**Temar Multi sort report with conditional formatting**

| | | info/news | talk/social | treat | company/ noise | entertainment/ escape |
|---|---|---|---|---|---|---|
| TPT12 | **Channel 4 - Top Quintile (Most Time Spent)** | Factor1 | Factor2 | Factor3 | Factor4 | Factor5 |
| | Variance explained (%) | 10 | 10 | 9.9 | 9 | 6.7 |
| | Variance explained cumulative (%) | 10 | 20 | 29.9 | 38.9 | 45.6 |
| 10 | For News And Current Affairs - Main Reason For Watching TV | 0.732 | -0.063 | -0.052 | 0.028 | -0.05 |
| 9 | To Keep Up To Date - Main Reason For Watching TV | 0.589 | 0.085 | 0.036 | 0.184 | 0.087 |
| 12 | For Sports News And Commentary - Main Reason For Watching T | 0.543 | 0.089 | 0.06 | -0.144 | 0.104 |
| 13 | For Education/Information - Main Reason For Watching TV | 0.528 | 0.017 | 0.186 | 0.057 | -0.198 |
| 11 | For Practical Advice - Main Reason For Watching TV | 0.351 | 0.135 | 0.439 | 0.072 | 0.076 |
| 5 | To Talk About It With Friends/Family As I Am Watching It - Main | 0.069 | 0.811 | 0.049 | 0.055 | -0.068 |
| 4 | To Spend Time With Friends/Family - Main Reason For Watching | -0.028 | 0.739 | 0.068 | 0.045 | 0.037 |
| 6 | To Give Me Something To Talk About With Friends/Family After | 0.105 | 0.593 | 0.141 | 0.122 | 0.077 |
| 16 | To Make Me Feel Better - Main Reason For Watching TV | -0.026 | 0.22 | 0.605 | 0.242 | 0.055 |
| 7 | To Stimulate My Imagination - Main Reason For Watching TV | 0.21 | -0.015 | 0.569 | 0.07 | -0.008 |
| 17 | Other - Main Reason For Watching TV | -0.205 | 0.019 | 0.526 | -0.162 | -0.34 |
| 8 | To Treat/Reward Myself - Main Reason For Watching TV | 0.076 | 0.139 | 0.519 | 0.098 | 0.311 |
| 11 | For Practical Advice - Main Reason For Watching TV | 0.351 | 0.135 | 0.439 | 0.072 | 0.076 |
| 2 | To Relax/Escapism - Main Reason For Watching TV | -0.078 | -0.065 | 0.3 | 0.139 | 0.544 |
| 3 | Force Of Habit - Main Reason For Watching TV | 0.043 | 0.142 | -0.074 | 0.706 | -0.068 |
| 15 | As Background - Main Reason For Watching TV | 0.008 | 0.089 | 0.106 | 0.672 | 0.081 |
| 14 | To Keep Me Company - Main Reason For Watching TV | 0.065 | -0.013 | 0.28 | 0.613 | 0.046 |
| 1 | For Entertainment - Main Reason For Watching TV | 0.025 | 0.079 | -0.08 | -0.08 | 0.736 |
| 2 | To Relax/Escapism - Main Reason For Watching TV | -0.078 | -0.065 | 0.3 | 0.139 | 0.544 |
| 17 | Other - Main Reason For Watching TV | -0.205 | 0.019 | 0.526 | -0.162 | -0.34 |
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The level of data explained by the factors is shown in this table of factor loadings. The variance explained (%) shows what percent of total variance is explained by each factor. The variance explained cumulative (%) shows the cumulative value of factor loadings. Factors are sorted in descending order from left to right. In this report the total variance explained by the 5 factors is 45.6%.

How can you judge if the variance explained is good?
If you have 5 factors and your number of input variables was 17 then 5/17=29.4%. Compare this number with the cumulative variance (%) in this report i.e. 45.6%, which is a lot higher. This kind of calculations helps the user calculate how good the factors related data compression is.

Here you see values in a table, these are called factor loadings. They are the correlations between the variables and the factors.

This report has been sorted in order to aid interpretation (and comparison). **The job of the user is to identify what the variables have in common (for each sorted factor) and then give the respective factor a name and/or description**. In this example, the user made up names are shown in yellow above the table.

Looking at this factor (3) where the scores are sorted and highlighted, it appears that they are logically consistent and we can see what they have in common. The people behind these variables seem to have similar opinions about feeling better, stimulating imagination, treat, relaxation, escapism, so we gave this factor the description "Treat".

Telmar's factor analysis program has a useful multi sort routine that sorts the variables for each factor. This aids interpretation by making comparison easier. The user can select enter a minimum or lower value, for the factor loadings, in order to determine the number of variables that will be shown for each factor. The default minimum is 0.3. In the example above we exported the multi sort report to excel and we have used conditional formatting to highlight the values above 0.3.

It is important in interpretation to pay attention to those loadings which are comparatively high for two or more factors, for example row 11. High values on two factors can mean that the different factors may have something in common.

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## About factor analysis (non technical)

- ✓ The report overleaf shows how the factor program has simplified the structure of a crosstab report and it has summarised and grouped the correlation with values (factor loadings)
- ✓ Factor analysis is used to understand a single target audience unlike correspondence analysis which compares a set of columns
- ✓ It reduces a "large" number of correlated questions (also referred to as rows or variables) e.g. lifestyle questions to a smaller set of uncorrelated variables called factors. It does this by grouping survey questions together (based on their correlation).
- ✓ Unlike cluster which groups respondents together, factor analysis groups questions which are answered in a similar way

## About factor analysis (technical)

- ✓ Factor analysis starts with a matrix of Pearson correlations.
- ✓ The system controls for complete multi-colleniarity i.e. it excludes variables if they have correlations of 1 or -1. That means for example that one cannot use mutually exclusive variables such as men and women
- ✓ Another example might be "computers are confusing" vs "my friends ask my advice about computing"
- ✓ If a user inputs mutually exclusive variables as described previously, the first will be automatically included and the second excluded, but when excluded the user will see a list of excluded variables which they can over-ride
- ✓ Telmar's FA provides graphical support that helps you decide how many factors to look at (a scree plot and other charts)
- ✓ The program has several user friendly features, such as
  - o special indicators explaining the cause of the high correlations
  - o Convenient methods for highlighting important information
  - o Easy ways to link factor analysis with other parts of the software (e.g. CrossTab and Cluster)

## What can it be used for?

- ✓ Factor analysis groups similar questions (variables) together. This means that factor analysis can be a useful aid for questionnaire design, as it can identify questions which are doing the same "job" (due to their high correlation with each other)
- ✓ Understand media and their relationship with content e.g. word of mouth, favourite TV programmes, topic of interest in newspapers or magazines etc.
- ✓ Factor analysis can be used as a selection procedure for running cluster analysis
- ✓ It can help explore or confirm different hypothesis about the relationship between variables
- ✓ As part of the media planning process to identify appropriate media for lifestyle driven target audiences

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