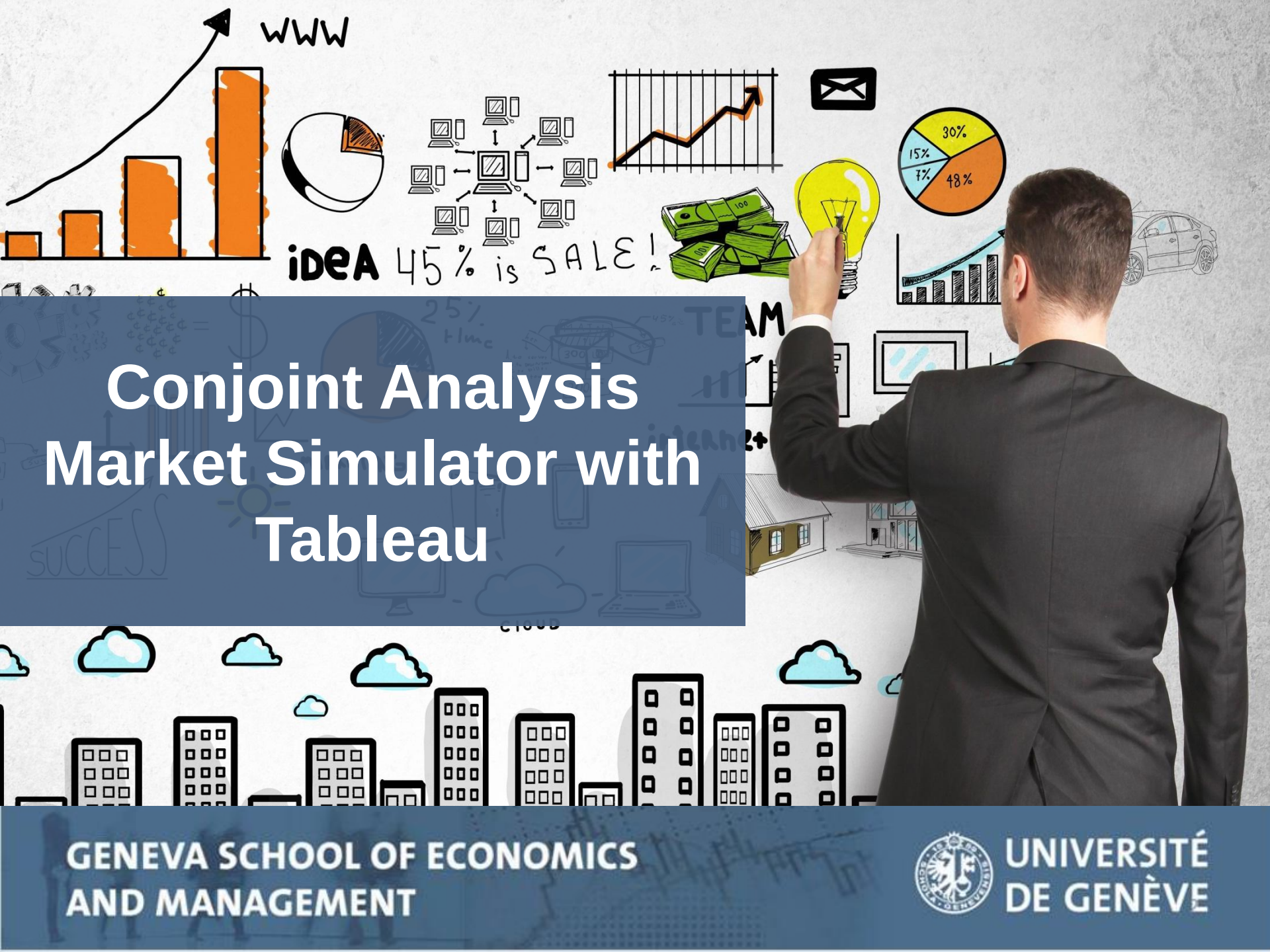



# Conjoint Analysis Market Simulator with Tableau

GENEVA SCHOOL OF ECONOMICS AND MANAGEMENT

UNIVERSITÉ DE GENÈVE

# Steps Overview

**Market Simulator Skeleton**

Case Study's Questions

## Goal:

- Create a simulator to compare your product against the ones of your competitors.
  - Make competitive market scenarios and predict which products respondents would choose
  - Accumulate (aggregate) respondent predictions to make “Shares of Preference”
- Why?
  - **Attribute Values may depend on the actual product setup**
  - Comparing utility differences is too simple and not the optimal way to go!
  - Willingness to pay can be assessed better with preference share simulations
- How?
  - Using Tableau
    - Create 1 product VS 2 other products

## Market Simulations

Preference shares models:

- First choice
- BTL (shares of preference)
- Logit (chose highest utility)

- Reminder
  - Simulators turn esoteric “utilities” into concrete “shares”
  - CONJOINT means “CONsider JOINTly”

# Questions you need to answer:

- Which product (a,b,c,d) has the more preference shares?

# Steps into Tableau

- Open the Tableau file «skeleton_simulation»
  - All data is already precharged
- Open «Dashboard params»

  Understand the menus
  - These are the parameters for components of the products
  - Product 1 = yours
  - Product 2 and 3 are from your competitors


- Open «Dashboard2»
  - On the left you have 2 dahsboards
    - «Total Utilities»
    - «First Choice»
    - «Pref Shares BTL»
  - Build either
    - «Pref. Shares Logit»

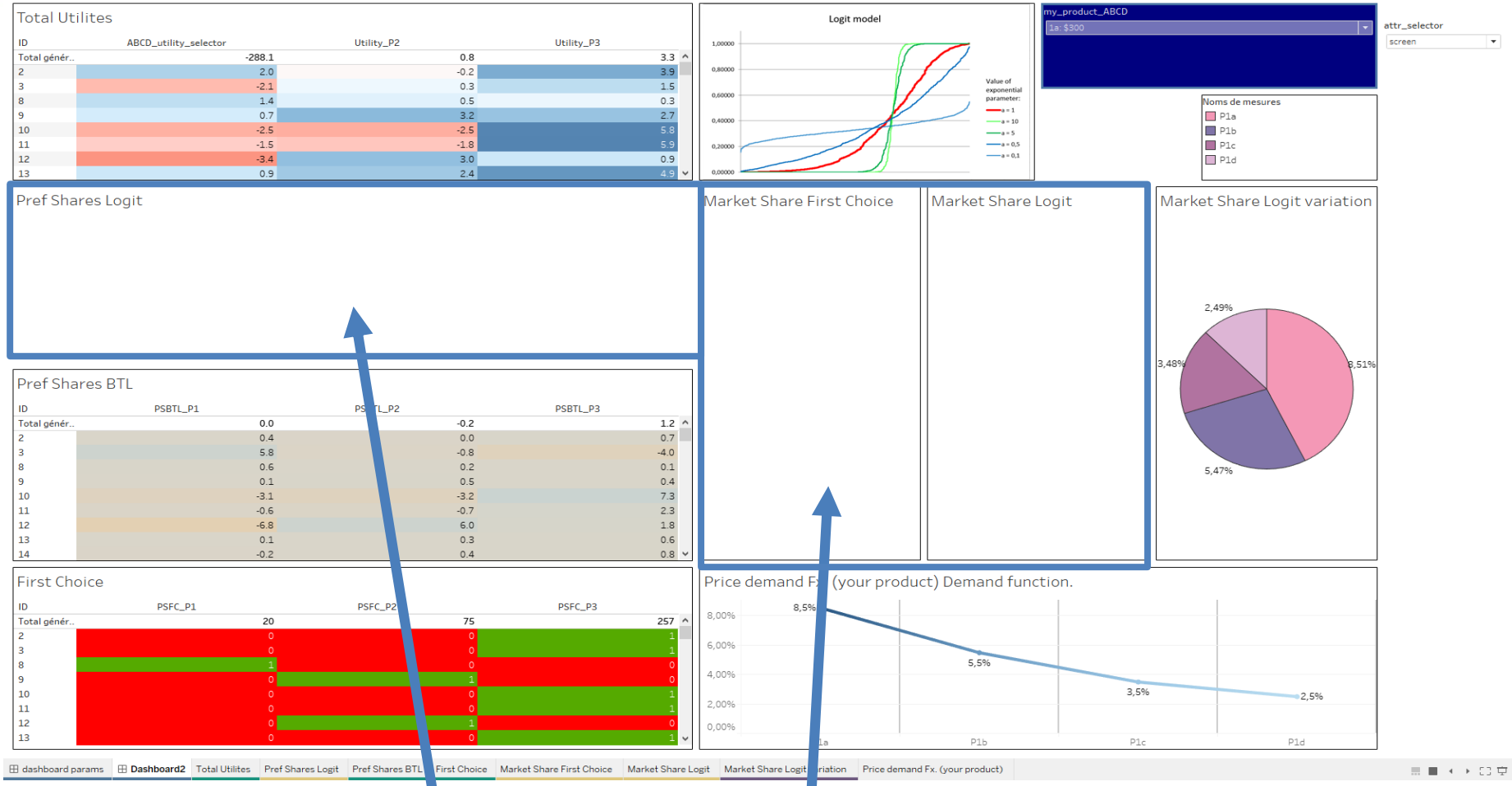

# Final Output

Build:

- «Pref. Shares Logit»

Also, build piechart graphs

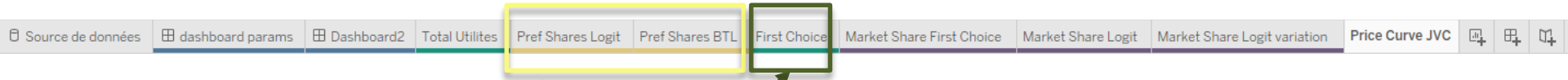
- «Market Share First Choice»
- «Market Shares Logit»




Fill the placeholder on the left and the two placeholders on the right.

**What you are provided with: the skeleton**

# Steps for formulas building (left part)




- Useful tips:
  - Help yourselfs with the «First Choice» sheet
  - Copy its structure
  - Apply it to the yellow sheets

To ease the task we assume **Utility_P1a**, which is the utility of your product 1 out of 4 products that you are testing, **is the utility of your reference product P1.**

So: «Utility_P1a» is your Utility_P1 (just remember this for ease of understanding)

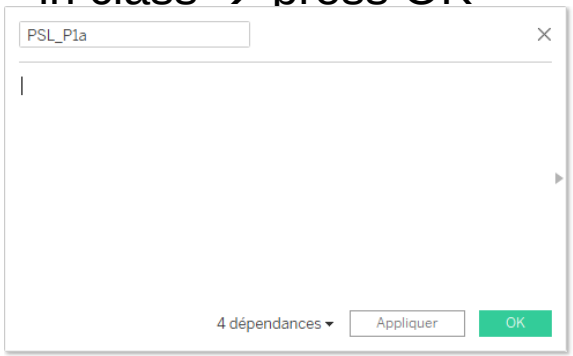
P1a = P1

  - Create a formula in a new calculated field
    - Left tab → new «claculated field»

For this example we show how to build «*product share logit*»

  - Call it «PSL_P1a» (as we are creating the PSL formula for product 1a)

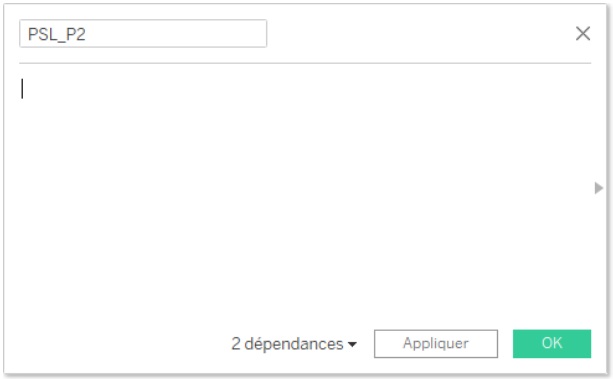
- Apply the Logit formula discussed in class → press OK



# Product share logit – how to do

- Do the same for:
  - «PSL_P2»
  - «PSL_P3»

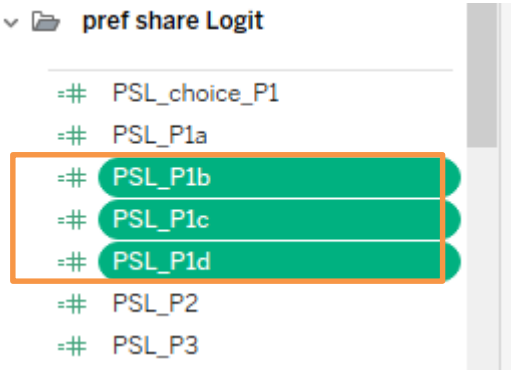
Competitors each only have 1 product.




Now that you understand the idea, do the same for:

- PSL_P1b
- PSL_P1c
- PSL_P1d

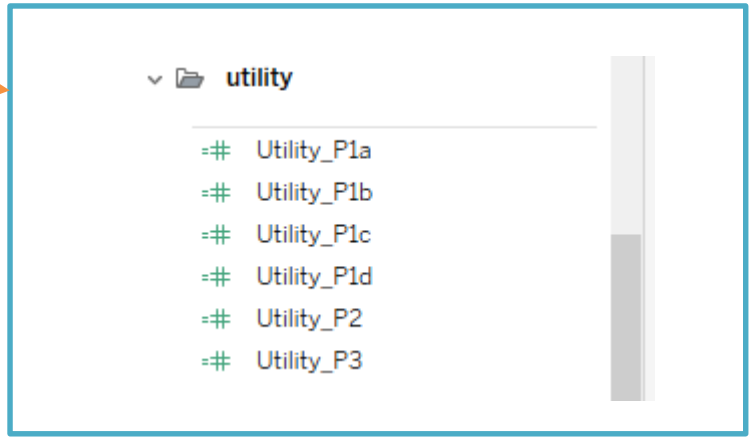
Dont worry about the **!** It's normal. You still need to complete the utility functions (next slide).



# Creating the utility functions

- How to create the utility functions?
  - In the utility folder, complete the code for
    - «Utility_P1d»
    - «Utility_P3»
  - Help your self by understanding how P1a, P1b, P1c and P2 work.
  - Same logic applies.

- All exclamation marks in the folder should disappear once you finished this task.




Final results

# Parameters. Why you need them? Part.1

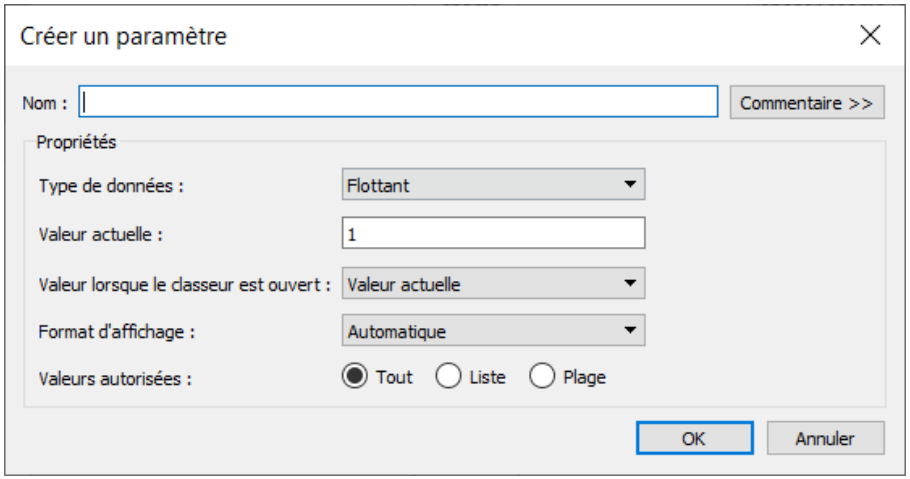
If you came until here, well done!

As you know your company is showing 4 products.

As such, you want to know how a given product does against the 2 other competition products.

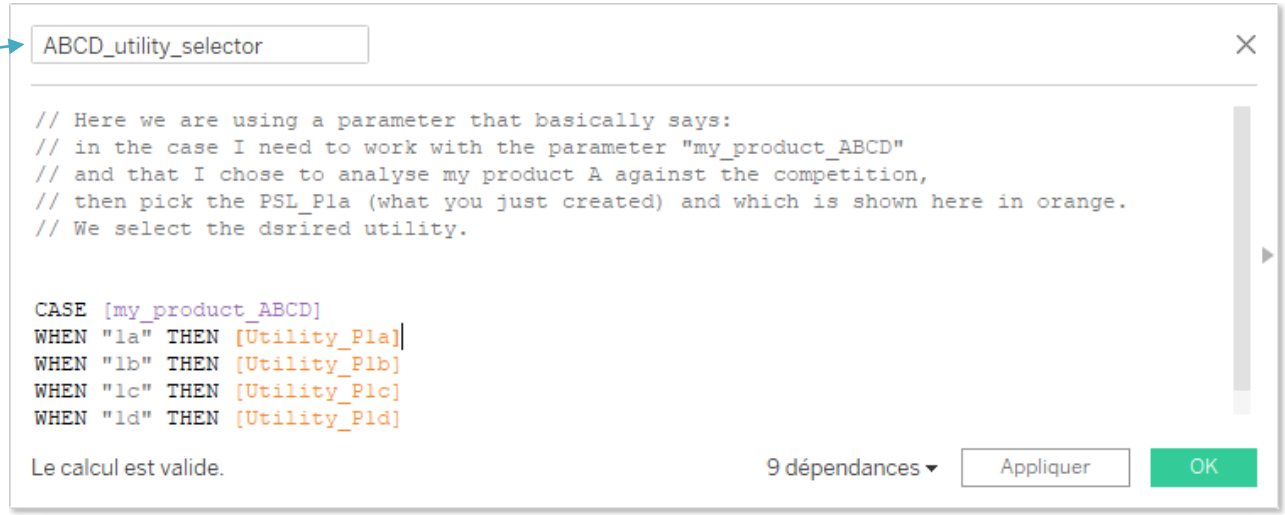
<u>For this you need to have a parameter that allows you one of your product at a time.</u>

- For this go on the left panel
- Create new parameter
- Call it «my_product_ABCD»
  - Type: text
  - Autorised values: list
- List of values:
  - 1a: $300
  - 1b: 350$
  - 1c: 400$
  - 1d: 450$



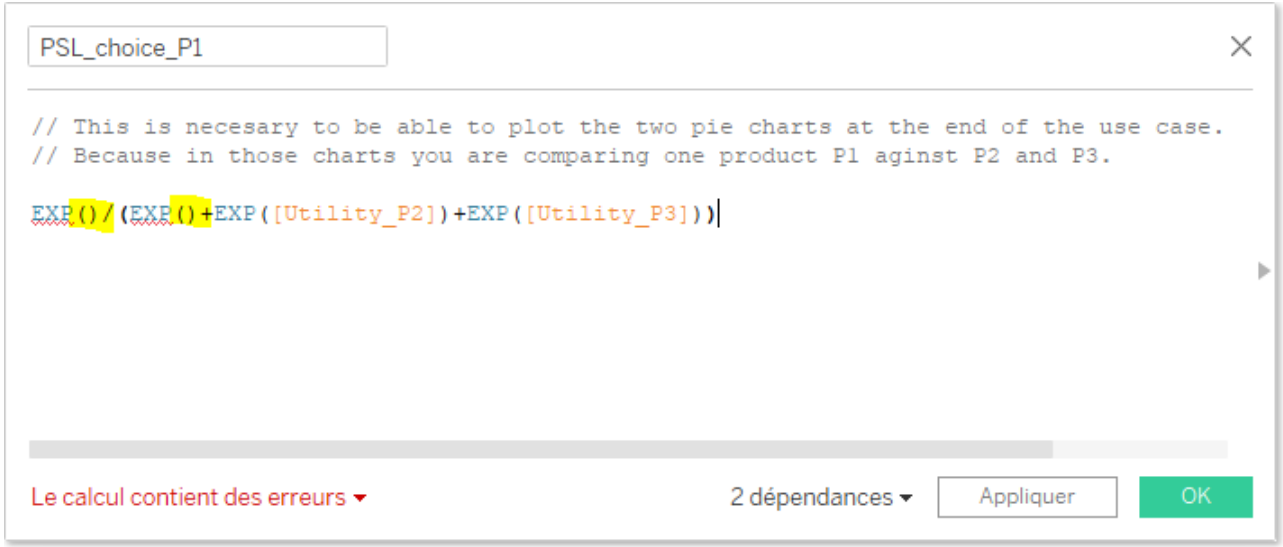
# Parameters. Why you need them? Part.2

- Open «ABCD_utility_selector» and reproduce what you see on the right.
- The selector allows to tell Tableau which one of your products you want to use for comparison. It will be helpful for all pie charts
  - (except for «Market Share Logit variation»)
- And all tables

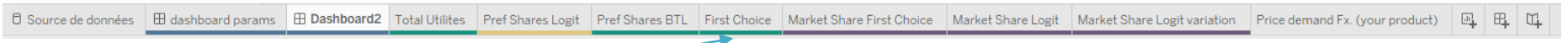


The selector you just created now needs to be applied in a calculated field. This calculated field is basically the Logit model for your 4 product where only the one you chose is used at a time.

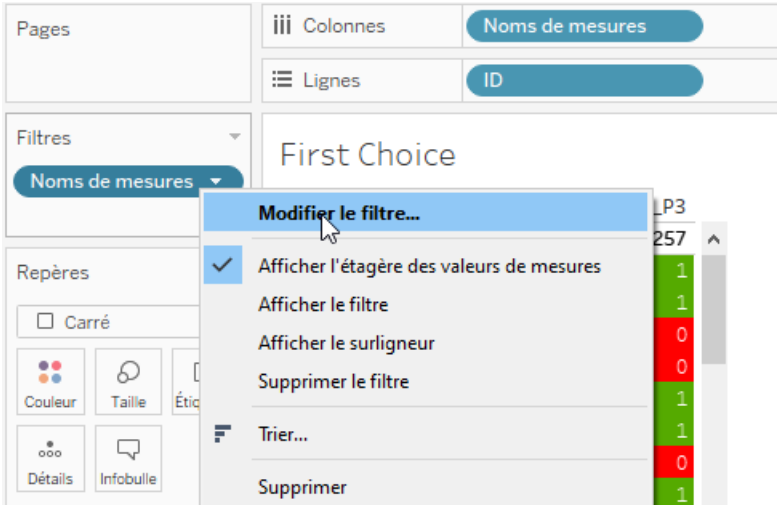
Complete the empty spaces:



# Dashboard creation: «Measure Names», how to work with them




- If you look at the «First Choice» sheet, you can see on top left in the filters: «Measures names».
- It allows you to change the variables you want to use in your sheet. Go on modify.
- Select the proper elements and press OK.
- Help yourself with the other sheet.




Final result you need to get (below):

Pref Shares Logit

| ID | PSL_choice_P1 | PSL_P2 | PSL_P3 |
|---|---|---|---|
| Total génér.. | 30.0 | 76.7 | 245.4 |
| 2 | 0.1 | 0.0 | 0.9 |
| 3 | 0.0 | 0.2 | 0.8 |
| 8 | 0.6 | 0.2 | 0.2 |
| 9 | 0.0 | 0.6 | 0.4 |
| 10 | 0.0 | 0.0 | 1.0 |
| 11 | 0.0 | 0.0 | 1.0 |
| 12 | 0.0 | 0.9 | 0.1 |
| 13 | 0.0 | 0.1 | 0.9 |
| 14 | 0.0 | 0.1 | 0.9 |
| 15 | 0.0 | 1.0 | 0.0 |

Well done!

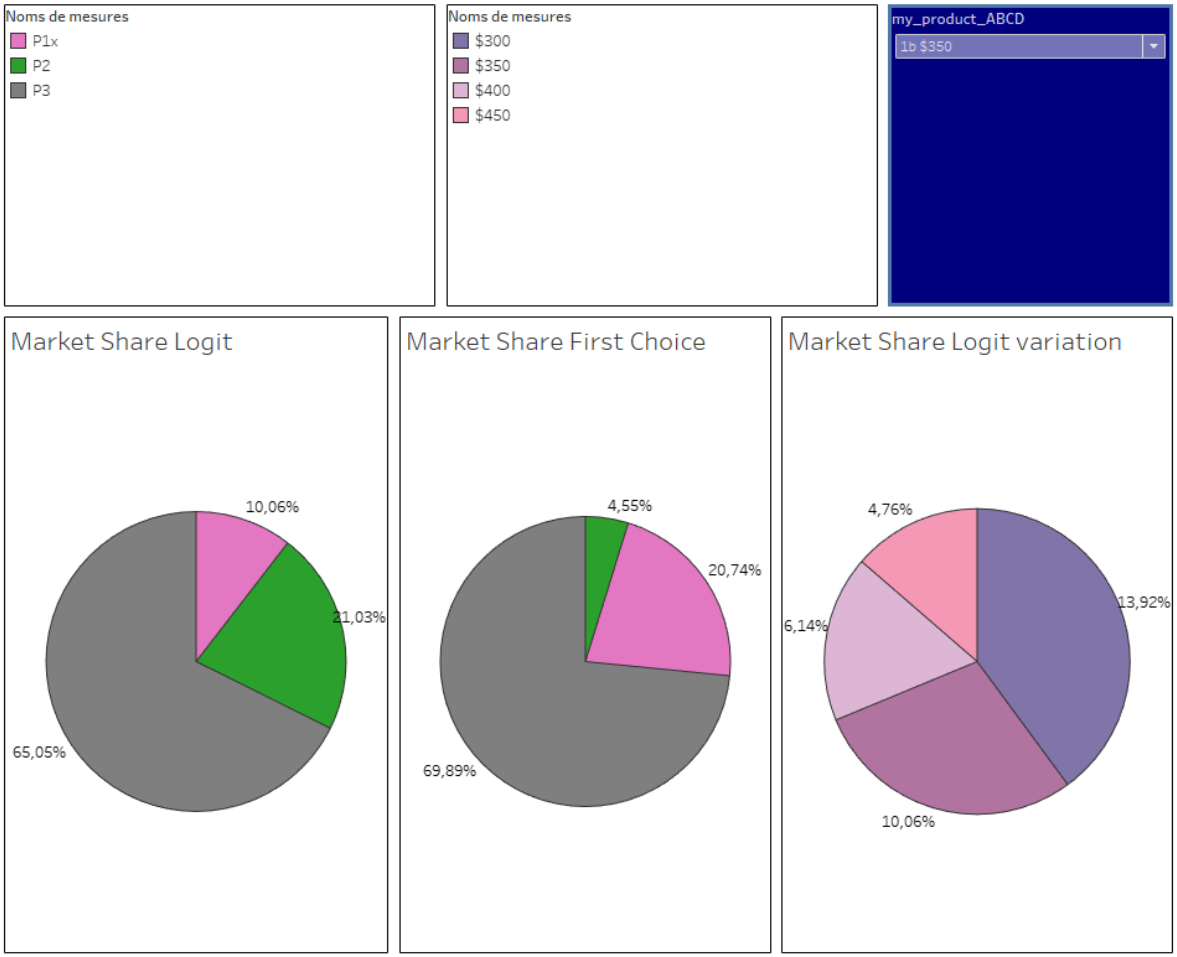
You completed the left part!

# Right part: pie-charts

- Now build the pie charts
- Help yourself with the one provided (Market Share Logit variation)
- Be careful,
  - for «*Market Share Logit*» and «*Market Share First Choice*» you are comparing one P1 product (a,b,c,or d) VS. P2 & P3
  - Not P1abcd against each other.

  Use the selector we built, for this task!

- Final result should look like this



# Steps Overview

Market Simulator Skeleton

**Case Study's Questions**

You are Carole Buerkli and have received a recent degree of a master in business analytics from the Geneva School of Economics and Management. In your first job you have become product manager for the smartphone brand Xiaomi for the EMEA region. Your first big project has been to conceptualize the launch of a new smartphone line. Your key competitors are Samsung and Apple. Currently Apple and Samsung have two smartphones in the market (see table below), that will be the key competitors for your new Xiaomi smartphone.

| Brand | Samsung | Apple |
|---|---|---|
| Screen | OLED | QLED |
| Sound | Stereo | Stereo |
| Sim Card | No Dual | No Dual |
| Camera | 20 MP | 20 MP |
| Price | 400 $ | 450$ |

Due to your education at the Geneva School of Economics and Management you are aware of the potential of conjoint studies to support this type of management decision problems. Luckily you can convince your new boss to conduct a research project with a research agency. Based on the result of the conjoint study you have already built a conjoint simulator.

Please use the conjoint simulator, that you have created based on the provided skeleton, in order to answer several questions related to management decisions concerning the introduction of the new Xiaomi smartphone. You will have to simulate different scenarios to arrive at a solution for the decision problems. You can vary your phone on five different attributes namely: price, screen, sound, sim-card , as well as camera. Below you find a table with five attributes and the different attribute levels.

| Attribute | Level 1 | Level 2 | Level 3 | Level 4 |
|---|---|---|---|---|
| **Brand** | Xiaomi | Samsung | Apple | |
| **Screen** | LED | QLED | OLED | |
| **Sound** | Mono | Stereo | Atmos | |
| **Sim-card** | No Dual | Dual | | |
| **Camera** | 20 MP | 60 MP | | |
| **Price** | 300 $ | 350 $ | 400 $ | 450$ |

**For the calculation of revenues and profits assume for simplicity, that the market volume is 10 million smartphones in the EMEA-region.**

**In general, conduct your simulations for first choice and logit-rules, but base your decisions on the result of the logit-rule.**

**Question 1:** Suppose your new Xiaomi smartphone would be launched with the lowest attribute levels on the four non-price attributes, e.g. Screen=LED, Sound=Mono, etc. Your boss thinks that a price of 350$ would be reasonable for such a product, as you would be the cheapest competitor in the market.

What will be preference share that this product will attain with First-Choice and Logit in EMEA market?
How would you change the price to increase revenues? By how much will your revenues change?

**Question 2:** Assuming if you could improve only one attribute level by one unit (i.e. from Screen=LED to Screen=QLED), which attribute would you choose to maximize your revenues assuming that the price is fixed at 350$?

**Question 3:** Assuming your R&D department gives you the opportunity to change the screen and the sound. The following table shows you by how much the manufacturing cost per unit will increase for different attribute improvements.

What product will you launch to maximize revenues?

What product will you launch to maximize profit assuming current manufacturing cost of 200$?

| | Screen | Manufacturing cost per unit |
|---|---|---|
| Improve from LED to | QLED | +20$ |
| Improve from LED to | OLED | +40$ |
| | **Sound** | **Manufacturing cost per unit** |
| Improve from Mono to | Stereo | +10$ |
| Improve from Mono to | Atmos | +40$ |

**Question 4:** from a press release, you learn that your competitor Apple will deliver an improved version of its current smartphone at the same price beginning of the next month. The new version has a 60 MP camera. Assume your competitor Samsung will reduce its price by 50$ as a reaction to this new Apple smartphone. If you could change only one attribute of your base smartphone which one would it be to maximize your profit in this new market situation?

| | Screen | Manufacturing cost per unit |
|---|---|---|
| Improve from LED to | QLED | +20$ |
| Improve from LED to | OLED | +40$ |
| | **Sound** | **Manufacturing cost per unit** |
| Improve from Mono to | Stereo | +10$ |
| Improve from Mono to | Atmos | +40$ |
| | **Sim-Card** | **Manufacturing cost per unit** |
| Improve to | Dual Sim card | +20$ |
| | **Camera** | **Manufacturing cost per unit** |
| Improve from 20 MP to | 60 MP | +60$ |