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at the HOUSE OF FINANCE

Opportunities of Social Media in the Financial Market

Do Firms Benefit from High Discount Rates  
of Customers who Purchase Complementary Products

QoS- and Security-Aware Optimization  
of Cloud Collaborations

Digital Banking – the New Normal



Deutsche Bank



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## Editorial

# Opportunities of Social Media in the Financial Market

Philipp Sommer

With approximately two billion active users, Social Media platforms provide new opportunities and challenges for the financial market. Users increasingly change their perspective away from a strict deference of their private rights towards the more engagement-oriented expectation that companies listen and respond to their concerns through Social Media. For example, the inbound consumer engagement with companies grows over eight times faster than social networks themselves.

The pervasiveness of Social Media platforms and the large amount of shared information causes promising emerging markets for financial institutions. A prominent case is the field of social trading networks (e.g., eToro or Wikifolio) where traders can interact and duplicate others' trades. On Wikifolio, users can trade certificates of portfolios which represent the investment strategy of a particular social trader. Since its launch in 2012, around EUR 290 million have been invested based on

1,900 Wikifolio certificates. These Wikifolio transactions account for a total trading volume of EUR 4.6 billion in stocks, ETFs, and certificates with a EUR 400 million turnover in October alone at the Stuttgart stock exchange. Consequently, several large direct banks offer some of the Wikifolio certificates for a savings plan. This demonstrates the incremental interest of and economic potential for financial institutions through Social Media platforms.

Apart from the more striving market of social trading, financial institutions are currently struggling to fully exploit other potentials of Social Media platforms like a successful customer relationship management or a sophisticated social credit scoring. Simply establishing a Social Media presence does not satisfy complex consumer interests spanning from feedback on banking products and services, over information on regulations, up to customized financial advice. While, e.g., over half of the online users expect a



**Philipp Sommer**  
Account Executive Financial Services  
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response to a complaint the same day they send it, the average response time amounts to ten hours while over two-thirds of questions remain unanswered. An internal allocation of customer complaints and alignment of company accounts would help to address user requests more satisfactorily.

Lastly, big financial institutions hold back on the opportunity of social credit scoring where credit companies use personal data from social networking sites (e.g., location, social graph, e-commerce behavior, and device data) to assess a consumer's credit risk. This approach follows the assertion of John Pierpont "J.P." Morgan that character is more important in assessing one's creditworthiness than money or property.

However, a common reciprocation is the reservation of banks to violate a customer's privacy. Social scoring providers address this issue by asking applicants to voluntarily provide a limited-time access to their Social

Media account or by following applicants on Social Media with their permission. Considering a person's social standing and professional connections is especially interesting for people who might otherwise have trouble getting a loan due to a scant or spotty credit history or for people in developing countries where it is difficult to obtain financial data about the applicant. Clearly, the identification and extraction of useful data points requires profound databases and analytical techniques in the realm of Social Media.

In general, it can be seen that the pervasiveness of social platform usage provides financial institutions with promising business opportunities which are partially already recognized (social trading). However, to exploit the financial market potential of other areas of Social Media (customer relationship management and social credit scoring), the use of more advanced engagement and analytical tools is required.

## Research Report

# Do Firms Benefit from High Discount Rates of Customers who Purchase Complementary Products?

DESPITE AMPLE EVIDENCE THAT CUSTOMERS EXHIBIT HIGHER DISCOUNT RATES THAN FIRMS, IT IS NOT CLEAR HOW DIFFERENCES IN DISCOUNT RATES AFFECT OPTIMAL PRICES, PROFITS, AND WELFARE OF COMPLEMENTARY PRODUCTS (WHICH COULD BE GOODS OR SERVICES). WE SHOW FOR COMPLEMENTARY PRODUCTS THAT HIGHER DISCOUNT RATES OF CUSTOMERS DO NOT INCREASE PROFIT OR CONSUMER SURPLUS. FIRMS, INCLUDING BANKS, WOULD BE ADVISED TO SEEK TO REDUCE EXCESSIVE DISCOUNT RATES AMONG CONSUMERS.

Iman Ahmadi

Anja Lambrecht

### Introduction

Recent behavioral research in economics argues that customers discount future benefits at much higher rates than firms. Annual discount rates for 3-year delays, for example, lie in the range of 36%–46% and for 1-year delays within a range of 83%–100% (Frederick et al., 2002). By contrast, a firm's weighted average cost of capital, a good indicator for a firm's discount rate (i.e., 1 divided by the sum of 1 and the discount rate), in most years is between 10% and 11% (Schaaf and Skiera, 2014). Yet, despite ample evidence that customers discount at higher rates than firms, the effect of such time

Bernd Skiera

Florian Heubrandner

preferences on pricing, profit, and welfare has not sufficiently been studied.

Studying this topic, however, is important because such high discount rates influence consumers' choices when expenditures or benefits occur at least partly in the future. Put differently, high discount rates indicate that consumers have a strong incentive to spend money today at the expense of not being able to spend money in the future. As a result, they might, among other shortcomings, not save enough money for their retirement. This tendency might become even worse if firms also have an incentive to even further encourage con-

sumers to act according to their high discount rates and enjoy today's living at the expense of paying for it in the future.

We study the effect of time preferences on pricing, profit, and welfare in the context of complementary products. We define complementary products as a combination of a durable and a consumable product where neither can be used independently of the other. Complementary product strategies are widespread in consumer goods markets. They include tied products where the consumable can only be used with the same firm's durable, such as Gillette razor blades – in which the razor is durable and blade is consumable; Nespresso coffee machines, where the coffee machine is durable and coffee capsules are consumables; or Sony games consoles, where the console is durable and the game is consumable. But they also include open (or "untied") systems where the consumer is free to use a competitor's consumable with the firm's durable, such as the iPad and audio/video files that can be purchased at both the iTunes store or elsewhere, printers and cartridges, digital wallets and payments that can be made with a variety of banks or credit cards.

The effect of high customer discount rates on profit from complementary services is difficult to predict. First, ignoring discount rates can result in suboptimal pricing decisions (Yao et al., 2012). Second, if customers discount later payments at greater rates than firms, firms may increase the consumable price and decrease the durable price as the latter is charged earlier than the former. The result may be an increase in profit beyond the profit they would obtain if firms and customers had the same time preferences. As a result, the question of whether firms benefit from high customer discount rates is difficult to answer.

### Basic Setup of our Model

We analytically model the effect of customers' and firms' discount rates on optimal prices of tie-in complementary services, profits, consumer surplus and thus, welfare. Tie-in complementary products are those products for whom the consumable is sold by the same firm as the durable. We assume that customers have heterogeneous demand functions and explicitly model the two-period nature of the decision process in which the durable is purchased in the first period and the consumable in the second period.

Discount Rates of Consumers (Measured by Their Discount Factor)

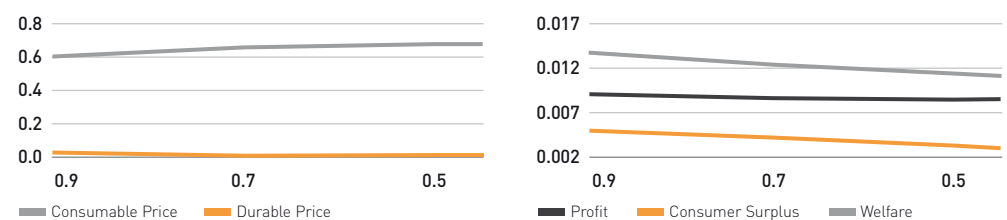


Figure 1: Effect of Higher Discount Rates of Customers on Prices, Profit, Customer Surplus, and Welfare (CS I). (Discount Factor=1/(1+Discount Rate); Durable Marginal Cost=0; Consumable Marginal Cost=0.5; Firm's Discount Factor=0.9)

We also assume that customers have perfect knowledge of prices and product quality and that the firm commits to future consumable prices. When they purchase the durable, customers evaluate the payment for the durable and the discounted value of payments and benefits of the consumable. We specify four competitive settings (CS) depending on whether the firm is a monopolist or is competing in the durable market and on whether complementary products are tied or untied. We derive optimal prices, profit, customer surplus and thus, welfare, in each of the four competitive settings but focus here on the two settings (CS I and CS II) in which the firm tie-in complementary products.

**Summary of Findings**

Our analysis yields several key insights. First, higher discount rates lead to lower durable prices but higher consumable prices. Because consumers with high discount rates prefer to have lower prices today even if they come with higher prices tomorrow. Second, higher customer discount rates never increase profits and also do not increase customer surplus. Thus, high discount rates hurt both customers and firms.

We simulate the effect of an increase in customer discount rates on prices, profit, and consumer surplus for the competitive setting in which the firm is a monopolist in the durable market and offers a tied complementary product (labeled as CS I) and present the results in Figure 1. As Figure 1 outlines, a higher customer discount rate leads to a higher consumable price and a lower durable price. Figure 1 also illustrates how higher customer discount rates reduce profit and consumer surplus.

Intuitively, customers discount the payments for the consumable but not the payments for the durable. The firm then decreases the durable price and raises the consumable price. This strategy is optimal as long as the firm’s discount rate is lower than the customer’s discount rate. Yet a lower price for the durable at the expense of a higher price of the consumable will never fully compensate for the loss in customer surplus. Hence, since higher discount rates mean that customers value future benefits less, firms do not benefit from higher customer time preferences. However, since the firm can tradeoff between payments for the durable and for the consumable, the relative decrease of firm profits is less

pronounced than the effect on consumer surplus. Figure 2 illustrates the effect of an increase in customer discount rates for the setting in which the firm competes in durable market and again offers a tied complementary product (labeled as CS II). Again, a higher customer discount rate (here reflected in a lower discount factor) leads to a higher consumable price and a lower durable price. Interestingly, the durable price is even slightly negative, so that firms are selling the durable to customers at a loss. There exist many real world examples, in tie-in complementary services or product, in which firms sell durables at a loss. Similar to CS I, high discount rates decrease customer surplus and welfare as the competition in the durable market yield profits that are always zero. Still, customers do not benefit either from their high discount rates.

**Conclusion**

Our study shows that neither customers nor firms benefit from higher customer discount rates. Higher customer discount rates relative to the firm’s increase consumable prices and decrease durable prices, consumer surplus, and welfare. This result can be observed for many customer product markets in which manufacturers tie durables to consumables, including the Gillette, Nespresso, and Sony examples discussed above. This result outlines that financial service institutions should follow strategies to decrease customers’ relatively higher discount rate for complementary products (e.g., credit cards, or financial advice on cash management).

Our results also illustrate that customer discount rates can have a significant impact on firm’s prof-

its and consumer surplus. As such, they suggest that the consideration of customer time preferences should play a more prominent role in firms’ decisions.

Most importantly, however, our results indicate that for complementary products, neither customers nor firms benefit from higher customer time preference. Thus, our finding illustrates that firms would benefit from lowering customer discount rates. Firms and banks may, for example, invest into educating customers to make them more aware of the effects of very high time preferences or run marketing campaigns that make future expenditures for consumables more salient.

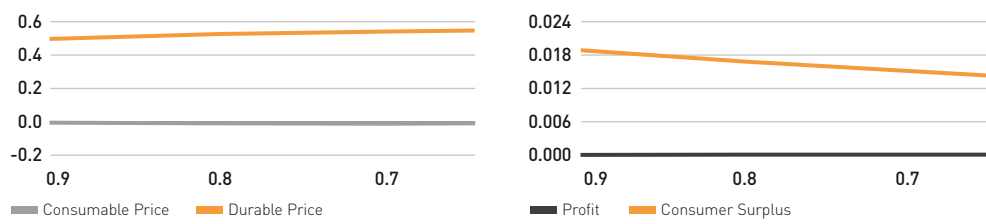
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**Discount Rates of Consumers** (Measured by Their Discount Factor)



**Figure 2: Effect of Higher Discount Rates of Customers on Prices, Profit, and Customer Surplus (CS II). (Discount Factor=1/(1+Discount Rate); Durable Marginal Cost=0; Consumable Marginal Cost =0.5; Firm’s Discount Factor=0.9)**



## Research Report

# QoS- and Security-Aware Optimization of Cloud Collaborations

WHILE CLOUD MARKETS PROMISE UNLIMITED RESOURCE SUPPLIES, INDIVIDUAL PROVIDERS MIGHT BE UNABLE TO OFFER SUFFICIENT PHYSICAL CAPACITY TO SERVE LARGE CUSTOMERS. A SOLUTION IS TO FORM CLOUD COLLABORATIONS, IN WHICH MULTIPLE CLOUD PROVIDERS UNITE FORCES IN ORDER TO CONJOINTLY OFFER CAPACITIES WITHIN CLOUD MARKETS. QUALITY OF SERVICE (QoS) AND SECURITY ASPECTS ARE THE PRIMARY CONSIDERATIONS IN BUILDING SUCH COLLABORATIONS. THIS RESEARCH REPORT PRESENTS A CORRESPONDING OPTIMIZATION APPROACH FOR THE SELECTION OF COLLABORATIVE CLOUD PROVIDERS UNDER CONSIDERATION OF FULFILLMENT OF CLOUD USERS' QoS AND SECURITY REQUIREMENTS.

Olga Wenge

Ulrich Lampe

Melanie Siebenhaar

Ralf Steinmetz

### Introduction

In highly dynamic market environments, such as the financial industry, the corresponding business processes are also currently evolving. Reasons for business process evolution comprise new regulations adapting to competitive products and services as well as achieving maturity over time (Grivas et al., 2010). Since IT is a major enabler of most business processes in the financial industry (Berger, 2003), agility of the utilized IT is a crucial foundation in order to achieve business process evolution.

Cloud markets promise IT agility in terms of custom-tailored service provisioning on-demand in a scalable pay-as-you-go fashion with unlimited resource supplies (Buyya et al., 2009).

However, some cloud providers might be unable to serve large customers on their own, e.g., due to limited data center capacity and, consequently, limited range of services. A solution to this issue is to form cloud collaborations within cloud markets.

Besides capacity issues, cloud collaborations can also be formed in order to extend in-house cloud solutions by externally provided public cloud services. In this case, they constitute so-called hybrid clouds that utilize private and public cloud solutions.

Focusing on the financial industry, extending in-house cloud solutions can provide major benefits in order to meet new demands such as coping with big data and supporting the use of mobile devices. However, such cloud collaborations have both QoS and security impact.

Cloud collaborations represent the cooperation of multiple cloud providers that aggregate their resources and conjointly satisfy users' demands (Kretzschmar and Golling, 2011). Since a user may potentially be served by any provider within a collaboration, the aggregated non-functional service attributes (e.g., availability, security protection level, and data center location) will be determined by the "weakest link in the chain", in other words, by the provider with the lowest guarantees.

Take an example of two cloud providers: One provider guarantees 99.5% availability and another provider guarantees only 99%. If these providers aggregate their capacities, the availability guarantee will be determined by the worst one, i.e., 99%.

Considering country- and industry-specific data protection laws and regulations is another concern in building cloud collaborations since pro-

viders can act in different jurisdictions (the European Union, Canada, Singapore, or the United States), where data privacy laws and other related regulations differ (Goiri et al., 2010).

A selection of collaborative partners is an activity traditionally provided by a cloud broker, who acts as a mediator between cloud providers and cloud users (Grivas et al., 2010). In our research, we examine the *Cloud Collaboration Composition Problem* (CCCP) with a focus on a cloud broker and its objective to maximize profit, thereby examining the following research question: *How to compose cloud collaborations under consideration of QoS and security properties within a market scenario involving multiple cloud providers and cloud users in order to maximize profit for a cloud broker?*

In this research report, we present an optimal solution of the abovementioned problem as well as two heuristic optimization approaches that lead to improvements in computational time performance and solution quality.

### Optimization Model for Cloud Collaboration Composition

Our solution approach to the Cloud Collaboration Composition Problem is based on the formulation of an optimization model. In our model, we define a cloud market that consists of a set of cloud providers  $P$  and a set of cloud users  $U$ . Each cloud provider offers a specified resource supply for a specified amount of monetary units. Likewise, each cloud user has a specified resource demand for which he/she is willing to

pay a specified amount of monetary units. Our approach allows collaboration between cloud providers and cloud users only if the total resource demand of a potential collaboration does not exceed the total resource supply.

Furthermore, we define QoS and security constraints as non-functional constraints. For maximum flexibility, we model these constraints using two sets of quantitative and qualitative non-functional attributes. Quantitative attributes represent numerical properties, e.g., availability, latency, and network throughput. Qualitative attributes refer to nominal properties, e.g., applied security policies, data center location, and compliance with related industry-specific regulations. Based on this observation, we define the values of quantitative attributes as real and the values of qualitative attributes as binary (i.e., whether an attribute is mandatory or not).

Each cloud provider is characterized by a set of guarantees: Qualitative and quantitative non-functional attributes that describe cloud provider's QoS and security properties. In contrast, each cloud user is characterized by a set of requirements: Qualitative and quantitative non-functional attributes that represent cloud user's demands for QoS as well as security properties and should be fulfilled by cloud providers. Furthermore, we calculate the cumulative non-functional values for quantitative and qualitative attributes of each collaboration. As explained before, the cumulative values of the quantitative properties are given by the "worst"

value among all providers in a certain collaboration.

In our approach, we take the perspective of a cloud broker, whose task is to unite cloud providers to build cloud collaborations and to assign cloud users to these collaborations. Such assignments are provided under the constraints that all cloud users' demands are satisfied and that all non-functional requirements are fulfilled. The monetary objective of the proposed optimization approach consists in cloud broker's profit maximization – i.e., the difference between the revenue from the served cloud users and the spending on the used cloud providers should be maximized.

For further details, we refer the interested reader to our prior publication [Wenge et al., 2014].

### Optimization Approaches

We have translated the proposed optimization model into an exact approach CCCP-EXA.KOM and solved it by an off-the-shelf optimization algorithm, namely branch-and-bound (Hillier and Lieberman, 2005). Furthermore, we have extended the introduced exact optimization solution approach with two heuristic approaches: CCCP-HEU.KOM and CCCP-INC.KOM.

The CCCP-HEU.KOM heuristic approach is based on the divide-and-conquer principle, i.e., the approach recursively breaks down the CCCP problem into sub-problems and combines the solutions of sub-problems to provide a solution to the original problem. Further-

more, it applies a greedy approach for the selection of solutions.

The CCCP-INC.KOM heuristic approach is based on the graph partition algorithm. Namely, this approach checks small subsets of users and providers for feasibility of non-functional attributes and potential profit, selects the best option, and adds it to a suitable collaboration or creates a new one.

### Evaluation Results

In order to assess the required computation time and the solution quality of our approaches for different problem sizes, we have evaluat-

ed two test cases: One with a fixed number of cloud providers, and another one with a fixed number of cloud users. For each test case, we have created 100 problem instances. Each instance was solved using all proposed approaches with a time-out of 300 seconds being imposed. Based on the resulting sample of solved problem instances, we computed the absolute computation time, macro-averaged ratio of profit (solution quality), as well as the corresponding 95% confidence intervals.

Figure 1 provides the quantitative evaluation results of the computation time. These results indicate that the computation time of the pro-

### Absolute Computation Time

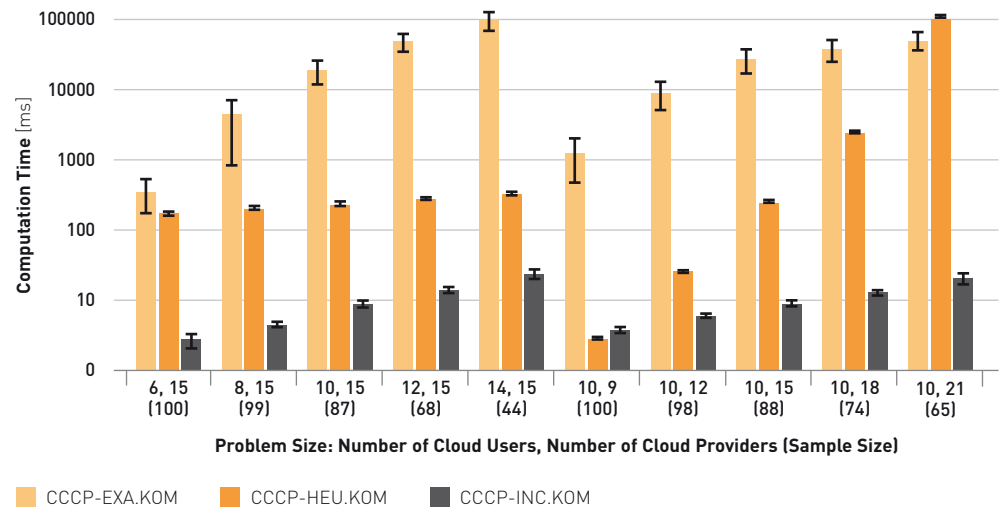
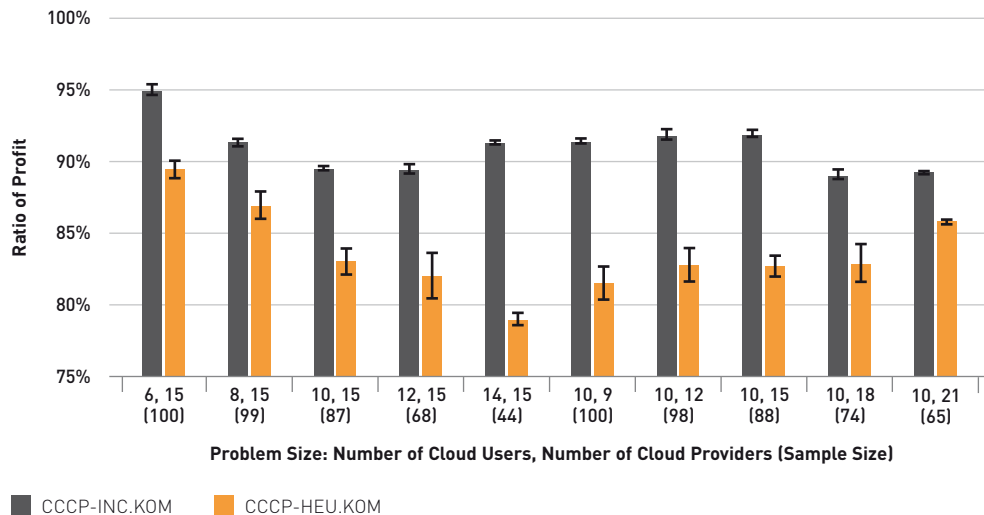


Figure 1: Absolute Computation Time (with 95% Confidence Intervals) for All Three Approaches by Test Case. Please Note the Logarithmic Scaling of the Ordinate.

**Macro-Averaged Ratio of Profit (Solution Quality)****Figure 2: Macro-Averaged Ratio of Profit (Solution Quality) Compared to the Optimal Profit.**

posed CCCP-EXA.KOM exact solution grows roughly exponentially with the number of market participants, which indicates its limited practical applicability to large-scale problem instances.

The CCCP-HEU.KOM approach exhibits polynomial time behaviour and shows improvements in computation time, emphasizing its applicability in current cloud markets, where the number of cloud providers is rather fixed. In the case with a fixed number of cloud users, the computational time of the CCCP-HEU.KOM grows with an increasing number of cloud users and demands further improvement.

In contrast, the CCCP-INC.KOM approach exhibits significant reduction of computation time (over 95%), even for the largest test cases (14, 15) and (10, 21), therefore confirming its superior scalability and proving the model's applicability in real market scenarios.

The evaluation of the solution quality with the comparison to an optimal, i.e., 100%, solution quality is provided in Figure 2. As can be seen, the CCCP-HEU.KOM approach exhibits significant profit reduction, which points out its limited practical interest. In contrast, the CCCP-INC.KOM approach consistently achieves over 90% of the optimal profit, proving its excellent applicability in practice again.

**Conclusions and Outlook**

While cloud markets promise virtually unlimited resources, the physical infrastructure of cloud providers is actually limited and they may not be able to serve the demands of large customers. Therefore, cloud providers can cooperate with each other building cloud collaborations. In this research report, we introduced the corresponding Cloud Collaboration Composition Problem along with exact and heuristic solution approaches. Our evaluation results indicated drastic improvements in computation time and solution quality, and also showed that the proposed algorithms are applicable in real cloud market scenarios.

In our future work, we will aim at extending the model with additional monetary attributes, more complex non-functional constraints, and dynamic structures. Furthermore, we plan a development of metaheuristics, e.g., best-of-breed, in order to support dynamic changes in our model.

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## Insideview

# Digital Banking – the New Normal

INTERVIEW WITH SUSANNE KLOESS

**Various new solutions were launched for banking customers in 2014, creating a new digital hype on the market. Payment services in particular, as the natural gateway to banking customers, are developing very quickly and a growing number of non-banks, such as PayPal, are laying claim to them. What's your view on current developments in the industry?**

Digital banking didn't start in 2014, it's been around for some years now. Almost all banks offer digital banking solutions like banking apps and payment solutions. Apple for example definitely brought more attention to this topic with the launch of Apple Pay. But mobile payment solutions are not new to the banking industry. Clients now face a more confusing landscape than ever. And: clients want a simple and efficient payment solution with broad reach and usage. However, payments are just one of many digital banking services which are currently being redefined.

**The term "digital innovation", especially in banking, is used in an almost excessive way.**

**How would you define real innovation?**

I think it's important to distinguish between invention and innovation. In the banking industry, the last big invention came 40 years ago in the form of the automated teller machine (ATM).

Innovation, digital or non-digital, in my definition is the way of doing things differently and exploring new ways of adding value. That doesn't always mean reinventing the wheel. Most of the time, it's about process innovation, i.e., restructuring existing process steps in a new and convenient way to add value for the customer. When it comes to process innovation, there's no distinction between a bank and any other area of business. It's all about making customers' lives easier and being relevant for them, both digitally and non-digitally.

**Talking about digitalization, how important is digital banking to banks nowadays?**

For me, there's no such thing as "digital banking". It's banking with digital access. Individual



Susanne Kloess  
Member of the Executive Board  
Postbank

customers have their own personal preferences regarding how they access and communicate with their bank. Some customers prefer personal interaction by visiting a branch or meeting a mobile sales agent. Others prefer using the telephone, while some choose online and mobile banking. And most customers switch between the available channels depending on where they are and the type of transaction. What matters is that customers can always find the right solution for them. No matter which form of access they prefer, they should always experience seamless connectivity between the different channels.

**What do these digital developments mean for banking products?**

It's not only technology that triggers a new solution; the revolution in the banking industry is being driven by changing customer behaviour. In addition to considering the quality of service and information received, customers also decide whether a product or service is relevant for them. For this reason, I prefer to talk

about customer solutions rather than banking products. Solutions have to be available anytime, anywhere, and in any way.

**Finally, what will the banking environment look like in future?**

I would like to describe the future banking environment in five words: convenient, relevant, fair, transparent, and – very importantly – secure because when it comes to money, its natural home is in a bank.

Banking solutions need to be transparent and easily understandable. Customers must be able to quickly identify what type of service they're getting and how much it costs. It's also crucial that customers receive a relevant and immediate solution via their preferred channel.

Banks can do this by offering easy-to-use technology as well as being part of the new ecosystem and the day-to-day lives of their customers.

**Thank you for this interesting conversation.**

# Infopool

## News

### The E-Finance Lab has a new postal address

From March 1<sup>st</sup>, 2015, new postal and new visitor addresses on the Campus Westend of the Goethe University Frankfurt apply. The new address of the E-Finance Lab is Theodor-W.-Adorno-Platz 3 ("House of Finance" (HoF) Building). The zip code for postal mailings is 60629 Frankfurt am Main. The former place Grüneburgplatz was renamed in honor of Theodor Wiesengrund Adorno, who was a leading member of the Frankfurt School of critical theory.

### 4<sup>th</sup> International Conference "The Industrial Organisation of Securities and Derivatives Markets: High Frequency Trading"

After three very successful conferences in 2008, 2010, and 2013, Prof. Dr. Peter Gomber (layer 2) will organize and chair the 4<sup>th</sup> international conference on "The Industrial Organisation of Securities and Derivatives Markets: High Frequency Trading" together with the Center for Financial Studies (Prof. Dr. Erik Theissen) and Deutsche Börse AG on July 17<sup>th</sup>, 2015 in Frankfurt. The objective of the conference is to bring together academics, practitioners, and members of the industry to focus on state-of-the-art academic research in an environment that stimulates discussions and an exchange of ideas.

### Prof. König Hosts Annual Conference with Research Affiliates

From February 12<sup>th</sup> –14<sup>th</sup>, Prof. König (layer 1) hosted the annual conference of his research offspring in cooperation with Prof. Schwind. About 60 participants (professors and their Ph.D. candidates) participated, presented, and discussed their work at Schloss Leyenburg in Rheurdt.

### Nomination for VHB Best Paper Award

The former research group of Dr. Immanuel Pahlke and Dr. Christoph Seebach around Prof. Beck (former layer 1) is nominated for the annual Best Paper Award of the German Academic Association for Business Research. The nomination refers to their paper on "Knowledge Exchange and Symbolic Action in Social Media-Enabled Electronic Networks of Practice".

### Joint Research Seminar in Riezlern

Prof. Hackethal (layer 3), Prof. Inderst (Goethe University Frankfurt), Prof. Meyer (Leibniz University Hannover), and their respective teams got together for a two-day research seminar in Riezlern to discuss their (joint) research results in the areas of household finance and institutional economics as well as current and future collaboration possibilities.

### Scientific Workshop "Future Mobile Communications and Networking"

Prof. Steinmetz (layer 1) chaired a research workshop on challenges for future mobile communications and networking. Five well known international speakers from universities and industry presented their future expectations towards mobile communication technology and their exploitation.

## Selected E-Finance Lab Publications

### Benthaus, J.:

Making the right Impression for Corporate Reputation: Analyzing Impression Management of Financial Institutions in Social Media.  
In: Proceedings of the 22<sup>nd</sup> European Conference on Information Systems (ECIS 2014), Tel Aviv, Israel, 2014.

### Etheber, T.; Hackethal, A.:

Leistungstransparenz: Neue Wege in der Anlageberatung.  
In: die bank, 2 (2015), pp. 16–19.

### Gomber, P.; Sagade, S.; Theissen, E.; Weber, M.; Westheide, C.:

Anonymity and Immediacy: Distinct Dark Markets and the Determinants of their Trading Volume.  
In: 18<sup>th</sup> Annual Conference of the Swiss Society for Financial Market Research, Zurich, Switzerland, 2015.

### Gomber, P.; Schweickert, U.; Theissen, E.:

Liquidity Dynamics in an Electronic Open Limit Order Book: an Event Study Approach.  
In: European Financial Management, 21 (2015) 1, pp. 52–78.

### Nguyen, B.; Siebenhaar, M.; Hans, R.; Steinmetz, R.:

Role-based Templates for Cloud Monitoring.  
In: Proceedings of the 7<sup>th</sup> International Conference on Utility and Cloud Computing (UCC 2014), London, UK, 2014.

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Is it Really About Facts? The Positive Side of Meforming for Turning Self-Disclosure into Social Capital in Enterprise Social Media.  
In: Proceedings of the 22<sup>nd</sup> European Conference on Information Systems (ECIS 2014), Tel Aviv, Israel, 2014.

### Skiera, B.:

Chancen und Risiken des Online-Marketing für Banken.  
In: Baxmann, U. G. (ed.): Kreditwirtschaftliche Vertriebsstrategien, pp. 21–53, Frankfurt School Verlag, Frankfurt am Main.

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<http://www.efinancelab.com/publications>

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### RESEARCH PAPER: A PYRRHIC VICTORY? BANK BAILOUTS AND SOVEREIGN CREDIT RISK

Prior to the financial crisis of 2007 to 2008, there was essentially no sign of sovereign credit risk in the developed economies, and the prevailing view was that such risk was unlikely to be a concern for these economies in the near future. However, sovereign credit risk has become a significant problem for a number of developed countries, most notably in Europe. In their study, the authors model a loop between sovereign and bank credit risk. Their model shows how a distressed financial sector induces government bailouts, whose cost increases sovereign credit risk. Increased sovereign credit risk in turn weakens the financial sector by eroding the value of its government guarantees and bond holdings. Using credit default swap (CDS) rates on European sovereigns and banks, the model identifies bailouts as triggers of the rise of sovereign credit risk in 2008. With their model, the authors document how post-bailout changes in sovereign CDS explain changes in bank CDS even after controlling for aggregate and bank-level determinants of credit spreads, confirming the sovereign-bank loop.

Acharya, V.; Drechsler, I.; Schnabl, P.

In: *The Journal of Finance*, 69 (2014) 6, pp. 2689–2739.

### RESEARCH PAPER: CAN BLOG COMMUNICATION DYNAMICS BE CORRELATED WITH STOCK MARKET ACTIVITY?

The goal of this paper is to model and analyze communication dynamics in the blogosphere “Engadet” and to relate these to stock market movements from Tech companies (e.g., Apple, Google, Microsoft). A so-called Support Vector Machine framework is developed which incorporates and weighs the impact of communicative aspects like the number of posts and comments or the length and latency of comments’ response times. This framework manages to predict the magnitude of concurring stock market movements with about 78% accuracy and the direction of movement with 87%.

Choudhury, M. D.; Sundaram, H.; John, A.; Seligmann, D. D.

In: *Proceedings of the 19<sup>th</sup> ACM Conference on Hypertext and Hypermedia*, Pittsburgh, USA, 2008.

## Electronic Newsletter

The E-Finance Lab conducts two kinds of newsletters which both appear quarterly so that each six weeks the audience is supplied by new research results and information about research in progress. The focus of the printed newsletter is the description of two research results on a managerial level – complemented by an editorial, an interview, and some short news. For subscription, please send an E-mail to [eflquarterly@efinancelab.com](mailto:eflquarterly@efinancelab.com) or mail your business card with the note “please printed newsletter” to

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