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1. Information needed for business decisions

1. **Business Rule:** The business wants to know the total sales figures of the company
   a) **Information needed for decision:** The total sales of the business per 3-year period, per year and per quarter.

2. **Business Rule:** The business wants to know the top 4 clients.
   a) **Information needed for decision:** The top 4 clients with the total amount purchased per year, per month.

3. **Business Rule:** The company wants to know which are the 4 bestselling products per amount.
   a) **Information needed for decision:** Top 4 selling product per amount sold per year, per month.

4. **Business Rule:** The company wants to know how satisfied the customers are with its services. (On a scale from 1(unacceptable) to 10(very satisfied))
   a) **Information needed for decision:** The total amount of reports under 6 per month, per week.

5. **Business Rule:** The company wants to know the efficiency of the workers that is measured against a specific fixed number per year, per month.

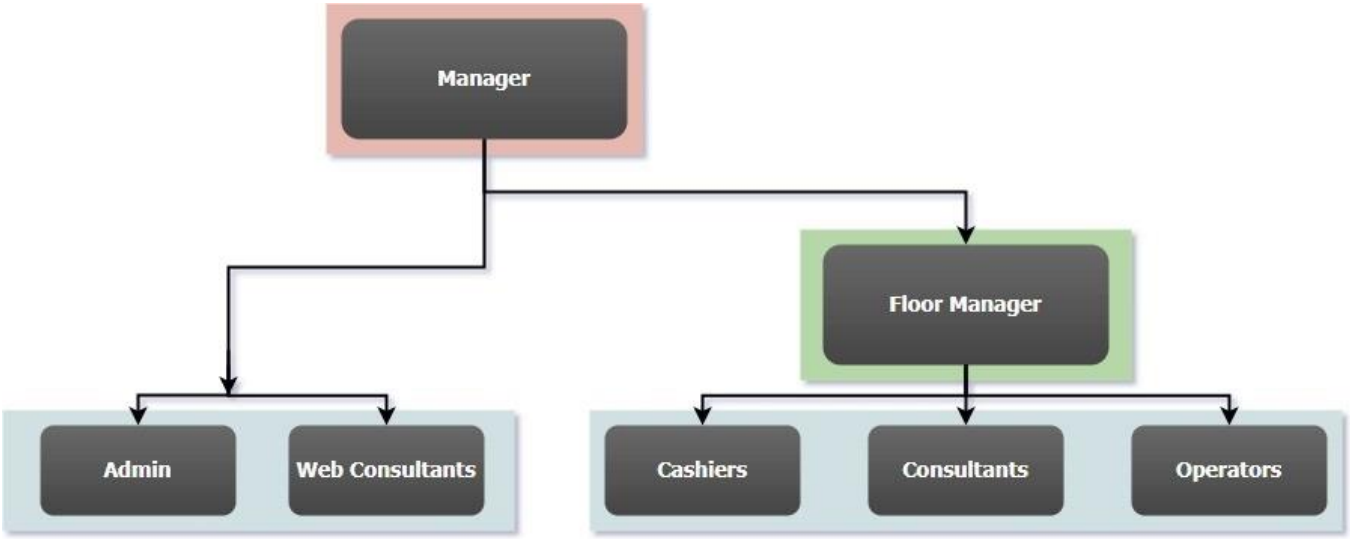
$$\text{Efficiency} = \frac{Amount\ of\ hours\ worked\ by\ employee\ in\ a\ given\ timeframe}{Required\ hours\ to\ be\ worked\ in\ a\ given\ timeframe} * 100$$

   a) **Information needed for decision:** The efficiency of the workers is calculated by the average of all the calculated efficiencies number per year, per month.

6. **Business Rule:** The company wants to know the top 6 suppliers per year, per month.
   a) **Information needed for decision:** The top suppliers are calculated by the total amount of products ordered for each supplier per year, per month.

2. Levels of organization for which information is needed

The following figure indicates the different levels of management that is found in AdamTech.



On management level there are two types of managers:

Manager: The highest form of authorization in the business is the manager. The manager needs to know the core information of the business to make intellectual business decisions such that the business can grow economically.

Floor Manager: The manager that is in charge of all the employees and make sure that if any errors or problems occur it is to be fixed as soon as possible. The floor manager makes sure that all the employees do their jobs and is responsible for interviews and ensuring employees leave dates does not leave the business without staff. Information needed by the floor manager or manager is:

- The manager requires information such as the total amount of sales to make business decision such as if the company is making a profit or a loss.
- The manager and floor manager want to know the top client/customers such that business decisions such as investments and partnerships.
- The manager and floor manager are interested in the satisfaction of the customers by the reports that customers leave with their experience at the store.
- The manager and floor manager want the average efficiency of the employees such that it can be made know if the employees are pulling their own weight.

On the worker level there are four types of employees:

Administrators: There are responsible for keeping the business books up to date and ensures that transactions are correctly logged. They are also responsible to ensure that all deliveries are made and arrive at the correct given location. They handle any queries and are able to order new stock as the stock figures are decreasing or depleted. Information needed by administrators is:

- The administrators require information such as the top clients that buy from the company.
- They need information such as the top suppliers to ensure that negotiations such as discounted prices and to ensure that the company promotes these products and keeps up to date with the newest products.
- The admins require the total sale figures to ensure that any suspicious figures are reported to the managers.

Web-Consultants/Consultants: They are responsible for sales and client service. They need to be updated with the current stock in the warehouse at any given moment to ensure efficiency and client satisfaction. They also need access to data such as transaction history if clients want to know details on their orders or cancel orders (web-consultants). Information needed:

- The top suppliers such that the supplier's products that are in high demand can be recommenced to customers and suggestions can be made.
- As well the information such as the top products sold such that if a customer asks for a product and it is a top selling product it can be recommended and the consultants is up to date with the latest technology.

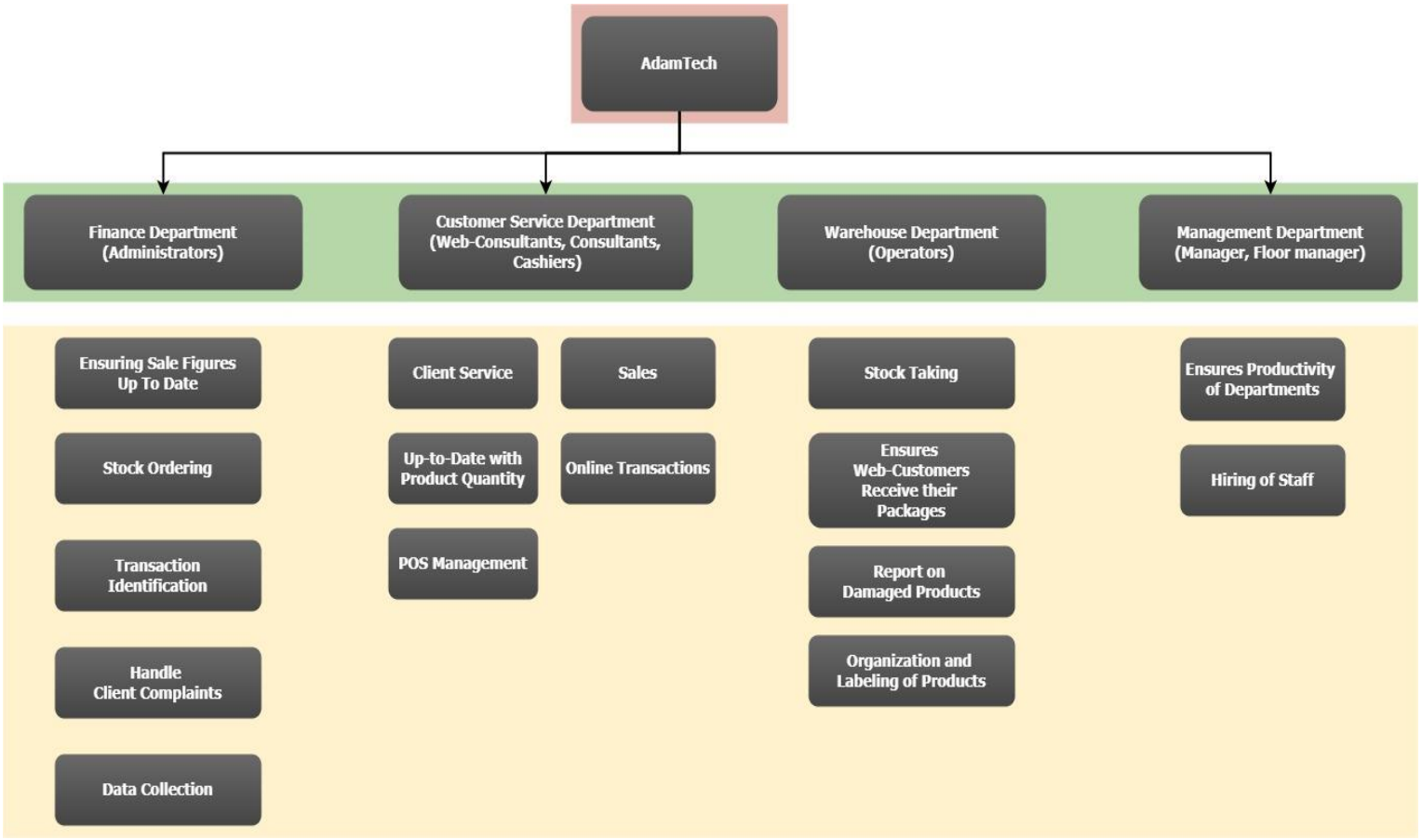
Operators: They are responsible to keep the warehouse in order and ensures that the stock is always ordered when underneath the threshold and keeping the stock figures up to date. They are responsible for the shipping of goods and ensure that FedEx collect the correct cargo on a specific day. Information needed is:

- Information such as the top selling products to know how the warehouse should be organized such that the products are easily accessible.
- Operators should also be made available the efficiency of the company to motivate and keep them working hard.

Cashiers: They are responsible for in-store transactions. Information needed is:

- The only information that cashiers acquire is the efficiency of the work they do. (e.g. How many hours they've worked out of the required workhours)

3. Business areas where information is needed



Finance Department	• The amount of stock ordered each month per product. • The salary or hourly pay per employee per week/month/year. • The sales figures for a 3-year time period • The top 4 selling products per year/month The finance department is in charge of how and where the companies' money is spent.
Customer Service Department	• A list of customers that were assisted by consultants and which consultants. • How satisfied the customers were with the assistance they received. • The quality of the products received from the suppliers.

	• Amount of warranty claims per product per week/month/year. • The top 4 clients, measured by the total amount they bought, per year/month The customer service department is in charge of all employees that work directly with customers, and the handling of warranty claims from clients.
Warehouse Department	• Quantity of items, available per product per week/month. • Time taken to deliver products to customers. • Quantity of items, unlabelled and unlisted products per week. • The top suppliers for the company per year/month The warehouse department is in charge of making sure there is always stock available and they are ready to be sold once received from the suppliers.
Management Department	• Number of employees in each department. • Number of complaints against each employee per week/month. • Expenses from each department per week/month/year. • The efficiency of the workers for a given time period The management department handles complaints received from clients, and checks that no department is unproductive. They are also in charge of the enlisting and delisting of employees.

4. Format that the information is required to be in (e.g. Graphical representation, drill down levels, end user representation tools or web based)

Information Sentence 1: The total sales of the business per 3-year period, per year and per quarter.

User	Display Format	Knowledge Extracted
Managerial Level	Construct a bar graph and a drill down per year	Managers can glance at the graph and quickly see if the growth of the business, either positive of negative.
Worker Level		The worker level, i.e. HR, gathers the information and reports it to a managerial level for decision making

Information Sentence 2: The top 4 clients with the total amount purchased per year, per month.

User	Display Format	Knowledge Extracted
Managerial Level	Display the clients. Do a drill down per clients and their purchasing history.	Managers can use this to see who their top clients are and see what they like the most.
Worker Level		Workers can identify what products aren't selling and thus what category is not selling, they must replay the information to the appropriate people to adjust the ordering schedule.

Information Sentence 3: The four best-selling products must be listed per amount and per category.

User	Display Format	Knowledge Extracted
Managerial Level	Construct a line graph	The managers can decide whether the supply demand is healthy for that product. And if they should start ordering

		more, or less of the product and can set a competitive price for it.
Worker Level		Worker level gathers information on what the customers want the most, and interpreting the information. They can also use the information as a guide for recommendations for unsure customers.

Information Sentence 4: The satisfaction of the company's customers is calculated on a scale between one and ten (one is unsatisfied and 10 is very satisfied).

User	Display Format	Knowledge Extracted
Managerial Level	Display information on a pie chart.	Managers are able to see whether customers/clients are satisfied with the serviced they received while doing business with the company.
Worker Level		Workers can inspect the information to see whether they are supply a good or bad service to customers and where to improve on.

Information Sentence 5: The efficiency of the workers is calculated by the average of all the calculated efficiencies number per year, per month.

User	Display Format	Knowledge Extracted
Managerial Level	Display the worker's efficiency. Do a drill down per year and the departments.	Managers can see which departments/workers are the most efficient and reward/punish accordingly.
Worker Level		Workers can see how effective the company as a whole are functioning.

Information Sentence 6: The top six suppliers are calculated by the total amount of products ordered for each supplier per year, per month

User	Display Format	Knowledge Extracted
Managerial Level	Construct Bar chart. Do a drill down per supplier.	The bar chart will help to visually illustrate to managers who the top suppliers are and how much each one is supplying. The drill down helps to be more specific for each supplier.
Worker Level		The workers must make sure the right products are being shipped and how much is being shipped.

5. Timeliness of information

The primary information used by AdamTech is the asset and liabilities regarding the fundamentals of the organization, such as salaries and contracts.

The secondary information that AdamTech uses is stock management, demand and supply information and price analysis, which in the current market has to be collected monthly to quarterly. In the following table, the information needed for business decisions are divided into 3 main time dimensions: Yearly, Quarterly and Monthly.

Time dimension	**Information in time dimension**
Yearly	The expenses of rent, wages and other finances often change such as worker contracts ending or maintaining the servers, this information generally does not change quickly, and thus this information is extracted at the yearend of the end of a financial year. The total sales and services that occur in a financial year will also be extracted at the end of a financial year. Statistical information will also be gathered at the yearend as to plan out

	the actions of the organization for the next 12 months.
Quarterly	The expenses of imports and the delivery goods couriered to clients are filed in exchange commission reports. Information summarized in quarterly reports are often government related and contain information such as the company's financial statements.
Monthly	Information extracted on a monthly basis is regarding to the list prices goods from manufacturers, resale prices and the supply and demand of certain products, it is important to analyse the supply and demand of products as often as possible to optimize stock management.

If an error occurs, then managers can analyse the system according to the time stamp and depending to what data-group the error belongs to and fix the error.

6. Aggregation and Granularity needed

1. **Business Rule:** The business wants to know the total sales figures of the company
    i. Using the sum function, the total sales of the business per year and per quarter should be calculated.

2. **Business Rule:** The business wants to know the top 4 clients.
    i. Using the sum function all clients' total amount purchased per year should be calculated. The 4 clients with the highest amount purchased should be extracted.

3. **Business Rule:** The company wants to know which are the 4 bestselling products per amount.
    i. The aggregation required will be calculating total amounts by summing the total number of a product sold and the revenue collected.
    ii. Given a quantity, the number of each product sold per year should be calculated and the 4 products with the highest sale rate should be extracted using the largest function.

4. **Business Rule:** The company wants to know how satisfied the customers are with its services. (On a scale from 1(unacceptable) to 10(very satisfied))

i. Each month, all reports with a rate lower than 6 should be extracted and using the sum function, the number of reports below 6 should be calculated.

5. **Business Rule:** The company wants to know the efficiency of the workers that is measured against a specific fixed number per year
   i. The efficiency of each worker is calculated using the efficiency formula defined below.
   ii. $\text{Efficiency} = \frac{Amount\ of\ hours\ worked\ by\ employee\ in\ a\ given\ timeframe}{Required\ hours\ to\ be\ worked\ in\ a\ given\ timeframe} * 100$
   iii. The efficiency of all workers is calculated by the average of all the calculated efficiencies number per year using the average function.

6. **Business Rule:** The company wants to know the top 6 suppliers per year, per month.
   i. Using the sum function all the products ordered from a supplier over a year, should be calculated for each supplier. The suppliers with the highest order rate should be extracted as the top suppliers using the Largest function.

7. Dimensionality of information

The different types of dimension that is to be used is:

- Category (such as Motherboards, Mice, PC-Cases, RAM, etc.)
- Time (Yearly, Quarterly, Monthly, Weekly)
- Amount (the total sum of stock bought or the total sales of the company)

1. The information regarding total sales figures should be calculated:
   - Per 3 Year interval
   - Yearly
   - Quarterly (Quarterly in this company is defined as 3 months i.e. Jan-Mar, Apr-Jun, Jul-Sep, Oct-Dec)
2. Information correlating with the top 4 clients should be calculated:
   - Yearly
   - Monthly
3. The top 3 bestselling CPUs is calculated:
   - Per Year
   - Per Month
4. Customer satisfaction with the company is calculated by:
   - Rating <6
   - Per Month
   - Per Week
5. Knowing the efficiency of employee is calculated:
   - Yearly

- Monthly

6. The top suppliers are calculated:
    - Yearly
    - Monthly