Project Summary – Analytics and Data Science

University of Cologne, marketintelligence and Bofrost team up to push the limits of direct marketing campaigns using State-of-the-Art Machine Learning

The latest marketing research shows exemplary promise in using Machine Learning, True Uplift Modeling, and Big Data to boost efficiency and effectiveness of marketing campaigns. Initiated by CEO Karl-Heinz Hopbach, marketintelligence (MI) Germany, and Prof. Dr. Detlef Schoder, University of Cologne (UoC), the aim was to beat traditional, long-lasting direct marketing approaches significantly. MI brings in more than 15 years of experience in data curation, analysis, campaign design, and execution, whereas the team of Professor Schoder leverages MI's campaign skills with scientific machine learning methods. They teamed-up with Bofrost, one of Europe's largest direct sellers of frozen food and ice cream, and successfully applied theory into practice.

Following the CRISP-DM industry standard for data mining projects, the joint team from MI and UoC
   ▪ compiled data sets from previous campaigns,

"The team headed by Karl-Heinz Hopbach and Professor Schoder successfully helped us to win new customers for Bofrost in a much more efficient way."

— **Stefan Strähle**
Executive Director, Bofrost Dienstleistungen GmbH

The Data Science Challenge
   Develop machine learning models that improve the prediction of households with a high likelihood of becoming Bofrost customers when targeted within a direct marketing campaign.

Time Frame
   Ongoing since 09/2018

Results
   Our machine-learning-optimized campaigns increased new customer sales by up to 66% compared to randomly selected recipients and by up to 131% (more than doubled) compared to households that did not receive a mailing at all.

marketintelligence

marketintelligence GmbH is based in Langenfeld, Germany, and is part of the marketingverbund group. The company offers a broad portfolio of tools and services that help its clients to find and successfully reach new customers. Among its customers are Bofrost, LandsEnd, Gefro, Klingel (Babista, Diemer, Egle, meyermode, MiaModa, mona).

Bofrost

With 4 million served households and more than 1.2 billion € sales in 2019, Bofrost is Europe's largest direct seller of frozen food and ice cream. The company was founded in 1966 in Issum (DE) and has since grown to more than 10,000 employees. With its more than 5,400 sales vehicles, Bofrost delivers more than 600 different frozen products directly to customers' homes.

Project Team

- Karl-Heinz Hopbach, *CEO and managing partner of marketintelligence*
- Robin Hopbach, *CEO of marketvision*
- Prof. Dr. Detlef Schoder, *Founding and Managing Director of Cologne Institute for Information Systems (CIIS) at University of Cologne*
- Dr. Roman Tilly, *Assistant Professor at University of Cologne*
- Jannik Rößler M.Sc, *PhD Student* and Dr. Daniel Döppner*, both researchers at University of Cologne*

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- defined and computed target and predictor variables,
- evaluated different types of machine learning models,
- assessed models both from a technical (accuracy and precision of forecasts) as well as from a business perspective (costs for acquisition),
- fine-tuned most successful models,
- selected final sets of recipients, and
- evaluated campaign results to further improve the approach.

The team has since conducted several campaigns exceeding more than 500,000 recipients. As a result, new customer sales increased by up to 66% compared to randomly selected recipients (control group). And when compared to non-recipients (new customers from households that did not receive a mailing) this number was even up to 131%, in other words, more than doubled. While deploying machine learning methods, the team proved it outperforms standard approaches significantly, while being more cost effective.

This demonstrates a substantial improvement for Bofrost's campaigns. The optimized selection of campaign recipients reduces campaign costs due to less scattering loss and increases the campaign outcome in terms of new customers for Bofrost. Further steps will include an even more fine-tuned and proprietary True Uplift Approach incorporating contextual data, such as, spatial data.

"The machine learning skills of Professor Schoder and his team have successfully merged with our data and domain experience to build an even stronger service for our clients."

— **Karl-Heinz Hopbach**
CEO, marketintelligence GmbH