Midterm report 4.4.2013

Assessing the Impacts of Marketing Investments

Client: Nokia

Project Group: Olli Rentola (Project manager)
Tiina Kangasniemi
Harri Mäkelin
Vilma Virasjoki

Contents

1. Project status

The project has proceeded according to the initial plan with a minor change in the schedule. Data preparation phase had to be extended beyond 13.3.2013, because in the beginning of modeling phase it was realized that the data needed more preparation before the modeling phase could be started completely. Therefore modeling phase could not be started fully until the 30th of March. This will not change the deadlines of the last phases of the project. Due to this delay, the modeling phase will be more intensive than the previous phases.

Data preparation and literature review have been completed. Also, data sets for modeling have been selected. As a result of preliminary screening, 8 countries and 7 brands have been identified for further analysis. These are denoted in the reports as countries one to eight and brands one to seven.

2. Data preparation

Data preparation was begun immediately after the data was received. As expected, several inconsistencies were found in the data sets, most of which could be attributed to varying practices in collecting and recording the data. For example, the names of many brands and countries had multiple forms, and in some countries data had been recorded in the local language. These inconsistencies were harmonized by mapping the different forms of the same entity to a single identifier, e.g., by mapping both "US" and "United States" to "USA".

While the brand survey and market share data sets were relatively clean and the number of different entities was limited, the media investment data set posed a bigger challenge. First, the number of different entities such as phone brands was much larger, and matching these entities could only be partly automated. Second, telecom operators constituted a significant portion of total marketing spend and in many cases promoted phones from several different manufacturers in the same marketing campaign. This presented the problem of correctly attributing their marketing investments to the appropriate phone brands. The solution in the former case was straightforward but required manual work; in the latter case the solution was to exclude such investments from the analysis. This was done because the effect of such investments to individual brands could not be determined with certainty. Therefore, despite making the corrections for the inconsistencies in the data as thoroughly as possible, the problems with the data are going to affect the results to some extent, which is likely to be one of the biggest challenges of the project in finding suitable models.

After cleaning the three data sets of most inconsistencies, they were consolidated into a single table which was essentially an inner join of the three. The brand survey data had the least number of brands and countries and also the least amount of historical data. Thus, it turned out to be the constraining data set and consequently presented itself as the basis for choosing the candidate countries and brands on which the analysis should be carried out.

At this point, the analysis is intended to be carried out at the individual brand and country levels, although countries and/or brands can be pooled together if the amount of data points at the disaggregated level proves to be insufficient.

3. Selection of countries and brands

The brand-country pairs were chosen by selecting those brands and countries that had consistent data from May 2010 to October 2012. This time period was chosen because during this time the maximum number of brands and countries could be chosen. Also, this time period consists of 30 months which allows for two kinds of analysis: analyzing the effects of marketing investments in 3 month and in 6 month intervals. The reason behind this choice is the nature and dynamics of marketing: all the effects of marketing investments might not manifest themselves within the first month of initial investment, which might make it difficult to see any results if the analysis were constrained to only 1 month intervals.

Before starting the modeling, a scatter plot analysis was carried out for all the candidate countries to determine the relationship between proportional marketing investment and proportional market share for each brand for each time period. Market share is a good indicator of how successful marketing investments have been, and plotting this is a good way to see whether or not there is a trend between marketing investments and brand awareness, consideration or preference. For instance, regardless of marketing investments, brand awareness may not change much in countries in which some specific brand has established a firm position already.

4. Risk management

The risk of data quality has been realized and due to this "Data preparation" phase was completed behind the initial schedule. The implications were assessed in section "Project status". Still, data quality is a problem and poses a risk regarding the reliability of the results. This will be mitigated by selecting data sets that are complete, i.e., do not have any missing data points. Otherwise, the risk landscape stays the same as proposed in the initial Project Plan.

5. Next steps

The next step in the project is modeling, and while a literature review uncovered many different methods for modeling the impact of marketing investments, they were deemed to be too specific and not suitable for the current assignment. Also, the results of the preliminary analysis indicated that static models and standard methods might be adequate for modeling the dependency. Therefore, the team has decided to attempt building a model using standard techniques such as linear regression before trying to incorporate dynamic effects into the model. It is expected that most of the brand-country combinations can be modeled with linear regression and those that cannot will be analyzed individually the appropriate way of modeling will be decided case by case.

Additionally it was found that the effects of marketing investments between brands vary significantly and further analysis should be conducted in order to find the underlying reason for this. The project team proposes to make a minor change in the scope of the project so that first the modeling of the effects of marketing investment is done in the modeling phase and in evaluation phase it is attempted to explain in more detail why the effects of investments vary between brands. A probable solution might be found when taking the brand awareness survey data into account.