Segmenting Customers According to Their Multidimensional Contact Sequences - Application of a Multidimensional Sequence Alignment Approach

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We used a multidimensional sequence alignment method to cluster customers of a retailer for consumer electronics according to the multidimensional sequences of their customer contacts, their functions and importance. Results reveal differences in the customers' behavior concerning the customer contacts, their functions and importance across the purchase process, as well as between the segments identified.

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EXTENDED ABSTRACT

It is increasingly common for firms to employ online distribution channels alongside its offline distribution channels and marketing channels to rely on these complex combinations as a source of competitive advantage and better serve their customers (Geykens et al. 2002). In such environments, many customers have become multi channel users. They realized contacts between the firm and themselves at different contact points, e.g. store, homepage across the purchase process (Rangaswamy and van Bruggen 2005). These customer contacts are a fundamental element for the attainment of customer knowledge for a supplier. Not only are the kind and number of the customer contacts in a specific process phase relevant to this, but also their functions and importance, not to mention the sequence of these three dimensions during the purchase process.

In general, customer behavior can be viewed as a sequence of interdependent actions over time (Hägerstrand 1970). However, customer behavior in marketing research is mostly treated as a chain of independent activities. Thus, the sequential order and obvious relations of the activities are often neglected. Therefore, Abbott’s (1995, p. 94) statement “We assume intercase independence even while our theories focus on interaction” is largely true for marketing research concerning the segmentation of the customers regarding their individual behavior through the across the purchase process. Hence, an analysis of the multidimensional sequence of the customer contacts (dimension 1), their functions (dimension 2) and their importance (dimension 3) could provide crucial insights into customer behavior, as well as the needs and preferences of the customers over time. Therefore, this study will demonstrate how multidimensional customer contact sequences can be measured and form the basis for multidimensional customer segmentation. For this, customer contact sequences of N=304 customers with a retailer for consumer electronics were surveyed in across the different phases of the purchase process (pre-purchase, purchase, and post-purchase phase).

To gain deeper insights in the differences of customer behavior and powerful clusters, the multidimensional contact sequences were characterized by three dimensions: the customer contact sequence, the sequence of the functions related to the customer contacts, and the sequence of the contact importance. To account for obviously interdependencies between the three dimensions we used a multidimensional sequence alignment approach which identifies elements that can be aligned simultaneously without calculating the costs twice, called “OTMSAM” (Joh et al. 2002). In doing so, the differentiation into four clusters proved to be the best solution (see table 1).

The centroid of the first cluster has realized the lowest number of customer contacts across the purchase process. After two very important contacts with newspaper and TV-advertising in the pre-purchase phase which were used for price comparison and selective information, the desired product was bought in the store. The first contact in the centroid of cluster 2 was realized with the store and was used to obtain general information about the retailer’s offers.

TABLE 1
Description of the Clusters by Centroid Sequences

<table>
<thead>
<tr>
<th>Cluster 1 (n = 115)</th>
<th>Multidimensional Centroid Sequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contacts</td>
<td>Newspaper advertising</td>
</tr>
<tr>
<td>Functions¹</td>
<td>PC &gt; GI &gt; P</td>
</tr>
<tr>
<td>Importance²</td>
<td>6 &gt; 6 &gt; 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cluster 2 (n = 75)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contacts</td>
</tr>
<tr>
<td>Functions</td>
</tr>
<tr>
<td>Importance</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cluster 3 (n = 74)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contacts</td>
</tr>
<tr>
<td>Functions</td>
</tr>
<tr>
<td>Importance</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cluster 4 (n = 40)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contacts</td>
</tr>
<tr>
<td>Functions</td>
</tr>
<tr>
<td>Importance</td>
</tr>
</tbody>
</table>

¹ GI = “general information”, SI = “selective information”, PC = “price comparison”, P = “purchase”, A = “advisory”; ² inquired on a six-step rating scale, 1 corresponds to entirely unlikely; 6 corresponds to very likely.
This contact was followed by a contact with other websites which was used for selective information. These two customer contacts were both realized during the pre-purchase phase and were rated as important contacts. During the purchase phase the product was bought after a consultation of the sales staff. Such contacts were of specific relevance and were therefore rated as very important contacts. The centroid of cluster 3 shows that these customers realized the highest number of contacts in the purchase phase. They sought contact with TV- and newspaper advertising in the pre-purchase phase to obtain general information. These contacts with different kinds of the retailer’s advertising were both evaluated as important contacts. During the purchase phase customers’ of the third cluster often realized contacts with advertising at the Point-of-Sale which were used for selective information. Such contacts were also rated as important. The following consultation of the sales staff and the purchase of the product in the store were of highest importance to the customers of cluster 3 and evaluated as very important contacts.

The centroid of the fourth cluster shows that these customers realized the highest number of customer contacts across the whole purchase process as well as in the pre-purchase phase. Furthermore, the customer contacts in this multidimensional centroid sequence cover all phases of the purchase process. It is noticeable that all contacts prior to the purchase were realized in the store. After two contacts with different kinds of advertising at the Point-of-Sale for obtaining general information, these customers sought contact with the sales staff followed by two customer contacts in the store for advisory functions. With regard to these findings one may conclude that the opportunity of direct product contacts in the store are of specific relevance to the customers in cluster 4. In the post-purchase phase a contact with the sales staff was used for advisory functions as well. This contact was evaluated as a very important by this customer.

Furthermore, the results of a multinominal logistic regression (Hosmer and Lemeshow 2000) on the cluster level show that cluster membership can be satisfactorily explained and predicted by the sequencing of customer contacts. With regard to the differences in the number of realized contacts as well as of the realized customer contact points, we used the number of the ten most frequently realized transitions (substrings) of two consecutive contacts as independent variables in a first multinominal logistic regression model with the cluster membership as dependent variable. In the second logistic regression model, we control for further variables which could be associated with cluster membership (product related and socio-demographic variables). As model 1 indicates, the sequence information are strongly associated with segment membership and provide a correct classification of 74.6% of the customers. The statistical association between the substrings and cluster membership remains robust, even though significance level of parameters decreases, and correct classification increases slightly (81.4%) when the control variables are included in model 2. Especially, substrings including contacts with the store, contacts with different kinds of the retailer’s advertising as well as customer contacts with the sales staff, the price of the product and internet affinity are contributing factors in explaining cluster membership.

REFERENCES


