Mat-2.177 Operaatiotutkimuksen projektityöseminaari

Research plan, Group Nokia 1

Replacement modeling benchmarks and best practices

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1 Background and Objectives

This research project will support mobile phone market forecasting by giving ideas of how to forecast the replacement market. Replacement market is getting more and more important as the new customer market saturates. So far the market forecasting methods have emphasized the new customer business.

The project aims at finding methods of modeling replacement demand and testing the feasibility of the methods. The replacement market modeling will be approached from both theoretical and practical direction. The theoretic approach includes examination of academic articles with the objective of trying to find appropriate methods and indicators of replacement patterns. The practical approach to the problem includes examination of the market data provided by the principal. The methods that result from the literature study will be tested in the practical part of the study.

2 Plan for Action

2.1 Research Approach

We will apply two different approaches, theoretical and practical. In the theoretical approach we intend to familiarize ourselves with the scientific literature concerning demand forecasting methods and indicators. The emphasis is on the theories of replacement demand. In addition we attempt to benchmark other industries to find out what kind of indicators and methods are commonly used to present replacement rates. The purpose of the theoretical approach is to find useful theories to apply to the case of Nokia.

In the practical part of the study we analyze the data Nokia has used in their forecasts. We also intend to get acquainted with the model currently used at Nokia. We further apply the theories found in the literature to Nokia's data in attempt to construct a better model for the replacement pattern of cellular phones. If the findings from the

theoretical part were not sufficient we will limit the practical part of the study into analyzing the methods and indicators Nokia is currently using and their suitability for forecasting replacement demand.

2.2 Tasks

Phase 1 – Theory

- Searching for articles and thesis from databases, e.g. Scirus
- Reading the articles and collecting useful ideas
- Searching the web pages of different companies, e.g. car manufacturers (Daimler, Ford, GM, Honda) for industry examples

Phase 2 – Application

- Familiarizing ourselves with Nokia's data and the current model
- Finding out the assumptions (requirements for the data, probability distributions etc.) behind the current model
- Evaluating the current model
- Attempting to solve possible problems of the current model
- Applying the results of phase 1 to Nokia's data, if possible
- The focus of phase 2 depends on the findings in the first phase

Phase 3 – Recommendations and Writing

- Presenting the results of the first two phases
- Giving recommendations on forecasting methods and indicators that Nokia could use in order to obtain more accurate replacement parameters.
- Writing the final report

2.2.1 Interim Reports

The first report is the project plan, which will be completed by Feb 13th 2003. In the plan we sketch the broad guidelines of the project. The plan is a 4-5-page report handed to the company and presented to the entire class.

By the time of the second interim report (Mar 14th 2003) we intend to have the first phase conducted. Thus we will be able to determine the focus and contents of the second phase. The interim report will include brief clarification of our projects course

and findings so far. Based on the progress of the project we update the project plan for the second and the third phases.

The final report will be finished by Apr 25th 2003 and it will contain the outcomes of all the three phases of the project. The report will be submitted to our client, Nokia Mobile Phones.

2.2.2 Resource Allocation

Phase 1 – Theory

Everybody searches for suitable articles and reports their findings to others. Important articles are shared with the whole group. Lari will try to benchmark other industries for best practices. Everyone will participate in compiling the interim reports; Hanna as the leader will coordinate the work.

Phase 2 – Application

Lari and Timo will focus on applying new methods and models. The girls will look into Nokia's current model. They will also analyze the possible factors affecting replacement demand for cellular phones and try to identify suitable indicators. A more specific work breakdown structure can be made once the first phase is completed.

Phase 3 – Recommendations and Writing

The whole group will discuss the findings and determine the emphasis of the recommendations. Everybody will participate actively in the writing of the final report.

2.2.3 Project Schedule

Project kick-off and planning

- Opening lecture of the seminar, contacting our clients at Nokia and discussing the project with Professor Ahti Salo in January 2003 (4h per person)
- Refining the project plan in the beginning of February, plan finished by Feb 13th 2003 (4h per person)

- Reading and commenting the project plan of another group (1h per person)
- Presenting the project plan and listening to other presentations (2h per person)
- Total Hours: 11h per person

Phase 1 – Theory
- Searching for articles (5h per person)
- Reading the articles, duration depends on how many we find (estimate: 10h per person)
- Compiling results and findings, writing notes of the findings (10h per person)
- Writing the interim report (4h per person)
- The whole phase 1 is done by Mar 14th 2003
- Total Hours: 29h per person

Phase 2 – Application
- Figuring out Nokia's data and model; finding out factors affecting the replacement demand of cellular phones (20h per Hanna, Riikka and Veera)
- Testing theoretical findings with Nokia's data (20h per Lari and Timo)
- Meetings with our clients at Nokia (3h per person)
- Discussions with forecasting and marketing experts at Nokia (3h per person)
- Phase 2 is finished by Apr 7th 2003
- Total Hours: 26h per person

Phase 3 – Recommendations and Writing
- Discussions and forming recommendations (5h per person)
- Writing the final report (30h per person), report is finished by Apr 25th 2003
- Presentation of the project and listening to other presentations (5h per person), presentation on May 5th 2003
- Total Hours: 40h per person

3 Risks of the Project

This chapter highlights the possible problems of the project from a general point of view as well as the risks related to the different phases of the project.

3.1 General

The project in general contains several risks related to the inter-personal chemistry of different participants. The size of the group is five persons, which is relatively large and hard to manage. This will harden the job of an efficient work allocation and project completion might be in danger. This combined with the fact that the project group has only limited time and other resources as well as the scarce amount of time Nokia has will danger the original schedule.

To overcome these problems the major responsibility lies on the project leader. She has to take action in case the group is falling behind schedules and stay in regular touch with Nokia.

3.2 Theory

The theory phase is largely dependent on the information found. However, companies are unlikely to publish critical knowledge, which might prove to be a problem as not enough practical examples are found. On the other hand we expect to find several different, scientific methods on replacement behavior analysis. The problem is to evaluate how these methods will fit into the context and conduct it in a limited amount of time.

To overcome these challenges we have to communicate regularly with professor Salo and the other groups finding different estimation methods for Nokia. We believe that the expertise of these two sources will enable us to complete the theory phase successfully.

3.3 Application

The application phase is dependent on the material received from both Nokia and the first phase. The biggest risk is related to the data supplied by Nokia as it currently contains only limited amount of variables, samples and is largely based on Nokia's current replacement model. The limited sample size will pose problems as the replacement behavior can only be observed during the recent years and in certain markets.

The only feasible method to overcome these obstacles is to regularly communicate with Nokia. Also professor Salo is likely to be able to help apply the models into the data.

3.4 Recommendations and Writing

The risk of the final phase is the measurement of the project's success. Do all parties have a similar view of the final outcome and agreement on what is to be done? The outcome is likely to shape during the project, which will once again stress the importance of constant communication.