

Lecture Notes in Business Information Processing

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Artur Lugmayr (Ed.)

Enterprise Applications and Services in the Finance Industry

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Revised Papers

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Preface

Advancements in information and communication technologies have paved the way to new business models, markets, networks, services, and players in the financial services industry. To research these advancements, and invite international experts in the domain, we organized the FinanceCom Workshop in 2014 in Sydney to help us understand, drive, and exploit the associated systems, technologies, and opportunities. We invited experts from multiple disciplines, including technical, services, economic, sociological, media technology, and behavioral science to discuss the topic. We welcomed research work from any discipline, as the intention was to organize a cross-disciplinary workshop to leverage the knowledge of various fields. We were also open to any type of research analysis and methodology to explore this exciting topic.

FinanceCom is part of an extremely successful workshop series that has taken place in Regensburg (2005), Montreal (2007), Paris (2008), Frankfurt (2010), and Barcelona (2012). Most proceedings have been published as part of Springer's *Lecture Notes in Business Information Processing* series. The FinanceCom Workshop in 2014 in Sydney devoted its theme to "New Emergent Trends of IT in Finance Industry," and in particular sought themes in the following research areas:

- Networks and business models
 - Technology-driven transformation of the financial industry — towards banking value networks
 - Business process outsourcing/offshoring and information systems
 - New e-finance business models enabled by IT
 - New bank business models and challenges in a post-financial crisis
 - Approaches for evaluating operational and credit risks as well as banking and market performance
- Financial markets
 - Electronic markets design and engineering
 - Algorithmic and high-frequency trading/post-trading systems and infrastructures
 - Analysis of intraday market data and news
 - Regulation of electronic financial markets (e.g. MiFiD, EMIR or Dodd-Frank)
 - Private equity and Venture capital investments
- IT and implementations
 - Role of new technologies (e.g., Web services, cloud, big data, and grid computing)
 - Implementation experiences and case studies
 - Enabling decision support systems in banking and financial markets
 - Enterprise communication in banking and financial services

- Interoperability of heterogeneous financial systems and evolving international standards
- “New” emerging digital and virtual financial markets
 - Virtual Currencies (Bitcoin, Amazon, etc.)
 - Alternative banking, loan, and financial market models
 - New customer contact trends
 - Crowdfunding, crowdsourcing, and B2B/B2C social media
 - Loyalty card, and smart card markets
 - New consumer identification methods (e.g., biometrics)
 - M/T/I banking and trading services
 - New banking and payment trends

The workshop attracted over 35 international attendees; eight research papers and one invited paper were accepted for presentation at the workshop. The contribution from Maurice Peat and Stewart Jones from the University of Sydney, Australia, constituted an invited paper and presentation. There were also six industry presentations. Several works that have been contributed to these proceedings underwent a double-blind peer-review process.

The following section gives an overview of the accepted contributions. Accepted contributions related to various aspects of research in financial markets, and can be grouped into four major clusters: processing and evaluating market news, algorithms and pre-processing of data, enterprise systems and big data, and emerging trends in financial markets. In the following section, a brief overview of the particular contributions can be found, starting with the invited contribution from Maurice Peat and Stewart Jones from the University of Sydney, Australia:

- Invited Paper
 - “Detecting Changing Financial Relationships: A Self-Organizing Map Approach”; Maurice Peat (University of Sydney, Australia) et al. investigate Kohonen’s self-organizing maps (SOMs) in the context of takeover target identification.
- Processing and Evaluating Market News
 - “Evaluation of News-Based Trading Strategies”; Stefan Feuerriegel (University of Freiburg, Germany) et al. investigate strategies for news-based trading with an emphasis on enabling decision support for financial markets, and demonstrate the sensitivity of financial markets to the release of news.
 - “A Framework for Evaluating the Effectiveness of Financial News Sentiment Scoring Techniques”; Islam Qudah (University of New South Wales, Australia) et al. investigate the efficiency of sentiment scores of financial news, compare potential models, and present a software architecture to cope with this challenge.
 - “Finding Evidence of Irrational Exuberance in the Oil Market”; Antal Ratku (University of Freiburg, Germany) et al. focus in particular on oil markets. They investigate the relation between the release of textual news disclosures, news reception, and market returns using the rolling window regression method.

- Algorithms and Data Pre-processing
 - “Validating an Incremental Rule Management Approach for Financial Market Data Pre-processing”; Weisi Chen (University of New South Wales, Australia) et al. devote their research work to data pre-processing, in particular in data quality aspects and data reliability aspects. The authors present a software tool that outperforms other tools in the domain.
- Enterprise Systems and Big Data
 - “Strategic Competitive Advantages Through Enterprise Systems: The Case of Exchange Systems”; Martin Haferkorn (Goethe University Frankfurt, Germany) et al. present how the upgrading of the IT infrastructure of exchange systems leads to competitive advantage and increases in trading volume.
 - “Conciliating Exploration and Exploitation at Middle-Manager Level: The Case Study of a European Bank Introducing Big Data”; Alberto Palazzesi (Università Cattolica del Sacro Cuore, Italy) et al. explore the exploitation of big data at an enterprise level based on research conducted within the context of the biggest European banks. The relationship between IT service provider, bank internal R&D departments, and middle management is investigated.
- Emerging Trends in Financial Markets
 - “Seasonality and Interconnectivity Within Cryptocurrencies – An Analysis of the Basis of Bitcoin, Litecoin, and Namecoin”; Martin Haferkorn (Goethe University Frankfurt, Germany) et al. describe how the market changes through the introduction of new technologies. With the example of cryptocurrencies, the authors illustrate how payment patterns and behavior diverge with the introduction of cryptocurrencies.
 - “Survey of Financial Market Visualization Utilizing Interactive Media Technology”; Artur Lugmayr (Curtin University, Australia) presents a brief introduction to the use of the latest visualization technologies in financial industries.

In particular we would like to thank the Organizing Committee of the workshop, namely, Martin Aichner, Erste Group, Austria; Peter Gomber, University of Frankfurt, Germany; Dennis Kundisch, University of Paderborn, Germany; Artur Lugmayr, Tampere University of Technology, Finland; Nikolay Mehandjiev, University of Manchester, UK; Jan Muntermann, University of Goettingen, Germany; Dirk Neumann, University of Freiburg, Germany; Maurice Peat, University of Sydney, Australia; Fethi Rabhi, University of New South Wales, Australia; Ryan Riordan, University of Ontario, Canada; Christof Weinhardt, Karlsruhe Institute of Technology, Germany; Axel Winkelmann, University of Wuerzburg, Germany.

However, without our two sponsors, the University of Sydney, Australia, and SIRCA, Australia, the workshop would not have been possible. We would truly like to thank both sponsors!

If you are interested in joining the rather small community around financial markets, please feel free to join our mailing list, or browse through the workshop website. To post to the email list, please use the following email address: financecom@ambientmediaassociation.org; if you would like to subscribe to the email list, please

visit the following website: http://mail.ambientmediaassociation.org/mailman/listinfo/financecom_ambientmediaassociation.org

The workshop website, including programs and other arrangements, can be found at: www.ambientmediaassociation.org/tiki/article7-Workshop-Enterprise-Applications-Markets-and-Services-in-the-Finance-Industry-FinanceCom2014

Last but not least, by reading these proceedings, I wish you interesting insights into the latest research in financial markets.

October 2015

Artur Lugmayr

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