

GENERAL QUESTIONS (A)
AND QUESTIONS BASED ON CASE STUDIES (B)
FOR SUPPLY CHAIN MANAGEMENT MSc FINAL EXAMINATION
FROM 2022 SUMMER COMPLEX EXAM

There are two list of questions for the oral exam. One is the list of general questions (A) and the other is the list of questions based on case studies (B). You have to answer two questions, one from each list.

GENERAL QUESTIONS (A)

1. Explain the push and pull supply chains with examples! Describe a factory where push and pull systems are both applied. Where is the decoupling point?
2. A company is facing challenges in adapting to changing circumstances. What kind of method/technique would you recommend for the company to evaluate potential development scenarios in an objective manner while minimizing the financial risk?
3. Compare the transportation branches concerning capacity, speed, cost! Which factors can determine the modal split in transportation?
4. Which competences can be improved, and/or newly created at an industrial company by employing the solutions of Industry 4.0? How can the company justify the digitalization investment? Classify the benefits that can be achieved by using innovative technologies.
5. Identify the possible risks in a new technology implementation in the production of an industrial company. What measures would you recommend for prevention and risk mitigation? What are the ways of overcoming organizational inactivity and employees' resistance to change?
6. Compare the single and multichannel distribution systems. Compare the centralized and decentralized distribution systems. What are the main features of cross-dock?
7. In your company several undesirable phenomena have occurred that have been identified by some colleagues as consequences of the bullwhip effect, which are the following:
 - Too high inventory levels
 - Decreasing efficiency
 - Increasing shipping, warehousing and other logistics costs
 - Decreasing service level

In your opinion, are the colleagues right? Justify your opinion, identify possible causes and consequences of the bullwhip effect, and recommend solutions for treatment!

8. Your company is in disagreement about the application and suitability of the push or pull systems. Facilitate their decision making process by interpreting each system, describing their features, applications, conditions, advantages and disadvantages! Provide examples of the products produced by a push or pull system!

9. At your company, there is a dispute on introducing the implementation of a “lean” or an “agile” system that would enable the achievement of the main corporate goals. Provide counsel to the company by describing and comparing the two conceptions.
10. There is a debate in your company about the appropriateness of the push or pull systems to be used for purposes of the company. Compare the two systems and outline also their combinations. Describe the possible concepts, tools and methods and how they may be favourable for achieving the goals and supporting the operation!
11. Give trade-off example in the field of procurement! Give trade-off example in the field of warehousing and transportation!
12. You are involved in designing a production line inventory system for a built-in component in a manufacturing plant. In order to bring the workstations on the production line closer together, the inventory level at the plant must be kept low. However, too low inventories may lead to frequent refilling or even downtime. Determine the factors affecting the optimal refill rate.
13. Give an example of a company where it is especially important to use effective supply chain management tools. Which areas are primarily affected by the use of supply chain tools? Justify your answer.
14. You are the head of a large company, which currently orders an important raw material from four different suppliers. What are the advantages and disadvantages of reducing the number of suppliers? Justify your decision.
15. What is the reasoning of competition between supply chains? What kind of value can be created by the SC?
16. Your company delivers goods of high-value with a low-weight to overseas markets. Currently, the shipment of the product happens via an air carrier at a high cost. The manager proposes a change due to the high cost. What are your arguments for keeping the current mode of transportation via air?
17. Your company initiates negotiations with a major supplier. What opportunities for cooperation may be feasible between the two companies? What benefits would be available both for the supplier and for the customer?
18. Describe the different layout strategies. Layout by product or layout by process can generate bottleneck problems more frequently?

QUESTIONS BASED ON CASE STUDIES (B)

1. In a metal company, 20 tons of raw materials per unit are needed for production in the amount of about 200 tons per day from abroad, from a distance of 1000 km. Currently, the goods arrive by rail. What are the alternatives to purchasing and shipment? What may be the advantages and disadvantages of the recommended alternatives?
2. A wholesaler company works with a huge number of small items. What kind of static storage system would you recommend for the company to ensure the efficient order picking, using as little floor space as possible in the shortest time possible?
3. Homogenous unit loads are stored in high stock in a warehouse, using bulk stacking storage technology. However, the company cannot optimize the building height of 8 meters of the warehouse due to the limited two-level high stacking option. What kind of static storage technology would you offer for the company to optimize the building height in the warehouse?
4. You are the supply chain manager at an international company, producing industrial packaging materials. You have the task to prepare for a digitalization project and you have to convince the board members that you have thoroughly done the project planning. Summarize the challenges an industrial company would face in designing and implementing a digitally supported supply chain! Consider internal and external factors from various perspectives, among others from the points of view of governance, finance, technology, and workforce.
5. A supplier company in the vehicle industry produces gearshifts. Built-in components are required for the production; however, the company is uncertain about their sourcing. Should the components be produced on site by the company itself, or should external suppliers be involved? What kind of dilemma is this? What pros and cons should the company take into account for making a decision? What trade-offs can be identified as a result of a certain decision?
6. The production of building materials demands significant investment (e.g., expensive technologies and huge factories). The demand is high for raw materials and transportation as well as for special vehicles (crane trucks). Therefore, the shipping cost can be as high as the production cost. In this particular industry, the factories supply mainly the local markets. What would you recommend a market-leading company, producing bricks and plasters, that intends to extend its service area geographically? How should the company select the new location? What decision factors should be considered?
7. A newly established industrial spring factory is searching for suppliers. The company must identify the main requirements related to direct and indirect materials and services. Furthermore, the most appropriate supplier-buyer relationship must also be considered. What would your recommendation be for the procurement department in terms of managing the supplies and suppliers?
8. An international holding is currently establishing its subsidiaries on a regional basis. During this process, an appropriate place should also be set up for the procurement function within the organization. What are the available options for the company? What are the advantages and disadvantages of the considered alternatives?
9. An electronic company wants to outsource its transportation activity, previously carried out by itself. What are the main differences between purchasing the shipping service and

purchasing the materials or products? Is there a distinction between purchasing a service versus purchasing materials? Provide your arguments pro and contra. What would you advise to reduce the purchasing uncertainty?

10. You are required to establish the distribution and sales strategies of an industrial company that produces regular bulbs, compact lightings (compact fluorescent lamps) and vehicle lighting products for the European market. What are the main tasks and steps to be taken during the design process of the above-described strategies? Consider the various customer segments and the features of the demand.
11. An industrial company appears on the market with a new product. Due to smaller orders, less than a truckload (LTL) shipments are also utilized. If it influences the packaging and loading, what modifications need to be considered in order to avoid product damages?
12. There is a disagreement in your company over setting the annual targets for the areas to be prioritized. You will be asked to explain the importance of the total cost approach in a meeting. As a logistics manager, give an interpretation for the total cost approach and for the phenomenon of logistics trade-offs. Give some examples for the trade-offs, describe the possible location, the options for the recognition and prevention.
13. What types of manufacturing and inventory strategies should be pursued by a company producing building materials, in particular colored plaster products, that are tailored to the current needs (25kg bucket packaging) in order to satisfy the changing market demands while keeping the costs low? In your answer, consider the different market segments, the rapidly changing fashion, the typical quantities, the seasonality and the current construction trends in Hungary, or your home country.
14. What strategy and structure should a company producing building materials follow for the supply and distribution of its own products, taking into account the different products, market segments, typical volumes, seasonality, construction trends, potential intermediaries, and storage capacity in Hungary or your home country?
15. The distribution and supply strategies must be developed/designed-worked out for a company producing 5-10 kg general washing powder in Hungary. Define the main considerations to be taken in the planning phase of the above-described strategies.
16. What solution should a building material company choose to provide the required transport capacity? In your answer, take into account the shipping demands (different product characteristics, market segments, typical quantities, seasonality, and construction trends) and the available services of other transportation companies (service portfolio, availability, departure and delivery times, freight capacity, tariff structure, and penalties) in Hungary, or your home country.
17. If you were in charge of a new project to reduce inventory at a smaller Tier-3 automotive supplier that produces plastic parts with a stable demand, how would you carry out the project? What data and methods would you use to achieve the inventory reduction target?
18. What are the best production and inventory strategies of a construction company that intends to produce a white masonry product (e.g., ytong bricks) that is in high demand? Give advice by considering the various market segments, typical volumes, seasonality, and construction trends in Hungary, or your home country.

19. You work for a company that supplies parts to an assembly plant. Your task is to optimize the inventory of the supply chain in collaboration with its participants (i.e., suppliers and customers). In practice, this may imply an inventory reduction for some participants and an inventory increase for others. What is your rationale for reducing the finished goods inventory in the supply chain? What are your reasons for reducing the raw material inventory and increasing the finished products?
20. As a supply chain member of a supermarket network, you are involved in organizing the supply of the network. According to the current supply structure, the demands of shops submitted the latest by 12.00 noon will be fulfilled the following morning by the central warehouse.

Question: What factors play a role in determining the service of a central warehouse? You need to bear in mind as well that our selling unit is a 'consumer package'. However, the ordering unit is sometimes a significantly larger 'collective package', possibly a 'unit load'. It is also important to keep in view that both the too high and the too low store inventory would make the operational processes more problematic, or it might as well reduce the level of customer service and the customer experience.

21. A contract of carriage has been made between the carrier and the consignor. Under the contract of carriage, the carrier is obliged to deliver 25 bags of palm seeds from the place of receipt to the place of delivery. What preparatory tasks does the carrier have to make before starting a transport transaction?
22. A contract of carriage has been made between the carrier and the consignor. The carrier is obliged to transport two containers from Hong Kong to Rotterdam. The ship is halfway en route when the shipper is informed that the Rotterdam consignee has moved the company to Hamburg. What can the shipper do in this case?
23. In practice, if a legally non-regulated dispute arises between the carrier and the consignor, what international organization is authorized to deal with disputes of this nature that the parties may turn to via interest representatives for the purpose of legislation? What international agreements have already been created under the auspices of this institution that governs the legal aspects of the international carriage of goods?
24. The shipper transports two containers from Hong Kong to Békéscsaba (Hungary). A CMR consignment note has been issued. The goods are transported from Hong Kong to Rotterdam by sea, from Rotterdam to BILK (Hungary) by rail, and from BILK to Békéscsaba by road. At the service in Békéscsaba, the goods are detected to have been damaged. According to which rules is the carrier's liability determined? What is the carrier liable for, in this case?
25. An electronic goods company entrusts the forwarder with the task of arranging the transport of the goods (using 1 container) from Shanghai to Vienna. What type of contract is used between the manufacturer and the freight forwarder? What are the responsibilities of the freight forwarder based on this contract? What governs international freight forwarding?
26. The shipper and the maritime carriage company have a contract of carriage by sea. Based on this contract, the maritime carrier transports the goods by sea from Hong Kong to Koper (Slovenia). After concluded the contract, the carrier has issued a bill of lading. The goods are unloaded in Koper, and the carrier hands over the bill of lading to the clerk at the customs office. What does the bill of lading prove in this case?

27. The shipper intends to transport two containers of tomato paste. The shipper is well aware of the two different types of merchant shipping possibilities: liner service and tramp service. Having considered the pros and cons of the mode of transportation, the shipper decides to transport the shipment by a liner service. Explain the shipper's rationale for choosing the liner service. What are the differences between liner shipping and tramp shipping?
28. The Audi Hungaria Ltd. wishes to sign specific contract with a supplier about the production, packaging, and just-in-time delivery of custom-made mirror housings. What type of contract should the company select in this particular case?
29. You are the CEO of a small furniture company. What are the main IT solutions to choose from, considering that you want to improve the production planning due to the increase in production volume? Prior to this, excel spreadsheets have been utilized. Outline the possible alternatives, provide a solution and justify your decision.
30. A company - producing dry meat products in western Hungary - is going to centralize its warehousing. In order to distribute its products in the entire country, the company maintains nine regional warehouses, which are in the vicinity of the largest Hungarian cities (e.g., Budapest, Debrecen, Miskolc, Szeged, etc.). This warehouse network was established 16 years ago; at that time, the Marketing Department had recommended to locate their products "close to the customer".

The current average inventory level of the regional warehouses has been 8, 6, 16, 5, 10, 15, 3, 15, 12 Million Euros. The company carries 80 different products and their customers are large retail stores and wholesalers. Their customer service promises a "24-hour delivery service", which means that orders having been placed before 2 p.m. are delivered the following day.

The Logistics Department intends to modify the distribution strategy of the company. Based on their proposal the 9 regional warehouses would be shut down while opening one single "central warehouse" for the entire country, located on the M0 highway (in Budaörs). From here, even the most remote unloading places could be reached within 3 hours.

Questions:

1. What are the advantages and disadvantages of the above-described proposal?
 2. Calculate the amount of inventory needed for the planned central warehouse. Bear in mind that the service level should be kept on the same 24-hour delivery service.
31. A company - producing dry meat products in western Hungary – requests you as a new intern to make a value chain analysis. The basic activities are the following:
- input transport
 - input warehousing
 - manufacturing
 - packaging and picking
 - finished product warehousing
 - finished product transportation
 - managing the vendor managed inventory

Question:

From the above list, which activities increase the costs and which ones add value? Show your analysis on a diagram.