
Essays on Text Mining for Improved Decision Making

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Data mining is defined as the process of extracting patterns from data. Thus, it is used to transform this data into information. A specific area of data mining is text mining or text data mining as the process of deriving high quality information from texts (unstructured data). Text mining structures the input text in a first step, it identifies new and unseen patterns within the structured textual data in a second step, and in a third step, it evaluates and interprets the results. Closely related to text mining is web content mining as a process of deriving high quality information from the content of web pages.

In total, this dissertation shows how methods from text mining and from web content mining can be used to support marketing professionals by improving marketing decision making. The methodologies are presented in seven studies where relevant textual information is analyzed that can be obtained from different sources (e.g. in web pages, documents, research papers, articles in technical periodicals, reports, etc.).

In the first two studies, a methodology is provided to support people from the marketing department by the identification of profitable business-to-business customers and profitable e-commerce companies. The methodology is based on a combination of text classification (latent semantic indexing) and web content mining.

Textual information from customers' and companies' websites is used to support the customer-acquisition manager and marketing professionals by identifying profitable customers and companies.

One important part of new product developments is the selection of new and innovative ideas as starting point for a research or a development project. Research projects have the aim to find new solutions for existing technological problems. Therefore, new technological problem solution ideas are needed. Alternatively, if new ideas are used as starting point for a development project then mainly, product ideas from the consumers are needed. Three studies support people from R&D and from marketing by the automatic identification of new product ideas from the consumers as well as by the automatic identification of new technological ideas from the scientists and technologists. Additionally, the innovative potential of the extracted ideas are identified in a further study.

Identifying innovative product and technological ideas probably leads to new applied science research areas. A well-known task in marketing is to provide an overview and to generate useful insights of existing markets for a new product of a company.

However here, it is also necessary to provide an overview and to generate useful insights of the current technological landscape concerning these new research areas of a company. This is helpful to support companies' research planning. A new approach for generating these insights specifically for large organizations is presented in a subsequent study.



Curriculum vitae

Dirk Thorleuchter (°1972, Euskirchen, Germany) is scientist at the Fraunhofer Institute for Technological Trend Analysis, located in Euskirchen, Germany. His research interests include text mining, web mining, and text classification for research planning and trend analysis. Additionally he consults the Armament Directorate of the German Ministry of Defence in defence-based research and technology planning. He studied computational science at the University of the Federal Armed Forces Germany in Munich and business informatics at the University of Hagen. He joined the German Armed Forces as information technology officer for 12 years.

Dirk is speaker of the Special Interest Group „Applied Information- and Communication Systems“ of the German Computer Society and is organizer of the

‘Practical IT-Security’ conference series and is member of the Program Committee of several international conferences. Further, he was invited to give a speech at the IASC 2008 Conference in the Satellite Meeting Statistic Modelling for Computer Security.

The research of Dirk has been published in ‘Technological Forecasting and Social Change’, ‘Expert Systems with Applications’, ‘Informatik Spektrum’, and ‘Studies in Classification, Data Analysis, and Knowledge Organization’. He will stay on at the Fraunhofer INT research institute in Germany.



Empirical Contributions to International and Local Tax Interaction

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Om hun doelstellingen te bereiken moeten overheden beslissen welk budget ze nodig hebben en op welke manier ze dit budget zullen financieren. Wanneer overheden deze beslissingen nemen houden ze niet alleen rekening met factoren die eigen zijn aan hun eigen rechtsgebied, zoals de wensen en eigenschappen van de inwoners, maar ook met de beslissingen genomen door overheden in andere rechtsgebieden. Dat laatste leidt tot strategische interactie tussen overheden, de centrale focus van het proefschrift. Strategische interactie komt voor op alle beleidsniveaus: zowel tussen lokale of regionale overheden binnen een land, als tussen landen binnen de wereldeconomie.

De eerste drie hoofdstukken van het proefschrift focussen op internationale belastingscompetitie tussen landen die de vennootschapsbelasting gebruiken als

strategisch instrument om internationale investeringen aan te trekken. We kijken specifiek naar ontwikkelingslanden omwille van het karige empirisch onderzoek ter zake en de luide roep om beleidsadvies.

We beantwoorden drie onderzoeksvragen: (i) is het verlagen van de vennootschapsbelasting even effectief voor het aantrekken van investeringen in landen met een relatief onaantrekkelijk investeringsklimaat als in landen met een relatief aantrekkelijk investeringsklimaat?, (ii) zijn ‘tax incentives’ (specifieke belastingskortingen) effectief voor het aantrekken van investeringen?, en (iii) houden overheden rekening met elkaars belastingsbeleid?

Hoofdstuk 1 beantwoordt de eerste vraag. De resultaten tonen aan dat het verlagen van de vennootschapsbelasting effectiever is in landen met een relatief goed