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**Summary for step-1: Deciding Not to Segment**

Being a key market strategy, market segmentation is applied in many organizations but the decision to implement it in the organization depends on certain factors that can change the course of the organization in the long run. Market Segmentation is a marriage, not a date.

Organizations need to make substantial changes. It affects the working of an organization in shorter periods like costs related to surveys, research, and campaigning taking a toll on the budget on a shorter period. Not only this, but it also affects the cultural policies of companies.

We can focus on certain implication barriers in implementing market segmentation

1. Senior management: leadership, commitment, and involvement of senior management of the organization undermines the success of market segmentation if not done properly. Resources needed for the implementation of market segmentation are always passed by the senior leadership so it is highly needed that they better comprehend the market segmentation well.
2. Organizational culture: communication, new ideas, creative thinking, etc. comes under this block which affects market segmentation implementation in the organization. Unwillingness for change, insights across organization, office politics, hampers its success.
3. Lack of proper training: if the team fellow tasked with market segmentation does not understand properly the foundations of it, then it will more likely proceed to failure.
4. Lac of formal market function and objective restrictions: diversity across organizations makes it necessary for proper formalization. So the role of data manager and analyst is important. Also, lack of financial resources makes it tough to get things done.

**Summary for step 2: Specifying the ideal Target segment**

This step comes after deciding on commitment for market segmentation. Deciding the ideal target segment based on user input is necessary as it contributes to future steps like data collection or specifying more than one target segment.

This step helps in deciding the ideal segment based on

1. Knock-out criteria: These are essential, non-negotiable features of the segment that the organization would consider targeting.

Important knockout criteria for a segment:

1. The segment must be homogenous
2. Must be distinct
3. Must be large enough
4. Must match the strength of the organization
5. Must be identifiable
6. Must be reachable
7. Attractiveness criteria:

These criteria are used to evaluate the relative attractiveness of the remaining market segment. These are not binary in nature. This criterion tells whether a market segment is taken as the target segment or not

1. Structured process in finding target segment:

Helps in finding a better relationship between organizational strengths and segment attractiveness. Plots are made to find the relationship. This helps to find out at least six attractiveness criteria for the team deciding on segmentation.

**Summary for step 3: Collecting Data**

This step deals with collecting empirical data based on user inputs and observations, in turn, helps in deciding the segment variables, how data needs to be collected for giving proper insights into the feature, and various methodologies and sources that can be used for data collection.

Segmentation variable and descriptor variable:

Typically if we see then, a segmentation variable is just a single characteristic of the consumer in the market that could be binary or categorical depending upon the input. For example, gender can be used as a segmentation variable.

All the other personal characteristics can be used as descriptor variables such as age and other information. These generally include socio-demographics.

The difference between common-sense and data-driven market segmentation is that data-driven market segmentation is based not on one, but on multiple Segmentation variables.

Segmentation Criteria: The organization must decide on segmentation criteria before data collection. Common criteria include geographic, socio-demographic, psychographic, and behavioral factors. The choice depends on the market and the product or service being analyzed.

1. Geographic Segmentation: A simpler approach using geographic factors, such as residence location. The key advantage of geographic segmentation is that each consumer can easily be assigned to a geographic unit. As a consequence, it is easy to target communication messages and select communication channels (such as local newspapers, local radio, and TV stations) to reach the selected geographic segments.
2. Socio-Demographic Segmentation: Criteria like age, gender, income, and education is useful in various industries. Socio-demographic segmentation criteria have the advantage that segment membership can easily be determined for every consumer.

3 Psychographic segmentation: Based on psychological variables including beliefs, interests, and advantages sought, psychographic criteria can shed light on customer behavior. Although they are more difficult to employ, they can be more reflective of the causes underlying behavioral variations.

1. Behavioral Segmentation: Behavioral segmentation groups consumers based on their actual behavior, such as purchase frequency, spending amount, or brand choices. This approach directly targets similarities in behavior.

Data from survey studies:

Surveys are done on a regular basis and act as a cheap source for data for various organizations.

There are certain factors need to be verified for proper use in the organization

1. Choice of variables :

Carefully selecting the variables that are included as segmentation variables in common-sense Segmentation, or as segmentation variables in data-driven segmentation, is critical to the quality of the market segmentation solution

1. Response Options

Response options play a significant role in data for segment variables, depending on whether that data could be nominal or ordinal, if it's genuine and compact then it makes the surveyee give the exact or lethargic responses.

1. Response style

Response styles affect segmentation results because they commonly used segment extraction algorithms cannot differentiate between a data entry reflecting the respondent’s belief from a data entry reflecting both a respondent’s belief and a response style

1. Sample size

Many statistical analyses are accompanied by sample size recommendations. If the sample size is sufficient, it is very easy to determine the number and nature of segments in the data set. Increasing sample size increases the correctness of the extracted segments but only up to a certain level.

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. E.g. like Google Microsoft etc.

Data from Experimental Studies

Another possible source of data that can form the basis of market segmentation analysis is experimental data. Experimental data can result from a field or laboratory. Experimental data can also result from choice experiment or conjoint analyses

**Summary to step 6: Profiling Segments**

Profiling is required when data-driven market segmentation is used. Not necessary for common-sense segmentation. Profiling consists of characterizing the market segments individually, but also in comparison to the other market segments. Correct profiling makes good strategic marketing decisions.

For profiling traditional approaches include high-level summaries and large tables for each segment. Such tables were hard to interpret. As a very high number comparison across the table elements needed to do it.

Segment profiling with visualizations:

Getting insights into segment characteristics even in the case of very big data, plots and graphs makes it much easier to comprehend. They also make it easier to assess the usefulness of a market segmentation solution. The process of segmenting data always leads to a large number of alternative solutions. Selecting one of the possible solutions is a critical decision. Visualizations of solutions assist the data analyst and user with this task.

This step can be divided into these 2 sub-steps:

1. Identifying defining characteristics of market segmentation: A good way to understand the defining characteristics of each segment is to produce a *segment profile plot*. The segment profile plot shows how each segment differs from the others. The segment profile plot is a so-called *panel plot.* For each segment, the segment profile plot shows the cluster centers (centroids, representatives of the segments). Heat maps and hierarchical clustering can be used to represent these segments more elaborative.
2. Assessing Segment Separation: The segment separation plot depicts – for all relevant dimensions of the data space – the overlap of segments. Segment separation plots are very simple if the number of segmentation variables is low, but become complex as the number of segmentation variables increases. For this cluster plot, heat maps and pcas are used extensively.

**Summary to Step 7: Describing Segments**

Describing segments is similar to the profiling step. The only difference is that the variables being inspected have *not* been used to extract market segments. Rather, in this Step market segments are described using *additional* information available about segment members.

If committing to a target segment is like a marriage, profiling and describing market segments is like going on a number of dates to get to know the potential spouse as well as possible in an attempt to give the marriage the best possible chance, and avoid nasty surprises down the track. The segment description step uses additional information, such as segment members’ age, gender, past travel behavior, preferred vacation activities, media use, use of information sources during vacation planning, or expenditure patterns during a vacation. These additional variables are referred to as *descriptor variables*.

Visualizations to Describe Market Segments:

1. Nominal and Ordinal Descriptor Variables:

When describing differences between market segments in one single nominal or ordinal descriptor variable, the basis for all visualizations and statistical tests is a cross-tabulation of segment membership with the descriptor variable. For comparisons, the mosaic plot offers a better suitable approach than using cross-tabulation tables. Easier to get proper proportions of segment variables in each of the segments.

1. Metric Descriptor Variables

Testing for segment Differences in descriptor Variable:

Statistical tests can be used to formally test for differences in descriptor variables across market segments. The simplest way to test for differences is to run a series of independent tests for each variable of interest. The appropriate test for independence between columns and rows of a table is the χ2-test. Using the p-value approach in hypothesis null hypothesis can be rejected as they are the same. The association between segment membership and metric variables is visualized using parallel boxplots. ANOVA can also be used to differentiate two groups.

Predicting Segments from Descriptor Variables:

Another way of learning about market segments is to try to predict segment membership from descriptor variables. To achieve this, we use a regression model with the segment membership as the categorical dependent variable, and descriptor variables as independent variables. Generalized linear models are also used for accommodating large distributions.

Linear models that can be used

1. Binary Logistic Regression
2. Multinomial Logistic Regression
3. Tree based methods

**Github code link :**