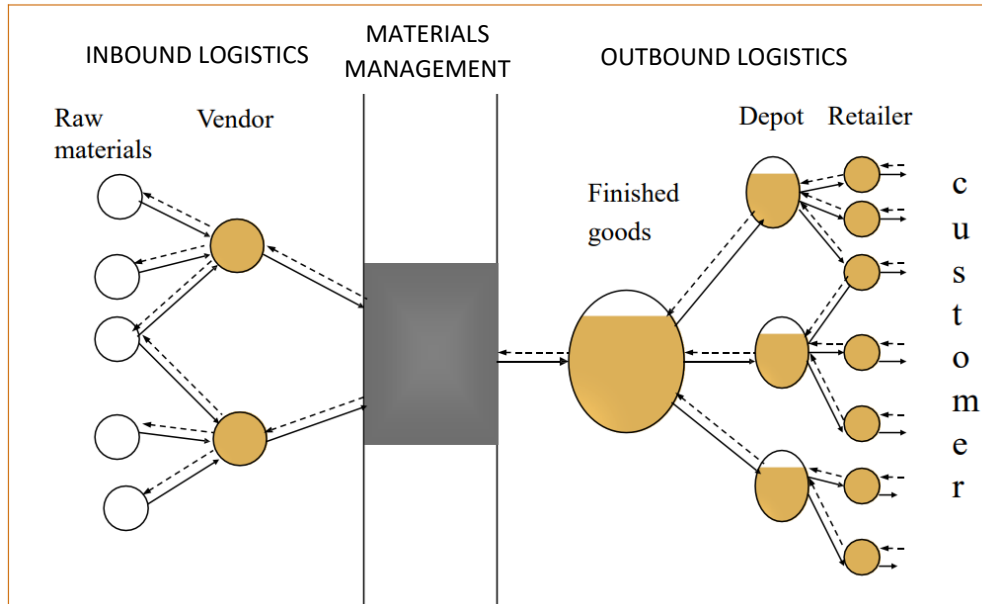


**MT4001 SHIPPING LOGISTICS AY21/22 SEMESTER 1**

Q1a.



The logistics activities in a firm are often divided into the management of three sub activities:

1. Inbound logistics – the movement of materials received from suppliers
2. Materials management – the movement of materials, components or goods within a firm
3. Outbound logistics, or physical distribution – the movement of goods outward from the end of the assembly line to the customer.

b.

Cross-functional supply chain drivers are drivers that interact with one another. In particular, they interact with Logistical drivers such as Facility, Inventory, and Transport. Information and Sourcing are intangible cross-functional drivers in the supply chain.

Information relates to the data and analysis regarding inventory, transportation, facilities throughout the supply chain, and it is potentially the biggest driver of supply chain performance. Its role in the supply chain is that it is the connection between the various stages in the supply chain and it allows coordination between stages. Information is crucial to daily operations of each stage in a supply chain such as production scheduling and managing inventory levels. With regards to its role in competitive strategy, it allows supply chain to become more efficient and more responsive at the same time, which reduces the need for a trade-off. Decisions on the information component has to be made on coordination and information sharing, and forecasting and aggregate planning.

On the other hand, Sourcing relates to the functions a firm performs and functions that are outsourced. Its role in the supply chain is that it defines the set of business processes required to purchase goods and services in a supply chain. It involves supplier selection, single vs. multiple suppliers, and contract negotiation. In addition, its role in the competitive strategy is that in-house vs. outsource decisions have to be made to improve efficiency and responsiveness. Sourcing decisions would include In-house vs. outsource, supplier evaluation and selection, and the procurement process.

For instance, instead of interacting with the shipping lines, PSA Cargo Solutions would interact directly with shippers and consignees to provide an one-stop logistics solutions. With the information on cargo to be transported and expected demand by shippers and consignees, PSA Cargo Solutions can source for the appropriate resources to fulfil the demands of the customers. These resources may be made available in-house, or outsourced from third party service providers.

(More maritime examples may be given on shipping lines, port terminal operators, regulators etc.)

Q2a.

Singapore has a dynamic and pro-business environment, including a transparent and well-respected legal system, political and economic stability, highly skilled and culturally adaptive talent pool, and an exceptional quality of life. Comprised of over 5,000 establishments, the Singapore maritime ecosystem employs more than 170,000 people, and contributes about 7% to the Republic's GDP. Home to more than 140 of the world's top shipping groups, a rich diversity of maritime products and services can be found in Singapore. It is the ideal Asian gateway for global leaders in shipping finance, shipbroking, risk management and marine insurance.

Singapore is also fast becoming Asia's hub for maritime law and arbitration and is one of the top global players in the offshore and marine engineering industry. It is also the choice venue for the headquarters and representative offices of international maritime organisations and associations such as the Baltic Exchange, Asian Shipowner's Forum, International Bunker Industry Association, International Association of Independent Tanker Owners and Baltic and International Maritime Council.

As a key gateway to business activities in Asia, Singapore presents opportunities for business transactions and networking with an established ecosystem of traders, shipping companies and maritime service providers.

b.

$$\text{Supply Chain Surplus} = \text{Customer Value} - \text{Supply Chain Cost}$$

Three important factors affect the increase in surplus that a third party provides: Scale, Uncertainty and the Specificity of Assets.

If the scale is large, it is unlikely that sufficient economies of scale are achieved internal to the firm itself. The third party is unlikely to achieve further scale of economies and increase the surplus. If a firm does not have sufficient economies of scale, the third party can increase the surplus by a large amount.

The uncertainty factor is the uncertainty of a firm's needs. If the need is predictable, the increase from a third party is limited. If the firm's needs are highly variable over time the third party can increase the surplus through aggregation with other customers.

If the assets required are specific to a firm and cannot be used by other party, then the third party is unlikely to increase the surplus. If the assets are less specific and can be used across multiple firms, a third party can increase the surplus by aggregating uncertainty across multiple customers or improving economies of scale.

A firm gains the most by outsourcing to a third party if its needs are small, uncertain, and shared by other firms sourcing from the same third party.

		<b>Specificity of Assets Involved in Function</b>	
		<b>Low</b>	<b>High</b>
Firm scale	Low	High growth in surplus	Low to medium growth in surplus
	High	Low growth in surplus	No growth in surplus unless cost of capital is lower for third party
Demand uncertainty for firm	Low	Low to medium growth in surplus	Low growth in surplus
	High	High growth in surplus	Low to medium growth in surplus

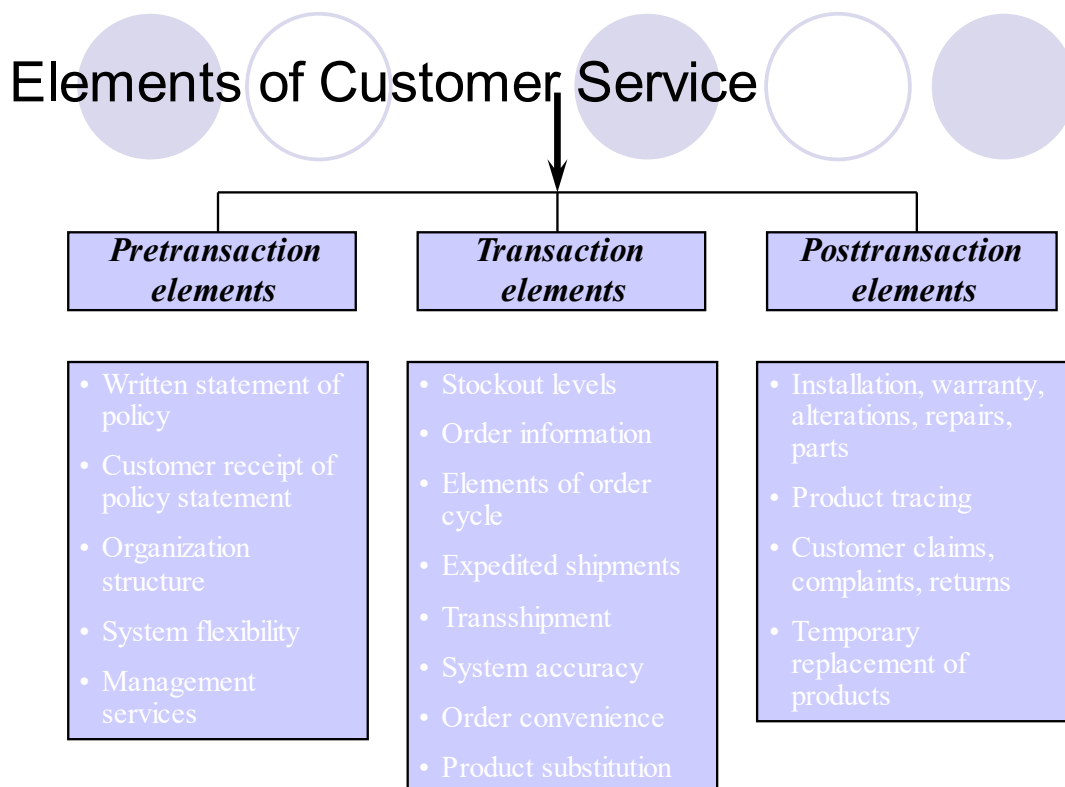
Q3a.

Customer Service can be defined as an activity, a performance measure, or a corporate philosophy, and the definition varies across organisations.

In a broad sense, Logistics Customer Service is a measure of how well the logistics system is performing in providing time and place utility for a product or service. This includes activities such as the case of checking stock, placing an order, and post-sale support of the item.

Customer service policies is essential to be based on customer requirements and supportive of the overall marketing strategy. It must readily be available to the consumer. The customer service policies should be cost efficient, contributing favourably to the firm's overall profitability. The entire marketing effort can be neutralized by poorly conceived or executed customer service policies. In addition, service policies must be based on customer requirements. The marketing department may provide the feedback on what the customer really desires and to treat different customers differently in terms of different levels and types of services.

b.



Pre-transactional Elements:

1. Written Statement of Customer Service Policy – it defines service standard, which should be tied to customers' needs. It includes metrics for tracking service performance and the frequency of report actual performance. It is also measurable and actionable.
2. Organisation Structure – it should be structured so that they are responsive to customers. This structure should facilitate both internal and external communication of policies, performance, and corrective actions as needed. Customers should have easy access to individuals within the organisation who can satisfy their needs and answer their questions. These should not be put on hold, and transferred from one representative to another, as the customer may be lost.
3. Management Services – to provide the customers with help in merchandising, improving inventory management, and ordering. It may be provided in the form of training manual, seminars, or one-to-one consultation, and the services may be free of charge or fee based.

Transactional Elements:

1. Stockout Level – it measures the product availability. The level should be monitored by product and customer in order to better track potential problems. When stock out occur, offer a suitable substitute, ship or drop ship from another location, and expedite the shipment.
2. System Accuracy – customers expect that the information they receive will be accurate.
3. Order Convenience – it defines how easy it is for customer to place an order. It should be user friendly.

Post-transactional Elements:

1. Installation, Warranty, Alterations, Repairs, and Service Parts – it is an important consideration in all purchases, especially capital equipment where such costs tend to far outweigh the cost of the purchased item itself.
2. Product Tracking/Tracing – it is important as to inform customer of potential problems and be able to recall potentially dangerous products from the market.
3. Customer Complaints, Claims, and Returns – being able to resolve customer complaints, and to establish corporate policies to handle customer complaints as efficiently and effectively as possible. Customer returns go through the logistics process in reverse, which is also known as reverse logistics.

Q4a.

D = 150 per week or 7800 per year

S = \$900 (assuming handling cost of \$100 per unloading and \$1 per unit not included)

C = \$600

h = 20%

$$EOQ = [(2 \times 7800 \times 900) / (0.2 \times 600)]^{0.5} = 342$$

$$\text{Cycle Inventory} = EOQ / 2 = 342 / 2 = 171$$

b.

150, since  $EOQ < Q_c$

c.

D = 2500 per month or 30000 per year

S = \$300

h = 20%

Step 1: EOQ for Lowest Price

$$EOQ = [(2 \times 30000 \times 300) / (0.2 \times \$4.60)]^{0.5} = 4423 \text{ (not feasible)}$$

Step 2: TC for Lowest Quantity of Lowest Price

$$D/Q(S) + Q/2hC + CD$$

$$(30000/4701)(300) + (4701/2)(0.2)(\$4.60) + (\$4.60)(30000) = \$142,076.95$$

Step 3: EOQ for Next Lowest Price

$$EOQ = [(2 \times 30000 \times 300) / (0.2 \times \$5.00)]^{0.5} = 4243 \text{ (feasible)}$$

Step 4: TC at this EOQ and Price

$$(30000/4243)(300) + (4243/2)(0.2)(\$5.00) + (\$5.00)(30000) = \$154,242.64$$

Step 5: Compare TC: Optimal EOQ = 4701

Q5a.

With the highly variable and uncertain demands, the manufacturer has to consider capacity implications depending on its strategy. The manufacturer may need to invest in excess capacities sufficient to meet the peak demand and it requires excess capital assets like production equipment, transportation equipment, storage, and workforce etc. If the manufacturer maintains a lean production system, its build-to-order model would require the manufacturer to incur overtime costs and subcontracting costs. Service levels may also be impacted if capacities and/or safety stock is insufficient, which can cause more frequent stock outs and/or longer delivery lead times in times of high demand.

b(i).

As the book is expected to be highly popular, the distribution of the book on launch would be a large-scale distribution over a very short period of time. By pre-ordering, the online retailer can better plan the capacity and allocate resources and during the day of launch. The online retailer can also update the forecast continuously and consolidate shipments. Furthermore, pre-ordering can improve cash flow for the online retailer as large amount of cash would be required to print, distribute, and transport the books. Finally, pre-ordering can reduce forecast errors as the data generated from the pre-orders may be used in the future for similar book launches.

b(ii).

After the segmenting the market, the pre-order discount can be considered through various factors. These factors include market size, price sensitivity, and importance of forecast accuracy. In essence, if the market size is large and the market is price sensitive, there is a higher tendency for larger discount. Similarly, if the importance of forecast accuracy is high, there is a higher tendency for the online retailer to offer a larger discount.

(Market Segments can be used to further explain the factors. (e.g. Loyalists, Defectors, and Switchers, or Price Sensitivity, Guaranteed Availability, and Willingness to Commit Early).

- END -