

Enabling Mobile Customer Relationship Management for Small and Medium-sized Enterprises

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Abstract: Mobile marketing is becoming more and more important for customer relationship management. Many big companies use loyalty or reward cards to collect customer data and create consumer loyalty by customized services. Existing loyalty programs (e. g. Tesco clubcard in the UK or Payback in Germany) are based on smart cards storing customer identification and additional data. Two issues can be identified: First, only very few major retailers are organized in well-working coalition programs. Second, many small retailers establish loyalty programs based on paper cards – the effect of these programs is not measured, consumer insight is not possible due to missing data.

A new system called mBonus discussed in this paper opens up new opportunities to solve these issues. With mBonus consumers can collect loyalty points at retailers using their mobile phones. Without any hardware at the point of sale data on consumer behavior can be collected. Therefore the system especially meets the needs of small and medium-sized companies. Retailers gain a competitive advantage and improve customer relationship management by analyzing consumer data.

Keywords: customer, loyalty, mobile, marketing, CRM

I. Introduction

Customer relationship management (CRM) is a key marketing strategy in most consumer focused enterprises and the heart of customer loyalty. In 2008 over 2.7 billion US-Dollars were spend on mobile marketing activities worldwide. This channel is mainly used for mobile advertising.

Over the past 15 years, mobile phones have changed from being a high-end gadget for wealthy people to an essential accessory that is owned by a large population of the world [21] [27]. This change also affected the services offered by mobile devices: Since the invention of the cellular concept by Bell Labs in 1947, voice services were the only driver for

mobile communications. In the late 1990s, short message services (SMS) emerged and showed subscribers the potential of new mobile services [17] [22] [33].

Among these new services, mobile marketing is defined as “the use of the mobile medium as a communications and entertainment channel between brands and end-users [27] and is gaining more and more importance. Kleijnen et al. [18] state three main drivers for this hype: the excitement regarding mobile technology; continuing growth of electronic commerce and the increasing penetration of mobile devices worldwide. Kavassalis et al. [17] advance that by using this technology, marketers are able to offer personalized content and target very specific vertical markets. Marketing based on user permissions promises to reduce unsolicited and costly mass mailings by targeting offers according to customer needs [35].

These personalized features help to improve customer relationship management and especially customer loyalty which is essential for the profitability of an enterprise [12]. Mobile applications can foster customer relationship management based on loyalty programs. The importance of focusing on a loyal clientele can be demonstrated by the Pareto rule of thumb: an enterprise achieves approximately 80% of its turnover with 20% of his customers [1].

According to the paradigm “structure follows strategy” a customer relationship management (CRM) system has to be implemented to collect and manage customer data in order to gain customer insight. Many big retailers therefore join large coalition programs such as Payback or Deutschlandcard. Those consumer loyalty programs are widely accepted in Germany: 61% of Germany’s population is a Payback cardholder [30]. With each purchase the customer collects a certain amount of loyalty points. Those points can be cashed in for different kinds of rewards. With the membership of such coalition programs retailers get customer data, which is

obligatory for a CRM strategy.

The established coalition programs are focused on large enterprises and thus have not managed to integrate small and medium businesses. Furthermore, consumer's loyalty is mainly towards the coalition programs and not focusing on retailers itself [38]. For this reason many retailers have launched their own card based loyalty programs, some being more and some being less successful. Tesco introduced an iPhone© application for its customers. However, it displays only the barcode that is normally stored on the club card – so, still hardware like card scanners is needed at the point of sale. Small and medium retailers often lack the basic technology and budget to introduce card based loyalty programs. They establish very simple loyalty solutions based on paper cards. The consumer collects stamps or stickers (from now on: “points”) and receives a reward as soon as a certain amount of points is reached - in this case consumer data is not stored and cannot be used for a customer relationship management system. As a loyalty program is a good starting point for customer relationship management, we developed a new system for loyalty programs that enable customer relationship management for small and medium-sized companies by using mobile phones.

II. State of the Art

Loyalty programs are tools to achieve a higher level of customer retention by providing increased satisfaction and value to a certain group of customers [4] [29]. Loyalty incentives are usually points which can be redeemed for prizes or special discounts, after reaching a certain threshold. Sharp and Sharp [34] define loyalty programs as “structured marketing efforts which reward, and therefore encourage, loyal behavior”.

Anon, loyal behavior results in a repeated purchase behavior which guarantees future earnings and helps companies to learn more about their customers [9]. Using this insight, better market segmentation can be achieved which mostly focuses on retaining the most profitable customers.

In the service industry, loyalty programs can even mitigate the effect of negative service experience [4]. Loyalty program members also spend more money at their business of choice, are less sensitive to increased prices and are more likely to pass on recommendations than non-members [7].

The ultimate goal of loyalty programs is to develop a relationship between the company and the customer. Boedeker [3] hereby identifies a shift in paradigm: He states that although the familiar “4P” marketing mix is still needed, relationships, interaction and networks should form the core of marketing. Customer relationship management (CRM) aims to bundle these strategies which all aim to achieve long-term profitability.

Boedeker [3] describes this relationship by using various levels which can be achieved by using one (or several) loyalty programs (Figure 1).

At the lowest level, price incentives (“financial bonds”) increase customer value, but fail to offer long-term advantage since they can easily be imitated by competitors. Social bonds additionally offer by providing gifts that are based on the gained knowledge about the customer. Furthermore, the third level provides value-added services that are not readily

available from other sources and differentiate the company against others (e.g. invitation to company fashion show).

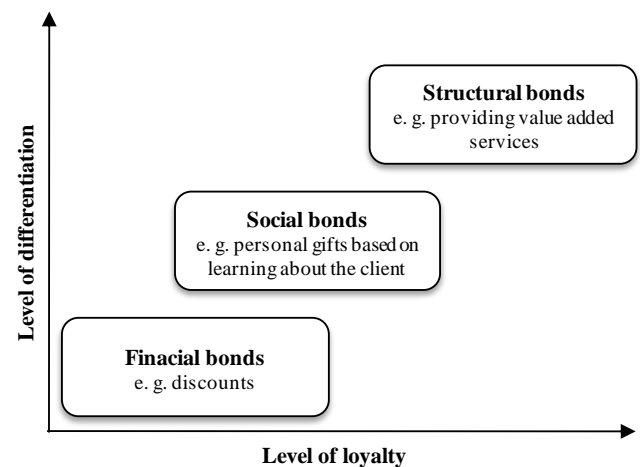


Figure 1. Levels of loyalty programs

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Besides increasing the number of (loyal) customers, loyalty card schemes also aim to collect more customer information. Stone et al. [36] describe that information provided by loyalty schemes may be used to adapt company offers to the needs of the customer. Mauri [25] uses a rather figurative description by saying that loyalty cards allows transforming of cold data on consumer behavior into “warm relationships and eventually into a genuine customer loyalty founded on mutual understanding and trust”.

This transformation of data is also mentioned by Rowley and Haynes [31]. They suggest that by extracting knowledge from customer data, companies can go beyond pure quantitative purchase analysis. Therefore, they get information about the customers buying products as well as combinations of different products. Wood [40] concurs by claiming that loyalty systems are a method to collect consumer data, which then enables companies to take more sophisticated strategies across diverse customer segments.

This implies that the design of the loyalty scheme is highly dependent on the data needed to optimize its offer to customers, whereas rewards ensure customer participation [32]. Businesses that are not able to gain customer insight from this data will therefore focus on the additional profit achievable by loyal customers. However, getting more customer insight and improving customer relationships are the only ways to achieve competitive advantages in the long run (cf. social and structural bonds, Figure 1).

As of today, loyalty can be achieved through different types of systems [9] [29], soon to be complemented by mobile loyalty systems:

- Discount systems offer instant discounts on the purchase price of a product or service.
- (Virtual) communities focus on social and service

aspects, such as product support.

- Loyalty discounts (e. g. coupons) are usually sent on a regular basis, independent of the purchase volume of the customer.
- Card-based systems are used as a medium to collect loyalty points. Each loyalty system usually defines its own “currency“ for loyalty credits. After a certain threshold, these points can then be redeemed for a free or discounted good or service.

All of these systems require an identification of the customer either through a member card or, in the case of virtual communities, username and password. Card-based loyalty systems are already widely established in many countries. Nearly 80% of all households in the United States have at least one supermarket loyalty card and in France the number is even higher (90%) [26]. In Germany, more than 61% are holders of the “Payback” card [30], which is a typical example for a loyalty coalition program. Within these programs, various enterprises cooperate and allow customers to collect and redeem their points at all participating stores. However, only a few major retailers are participating in well-established coalition programs. Other ones are building up own loyalty program with more or less success [2] [24].

Traditional card-based loyalty systems focus on plastic cards which are accessed at the point of service (POS) to identify the customer. Smaller enterprises use paper cards and stamps or stickers to keep their investments in hardware low [23].

Another form of loyalty cards is widely popular in the US: loyalty mechanisms are integrated with credit cards and allow collecting loyalty points (often implemented as frequent flyer miles) on specific purchases [8].

Several drawbacks can be identified: Paper-based card systems do not enable customer insight, since there is no data collected. Although space in the wallet is limited to three of loyalty cards members are forced to carry many different cards for different loyalty programs [28]. That results in forgotten, lost or simply thrown away cards [6]. Credit card based systems force the customer to always use the same form of payment and still require the card itself at the POS. Demoulin and Zidda [6] therefore conclude: “This trend thus predicts the end of loyalty cards in the long term.”

Mobile loyalty systems offer a new approach to replace loyalty cards and are further described in the following chapter.

III. The mBonus System

Following the assumption that nearly every individual in developed countries possesses at least one mobile phone [11] and that a mobile phone is permanently at hand, an alternative to card based loyalty programs is introduced. mBonus can replace plastic and paper cards due to built-in computing power, interaction possibilities and a display (see Figure 2).

Various kinds of loyalty programs of different retailers can be handled by the mBonus system. As soon as consumers reach a Point of Sale (POS) and are willing to collect loyalty points, they receive a code. The code can be handed over as a paper coupon or as sticker. Encoded in the code is the store and validity of the code. The user enters this code and sends it to the server, where it is checked for validity and then added to

his account. As soon as the user’s account reaches a certain amount of points for one retailer, he is automatically rewarded with a digital voucher (e. g. “free donut”). To cash in this coupon, the consumer receives another code that needs to be entered to verify his eligibility to the retailer. After this verification, the voucher is deleted and the consumer gets, for example, a free donut.



Figure 2. The mBonus approach

Various kinds of loyalty programs of different retailers can be handled by the mBonus system. As soon as consumers reach a Point of Sale (POS) and are willing to collect loyalty points, they receive a code. The code can be handed over as a paper coupon or as sticker. Encoded in the code is the store and validity of the code. The user enters this code and sends it to the server, where it is checked for validity and then added to his account. As soon as the user’s account reaches a certain amount of points for one retailer, he is automatically rewarded with a digital voucher (e. g. “free donut”). To cash in this coupon, the consumer receives another code that needs to be entered to verify his eligibility to the retailer. After this verification, the voucher is deleted and the consumer gets, for example, a free donut.

The user can always check his current status regarding already collected points and how many more are still needed to receive another reward.

Advantages of this approach compared to existing card based loyalty programs are:

1. Possibility of data collection for CRM.
2. Permission marketing is an additional option as soon as consumers allow the system to send messages on next possible rewards. Example: “Have only one more sandwich at ABC and receive a soft drink for free!”
3. No hardware, like card readers or scanners are necessary at the POS – investment for retailers is low.
4. No plastic or paper card is necessary.
5. Many retailers can participate using their individual reward schemes.
6. Loyalty coalitions between different retailers can be setup dynamically.
7. Consumers always have a precise overview of their account balance and thus are willing to collect more in order to receive rewards - true loyalty is the result.

The mBonus system has been implemented for mobile devices such as the iPhone© as well as for all kinds of different mobile devices. A comprehensive study based on the technology acceptance model (TAM) has been conducted to

show whether the system meets the requirements of retailer and consumer. With the help of the collected data mBonus provides customer insight and the basis for a mobile customer relationship management strategy.

IV. Mobile Customer Relationship Management with mBonus

The term mobile customer relationship management is used in different ways according to the mobility of both players - the company and the consumer. If the company is “mobile”, e. g. when they support their sales force employees via mobile devices (e. g. Laptop, PDA), the company is focused on mobile CRM. mBonus supports a consumer focused mobile CRM, characterized by the fact that consumers are “mobile” via mobile devices [13].

With the special focus on mBonus as a mobile loyalty program we take a closer look at the three components of mobile CRM [15].

A. Operational Component

The operational component subsumes all applications which aim at performing customer oriented business transactions efficiently [16]. This comprises predominantly the provision of necessary data for automating the operational world of CRM.

The operational component of the mBonus loyalty system consists of a centralized server architecture containing a web server providing access to the web sites as well as a database storing the entire data. A REST interface providing SMS services is implemented too. Figure 3 describes the overall mBonus architecture.

Based on the architecture redeeming codes is possible in various ways, which ensures that a consumer can choose his or her preferred medium to collect points. While the websites provide access for entering codes through regular computers or mobile devices the REST interface provides code redeeming by SMS or a mobile application.

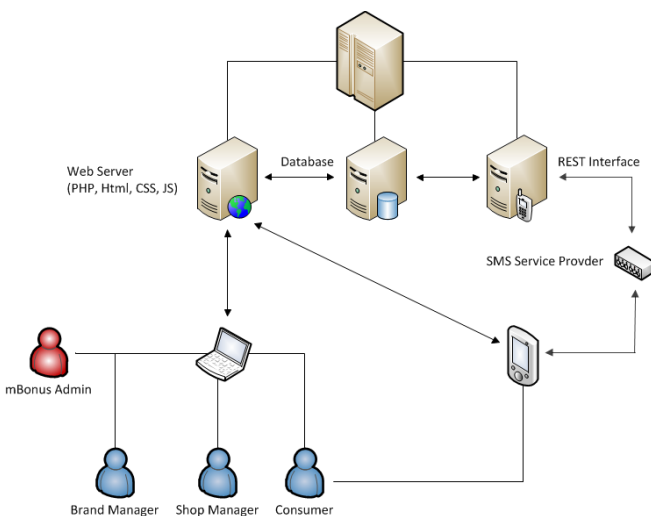


Figure 3. mBonus architecture

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or mobile devices the REST interface provides code redeeming by SMS or a mobile application. According to the mobile loyalty study of Wiedemann [39] a mobile loyalty system is more successful when it offers all different ways of redeeming points for the consumer.

By entering a code via the different redeeming possibilities, a request is sent to a web service provided by the mBonus server. After successfully validating the code, the code balance (or total) of the respective user is updated and the resulting new values are returned. Besides that the redeeming date of the code is saved. Consumers can view their new status by using the web administration interface which is available for mobile devices, too.

Data is stored in a database and accessed and/or modified using the mBonus web administration interface secured by a username and password. This interface also provides a number of different functional actors e.g. consumer browser, consumer SMS and others.

1) Desktop website

One of the first variants that were implemented in the adaption process is an additional website for customers where they can check their current code balance and enter loyalty codes.

Although this variant might look inappropriate for a mobile loyalty system, several use cases make this variant compulsory: For example, when a customer wants to enter a number of codes at once and doesn't feel comfortable to do this on the small keyboard of the mobile phone. Gathered codes can already be entered on the computer, whereas the mobile phone is still needed to redeem the voucher.

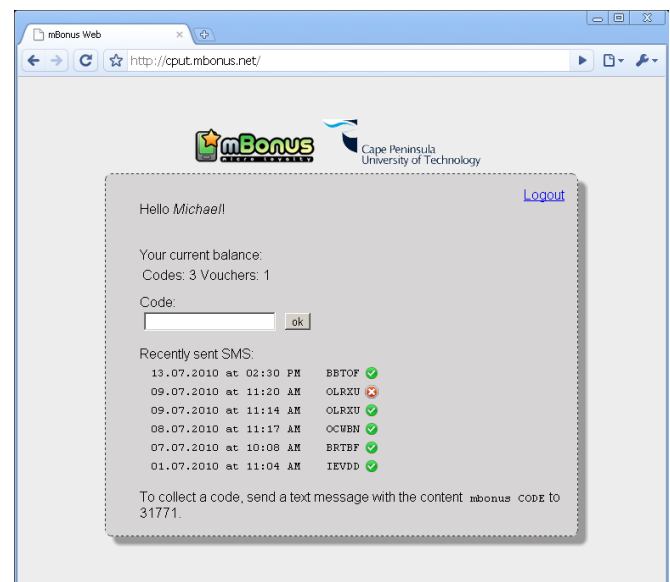


Figure 4: mBonus web interface

On the technical side, the website is based on standard web programming languages such as PHP, standard HTML and CSS.

2) Mobile website

Besides the regular website a mobile version was created, too. This mobile website uses the same architecture and provides the same functionality but is adapted to the smaller screen size of mobile phones.



Figure 5. Mobile Internet variant

This adjustment is done automatically by the mobile browser but is also supported by the design of the website through properly used CSS. The number of images was kept to a minimum to reduce the amount of data that has to be transferred which results in faster loading times and lower cost. This is especially important for developing countries like South African since flat rates are very rare and connections are billed per kilobyte.

3) SMS

The third variant that was added to the system is an SMS interface, which makes the system available for all customers possessing a mobile phone. Codes can be collected by sending a text message with the keyword “mbonus” followed by a space and the loyalty code to a specific number. This number is made available with the help of the company “Clickatell”, who agreed to support this research project. Clickatell operates a gateway, which receives the incoming SMS and then converts them into HTTP (Hypertext Transfer Protocol) requests to the web services on the mBonus server. The customer is identified by his phone number which is automatically included in every SMS. If the used code is valid, the code balance is incremented and the database is updated. At the moment, the server does not notify the customer about the success of this request because of the accruing costs for the outgoing SMS. This functionality can certainly be added at a later point.

4) Mobile Application

Another part of the prototype implementation is an iPhone© application that allows customers to enter codes and keep track of their current code balance. If they reach a certain threshold, a voucher is automatically added in the corresponding view (Figure 6).

The iPhone© app is communicating with the server by using the REST (Representational State Transfer) architecture. An important concept within REST are so-called RESTful web services, each being identified by a Unique Resource Locator (URL). These web services are accessible through the internet. The client (e. g. the iPhone© App) only

needs this URL to send data to the server which is then processed and if necessary, the database is updated with the new values. Every request from the client contains all the information necessary to perform the action on the server, which thereby does not have to keep track of all currently connected clients. This allows a high level of scalability.



Figure 6. Entering a loyalty code within the iPhone© application

The results are returned in the standard JSON (JavaScript Object Notation) (“Introducing JSON”) format and are then displayed within the client application.

B. Analytical Component

The data generated by the operational functionality can be analyzed by the analytical CRM component to support business performance management and to enable management decision making based on operational information. Transaction data analyses help to forecast product demand and the probability of purchase. Additionally, campaign management and market segmentation can be improved [20].

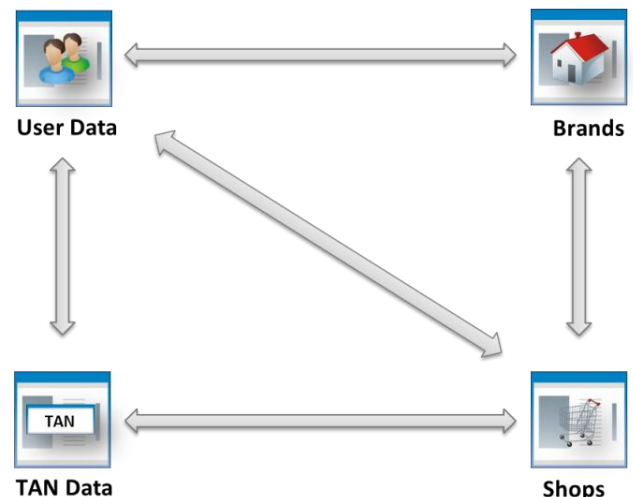


Figure 7. Data domains

The data stored during operational use of the mBonus system can be dedicated to four domains (see Figure 7):

- User data that is entered by the consumer directly using his or her preferred channel,
- brand data comprising information about the brand itself and the subordinated shops,
- information on the shops
- as well as information about the entire code entering and voucher redeeming processes.

Besides, the single data domains are linked by interdependencies. E. g. user data is link to brands by permission marketing settings. These settings enable consumer to control the marketing channels according to their needs. Hence, an overview on preferred marketing channels can be directed. Besides, a joint consideration of socio-demographic information and marketing permissions can reveal useful information for future marketing campaigns.

The linkages of user data and visited shops - which can be achieved by considering the entered codes - are the most valuable source of information for analyzing the customer behavior. This data combination allows gaining information about the typical clientele of a particular shop as well as about the loyalty of customers towards this shop.

By connecting TAN, user and shop data an even deeper insight into customer behavior can be achieved. Information such as mean time that customers needed to collect enough codes for one voucher, frequency of purchases, recent purchases and purchasing time may give useful hints for future marketing operations.

The retailer additionally can optimize the product range according to received consumer insight. Through mBonus a retailer can identify its most loyal customers and offer them extra services like coupons or extra loyalty points per purchase. Additionally, the analyses provide different kinds of cross-selling opportunities; e. g. "Looking for a dessert? Get one scoop of free ice cream after your sandwich!" All this knowledge is especially valuable for small and medium-sized companies who did not get any insight into customer behavior and thus were not able to establish a strategy for CRM yet.

C. Communication Component

The communication component facilitates integrated, consistent communication and coordination between different channels and customer touch points. Therefore, brands and subordinated shops should act according to the CRM principle "one face to the customer".

Most customers feel negative towards spam (Terzinde et.al). Therefore the mBonus communication is strongly based on the concept of permission marketing [10]. This concept was applied in two different ways: First, the consumer decides what kind of information he or she wants to provide mBonus. Second, she or he gives permission before receiving special offers or additional services. The consumer will only ask for this kind of additional service (e. g. birthday presents, coupons, raffles or limited offers via SMS) if they meet his or her individual needs. When the customer gets valuable services and is aware of the prudent data handling, he may be willing to allow mBonus to collect more socio-demographic and geographic data. In return she or he will get better high value services – customized to the individual needs.

The main channel used for mBonus communication is mobile Internet and SMS. Additionally, a web-interface can be used if the consumers prefer a personal computer to administrate the different shops. All channels can easily be synchronized since they are all based on the same database.

V. Conclusion and Future Research

Based on the mBonus system retailers can collect a comprehensive amount of customer data to get customer insight and to create mobile services. Therefore, the data has to be analyzed. In order to offer different kinds of mobile services the following questions have to be addressed:

- What are the relevant mobile services for the consumer?
- Which analytic services and which CRM services can be developed for retailers?

In the succeeding steps of this research project we will focus on both aspects – retailer as well as customer needs to get a better understanding of the possible mobile services we can offer based on the collected data. On the one hand we will conduct further surveys where prototypical services will be evaluated. Figure 8 shows a prototypical functionality where a certain retailer gets a quick overview of its customers and their redeeming behavior. The map shows three shops located in the city center of Nuremberg, Germany. The circle around each shop implies the amount of redeemed vouchers. The bigger the circle, the higher is the amount of redeemed vouchers.

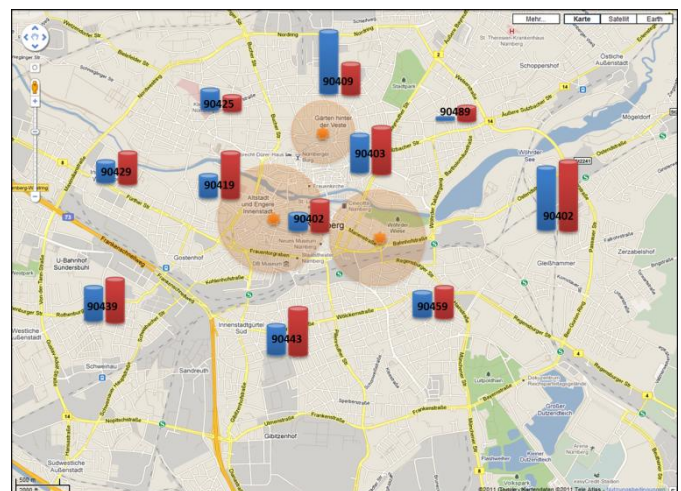


Figure 8. Prototypical illustration of analysis results

The position of the columns shows where the customers come from based on the postal code. The left hand column indicates male and the right hand column female customer. This map can support and simplify decision processes within a retailer's company, e. g.

- Should we open another shop outside the city center?
- In which areas should we advertise new products or conduct marketing campaigns for our company?

This is only an example of a variety of different services that can be developed and that have to be tested and verified before they may be integrated into the mBonus system.

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Author Biographies



Dr. Carolin Löffler was born 1979 in Coburg, Germany. She graduated in business administration from University of Erlangen-Nuremberg in 2007. In 2010 she has completed her PhD in Services Science at the University of Erlangen-Nuremberg and currently works as a PostDoc at the Institute of Information Systems. Her current research focuses on online social networks as well as enabling strategies for mobile solutions for service industries such as commerce, retail, logistics, healthcare, and education.



Johannes Kröckel was born 1982 in Bad Kissingen, Germany. He graduated in information systems from the University of Erlangen-Nuremberg in 2009. Currently, he is part of the research staff at the Institute of Information Systems of the University of Erlangen-Nuremberg. Together with Dr. Löffler he is responsible for the mBonus project with special focus on the technical implementation. His research mainly addresses the extraction and analysis of customer context data in retail stores.



Michael Hettich was born 1984 in Blaubeuren, Germany. He holds a degree in international information systems from the University of Erlangen-Nuremberg since 2010. In his master thesis, he developed strategies for mobile loyalty systems in developing countries. He currently works as a technical consultant in the telecommunication industry.