Business process: sales (sharing), buying cars:

Measurable goals:

* increase rental of cars in each city by at least 1% each month compared to previous month
* annual increase in profit by 7% in total (from all locations) ***essa* 🤙**

**Specification of business processes**

1. Business goals of the organization

“CarShare” is a car sharing company located in Poland which provides sharing cars for minutes in Polish biggest cities. The main goal of the company is to achieve the highest profit possible from car sharing service. Two main metrics are being monitored: **monthly rentals of cars in each city and total profit in all locations annually**. It is assumed that the company is successful if **there is an increase of monthly rental by at least 1% and annual profit for all locations is increased by at least 7%**. Currently the biggest problem is to answer the question why is there different demand for different types of cars in different cities.

The most important business issues in the bookstore include buying and sharing cars. Cars shared are of different types e.g. utility, compact, family etc. Each of the cars is of certain make and model. Cars can be shared anytime they are available and in anyplace they are located by customers who use the service by themselves. Cars are bought by the CEO and shipped to different cities.

The CEO would like to analyze which car brands and models, therefore types, are rented the most in which cities.

2. Business processes

***Car sharing***

1. A general description of the business process and a description of the performance metrics generated by this process, possible current analytical problems.

The process of sharing a car is as follows: the customer downloads the CarShare app, creates an account with a linked credit/debit card. Next, the customer finds a nearby car to rent it for a ride, all of the available cars are shown on the map in the app. After the customer has chosen a car, he confirms his choice, the car unlocks itself and is ready to be driven. After the customer has reached the planned destination, he confirms the end of the ride in the valid area for parking (visible in the app), linked bank account is charged appropriately to time spent in the CarShare vehicle. The car is locked and ready to use for the next customer, if there is enough petrol for average ride distance.

After payment these metrics are generated:

location of starting and finishing points of the travel, time in which the distance was traveled, total distance, information regarding if the user had a subscription, type of car rented, how much a customer was charged, cars VIN number, the date of travel.

1. Typical questions

Compare the number of rentals between different makes of cars monthly.

What cars are the most popular in each city in different months?

Compare the number of total rentals between cities monthly.

What are the profits in each city per single car monthly?

Give the number of total annual rentals.

What are the numbers of total rentals in each city?

What is the average increase of rentals between months in one year?

Give the percentage of change in rentals in following months.

How does the price of the car compare to its monthly profit?

1. Data

Data is stored in the databases connected with the CarShare app.

***Car purchase***

1. A general description of the business process and a description of the performance metrics generated by this process, possible current analytical problems.

The car purchase process is as follows: CEO searches for offers on the car market for the car types that the company is interested in, only new cars are bought. Then the CEO contacts the car manufacturer responsible for the sale of desired vehicles and places an order. After cars arrive in destined magazines they are wrapped in veneers of CarShare brand, and then they are sent to the cities that require more cars for efficient and effective service.

The following metrics are generated: date of purchase and arrival of vehicle, type of car bought, cost of the car, name of the car manufacturer, car model, name of the city that the car was sent to.

1. Typical questions

Which car manufacturer delivers the cars the fastest?

Which car types are delivered the fastest?

Compare the number of car models purchased.

Find cities that required the most vehicles in the last year.

Which cars are the cheapest and which are the most expensive, looking at the average prices.

1. Data

All data about bought cars are stored in an EXCEL file.

**Requirements specification for Sharing business process**

1. General description of business process

1. A general description of the business process and a description of the performance metrics generated by this process, possible current analytical problems.

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After payment these metrics are generated:

location of starting and finishing points of the travel, time in which the distance was traveled, total distance, information regarding if the user had a subscription, type of car rented, how much a customer was charged, cars VIN number, the date of travel.

**The increase of rentals of cars in each city by at least 1% each month compared to previous month.**

**The annual increase in profit by 7% in total (from all locations).**

1. Typical questions

Compare the number of rentals between different makes of cars monthly.

What cars are the most popular in each city in different months?

Compare the number of total rentals between cities monthly.

What are the profits in each city per single car monthly?

Give the number of total annual rentals.

What are the numbers of total rentals in each city?

What is the average increase of rentals between months in one year?

Give the percentage of change in rentals in following months.

How does the price of the car compare to its monthly profit?

1. Data

Data is stored in the databases connected with the CarShare app.

2. Data sources structures

| TABLE NAME | ATTRIBUTE | ATTRIBUTE TYPE | DESCRIPTION |
| --- | --- | --- | --- |
| CAR | VIN\_number (PK) | varchar (17 characters) | Unique identification number for each car |
| model | varchar (50 characters) | Brand name of the vehicle |
| make | varchar (50 characters) | Model of the vehicle |
| prod\_year | int | Year of production of the vehicle |
| engine\_power | int | Horsepower of the engine |
| transmission | varchar (20 characters) | Type of transmission of the vehicle (manual, automatic, etc.) |
| type | varchar (50 characters) | Type of vehicle (sedan, SUV, hatchback, etc.) |
| status | varchar (20 characters) | Availability of the vehicle (rented, available, etc.) |
| USER | user\_id (PK) | int | Unique identification number for each user |
| user\_name | varchar (50 characters) | Name of the user |
| email | varchar (50 characters) | Email address of the user |
| phone | varchar (15 characters) | Phone number of the user |
| age | int | Age of the user |
| gender | varchar (10 characters) | Gender of the user |
| RENTAL | rental\_id (PK) | int | Unique identification number for each rental |
| VIN\_number (FK) | varchar (17 characters) | VIN number of the car that was rented |
| user\_id (FK) | int | User ID of the user who rented the car |
| start\_time | datetime | Start time of the rental |
| end\_time | datetime | End time of the rental |
| date | date | Date of the rental |
| cost | int | Cost of the rental |
| PAYMENT | payment\_id (PK) | int | Unique identification number for each payment |
| user\_id (FK) | int | User ID of the user who made the payment |
| amount | int | Amount of the payment |
| date | date | Date of the payment |
| method | varchar (20 characters) | Payment method (credit card, cash, etc.) |
| CITY | city\_id (PK) | int | Unique identification number for each city |
| city\_name | varchar (50 characters) | Name of the city |
| voivodeship | varchar (50 characters) | Voivodeship/province of the city |
| population | int | Population of the city |
| area | int | Area of the city |

Excel

(information about ordered cars, each line describes one car, line one i a header)

* COLUMN A - order identification number (numeric)
* COLUMN B - make (text)
* COLUMN C - model (text)
* COLUMN D - production year (year)
* COLUMN E - order date (date)
* COLUMN F - total price (numeric)

3. Scenarios of analytical problems

*How do different regions affect the type of car needed by customers?*

1. Compare the models of cars rented in different cities.
2. Compare the amount of cars rented to rentals in the previous month.
3. Compare the most often rented car models to the previous month.
4. What is the ratio of total cars in a city to the population of a given city?
5. Compare amounts of rentals in winter and summer.
6. What cars are rented for long distance travels?
7. Compare the amount of rented cars to the amount of total cars in the cities.

*Why is there a decrease/increase in car rentals this month?*

1. Compare the number of rentals of different car types in analyzed and previous month.
2. Compare the average price of renting cars between months.
3. What are the most rented cars?
4. What is the most rented model?
5. Compare the number of rentals between models.
6. Compare the number of rentals in different cities monthly.

4. Data needed for analytical problems

**Analytical problem:** *How do different regions affect the type of car needed by customers?*

1. Compare the models of cars rented in different cities.

* Rentals table: rental\_id, VIN\_number
* Cars table: VIN\_number, model
* Cities table: city\_name

1. Compare the amount of cars rented to rentals in the previous month.

* Rentals table: rental\_id, start\_time
* Cars table: VIN\_number
* Previous month start and end date

1. Compare the most often rented car models to the previous month.

* Rentals table: rental\_id, VIN\_number
* Cars table: VIN\_number, model
* Previous month start and end date

1. What is the ratio of total cars in a city to the population of a given city?

* Cities table: city\_name, population
* Cars table: VIN\_number, city\_name

1. Compare amounts of rentals in winter and summer.

* Rentals table: rental\_id, start\_time, end\_time

1. What cars are rented for long distance travels?

* Rentals table: rental\_id, VIN\_number
* Cars table: VIN\_number
* Distance traveled per rental

1. Compare the amount of rented cars to the amount of total cars in the cities.

* Rentals table: rental\_id, VIN\_number
* Cars table: VIN\_number, city\_name
* Cities table: city\_name, population

**Analytical problem:** *Why is there a decrease/increase in car rentals this month?*

1. Compare the number of rentals of different car types in analyzed and previous month.

* Rentals table: rental\_id, start\_time, end\_time
* Cars table: VIN\_number, type
* Previous month start and end date

1. Compare the average price of renting cars between months.

* Rentals table: rental\_id, start\_time, end\_time, cost
* Previous month start and end date

1. What are the most rented cars?

* Rentals table: rental\_id, VIN\_number
* Cars table: VIN\_number, model

1. What is the most rented model?

* Rentals table: rental\_id, VIN\_number
* Cars table: VIN\_number, model

1. Compare the number of rentals between models.

* Rentals table: rental\_id, VIN\_number
* Cars table: VIN\_number, model

1. Compare the number of rentals in different cities monthly.

* Rentals table: rental\_id, start\_time, end\_time
* Cities table: city\_name

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Analytical problems:

***How do different regions affect the type of car needed by customers?***

1. Compare the amount of rentals of different car types in different cities.

* amount of car rented
* type of car
* city

2. Compare costs of renting different car types.

* current avg cost of petrol
* type of car
* avg insurance cost

***Why is there a decrease/increase in car sharing?***

Requirements

~~1. ProcessSpecification.pdf must define:~~

~~a. two processes (according to the template),~~

~~b. two measurable goals.~~

2. RequirementsProcessSpecification.pdf must define:

~~a. two measurable goals (at least one must concern previous time period)~~

b. two data sources (one relational and one having the selected format: csv, json, excel, etc.) designed in a way allowing to integrate data,

~~c. two analytical problems,~~

d. five queries for each analytical problem, which can be executed basing on data defined in data sources, but to execute at least two of these queries data from both data sources are demanded,

e. one query which demands additional data sources, but does not demand changing the business process,

f. one query which demands additional data, which can be gathered only by changes in the business processes.