Market Segmentation Analysis Report

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Step 1:

3.1 Implications of Committing to Market Segmentation

Market segmentation is a long term commitment that requires considerable resources to be invested in research, fielding surveys, and focus groups, designing multiple packages, and designing multiple advertisements and communication messages. The return on investment must be sufficient to justify the costs. A market segmentation strategy may require changes to the internal structure of the organisation, including the development of new products, the modification of existing products, changes in pricing and distribution channels used to sell the product, as well as all communications with the market.

3.2 Implementation Barriers

Senior management is the first group of barriers to market segmentation. Lack of leadership, pro-active championing, commitment and involvement in the market segmentation process by senior leadership undermines the success of market segmentation. A second group of barriers relates to organisational culture. This group includes lack of market orientation, resistance to change, lack of creative thinking, bad communication, short-term thinking, unwillingness to make changes and office politics. The lack of a formal marketing function and a qualified data manager and analyst in the organisation can be major stumbling blocks. Another obstacle to market segmentation may be the lack of financial resources or the inability to make the structural changes required. Process-related barriers include not having clarified the objectives of the market segmentation exercise. Doyle and Saunders (1985) note that management science has had a disappointing level of acceptance in industry, but graphical visualisations can help to overcome this challenge.

Step 2:
Attractiveness Criteria

Attractiveness criteria are not binary in nature. Each market segment is rated according to how attractive it is according to all criteria.

4.4 Implementing a Structured Process

There is general agreement in the segmentation literature that following a structured process is beneficial. The most popular structured approach is to use a segment evaluation plot, where segment attractiveness and organisational competitiveness values are determined by the segmentation team. Optimally, a team of people should complete market segmentation analysis, and the advisory committee should be comprised of representatives from all organisational units. This is because each unit has a different perspective on the business of the organisation.

The segment evaluation plot can be completed in Step 2 of the market segmentation analysis, but it is much easier to select a target segment if the attractiveness criteria are selected at this early stage.

At the end of this step, the market segmentation team should have a list of approximately six segment attractiveness criteria, and a weight attached to each criteria. The weights should be negotiated with the advisory committee.

Step 3:
Collecting Data

In commonsense segmentation, one single characteristic of the consumers in the sample is used to split the sample into market segments. In this case, gender is the segmentation variable.

All the other variables, such as age, the number of vacations taken, and information about five benefits people seek or do not seek when they go on vacation, serve as descriptor variables. Data-driven market segmentation uses multiple segmentation variables to identify naturally existing, or artificially creating market segments useful to the organisation. In the data-driven case, we may want to extract market segments of tourists who share a common set of benefits they seek when going on vacation, rather than focusing on gender or age. When commonsense segments are extracted, the quality of the empirical data is critical to both assigning each person in the sample to the correct market segment and to correctly describing the segments.

Empirical data for segmentation studies can come from a range of sources, including survey studies, scanner data, loyalty programs, and experimental studies. Survey data is often unreliable in reflecting behaviour, especially when the behaviour of interest is socially desirable.

5.2 Segmentation Criteria

Long before segments are extracted, the organisation must choose which segmentation criterion to use. The most common segmentation criteria are geographic, socio-demographic, psychographic and behavioural. Bock and Uncles (2002) argue that the most relevant differences between consumers are profitability, bargaining power, preferences for benefits or products, barriers to choice and consumer interaction effects. However, there are many different segmentation criteria available, so use the simplest possible approach.

5.2.1 Geographic Segmentation

Geographic information is seen as the original segmentation criterion used for the purpose of market segmentation. The location of residence serves as the only criterion to form market segments, and is often the most appropriate approach.

Geographic segmentation allows marketers to target communication messages and select communication channels to reach the selected geographic segments. However, people living in the same country or area do not necessarily share other characteristics relevant to marketers, such as benefits they seek when purchasing a product. Despite the potential shortcomings of using geographic information as the segmentation variable, international market segmentation studies have experienced a revival.

5.2.2 Socio-Demographic Segmentation

In some industries, socio-demographic segmentation is very useful, for example in luxury goods, cosmetics, baby products, retirement villages, tourism resort products and so on. As with geographic segmentation, socio-demographic segmentation criteria can easily be determined for every consumer, but in many instances, the socio-demographic criterion is not the cause for product preferences, thus not providing sufficient market insight for optimal segmentation decisions. Psychographic segmentation is used to group people according to psychological criteria, such as beliefs, interests, preferences, aspirations, or benefits sought when purchasing a product. Most psychographic segmentation studies use a number of segmentation variables. The psychographic approach has the advantage of being more reflective of the underlying reasons for differences in consumer behaviour, but the disadvantage is the increased complexity of determining segment memberships for consumers. Another approach to segment extraction is to search directly for similarities in behaviour or reported behaviour. Tourist behaviour emerged as superior to geographic variables. Using actual behaviour rather than stated behaviour or stated intended behaviour, behavioural segmentation groups people by the similarity which matters most. This

avoids the need for the development of valid measures for psychological constructs.

5.3 Data from Survey Studies

Most market segmentation analyses are based on survey data, which is cheap and easy to collect. However, survey data can be contaminated by a wide range of biases. In data-driven segmentation, all variables relevant to the construct captured by the segmentation criterion need to be included, but unnecessary variables must be avoided. These variables can make questionnaires long and tedious for respondents, which causes respondent fatigue and lower quality responses. Noisy variables can be avoided by asking all necessary and unique questions, while resisting the temptation to include unnecessary or redundant questions. They are particularly problematic in the context of market segmentation analysis. A good questionnaire requires conducting exploratory or qualitative research, which is then categorised and included in a questionnaire as a list of answer options. Options allowing respondents to answer in only one of two ways generate binary or dichotomous data, while options allowing respondents to select an answer from a range of unordered categories correspond to nominal variables. Options allowing respondents to indicate a number generate metric data, but most commonly used response options in survey research are ordered answer options larger than two, which generate ordinal data, but the distance between adjacent answer options is not clearly defined. If metric or binary response options are meaningful with respect to the question asked, they should be provided to respondents. Ordinal scales dominate both market research and academic survey research, but using binary or metric response options instead is usually not a compromise. Survey data is prone to capturing biases, including respondents' tendencies to use extreme answer options, to use the midpoint, and to agree with all statements. Response styles affect segmentation results because commonly used segment extraction algorithms cannot differentiate between a data entry reflecting the respondent's belief and a response style. If a market segmentation is

based on responses to questions asking tourists whether or not they spent money on certain aspects of their vacation, it could equally well reflect a response style. Additional analyses are required to exclude this possibility.

5.3.4 Sample Size

Market segmentation analysis is difficult if the sample size is insufficient. Formann (1984) recommends that the sample size should be at least 2P (better five times 21'), where p is the number of segmentation variables. Qiu and Joe (2015) recommend that the sample size for constructing artificial data sets for studying the performance of clustering algorithms should be at least ten times the number of segmentation variables times the number of segments in the data. Dolnicar et al. (2014) conducted extensive simulation studies with artificial data modelled after typical data sets used in applied tourism segmentation studies. The adjusted Rand index served as the measure of correctness of segment recovery. The higher the effect of an increase in sample size, the better the algorithm identified the correct market segmentation solution. Increasing the sample size improves the correctness of the extracted segments, but the biggest improvement is achieved by increasing very small samples. Dolnicar et al. (2016) investigated the effect of market and data characteristics on sample size requirements for segmentation algorithms, specifically the number of market segments present in the data, whether those market segments are equal or unequal in size, and the extent to which market segments overlap. A larger sample size always improves an algorithm's ability to identify the correct market segmentation solution, but the effect varies substantially across market and data characteristics. Using uncorrelated segmentation variables leads to very good segment recovery, but correlation cannot be well compensated for by increasing sample size. This study demonstrates the importance of having a sufficiently large sample size, high-quality unbiased data, no correlated items, high-quality responses, being binary or metric, being free of response styles, and including a sufficient sample size given the number of segmentation variables.

5.4 Data from Internal Sources

Increasingly, organisations have access to substantial amounts of internal data that can be harvested for the purpose of market segmentation analysis. This data is usually automatically generated and no extra effort is required to collect data.

5.5 Data from Experimental Studies

A possible source of data for market segmentation analysis is experimental data. This data can be obtained from field or laboratory experiments, choice experiments or conjoint analyses, and can be used as a segmentation criterion. The third layer of market segmentation analysis depends primarily on user input. The user needs to be involved in most stages, literally wrapping around the technical aspects of market segmentation analysis.

Step 2: Specifying the Ideal Target Segment

After committing to investigating the value of a segmentation strategy in Step 1, the organisation must determine two sets of segment evaluation criteria in Step 2. These criteria are used to evaluate the relative attractiveness of the remaining market segments.
The segmentation team needs to negotiate the extent to which knock-out criteria matter in target segment selection, and then apply attractiveness criteria to determine the overall relative attractiveness of each market segment.
Knock-out criteria are used to determine if market segments qualify to be assessed using segment attractiveness criteria. They include substantiality, measurability and accessibility.
The segment must be large enough, match the strengths of the organisation, be identifiable, and be reachable in order to make the customised marketing mix accessible to them.

Step 6:
Profiling Segments

Profiling is required when data-driven market segmentation is used, because in commonsense segmentation the profiles of the segments are predefined. However, in data-driven market segmentation the profiles of the segments are unknown until after the data has been analysed.
At the profiling stage, we inspect a number of alternative market segmentation solutions, and make a correct interpretation of the resulting segments. Data-driven market segmentation solutions are difficult to interpret, and 65% of marketing managers state that they have difficulties understanding the results.

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Traditional statistics approaches to segment profiling are often contradictory, rushed, slap hazard and insufficiently conclusive, and are often presented in a PowerPoint presentation with a slick handout. Graphical statistics approaches are less tedious and thus less prone to misinterpretation.

8.2 Traditional Approaches to Profiling Market Segments

We use the Australian vacation motives data set and reload the segmentation solution derived and saved on page 171.
R> data ("vacmot", package = "flexclust") R> load ("vacmot-clusters . RData
Data-driven segmentation solutions are usually presented to users as high level summaries or large tables that provide exact percentages for each segmentation variable. These tables are hard to interpret and make it virtually impossible to get a quick overview of the key insights.
Segment 2 is motivated by rest and relaxation, and does not want to exceed the planned travel budget. They care about a change of surroundings, but not about cultural offers, an intense experience of nature, or realising creativity.

Table 8.1 Six segments computed with the neural gas algorithm for the Australian travel motives data set. All numbers are percentages of people in the segment or in the total sample agreeing to the motives

	Seg. 1	Seg. 2	Seg. 3	Seg. 4	Seg. 5	Seg. 6	Total
Rest and relax	83	96	89	82	98	96	90
Change of surroundings	27	82	73	82	87	77	67
Fun and entertainment	7	71	81	60	95	37	53
Free-and-easy-going	12	65	58	45	87	75	52
Not exceed planned budget	23	100	2	49	84	73	51
Life style of the local people	9	29	30	90	75	80	46
Good company	14	59	40	58	77	55	46
Excitement, a challenge	9	17	39	57	76	36	33
Maintain unspoilt surroundings	9	10	16	7	67	95	30
Cultural offers	4	2	5	96	62	38	28
Luxury / be spoilt	19	24	39	13	89	6	28
Unspoilt nature/natural landscape	10	10	13	15	69	64	26
Intense experience of nature	6	8	9	21	50	58	22
Cosiness/familiar atmosphere	11	24	12	7	49	25	19
Entertainment facilities	5	25	30	14	53	6	19
Not care about prices	8	7	43	19	29	10	18
Everything organised	7	21	15	12	46	9	16
Do sports	8	12	13	10	46	7	14
Health and beauty	5	8	10	8	49	16	12
Realise creativity	2	2	3	8	29	14	8

To profile all six market segments based on Table 8.1, 120 numbers have to be compared, and 300 numbers have to be compared for the complete table with 20 rows. Segment 2 is characterized by rest and relaxation, and not wanting to exceed the planned travel budget.

To profile all six market segments based on Table 8.1, 120 numbers have to be compared, and 300 numbers have to be compared between segments. This means 420 comparisons in total. If the data analyst presents five alternative segmentation solutions containing six segments each, a user would have to compare 2100 pairs of numbers to understand the defining characteristics of the segments. This approach is not statistically correct.

8.3 Segment Profiling with Visualisations

Market segmentation solutions typically do not make much use of graphics, although data visualisation using graphics is an integral part of statistical data analysis. Graphics are particularly important in exploratory statistical analysis (like cluster analysis) because they provide insights into the complex relationships between variables. Leisch (2008) reviews visualisation techniques for cluster analysis and mixture models, and gives examples of prior use of segmentation solutions.
Visualisations are useful in the data-driven market segmentation process to inspect one or more segments in detail and to assess the usefulness of a market segmentation solution.

8.3.1 Identifying Defining Characteristics of Market Segments

A segment profile plot shows how each market segment differs from the overall sample for all segmentation variables. The segment profile plot is the direct visual translation of tables such as Table 8.1.
Tourists who care about an unspoilt natural landscape seek an intense experience of nature.
The variables are shown in the order suggested by hierarchical clustering of variables, with marker variables depicted in colour.
The segment profile plot is a panel plot that shows the cluster centres for each segment. The dots represent the total mean values for the segmentation variables across all observations in the data set.
Barchart's segment profile plot uses marker variables to make the chart easier to interpret. Marker variables are defined as variables that deviate by more than 0.25 from the overall mean.
The deviation figures of 0.25 and 50% indicate substantial differences, but are ultimately arbitrary and can be chosen by the data analyst and user.
Only 12% of people indicated that HEALTH AND BEAUTY was a travel motive for them. Therefore, this vacation activity will be considered a marker variable.
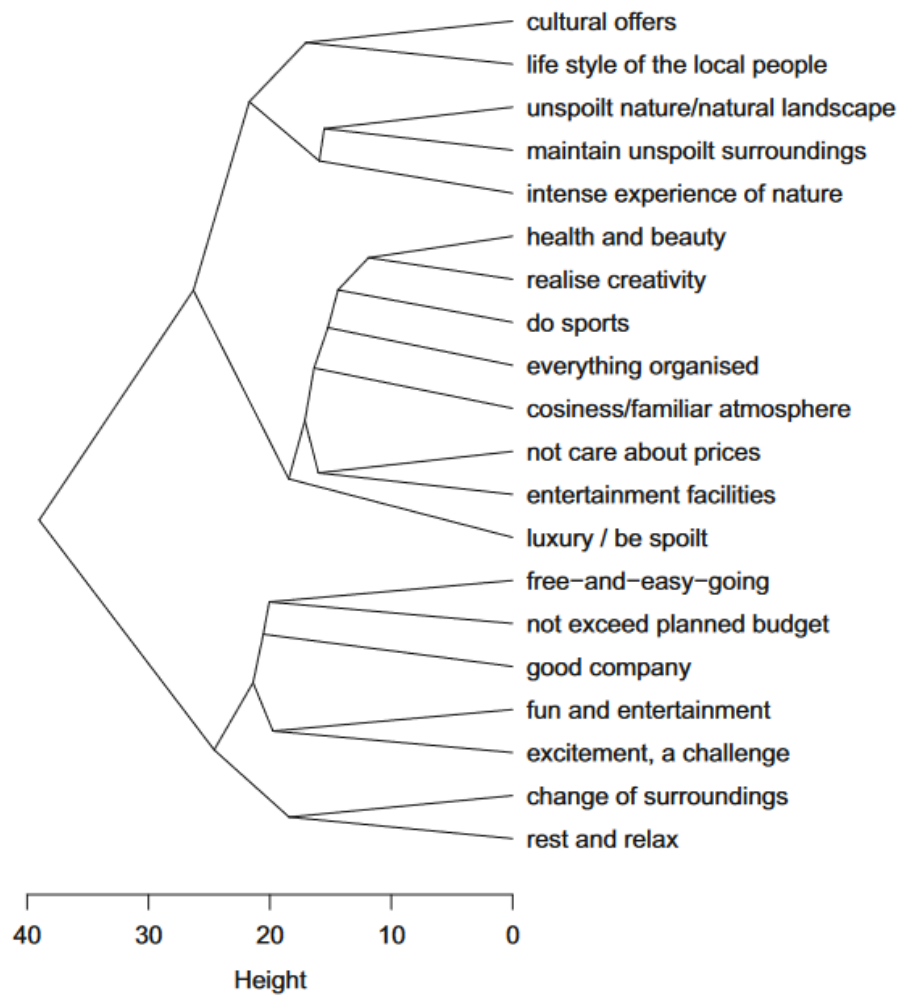
Fig. 8.1 Hierarchical clustering of the segmentation variables of the Australian travel motives data set using Ward's method
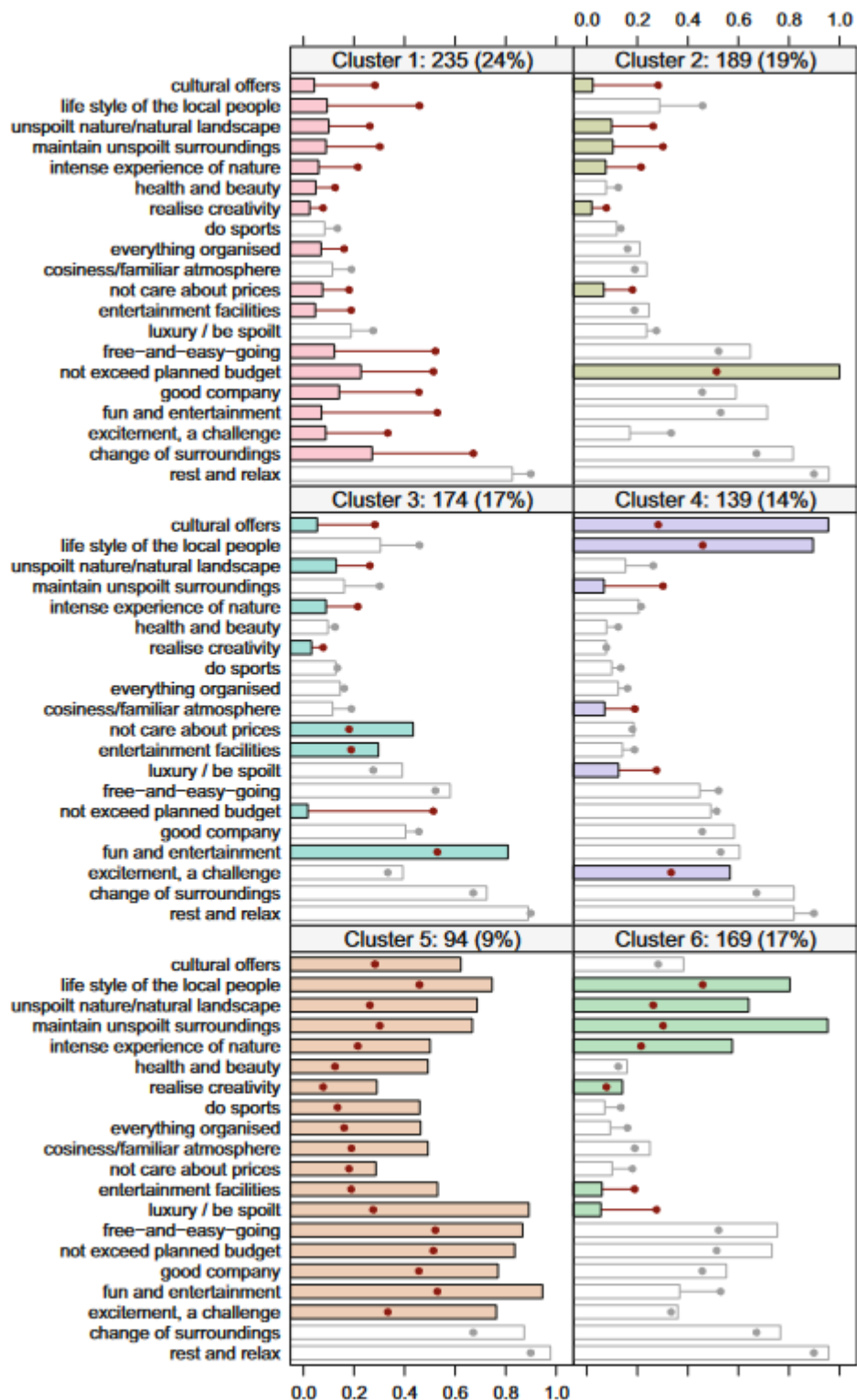
**Fig. 8.2** Segment profile plot for the six-segment solution of the Australian travel motives data set

The segment profile plot in Fig. 8.2 shows that members of segment 2 are characterised primarily by not wanting to exceed their travel budget, members of segment 4 are interested in culture and local people, and members of segment 3 want fun and entertainment. Nazila Babakhani

conducted an eye tracking study to investigate how people interpret complex data analysis results presented in traditional tabular versus graphical statistics format. A heat map shows how long one person looked at each section of a table or figure. The heat map of the segment profile plot shows that the person looked at a smaller surface area and took less effort to find the information required to answer the question.
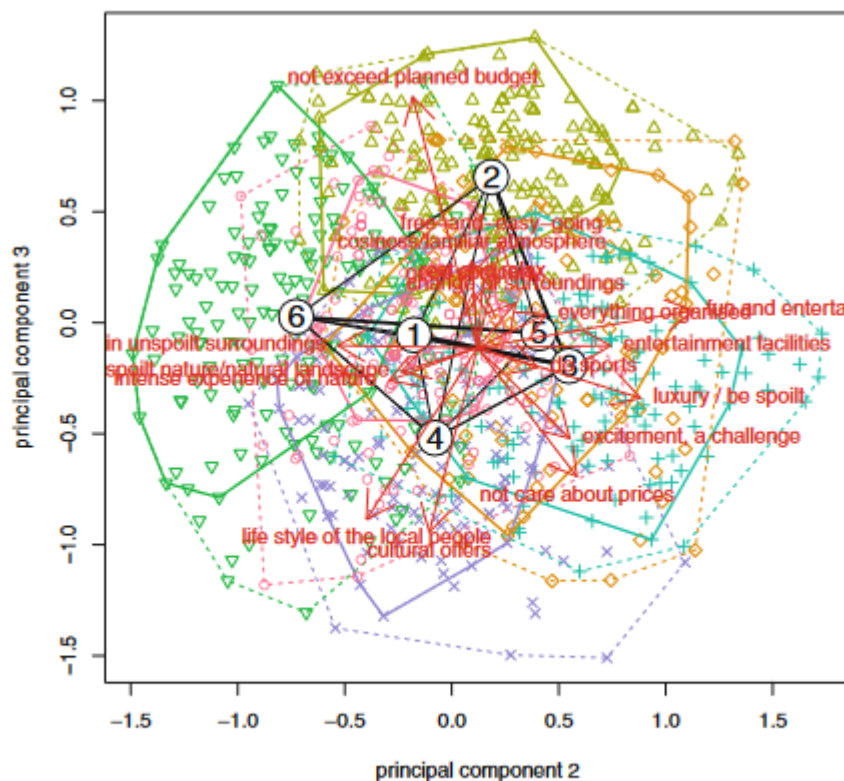
8.3.2 Assessing Segment Separation

Segment separation plots depict the overlap of segments for all relevant dimensions of the data space, and are very simple if the number of segmentation variables is low.
Examples of segment separation plots are provided for two different data sets: a data set with three distinct, well-separated segments, and a data set with an elliptic data structure.
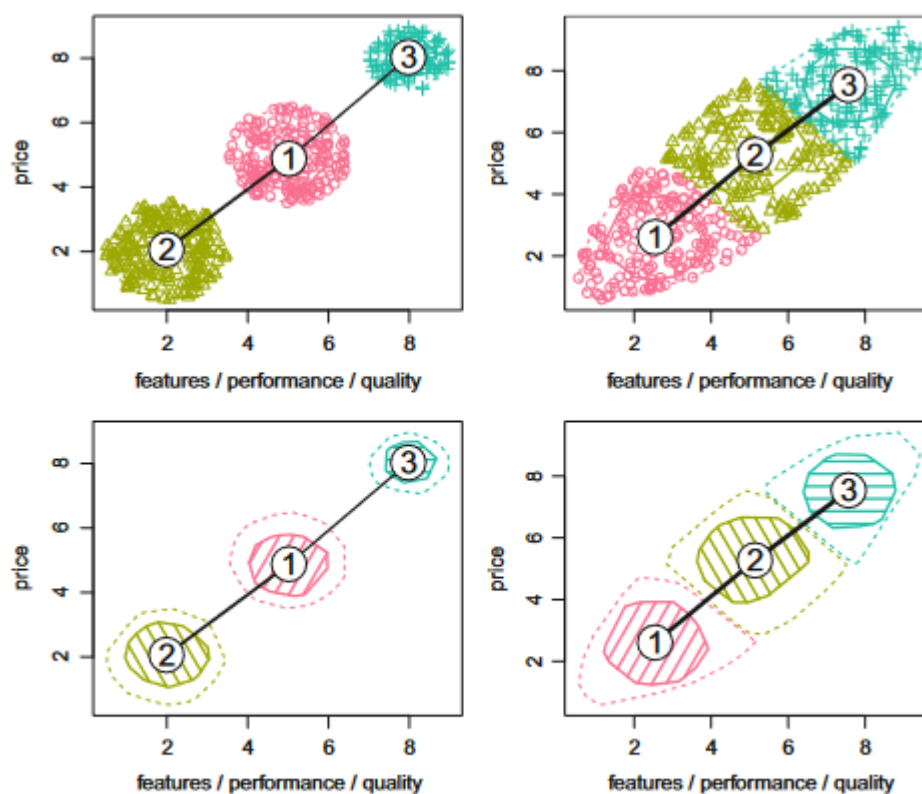
Fig. 8.4 Segment separation plot including observations (first row) and not including observations (second row) for two artificial data sets: three natural, well-separated clusters (left column); one elliptic cluster (right column)

The artificial data visualised in Fig. 8.4 are two-dimensional. The black lines connect segment centres and indicate similarity between segments. The width of the black line is thicker if more observations have these two segment centres as their two closest segment centres. For 20-dimensional travel motives data, a segment separation plot can be created using a number of different projection techniques, including principal components analysis.

Fig. 8.5 Segment separation plot using principal components 2 and 3 for the Australian travel motives data set

Figure 8.5 contains the resulting segment separation plot. The enhanced version combines the advantages of the segment separation plot with the advantages of perceptual maps.

Modifying colours, omitting observations, and highlighting only the inner area of each segment leads to a cleaner version of the plot.

The vacmot function plots the principal component of the image at 2: 3 and at 1: 6 in a light-dark space. The segment separation plot using principal components 2 and 3 for the Australian travel motives data set without observations is still not trivial to assess, but it is easier to interpret than the segment separation plot shown in Fig. 8.5 containing additional information. Each segment separation plot only visualises one

possible projection. This single projection allows the conclusion that segments 6 and 3 represent distinctly different tourists.
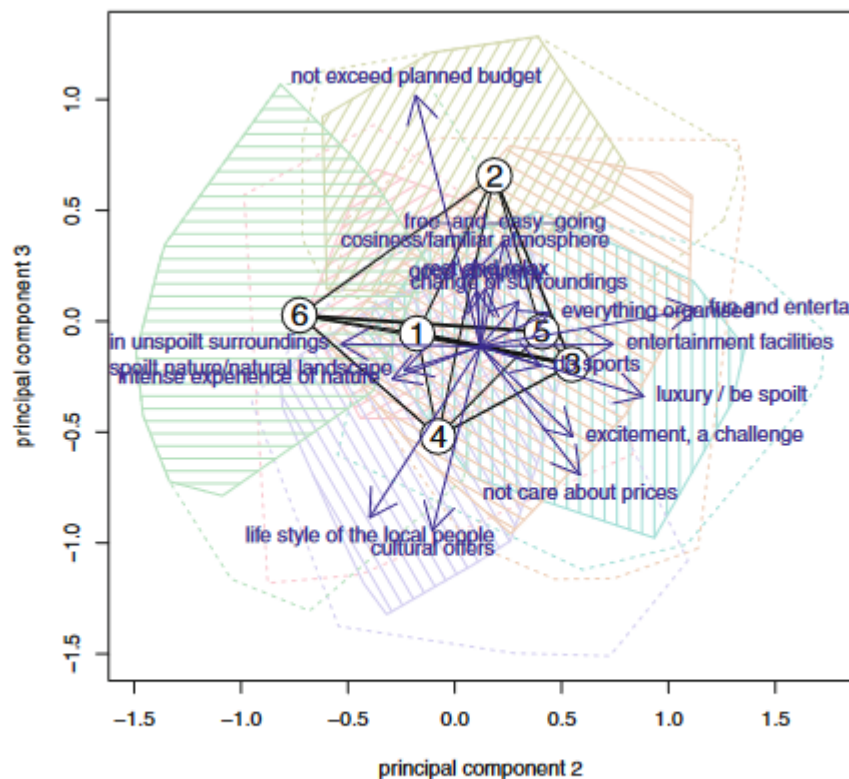
Fig. 8.6 Segment separation plot using principal components 2 and 3 for the Australian travel motives data set without observations

Figure 8.6 displays market segments based on consumer data, but the data does not naturally fit into clear segments, making the visualization difficult to interpret. The plot shows four distinct segments with different travel motives. Segment 6 values unspoiled nature and intense nature experiences, while segment 3 values luxury, fun, and entertainment. Segment 2 prioritizes staying within their travel budget, while segment 4 cares about the lifestyle and culture of local people. Each segment separation plot only visualizes one possible projection, so overlapping segments in this projection may not overlap in all projections. However, the well-separated nature of segments 6 and 3 in this projection suggests that they represent distinctly different tourists in terms of their travel motives.

Github link:

https://github.com/Apeksha0706/McDonalds_Data--Market_Segmentation_Analysis.git