

C/ DETAILED GUIDELINE

I. Executive summary (250 words)

Provide a concise overview of the main points and findings of a document or report. It should be clear, focused, and tailored to the intended audience, highlighting key insights and recommendations.

Example:

The research evaluates Lululemon's forecasting and inventory management systems, focusing on efficiency, sustainability, and information technology use. Interviews with the manufacturer's deputy director and HR head will provide an industry report.

II. Introduction (330 words)

- Introduction to inventory management

Example:

Inventory is crucial for a successful organization, including raw materials, WIP, operational supplies, and finished goods. It supports customer service, transportation, and manufacturing activities. Inventory management addresses stock control demands to resolve conflicts in the best interest of the organization, addressing opposing demands in stock control.

Muller M (2019) Essentials of Inventory Management, 3rd edn, HarperCollins Leadership, the United States.

Wild T (2017) Best Practice in Inventory Management, 3rd edn, Taylor & Francis Group, New York.

- Introduction to the brand (brand's history, brand's personality, current situation,...)

Example:

Lululemon, founded in 1998 by Canadian Chip Wilson, is an industry leader in yoga and sports apparel. With 574 official stores in 17 countries, the brand has grown significantly in popularity among athletic wear and yoga enthusiasts worldwide, showcasing its innovative sportswear and customer base.

- Impact of the inventory management to the brand and the industry

Example:

Lululemon is prioritizing inventory management due to its significant retail presence. The company is investing in new inventory forecasting systems, technological enhancements, and environmental responsibility to enhance overall performance and commitment to environmental responsibility.

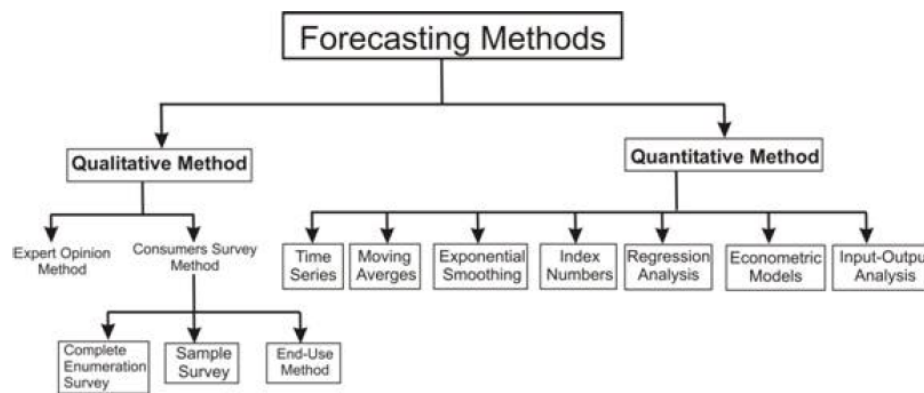
III. Forecasting methods

1. Definition (140 words)

Analyze the forecasting methods

Example:

Forecasting is crucial for managerial decision-making in business, reducing risk and uncertainty. There are quantitative and qualitative methods for predicting economic variables. Qualitative research focuses on gathering industry opinions or customer interviews for short-term forecasting, while quantitative analysis uses previous experience for long-term forecasting. Both methods are essential for effective business management ([Seminaronly 2023](#)).



2. Brand's forecasting methods (380 words)

- Analyze the brand's forecasting method (what methods they applied, how did they do that)

Example:

Lululemon uses a combination of quantitative and qualitative inventory forecasting methods to ensure a sufficient supply of products. This method combines data and statistics with human insights, allowing for accurate projections of inventory requirements and a comprehensive market picture.

- Compare the 2 methods (qualitative and quantitative forecasting methods)
 - Qualitative forecasting methods:
 - Lululemon uses consumer feedback, social media trends, and preferences to identify fashion trends and fabric combinations.
 - They combine qualitative and quantitative methods in their analysis to appeal to potential customers.
 - Quantitative forecasting methods:
 - Lululemon uses sales data, trends, and quantitative measurements for forecasting.
 - They collaborate with suppliers based on the production requirements identified.

You can create a table for this part

	Qualitative forecasting	Quantitative forecasting
Similarity	<ul style="list-style-type: none"> Share the same goal, which is to make good forecasts about what will happen in the future. Predictions should be based on relevant facts and information, and they should be made using analytical and critical thinking skills. Have a certain amount of subjectivity and interpretation, such as how expert views and market trends are interpreted (Caniato et al. 2010). 	
Differences	<ul style="list-style-type: none"> Future outcomes can be predicted using subjective data such as expert opinions, market research, and personal experience. When there is fewer historical data to corroborate the forecast, it is more 	<ul style="list-style-type: none"> Utilize statistical analysis and mathematical models extensively to predict future outcomes. Provide more accurate and reliable results (Caniato et al. 2010).

Caniato F, Kalchschmidt M and Ronchi S (2010) 'Integrating quantitative and qualitative forecasting approaches: organizational learning in an action research case', Journal of the Operational Research Society, 62(3): 413-424, doi:10.1057/jors.2010.142.

IV. Inventory management

1. Inventory management data (200 words)

- Describe the brand's inventory management and give examples
- Identify and analyze factors that affect their inventory management system

Example:

Lululemon experienced a 25% increase in inventory between Q3 and Q4, but faced challenges due to store closures. The company's vertically integrated business model allows it to manage inventory differently from indirect intermediaries. By focusing on incoming inventory management and RFID-enabled visibility in its inventory management systems, Lululemon has effectively managed stock, minimized waste, and maintained optimal product availability, despite the COVID-19 crisis ([Cosgrove 2020](#)).

2. Economic order quantity (EOQ) (90 words)

Define EOQ shortly and how the brand implies in their business, reasons to imply and is it effective?

Example:

The model is used in inventory management to determine the number of products a business should add to its warehouse per batch order, aiming to minimize total inventory costs and prevent frequent orders and surplus inventory ([Hayes 2023](#)).

3. ABC analysis (190 words)

Define what is ABC analysis, why is it important to the brand, any examples?

Example:

Activity-based costing (ABC) is a costing method that assigns indirect and overhead expenses to related goods and services, reducing arbitrary allocation. It is more systematically used than traditional methods and focuses on the connection between expenditures, overhead operations, and related goods.

ABC is more effective for Lululemon, as it prevents inefficient allocation of costs to standard products, resulting in larger sales returns ([EMBA Pro n.d.](#)).

V. Minimum order quantity (MOQ)

1. Definition (400 words)

Define what is MOQ, what is the difference between high and low MOQ, benefits of MOQ,...

Example:

Minimum order quantity (MOQ) is a supplier's minimum quantity for a product, which buyers, or brands, must meet or exceed to place an order, considering factors like warehousing space and cost savings, and their affordability (Zhu 2022).

Zhu H (2022) 'A simple heuristic policy for stochastic inventory systems with both minimum and maximum order quantity requirements', *Annals of operations research*, 309(1):347-363, doi: 10.1007/s10479-021-04441-1.

Benefits of MOQ for buyers:

- Cost efficiency through lower unit prices and economies of scale.
- Reduced ordering frequency and time savings.
- Consistent supply and reduced risk of stockouts.
- Increased negotiating power for favorable terms.

Benefits of MOQ for suppliers:

- Production efficiency and cost savings.
- Effective inventory management.
- Streamlined operations and logistics.
- Revenue stability and better capacity planning. ([Jenkins 2021](#))

2. MOQ of the brand (175 words) (You can reuse this part from asm1)

Analyze the minimum quantity that the brand needs to order to manufacture their products (how many items, did they use just-in-time (JIT) method to calculate,...)

If there is no information that shows the minimum ordering quantity, analyze if the MOQ is high or low, did that amount of MOQ affect them, do they only order from 1 supplier or more.

Example:

Lululemon, a large athletic corporation with projected 2022 sales of \$7.46 billion, may benefit from a high MOQ from suppliers. This allows them to negotiate lower production costs, maintain favorable relationships, secure supply and manufacturing contracts, and diversify their supply base. The high MOQ also allows them to order large volumes from various vendors, reducing exposure to any supply chain area.

VI. Economic order quantity (EOQ)

1. Definition (EOQ) (290 words)

Define what is EOQ, EOQ formula, benefits of EOQ,...

Example:

The Economic Order Quantity (EOQ) model, introduced by Ford W. Harris in 1913, helps organizations determine the most efficient order quantity to minimize inventory costs (Choi 2014). It's often used by companies with extensive supply chains and variable costs, allowing for adjustments to production levels and order intervals ([Fernando 2022](#)).

$$Q = \sqrt{\frac{2DS}{H}}$$

Q = EOQ units

D = Demand in units (typically on an annual basis)

S = Order cost (per purchase order)

H = Holding costs (per unit, per year)

EOQ benefits: [\(Caldwell 2021\)](#)

- Cost efficiency by minimizing inventory and ordering costs.
- Optimized inventory levels, reducing stockouts and excess inventory.
- Streamlined operations and improved planning.
- Enhanced customer satisfaction and cash flow management.

Choi TM (2014) *Handbook of EOQ Inventory Problems Stochastic and Deterministic Models and Applications*, 1st edn, Springer, New York.

2. EOQ of the brand (110 words)

Analyze the brand's EOQ level, how they manage it, what did they do, why do they have to do it?

Example:

Lululemon employs the EOQ model to manage inventory effectively, aiming to provide a seamless shopping experience. By keeping stock levels low, they can quickly sell merchandise, enhancing brand value and boosting anticipation for upcoming trends and new patterns.

VII. Reorder point (ROP)

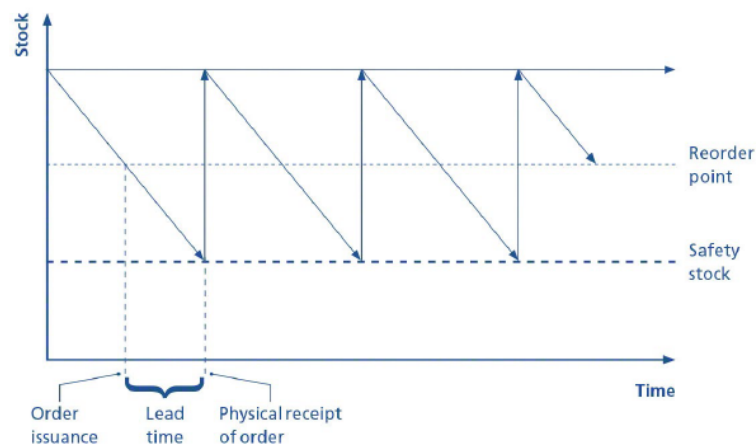
1. Definition (200 words)

Define what ROP is, ROP formula, role of ROP in inventory management

Example:

To avoid stockouts, businesses must contact suppliers at the reorder point (ROP) to place new inventory orders. Balancing investment costs and product risk is crucial. Evaluating the ordering point can occur continuously or at predetermined intervals (Kao & Hsu 2002).

$$\text{Reorder point (ROP)} = \text{safety stock} + (\text{average consumption} \times \text{supplier lead time})$$



The role of reorder point in inventory management [\(Mecalux 2021\)](#)

Kao C and Hsu W (2002) 'Lot size-reorder point inventory model with fuzzy demands', *Computers & mathematics with applications*, 43(10): 1291-1302, doi:10.1016/S0898-1221(02)00101-3.

2. Reorder point of the brand (200 words)

Analyze what the brand reorder point is, do they apply the method in the definition, how do they manage that, is there any software for this...?

If there is no information that shows the ROP, analyze how they manage their stock, how they estimate the inventory, is what they do effective...?

Example:

Lululemon's ROP strategy uses real-time demand forecasting to maintain inventory levels and avoid stockouts. Data analytics estimate inventory needs based on sales patterns and customer preferences. Lululemon reloads products when inventory levels fall below a threshold, enhancing efficiency and competitiveness in the athletic apparel industry.

VIII. Inventory levels

1. Definition (120 words)

Define what inventory level is, are there any different categories (minimum, maximum, and optimal),...

Example:

Inventory refers to the total value of goods or materials at all stages of production or distribution, while inventory levels describe the total quantity in warehouses and stores. Monitoring stock levels helps companies keep up with demand without high holding costs ([Locad 2023](#)). There are three categories of inventory levels: minimum, maximum, and optimal. The objective is to maintain low inventory costs, ensure steady cash flow, and maximize profits by aligning current inventory levels with customer demand ([Cogsy 2023](#)).

2. Inventory level of the brand (140 words)

Analyze the brand's inventory level (by month, by quarter or by year) (include a chart if any), how they maintain it, does it satisfy the inventory turnover, is there any problem (high stock quantity...)?...

Example:

Lululemon Athletica Inc's inventory increased by 49.76% in Q1 2023 to \$1.447 billion, a 49.76% increase from 2022. Despite this, the brand maintains its pricing power, with impressive profit margins over the past three years. Despite a 28% year-over-year income increase, Lululemon's gross margins averaged 56%, indicating satisfactory inventory turnover ([Macrotrends 2023](#)).

3. How to maintain optimal inventory levels (300 words)

There are 3 main recommendations:

- Reduce lead time: ([Cogsy 2023](#))
 - Accurate sales projections optimize inventory management and manufacturing efficiency.
 - Opt for domestic suppliers for reduced transit time, requiring a cost-benefit analysis.
 - Opt for frequent, smaller purchase orders for convenience and cost-effectiveness, despite potential higher costs over time.
- Audit your inventory on a regular basis:

- Audits of inventories are crucial as they verify the accuracy of inventories, ensuring that the counts used accurately reflect stock levels.
- Reduce obsolete inventory: To address pricing requirements and reduce costs, consider implementing product bundles and giving away outdated goods.

IX. Technology in inventory management

1. Radio-frequency identification (RFID) (380 words)

Define the type of one or more of the types of technology that has been applied in inventory management (RFID, software, WMS, IoT, mobile technology,...), how that technology works, how it was employed, was it important or useful,...

Example:

RFID is an automated identification technique used in Automatic Identification and Data Capture (AIDC) for object identification, data collection, and input into computer systems. It is particularly useful in the garment industry for inventory accuracy and shipment authentication.

Nayak R, Singh A, Padhye R and Wang L (2015) 'RFID in textile and clothing manufacturing: technology and challenges', *Fashion and Textiles*, 2(1):1-16, doi: 10.1186/s40691-015-0034-9.

Nayak R (2019) *Radio Frequency Identification (RFID) Technology and Application in Fashion and Textile Supply Chain*, Taylor & Francis Group, Milton.

Newton GD (2019) 'A Billion Little Pieces: RFID and Infrastructures of Identification', *Journal of Broadcasting & Electronic Media*, 63(4):745-746, doi: 10.1080/08838151.2019.1673123.

2. How does brand apply RFID in their inventory management (290 words)

Analyze how the brand adapts and applies the mentioned technology to the brand, what kind of system it is, where and when it is used...

Example:

Lululemon has selected Nedap as its new supplier for the implementation of Nedap iD Cloud, an RFID-based retail solution that enhances the omni-guest experience in its over 600 global stores. The technology streamlines supply chain management, providing real-time inventory visibility. Lululemon plans to expand its RFID-based inventory management platform to new markets in 2023.

X. Order management system

1. Definition (100 words)

Define what an order management system is, its life cycle, types of OMS (Enterprise resources planning (ERP), Customer relationship management (CRM), Supply chain management (SCM))...

Example:

An Order Management System (OMS) is a digital solution that manages an order's lifecycle, including processing, inventory control, fulfillment, and post-sales support, providing

real-time inventory visibility and order arrival information for businesses and consumers ([Kokoris 2018](#)).
([IBM 2023](#))

2. Brand and the use of EPM (270 words)

Choose one of the mentioned types of OMS (Enterprise resources planning (ERP), Customer relationship management (CRM), Supply chain management (SCM)) that the brand applies, define the meaning, how the brand implies it, and provide the data...

Example:

Lululemon, a leading retailer, has partnered with Oracle to offer Enterprise Performance Management (EPM) solutions. The Oracle Cloud EPM offers strategic modeling, customizable dashboards, and real-time visualization of planning and budgeting data, enabling businesses to adapt to changing circumstances.

XI. Process of receiving goods

1. Definition (110 words)

Define what process of receiving goods is, what does it include...

Example:

Goods receiving involves inspecting and allocating incoming items to a warehouse location, ensuring they are of the correct quality and quantity. This process maintains warehouse efficiency and helps identify supplier issues, ensuring the correct products are received and stored appropriately ([Safer Storage Systems n.d.](#)).

2. Brand's process of receiving goods (350 words)

Analyze the brand's process of receiving goods, how many stages are there, provide short description of what the brand did for each step.

Example:

Lululemon's goods receiving procedure may involve inspecting incoming shipments, documenting issues, and processing inventory systems or storage locations, or not, to ensure accurate and timely processing of products post-receipt.

Goods receiving procedure: receiving, documentation, inventory count, inventory inspection, inventory processing

Lululemon conducts quality control tests and rigorous procedures to ensure customer orders are accurate and their products meet manufacturer authenticity criteria, while maintaining a structured product reception process for quick sales.

XII. Inspection (155 words)

Re-use the 'Quality Assurance' part in assignment 1, and explain clearly how the brand inspect their sourced materials as well as provide the data.

Example:

Lululemon maintains quality control through regular inspections and evaluations of its subcontractors, vendors, and fabric mill producers, with interviews with staff, management, and overseas migrant employees, and often without notice.

XIII. Issuance of goods and storage (260 words)

Define the meaning of goods issuance, what is the brand strategy on this, how the storage affects the issuance, provide the data...

Example:

Storage preserves goods from production to sale, while inventory management bridges the gap between production and consumption ([Agarwal 2022](#)). Goods issue involves transferring goods from warehouse to production, resulting in decreased inventory ([Saloodo 2023](#)).

Lululemon focuses on product design and procurement, outsourcing production to suppliers and manufacturers. This strategy allows for large storage capacity in retail locations and distribution centers, with Groveport, Ohio being its second largest U.S. warehouse ([KHL engineers 2023](#)).

XIV. Sustainability in inventory management (300 words)

Describe how the brand incorporates sustainability in their inventory management system (with evidence). You can also re-use the information from assignment 1.

Example:

Lululemon prioritizes environmental and human well-being through sustainable practices like inventory management, fiber use, and innovative materials. They use the Sustainable Apparel Coalition Higg Materials Sustainability Index for impact assessments and global waste reduction.

XV. Conclusion (270 words)

Summarize the key points for the brand's global sourcing findings.

Example:

The research examines Lululemon's inventory management, highlighting improvements in technology implementation, sustainability, and environmental preservation. However, efficient resource usage and better order quantity information could enhance the company's reputation.

D/ TIPS

- Choose a big brand that provides a lot of information.
- Stick with the brand's annual report, impact or sustainability report as most of this assignment are all mentioned in it.
- If the information you need is not provided in the annual report, find a theory for that part as most brands tend to follow those theories.
- Utilize charts, diagrams to avoid exceeding the word limit.

F/ FOOD FOR HUNGRY THOUGHTS

Muller M (2019) *Essentials of Inventory Management*, 3rd edn, HarperCollins Leadership, the United States.

Wild T (2017) *Best Practice in Inventory Management*, 3rd edn, Taylor & Francis Group, New York.

Seminarsonly (2023) *Demand forecast*, seminarsonly website, accessed 10 May 2023.

<https://www.seminarsonly.com/Engineering-Projects/Economics/Demand-Forecast.php>

Caniato F, Kalchschmidt M and Ronchi S (2010) 'Integrating quantitative and qualitative forecasting approaches: organizational learning in an action research case', *Journal of the Operational Research Society*, 62(3): 413-424, doi:10.1057/jors.2010.142.

Hayes A (2023) *Inventory Management Defined, Plus Methods and Techniques*, Investopedia website, accessed 20 May 2023.

<https://www.investopedia.com/terms/i/inventory-management.asp>

Jenkins A (2021) *Minimum Order Quantity (MOQ): Formula, Tips, & Benefits*, Netsuite website, accessed 17 May 2023.

<https://www.netsuite.com/portal/resource/articles/inventory-management/minimum-order-quantity-moq.shtml>

Zhu H (2022) 'A simple heuristic policy for stochastic inventory systems with both minimum and maximum order quantity requirements', *Annals of operations research*, 309(1):347-363, doi: 10.1007/s10479-021-04441-1.

Choi TM (2014) *Handbook of EOQ Inventory Problems Stochastic and Deterministic Models and Applications*, 1st edn, Springer, New York.

Caldwell A (2021) *Economic Order Quantity (EOQ) Defined*, Netsuite website, accessed 18 May 2023.

<https://www.netsuite.com/portal/resource/articles/inventory-management/economic-order-quantity-eoq.shtml>

Fernando J (2022) *Economic Order Quantity: What Does It Mean and Who Is It Important For?*, Investopedia website, accessed 18 May 2023.

<https://www.investopedia.com/terms/e/economicorderquantity.asp>

Kao C and Hsu W (2002) 'Lot size-reorder point inventory model with fuzzy demands', *Computers & mathematics with applications*, 43(10): 1291-1302, doi:10.1016/S0898-1221(02)00101-3.

Locad (2023) *How to Determine Optimum Inventory Levels*, Golocad website, accessed 20 May 2023. <https://golocad.com/inventory/inventory-level/>

Cogsy (2023) *How To Calculate And Maintain Optimal Inventory Levels*, Cogsy website, accessed 19 May 2023. <https://cogsy.com/backordering/inventory-levels/>

Nayak R, Singh A, Padhye R and Wang L (2015) 'RFID in textile and clothing manufacturing: technology and challenges', *Fashion and Textiles*, 2(1):1-16, doi: 10.1186/s40691-015-0034-9.

Nayak R (2019) *Radio Frequency Identification (RFID) Technology and Application in Fashion and Textile Supply Chain*, Taylor & Francis Group, Milton.

Newton GD (2019) 'A Billion Little Pieces: RFID and Infrastructures of Identification', *Journal of Broadcasting & Electronic Media*, 63(4):745-746, doi: 10.1080/08838151.2019.1673123.

Kokoris G (2018) *What is an OMS and Why Do I Need One?*, supplychain247 website, accessed 22 May 2023.

https://www.supplychain247.com/article/what_is_an_oms_and_why_do_i_need_one

IBM (2023) What is order management?, IBM website, accessed 22 May 2023.

<https://www.ibm.com/topics/order-management#:~:text=PDF%2C%20720%20KB>

Safer Storage Systems (n.d.) *Receiving and inspecting goods*, Safer Storage Systems website, accessed 15 May 2023. <https://saferstoragesystems.com.au/receiving-and-inspecting-goods/>

Agarwal RC (2022) *Storage: Meaning, Functions and Need for Storage*, your article library website, accessed 21 May 2023.

<https://www.yourarticlelibrary.com/business/storage-meaning-functions-and-need-for-storage/42128#:~:text=Storage%20is%20defined%20as%20%27the,gap%20between%20production%20and%20consumption>

Saloodo (2023) *Good issuance*, Saloodo! website, accessed 21 May 2023.

<https://www.saloodo.com/logistics-dictionary/goods-issue/#:~:text=A%20goods%20issue%20is%20the,of%20stock%20in%20the%20warehouse>