Data Science for Business
Lecture #2
Introduction to Ford Ka Case

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Ford Ka Case Background

What is the problem?

Objectives for the Case

Illustrate data mining process with cluster analysis

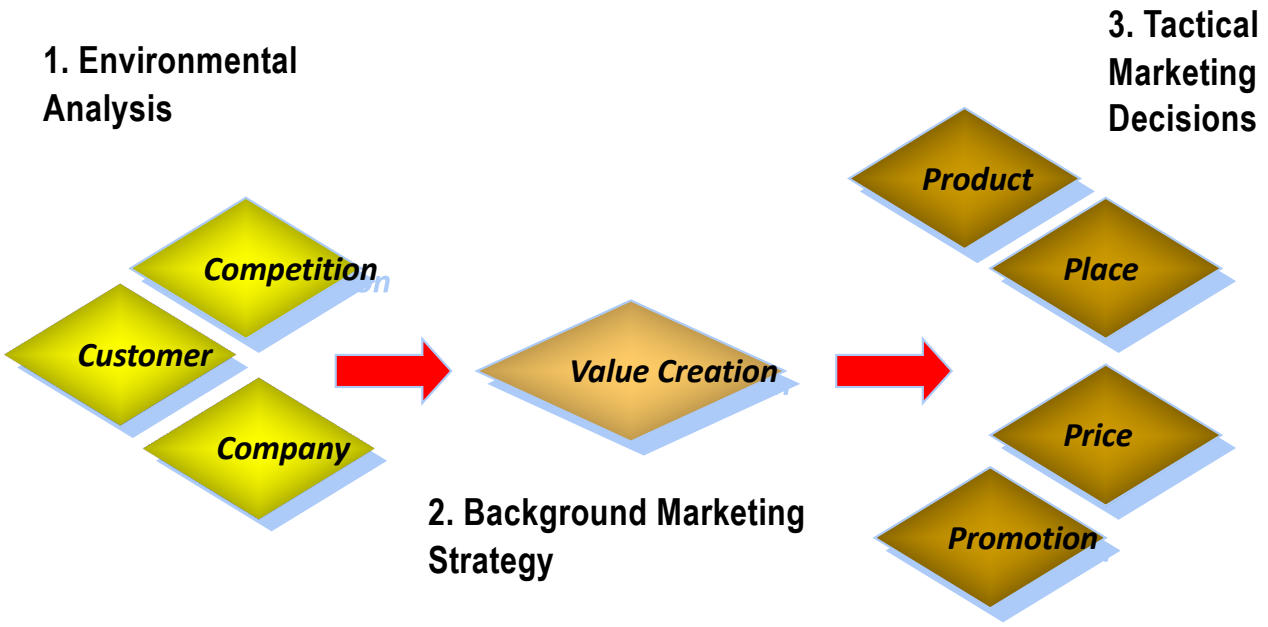
Marketing case study in Segmentation, Targeting, and Positioning

The importance of communicating our results

My goal is show how to translate your data mining analysis with the managerial problem

Business Background:

Developing a Marketing Strategy



What is segmentation?

Product categorization is not market segmentation.

- Segmentation is a process to group people with common needs and not products with common features.

Market segments are formed based on customer needs and not customer characteristics.

- Demographics help describe and identify potential customers, but segment formation and description are separate steps

Segmentation involves people and needs and both can change.

- A change in customer needs effects the firm's market offering, and if new customers are attracted to the firm it must adapt its market segmentation

A firm must be able to profitably satisfy the market segment needs

- Marketing mix tends to be ineffective if it is targeted at people with vastly diverging needs. Success requires clear understanding of what customers want, who they are, and how to market to them

No marketing strategy without market segmentation

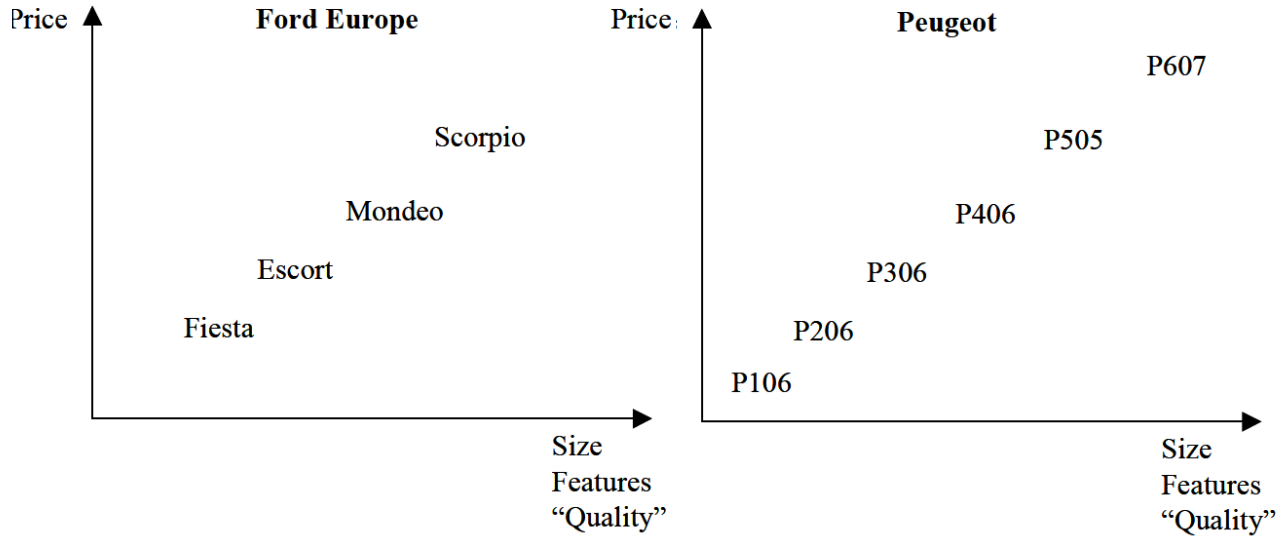
- Responding to competitors is done consistently with our market segmentation strategy

Traditional Segments *(or Product Categories)*

Category	Description	Examples
A & B	Small cars	Ford Fiesta, Fiat Cinquecento, Opel Corsa, Peugeot 106 and 205, Renault Clio, Renault Twingo, VW Polo
C	Lower medium cars	Ford Escort, Opel Astra, Peugeot 306, Renault Megane, VW Golf
D	Upper medium cars	Ford Mondeo, Audi 4, BMW 3, Peugeot 406, Renault Laguna, VW Passat
E	Executive cars	Ford Scorpio, Audi 6, BMW 5, Mercedes E, Renault Safrane
F	Luxury cars	Jaguar XJ6/12, BMW 7 Series, Mercedes S
G	Cabriolets	BMW Z3, Mazda MX-5, Mercedes SLK, Porsche Boxster
J	SUVs	Ford Maverick/Explorer, Opel Frontera, Range Rover, Toyota RAV4, Toyota Landcruiser
M	Minivans	Ford Galaxy, Fiat Ulysse, Renault Espace, VW Sharan
S	Coupes	Ford Probe, Mercedes CLK, Opel Tigra

Ford Product Line

Product Line for Ford Europe and Peugeot



Typically the product line is a tradeoff Between prices and features

How does the product lineup relate to competitors?

Renault Twingo Marketing

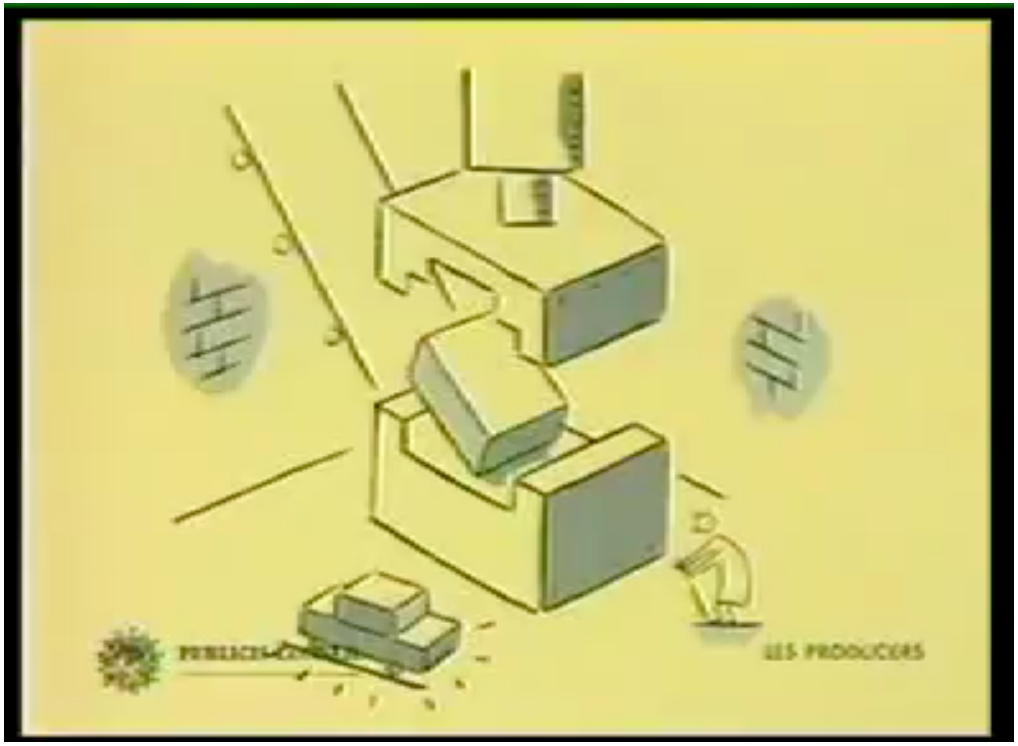
One of Ford's major European competitors, Renault, has introduced a new automobile into the marketplace. It is called the Twingo.

The car was not a major innovation, but the marketing strategy was…

Renault decided use the psychographic characteristics of potential buyers to segment buyers. The target was not a demographic group, but a segment of the population that identified with an idea.

The car was positioned for "Modern Times"

Renault Twingo Marketing
Advertising Example #1

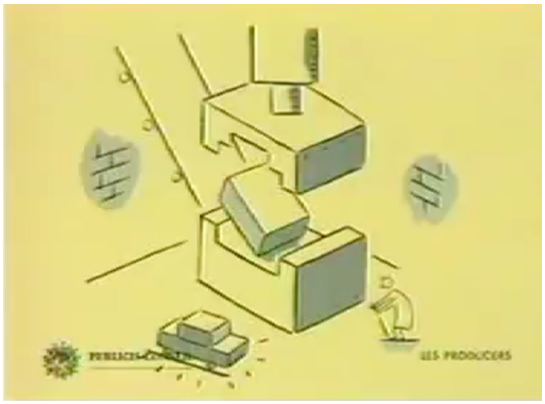


Renault Twingo Marketing
Advertising Example #2

Renault Twingo Marketing
Advertising Example #3

Renault Twingo Marketing

Advertisement #1



Advertisement #2

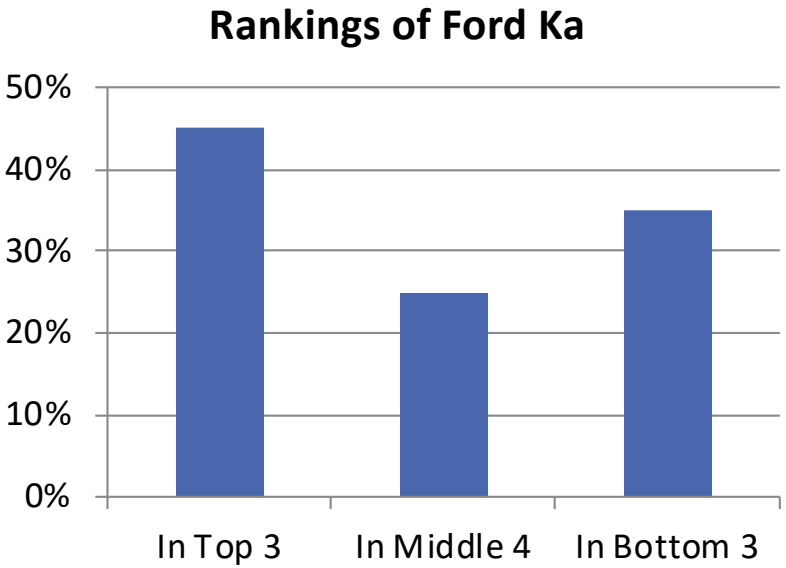
Advertisement #3

What is the theme of each advertisement? What is the story? Who is the focus?

Why did Ford develop the Ka?

1. Small cars have become attractive (not just price), but environmental factors and traffic congestion. Technological improvements make them better/safer.
2. Increased number of women buyers due to increased workforce participation. Stronger prefer for smaller cars due to “esthetics” and “design”
3. Experienced and observed improvements increase customer expectations
4. Number of small car models has increased, and they have become more distinct
5. More buyers seek cars that express their individuality and personality (e.g., Twingo, Mercedes A)

How do people react to Ka?



Note: We are not trying to predict who likes the Ford Ka,
but we would like our clusters to help explain these reactions

What is our problem?

How can we use our data to understand consumers? More specifically, how can we segment our large population of consumers into smaller and more easily understood groupings?

"Our traditional targeting methodology does not seem to be working … In order to see whether buyers in the small car market can be grouped into psychographic clusters, we have collected information based on a set of 62 attitudinal questions. As we see it, the key issue is to determine whether traditional demographic segmentation of the small car market lines up with psychographic segmentation. Perhaps psychographic segmentation will tell us something different about buyers of small cars." [Ford Ka Case]

What data do we have?
Survey of 250 likely small car buyers

Demographic Data

- Gender, Age, Marital Status, Number of Children, First time purchase, Age Category, Children Category, Income Category

Psychographic Data

- 62 attitudinal questions (1='strongly disagree' to 7='strongly agree')
- Q1: "I want a car that is trendy"
- Q2: "I am fashion conscious"
- Q3: "I do not have time to worry about car maintenance"
- Q4: "Basic transportation is all I need"

Perceptual Data (we do not use)

- On a scale of 1='very similar' to 9='very different' compared each pair of cars
- Analyzed using another technique known as Multidimensional Scaling (MDS)

Ford Ka Hints

There is a "Hint" that is given to show how to do the Ford Cluster Analysis using the demographic data. The basic steps are:

1. Input Data
2. Describe and manipulate the data
3. Plot Data
4. Perform k-Means
5. Interpret and evaluate Clusters

Please look at the Discussion board for additional hints.

Hints for Ford Ka Cluster Analysis

The hints given in this document are meant to provide the steps necessary to provide a solution to the cluster analysis assignment. Commands to enter in RStudio are given in a script that accompanies this hint called FordKaHints.R, are given in the `Lucida` font, and are also given in a shaded box.

These hints will give you only one possible solution. You are encouraged to try alternative clustering solutions and look for a better one. Please see the comments in the pink shaded area for additional analysis that you may want to perform. There are five basic steps which are given below: input data, describe it, plot it, perform the cluster analysis and interpret the results.

1. Input data

The dataset is given as both a comma-delimited table and an Excel spreadsheet. The spreadsheet is helpful to refer to the codes to which the categorical variables correspond to (e.g., Gender=1 is Male and Gender=2 is Female). (Note: you should replace "c:/class/" with your correct subdirectory in which your data is stored.)

```
> # read in Ford Ka datasets
> forddemo=read.csv("c:/class/FordkaDemographicData.csv",row.names=1)
> fordpsyc=read.csv("c:/class/FordKaPsychographicData.csv",row.names=1)
> ford=read.csv("c:/class/FordKaData.csv",row.names=1)
```

There are three different datasets, but the `ford` dataset includes both the forddemo and fordpsyc datasets as additional columns. To list the variables (or columns) of each of the data frames:

```
> # to list the variables in each dataset
> ls(forddemo)
[1] "Age"                "AgeCategory"        "ChildrenCategory"
[4] "FirstTimePurchase" "Gender"             "IncomeCategory"
[7] "MaritalStatus"      "NumberChildren"     "PreferenceGroup"
> ls(fordpsyc)
 [1] "Q1"  "Q10" "Q11" "Q12" "Q13" "Q14" "Q15" "Q16" "Q17" "Q18"
[11] "Q19" "Q2"  "Q20" "Q21" "Q22" "Q23" "Q24" "Q25" "Q26" "Q27"
[21] "Q28" "Q29" "Q3"  "Q30" "Q31" "Q32" "Q33" "Q34" "Q35" "Q36"
[31] "Q37" "Q38" "Q39" "Q4"  "Q40" "Q41" "Q42" "Q43" "Q44" "Q45"
[41] "Q46" "Q47" "Q48" "Q49" "Q5"  "Q50" "Q51" "Q52" "Q53" "Q54"
[51] "Q55" "Q56" "Q57" "Q58" "Q59" "Q6"  "Q60" "Q61" "Q62" "Q7"
[61] "Q8"  "Q9"
> ls(ford)
 [1] "Age"                "AgeCategory"        "ChildrenCategory"
 [4] "FirstTimePurchase" "Gender"             "IncomeCategory"
 [7] "MaritalStatus"      "NumberChildren"     "PreferenceGroup"
[10] "Q1"                 "Q10"                "Q11"
[13] "Q12"                "Q13"                "Q14"
```

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