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Delivering the right tourist service to the  
right people - a comparison of  
segmentation approaches

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# **Delivering the right tourist service to the right people - a comparison of segmentation approaches**

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## **Abstract**

Market segmentation has developed to become a generally accepted and widely applied concept in strategic marketing. However, the gap between academic research aiming at increased sophistication of the methodology and managerial use has steadily increased. This paper takes the perspective of a destination manager and compares two segmentation approaches. One typically used in destination management (*a priori* geographical segmentation) and another one that is common in academic literature (*a posteriori* behavioural segmentation). The comparison emphasizes managerial usefulness (implying maximization of match between the tourists' vacation needs and the destinations' offer) and is illustrated with an empirical guest survey data set for Austria.

## Introduction

Due to the very nature of the tourism industry, the concept of market segmentation has been implemented since the early days of tourism promotions. Despite being a global industry, and developing to become more and more global each year, the budget for tourism promotion has to be spent in a concentrated manner to maximize the impact. It is therefore impossible to target all kinds of tourists from all countries in the world. Smaller groups that have something in common (market segments) have to be defined and addressed. Typically, national tourism organisations are responsible for the task of market segment selection (Heath and Wall, 1992; Morrison *et al.*, 1995; Moutinho, Rita & Curry, 1996) and, typically, geographical segments are defined and worked with (Dolnicar & Grabler, 2003; Mazanec, 1986a and b). In academic publications, however, more complex segmentation approaches based on multiple pieces of information about the tourist are propagated.

The aim of this article is to take the perspective of a destination manager in Austria and compare the managerial usefulness of a typical geographical segmentation with the usefulness of a segmentation that is based on vacation behaviour. For the purpose of comparison, both procedures are described, computed and interpreted. Managerial conclusions based on the results are drawn, and dangers and advantages of each of the two approaches are outlined. The significance of the comparison of procedures lies in the fact, that any organisation in the tourism industry has to choose which segment will be targeted. It is not possible to choose multiple segmentation solutions resulting from various approaches and simultaneously use them as strategic basis. The need to choose one segmentation solution makes the question of the most useful solution highly relevant. This article illustrates the two fundamental options thus providing guidance for management to follow the presented procedure in making this crucial strategic marketing decision.

## Market Segmentation in Tourism

The fundamental assumption underlying the concept of market segmentation is essentially a quality-driven concept: matching the touristic offer available at a particular destination with a market segment that is interested in precisely the characteristics this particular destination offers. This maximizes visitor satisfaction, which consequently will (1) increase attractiveness / utility of the product to the consumers in the segment, (2) increase sales, (3) strengthen the competitive position because the destination develops a strong specialized image position within the chosen target segment that can not be copied easily by competing destinations. The entire service quality from the information phase before the vacation to the minimization of an expectation – satisfaction gap is thus increased by consequent implementation of suitable market segmentation strategies. The concept of matching market demand and organisation / destination strengths is the fundamental idea of marketing (McDonald, 1984).

There are two different ways of determining segments: If destination management knows exactly which tourist characteristics are relevant for grouping visitors, the market can simply be split on the basis of these criteria. This approach is known as *a priori* (e.g. Mazanec, 2000) or commonsense (Dolnicar, forthcoming) segmentation. It is implemented in four steps:

1. Splitting tourists into segments on the basis of characteristics known to be relevant. The relevance of characteristics depends on the purpose of the study and the context.
2. Testing whether resulting segments differ. This is typically done in tourism research by applying discriminant analysis to descriptive information (Dolnicar, 2002) to determine with regard to which characteristics - other than the splitting criterion – the segments differ significantly.

3. Description of resulting segments in all available detail in order to be able to customize the entire strategic and operational marketing mix to best suit the needs of the target segment chosen.
4. Selection of the target segment best matching the destination strengths.

A few examples from published tourism research include the travel purpose (Kashyap & Bojanic, 2000) investigate differences between business and leisure tourists), age (Smith & MacKay, 2001), the level of intention to visit a destination (Court & Lupton, 1997).

If, however, destination management lacks prior knowledge of such kind, segments have to be determined first. Usually an empirical data set is the starting point. This approach is referred to as *a posteriori* (Mazanec, 2000), *post-hoc* (Wedel & Kamakura, 1998) or data-driven (Dolnicar, forthcoming) segmentation. Data-driven segmentation requires six steps, the first three of which replace the first step in the *a priori* process:

- 1a. Selection of the segmentation base. The segmentation base is the block of questions from a survey that is used to find segments with similar answer patterns. Again, the relevance of the segmentation depends on the purpose of the study. Typical examples from tourism research include travel motivations (Formica & Uysal, 1998), benefits sought (Kastenholz, David & Paul, 1999) and travel behavior (Moscardo et al., 2000).
- 1b. Computation of groups which are as different from each other as possible while including maximally similar members.
- 1c. Splitting of tourists into segments on the basis of the partitioning process undertaken. The membership to the above groups is used as segmentation criterion.

2-4 see above

Typical examples from tourism research include travel motivations (Formica & Uysal, 1998), benefits sought (Kastenholz, David & Paul, 1999) and travel behavior (Moscardo et al., 2000).

A comprehensive study of data-driven segmentation studies in the area of tourism research was provided by Dolnicar (2002) revealing a number of emerged standards in data-driven segmentation studies in tourism that undermine the quality of such studies. This includes unquestioned data-preprocessing, the use of inappropriate measures of association and clustering algorithms given the data format, computation of one single solution and thus ignorance of the exploratory nature of clustering techniques and use of too small sample sizes given the large numbers of variables chosen as segmentation base.

### ***Austrian destination management***

Austria has a very long tradition as a tourism destination and internationally ranks among the top tourist-receiving countries. Internally, the tourism industry makes a major contribution both to gross domestic product (7 %) and to employment by directly or indirectly employing 14 % of the Austrian workforce (Bundesministerium für Wirtschaft und Arbeit, Sektion Tourismus und Freizeitwirtschaft, [www.bmwa.gv.at/tourismus](http://www.bmwa.gv.at/tourismus), last accessed on 6.10.2003).

The Austrian National Tourism Organisation (NTO) is located in the capital of Austria, Vienna. It was established in 1955 with the main goal of increasing the awareness of Austria as a tourist destination internationally as well as generating first time tourist visitors to Austria. Members of the organisation are the Republic of Austria, the nine provinces of Austria (see Figure 1) and the Austrian Chamber of Commerce.

Figure1.eps here

*Figure 1: Austria and its provinces (Source: Österreich Werbung)*

The organisation was named “Österreich Werbung” in 1989. As a result of a major structural reform in 2001, the provinces withdrew from the association, which now consists of only two shareholders: the Republic of Austria (75 %) and the Austrian Chamber of Commerce (25 %). This information and further information about the Austrian NTO can be found at [www.austria-tourism.at](http://www.austria-tourism.at) (last accessed on 6.10.2003).

The NTO is responsible for segment selection in Austria. An overview of responsibilities of NTOs and the specific responsibilities of the Austrian NTO and regional tourism organisations is provided by Dolničar & Schösser (2003). The two segmentation approaches to be compared in this article will be illustrated using the Guest Survey Austria data set and taking the perspective of a destination manager in Austria. This is a very realistic managerial situation, as the data resulting from this survey are used for precisely this purpose.

### ***The Guest Survey Austria***

The Guest Survey Austria (GSA) is an ongoing market research study that is repeated every 3 years and funded by the Austrian National Tourist Office, the Federal Ministry for Economic Affairs, the Chamber of Commerce Austria as well as the Austria regional tourism organisations. It is collected by drawing a quota random sample of tourists based on the region in Austria, the country of origin and type of accommodation. For this study, the summer data for the years 1994 and 1997 are used. These surveys were designed, administered and analysed by the Institute of Tourism and Leisure Studies at the Vienna University of Economics and Business Administration with the fieldwork having been conducted by the Austrian Society for Applied Tourism Science (ÖGAF) in co-operation with the Salzburg Institute for Basic Research. The design of the questions therefore could not be influenced by the authors of this study.

The survey is very rich in data. The information used for this particular comparison includes socio-demographic information about the respondents (country of origin, age, gender), travel related information (province in which the respondent is staying in Austria, number of overnight stays in Austria, kind of accommodation, star category of accommodation, travel group, travel expenditures), leisure activities and travel motives. Regarding leisure activities respondents stated which activities they engaged in during their vacation in Austria. The data includes the categories “often or sometimes” and “never”. The summer vacation activities listed are playing tennis, cycling, riding, playing golf, swimming / bathing, sailing / surfing, boat-trips, going to a spa, using health-facilities, mountaineering, hiking, going for walks, participating in organized excursions, making excursions into the near surroundings (not organized), relaxing / doing nothing, going out for dinner, going to discos/bars, shopping, visiting sights, going to museums / exhibitions, going to the theatre / musical / opera, visiting a “Heurigen” (this is a typical Austrian wine tavern), visiting festivals / concerts and visiting Tyrolean evenings / amateur theatres.

### ***Commonsense Segmentation –Geographical Segments***

The typical approach of dividing tourists into market segments based on their country of origin is chosen. Regions of origin included in the survey are Vienna (916 respondents), Austria without Vienna (1090), Belgium (647), Denmark (515), France (621), Germany

(3399), Hungary (442), Italy (690), Netherlands (913), Spain (234), Sweden (393), Switzerland (727), the UK (799), the USA (500) and other countries (387).

The entire survey data set is thus split into market segments based on one single variable, the country of origin. This results in 15 market segments. The Italian market segment is selected next for detailed description. From a managerial perspective, this decision clearly does make a lot of sense, as Italy can be targeted as one market using the same language and the same media structure all over the nation. However, the NTO (and this is probably the most typical segmentation approach used by NTOs worldwide) needs to gain as much understanding as possible into the Italian marketplace. This is done by describing the segment and testing for significant differences as compared to the other geographical target markets.

The results from the Guest Survey Austria provide management with the following descriptive insights of the Italian market: Italian visitors to Austria are younger than the other visitors, they spend fewer nights in Austria, they spend more money per person per day in total during their vacation and have higher expenses for entry fees for cultural offers.

While Italian tourists have significantly less experience with Austria than visitors from other nations, no such differences could be detected with regard to the intention to return to Austria.

Italians more frequently visit Vienna and Carinthia, while less frequently spending their stay in Burgenland and Lower Austria. Also they are found camping very infrequently. The proportion of Italians in hotels, on the other hand, is higher than that of other visitors, with Italians favouring higher hotel star categories.

The profile of Italian visitors to Austria with regard to the vacation activities they engage in is provided in Figure 2, where the columns indicate the percentage of Italian tourists stating that they have engaged in each one of those vacation activities and the lines along the centre of each column indicated the percentage of tourist from all countries of origin undertaking these leisure pastimes. As can be seen, there are only minor deviations of Italian tourists to the total groups of holiday-makers to Austria. The differences are that Italian tourists spend less time swimming and bathing, relaxing, visiting spas and health facilities, surfing and sailing, boating, mountaineering, participating in organised excursions and at so called "Heurigen", while engaging more in hiking, going out in the evenings, shopping, and participating in cultural activities.

Figure2.eps here

*Figure 2: Vacation activity pattern for Italian tourists in Austria*

From the managerial perspective the picture of the prototypical Italian tourist does not make it very easy to target the group, as there seems to be a substantial amount of heterogeneity within this common sense geographical segment.

If a message were designed based on the geographical segment profile, a NTO would probably choose to emphasize the cultural component, as the vacation profile shows above average interest in those activities. The product offer would probably feature a one-week stay in Vienna or Carinthia with up-market hotel accommodation and a lot of exhibitions and museums as well as some sports offers, especially cycling and hiking.

However, this advertising message and offer would be based on a heterogeneous group of visitors and would thus not provide a high quality product for all of the Italian tourists.

## **Data-driven Segmentation – Behavioural Segments**

The data-driven segmentation conducted for the case of Austrian destination management segment choice is based on vacation activities. The variables are coded in binary format, the partitioning algorithm used is *k*-means (e.g. Everitt, 1993). This algorithm is appropriate for large sample sizes and splits the respondents through an iterative process of (1) distance computation between each respondent and a centroid representing each segment, and (2) assignment of each respondent to the closest representant. The raw data was not pre processed before the grouping (partitioning) into segments was undertaken. In order to determine if there exist natural clusters in the data and how many, market segmentation solutions with numbers of clusters from 1 to 14 (see horizontal axis in Figure 3) were computed and the development of inner variance (the sum of the distances of each respondent to the centre representing her or his segment) was plotted (see vertical axis in Figure 3).

Figure3.eps here

*Figure 3: Number of clusters plot*

As can be seen from the graph, no distinct drop in the inner variance measure can be detected, indicating that natural clusters are unlikely to exist. Therefore, deciding on the number of clusters becomes a managerial responsibility rather than being driven by numeric indices or criteria. This is not a general finding. The general rule with regard to the selection of clusters and numbers of clusters is to first explore the data. Only if no structure can be determined, is it up to the manager to choose the solution that is most useful. Solutions from 4 to 9 clusters were visually inspected and the six-cluster solution was chosen as managerially most useful. The six-cluster solution contains two answer tendency clusters. This is a typical phenomenon that occurs in clustering if the question format in the survey is susceptible to answer tendencies. Therefore these two clusters are not taken into consideration in choosing possible target segments: one of them is characterised by all segment members undertaking all activities more often than this is the case among the total of visitors to Austria (2096 respondents), and the second one showing the precise opposite behaviour (1787). The remaining four clusters can be named “cultural tourists” (1976), “summer relaxation visitors” (1513), “hiking and excursion holiday-makers” (2123) and “mainstream mix guests” (2778). Note that the numbers given in brackets are absolute number of respondents and would need to be multiplied by appropriate weights to get proportions of the total population, this is omitted for simplicity.

For the purpose of this example, the culture tourists are chosen as a segment for Austria. These tourists can be described in the following way: with regard to age, they are neither among the oldest, nor among the youngest segment. With regard to the duration of stay, the culture tourists spend by far the fewest nights in Austria: 8.6 nights on average. They spend almost twice as much money on entry fees for cultural offers than the behavioural segment with the second highest expenditures and nearly five times as much as the segment with the lowest entry fee expenditures per person per day. Even in terms of total expenditures per person per day, the cultural tourists spend the highest amount of all segment in Austria (82 Euros). This is 30 percent more than the amount of the second highest spending segment. Furthermore, three quarters of those tourists stay in hotels and they have an above average choice of high hotel star graded hotels, with one third staying in five star accommodation. All these pieces of information make the cultural tourist a highly attractive and very distinct segment to choose as a marketing target. However, there are some drawbacks that are just as distinct but not commercially attractive: Cultural tourists have a very low intention to return

to Austria, with one fifth stating that that they can hardly imagine to return. They also have little prior experience with Austria, which paints a picture of tourists who come for the once in a lifetime cultural tour to Austria.

The activity profile for the cultural tourist is provided in Figure 4. As can be seen, the proportion of members of this segment that visits museums is far higher than the sample average (indicated by the line). Also sightseeing and the other cultural activities are engaged in more often than this is the case for all visitors to Austria. All sporting activities, however, are far below average.

Figure4.eps here

*Figure 4: The culture tourist*

All in all, the cultural tourist segment is a distinct and homogeneous segment. Figure 5 visualizes the contingency table cross-tabulating country of origin and *a posteriori* segment membership. Columns higher than the horizontal line indicate that citizens of a particular country of origin are over-represented in particular behavioural segments, columns lower than the line represent the contrary; the darker the column the stronger the deviation. In the cultural segment (marked with number 3 on the horizontal axis in Figure 5<sup>1</sup>) the number of Austrian, German, Dutch and Swiss tourists is extremely low, whereas French, Italian, Spanish, British and American tourists are highly over-represented. With regard to Italy, it becomes clear that the only significant overrepresentation is in the cultural segment, indicating a strong association of the commonsense geographic segment and the behavioural segment.

Figure1.eps here

*Figure 5: Association plot of geographical and behavioural segments*

An advertising message for cultural tourists would clearly emphasize the cultural component. The product offer would include high star category accommodation and as much cultural offers as possible. The target group is distinct and homogeneous with regard to the profile which would lead to a higher probability of satisfying customer's needs and thus provide high quality of service to the tourists.

## **Comparing segmentation approaches from the managerial perspective**

Two different approaches of market segmentation for purposes of destination management were illustrated using real data. Both approaches are used in practise, with the geographical technique dominating the market, however. This is not mirrored in the academic tourism research literature as much as by the reality of NTO structures and marketing programmes

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<sup>1</sup> Pearson residuals are computed as  $(o-e)^2/e$  where  $o$  is the observed number of individuals and  $e$  is the expected number of individuals for the null hypothesis of independence. The p-value corresponds to the usual Chi-square test of independence in contingency tables.

which are usually country-of-origin centred (see [www.tourism-austria.at](http://www.tourism-austria.at) for an example). The Italian market and the behavioural segment of culture tourists were chosen because of the strong association of the two markets that eases comparison from a managerial and customer service quality delivery perspective.

The advantages of the geographic approach include:

- **Simple concept that is easily understood by all employees of the NTO.**  
The concept of targeting potential visitors from certain countries of origin is easily understood. It is unlikely that any misunderstandings among employees would occur. In the empirical example, for instance, it is trivial to understand that potential tourists from Italy are targeted and that this group has certain characteristics that have to be accounted for.
- **Straightforward possibility of targeting.**  
The targeting procedure itself, the communication with the target market is easy, as all activity is limited to one country. The market can be reached very easily. For instance, in the Austrian example, the promotional effort is invested in Italy. The NTO only needs Italian versions of the promotional material and expertise in the media infrastructure of this one country.

The disadvantages include:

- **Danger of insufficient consideration of the heterogeneity of geographical target markets.**  
In the case of Austria, the segment of Italian tourists, for instance, did not seem to be strongly dominated either by cultural or any other specific interests. The market is far more heterogeneous with regard to both the activity profile as well as descriptive information as it is the case for the cultural tourists derived from the data-driven segmentation approach. A product or promotional campaign designed for the Italian market would thus emphasize a mix of sports and cultural activities which might run the risk of attracting neither the sports-interested Italians, nor the culture-interested ones.

On the other hand, behavioural segments – or data-driven segments in general – have the following advantages:

- **Relevant segments.**  
Segments are identified or constructed on the basis of multiple variables that are assumed to be most relevant to the destination choice. It is assumed that an advertising appeal emphasizing those relevant pieces of information would be stronger than using a commonsense grouping criterion as the country of origin. In the example illustrated above, vacation activities were chosen as relevant segmentation base. Therefore the resulting segments are highly homogeneous with regard to the activity pattern. As vacation activities form a central part of the tourist service, encounter homogeneity in this respect might be the stronger concept than homogeneity with regard to the country of origin. The behavioural segments derived from the activity information would probably render more relevant groupings in the empirical example, as the segment turn out to be highly homogeneous not only with regard to the vacation activities, but also with respect to descriptive information.
- **Homogeneous segments.**  
With regard to the selected segmentation base the tourist groups resulting from partitioning are more homogeneous than simple commonsense segments. In the illustration above even the descriptive information, that was in no way optimised to be maximally homogeneous, rendered a highly distinct profile.

- **General applicability.**

Data-driven segments are typically crossing the border of demographics. They are therefore more generally applicable. For instance, the Italian market is clearly larger than the market of Italian cultural tourists, but the market of cultural tourists extends over national borders (see Figure 5). An intelligent concept of targeting the cultural segment can thus easily be used on a broader scale than nationally customized messages or product offers.

The disadvantages of this approach include:

- **Data-driven segments are not simple to identify or construct properly.**

There are many possible pitfalls when data-driven segmentation solutions are computed (Punj & Stewart, 1983; Dolnicar, 2002). These must be avoided in order to provide a solid decision basis for management and consequently a high quality service for the target segment chosen. However, there is a lack of expertise in this area among both NTOs and commercial market research companies. In the last consequence, this disadvantage leads to the conclusion that a wrong data-driven segmentation solution can never be useful. Unless the segments are derived in a methodologically clean manner, the entire solution is of doubtful value.

- **Data-driven segments are more complex to understand.**

Data-driven segments are more complex constructs. They are defined by certain common traits, but could be very heterogeneous with regard to the most obvious classification criteria of tourists, like age or country of origin. For instance, the term “cultural tourist” itself is very endangered by simplification. It is defined by a multidimensional activity pattern, whereas it might be tempting to assume that tourists were simply asked what kind of tourists they are and then classified themselves accordingly.

- **Higher complexity in implementation.**

The task of communication with the Italian market is not difficult to implement. Standard marketing media planning procedures can be applied. In the case of data-driven segments that exist in various geographical regions, cultures and language groups, the task of optimally allocating the marketing budget, modifying the single messages to suit each particular cultural background and translate them becomes far more complex to implement. Figure 5 indicated clearly that a number of geographical markets would have to be addressed in order to exploit the maximum potential of the cultural tourist segment.

## Conclusions

The aim of this paper was to illustrate the usefulness of different kinds of segmentation studies for destination management and optimising the match between tourists’ needs and destination offers to ultimately increase the quality of the tourist experience while maximizing profit as a destination. The managerial relevance of the study rests with the fact that the fundamentally different segmentation approaches are rarely compared. Typically, both in tourism industry and academic publications, one of the approaches is chosen and different solutions following the same technique are compared. This illustration provided an argument to compare *a priori* and *a posteriori* approaches before choosing the final target segment. This was achieved by explaining the theory of both approaches, the common sense segmentation approach and the data-driven approach, and illustrating possible resulting segment solutions for the case of the tourist destination Austria on the basis of survey data actually used for this particular purpose by the Austrian National Tourism Organisation.

A typical geographical segmentation was conducted based on the country of origin information and the segment of Italian travellers was chosen for detailed description.

The data-driven segmentation was based on a set of vacation activities. Segments were constructed that can be described by similar vacation activity patterns. Among six behavioural segments derived, the cultural tourists were chosen as potentially interesting target segment and described in detail.

With both approaches having their advantages and drawbacks, the general recommendation emerging from this paper is as follows: the optimal results will be achieved by considering both segmentation approaches and empirically compare the appropriateness and usefulness for the managerial problem at hand. While no general superiority of one of the concepts can be claimed, the particular managerial usefulness can be evaluated in a context-independent manner. However, considering the fundamental and long-term nature of market segmentation decisions, it seems particularly important to be aware of the strengths and weaknesses of both procedures. In the best case it is advisable to compute multiple solutions and gain in -depth understanding by exploring those alternatives, and investigating the associations between them.

Future work includes operationalising criteria for the comparative evaluation of the two segmentation approaches and developing a methodological toolbox to support management in the selection process of the appropriate segmentation technique. Another important step is bridging the gap between state of the art statistical methodology and the heuristics widely used in practise. This process can be eased by supporting easy to use data analysis software and methodological support.

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