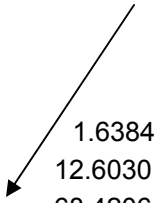
# SIM Case: Cluster analysis detects three groups (segments) of brands

# Average characteristics of segments

| N Rows | 3.0 | 3.0 | 5.0 |
|---|---|---|---|
| Mean(Computer line) | 2.8 | 1.7 | 1.8 |
| Mean(Time to Market) | -4.0 | -4.3 | 2.4 |
| Mean(Price) | $ (3,666.67) | $ (2,833.33) | $ (3,620.00) |
| Mean(Payment terms) | 40.3 | 39.0 | 40.2 |
| Mean(Financing) | 4.0 | 1.0 | 1.8 |
| Mean(Warranty) | 10.0 | 10.0 | 10.8 |
| Mean(Phone support) | -2.1 | -2.1 | -1.8 |
| Mean(Installation) | 4.0 | 1.0 | 2.8 |
| Mean(Hardware Service) | -1.9 | -3.2 | -2.7 |
| Mean(Marketing) | 4.0 | 1.3 | 3.0 |
| Mean(Software Compatibility) | 2.2 | 2.7 | 2.5 |
| Mean(Speed) | 3.1 | 3.0 | 3.4 |
| Mean(Training) | 2.0 | 1.0 | 2.4 |

# Principal components ==> 2 dimensions explain > 50% of the brand characteristics



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Eigenvalue | 4.3780 | 2.8782 | 1.6384 | 1.3518 | 1.2616 | 0.7695 | 0.3557 |
| Percent | 33.6773 | 22.1403 | 12.6030 | 10.3981 | 9.7043 | 5.9194 | 2.7358 |
| Cum Percent | 33.6773 | 55.8176 | 68.4206 | 78.8187 | 88.5230 | 94.4424 | 97.1782 |
| **Eigenvectors** | | | | | | | |
| Computer line | 0.36762 | -0.30330 | 0.18262 | 0.12249 | 0.16531 | -0.01560 | -0.06428 |
| Time to Market | 0.03995 | 0.44558 | -0.11850 | -0.23752 | 0.21217 | 0.46402 | -0.29919 |
| Price | -0.34661 | -0.19868 | -0.01333 | 0.04812 | 0.33348 | 0.22826 | 0.67260 |
| Payment terms | 0.09966 | 0.12826 | 0.53174 | -0.49253 | -0.08159 | 0.26862 | 0.30039 |
| Financing | 0.38225 | -0.19679 | 0.02764 | 0.20604 | -0.28097 | 0.27998 | 0.15398 |
| Warranty | 0.05822 | 0.28199 | 0.49151 | 0.25548 | -0.23476 | -0.39857 | 0.16151 |
| Phone support | -0.01332 | 0.42004 | -0.39594 | 0.31725 | 0.05857 | -0.17320 | 0.37594 |
| Installation | 0.35819 | -0.04393 | -0.18389 | -0.39361 | 0.25891 | -0.18272 | 0.32957 |
| Hardware Service | 0.32087 | -0.11950 | 0.00619 | 0.16752 | 0.59620 | -0.07496 | -0.16296 |
| Marketing | 0.37934 | 0.10577 | 0.15702 | 0.39332 | 0.07075 | 0.29286 | 0.11546 |
| Software Compatibility | -0.32079 | 0.15715 | 0.27039 | 0.35634 | 0.23428 | 0.35063 | -0.08746 |
| Speed | 0.11339 | 0.47427 | 0.19876 | -0.10194 | 0.30677 | -0.28577 | -0.00905 |
| Training | 0.30428 | 0.28608 | -0.31535 | 0.01551 | -0.30954 | 0.25210 | 0.12794 |

# Any variables completely left out in the 2-dimensional picture?

- Payment terms (only 9% of variance explained)
- Warranty (24% of variance explained)

| Communalities | |
|---|---|
| Computer line | 0.85644 |
| Time to Market | 0.57843 |
| Price | 0.63959 |
| Payment terms | 0.09084 |
| Financing | 0.75117 |
| Warranty | 0.24371 |
| Phone support | 0.50859 |
| Installation | 0.56726 |
| Hardware Service | 0.49185 |
| Marketing | 0.66221 |
| Software Compatibility | 0.52162 |
| Speed | 0.70370 |
| Training | 0.64089 |

# What does it mean for two Brands to be close to each other?

- The two brands have similar profiles on the attributes

  (their attribute values are highly correlated)

# Looking at the rotated loading matrix (or “factor pattern”) …

Factor 1:

- Broad computer line
- Good financing terms
- Good service, marketing
- Expensive
- Software not compatible

Factor 2:

- Quick to market
- High performance (fast)
- Good training, phone support
- Good warranty
- Expensive

Rotated Factor Pattern

| | | |
|---|---|---|
| Computer line | 0.881767 | -0.280935 |
| Time to Market | -0.129445 | 0.749447 |
| Price | -0.603232 | -0.525071 |
| Payment terms | 0.139959 | 0.266921 |
| Financing | 0.861048 | -0.098828 |
| Warranty | -0.015704 | 0.493418 |
| Phone support | -0.224512 | 0.676890 |
| Installation | 0.740723 | 0.136348 |
| Hardware Service | 0.701270 | -0.008483 |
| Marketing | 0.712771 | 0.392636 |
| Software Compatibility | -0.718843 | 0.069904 |
| Speed | 0.004681 | 0.838854 |
| Training | 0.476995 | 0.642936 |

# Factor loadings (of attributes) and factor scores (of brands) can be overlaid

# What does it mean for two attributes to point in the same direction from the center?

- Brands that are high on one attribute are also hight on the other

  (the attribute values are highly correlated across brands)

# How can you tell if a Brand is high on a particular attribute?

- Extend the attribute arrow into a line
- Drop a perpendicular from Brand location to the attribute line & check whether it is on the positive or negative side of the line (and by how much)
- These conclusions are approximate because the map cannot perfectly capture all the information in the Brand-attribute matrix

# The main uses of perceptual maps in new product development are:

- to understand market structure
- to jog the mind for new product ideas (in "blank spaces")
- to formulate a Core Benefit Proposition
- to test how a new product concept is perceived
- after launch, to check if desired positioning is being achieved