

Faculty Exchange Program Final Report

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Host: Alan Montgomery, Associate Professor, Tepper School, CMU

Period: June 1st, 2014 to September 15, 2014

This report aims at briefly summarizing the work developed during the stay of Vera Miguéis in CMU. The objectives foreseen for this visiting period encompassed two components:

- **research component**, involving the development of a research project focused on strategies of customization in online grocery retailing settings.
- **educational component**, involving visits to schools, observing classes, attending seminars and exchanging views with professors.

The outcomes of this experience were expected to contribute to foster research best practices and to establish relevant contacts with well recognized researchers. Moreover, it was expected to contribute to the enhancement of the teaching practices and to foster the excellence of the educational skills.

Regarding research, the first weeks of the stay in CMU consisted of specifying in detail the objectives of the research, taking into account the nature of the data provided by the company used as case study. For this purpose, it was conducted a descriptive analysis of the data available. Having developed this analysis, we agreed on developing a model to estimate incidence and quantity of each product category in customers' shopping baskets. This model should encompass the effect of e-mail communications by considering the association between the categories included in the communications and the products available in the online shop. A topic model should be used to identify a small set of dimensions that summarizes the information contained in the full corpus of terms created through the internet search of the products included in the e-mail communications.

This stage of the project was followed by the study of the econometric models and techniques used to tackle this type of problems. The text mining techniques used to extract the topics underlying sets of unstructured data were also explored. This study resulted in a literature review that positions and motivates the study.

The next stage consisted of defining the model to be used to estimate the quantities purchased. This was followed by the data preparation, namely the cleaning of the logs provided.

A new stage involved the specification of the model to extract the main topics which characterize the textual information created through the internet search of the content of the newsletters.

Having prepared the textual information we run multiple tests in order to infer how well simpler versions of the model (e.g. univariate models) would perform. This was followed by the tested of the final model. The results revealed that despite the potential of the model specified, the data available do not allow to conclude about the effectiveness of the model. This data represents only one month of transactions and revealed poor to support the study. The researchers are currently trying to collect other data that can be used in the empirical validation of the approach.

This work resulted from the continuous involvement of the two researchers. Usually two meetings per week were arranged.

During the stay in CMU, Vera Miguéis was introduced to Robert Blattberg, the Timothy W. McGuire Distinguished Service Professor of Marketing at the Tepper School of Business. He runs the Center for Marketing Information and Technology (CMTI), which works to bring together marketers to discuss new innovations in the marketing technology field and forecast their impact in the future marketplace. Given the similarity of the research interests of Vera Miguéis and Robert Blattberg, the two researchers decided to develop a project that aims at exploring the use of text mining in marketing context. More specifically, the objective of this project is to identify and distinguish customer's feelings and attitudes towards different stores belonging to a chain of supermarkets using social media. At this stage, the researchers are establishing contacts in order to collect relevant social media data to be used in the empirical validation of the methodology.

Vera Miguéis also attended several seminars in CMU, e.g. "Principles of Programming", "Past, Present, and Future").

Regarding education, this stay in CMU allowed to visit many schools and experience their environment. Vera Miguéis attended some classes from the following courses: "Marketing Communications & Buyer Behavior" in Tepper School and "Machine Learning" in School of Computer Science. The attendance of these courses enabled to get some insights about the pedagogical practices and methods used in CMU. The visitor also exchanged some views and experiences with other professors, namely about the Open Learning Initiative.

Summing up, Vera Miguéis considers that this was a very good experience both in terms of research and education. In the future, she considers revising some elements of her teaching method. She intends to promote self-study outside the class and to complement the lectures with video lectures and/or video demos. In addition, she hopes to be back to CMU for short term visits to carry on some research. She hopes to conclude soon the projects in progress and to be able to further explore the research topic addressed during this visit. Vera Miguéis believes that this visit constitutes a first step for the identification of similar research interests, potentially enabling the strengthening of the co-operation.

Porto, September 19th, 2014