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Empirical Paper

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Acceptance of mobile loyalty cards in the German B2C consumer goods market

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Abstract: The consumer goods market is characterized by strong competition. Thus, to bind customers to the company, a higher priority needs to be attributed to customer retention measures. Such measures include the loyalty card, but the use of the physical card is declining. To counteract this decline, mobile loyalty cards were developed. The basis for the use of mobile loyalty cards is sufficient consumer acceptance. This work is expected to contribute to the explanation of acceptance in the form of usage behavior. Based on the Technology-Acceptance-Model-2 (TAM2) and the literature, hypotheses were derived and a research model was developed. For model testing, a dataset of 255 participants was generated through an online survey and analyzed using partial least squares structural equation modeling (PLS-SEM). The results show that in addition to financial benefits, convenience benefits and psychological factors also have an influence on acceptance. Furthermore, the usage behavior is not negatively influenced by the expected loss of control over personal data. Based on the findings, indications for marketing implementation are given for the confirmed factors.

Keywords: mobile loyalty cards, acceptance, TAM2 JEL Classification: M31, M37, D12

1 Introduction

In recent years, the objectives of many companies have changed. Substitutable products increased global competitive pressure and in some cases stagnating markets have encouraged this development. Alongside the orientation toward cost reduction since the late 1980s and the acquisition of new customers, the importance of customer loyalty management has grown. In practice, it has been found that market success is more closely linked to intensive cultivation of the customer base. By integrating customer loyalty targets into the overall corporate target system, marketing experts have developed various instruments to identify profitable customers and to achieve rational and emotional loyalty to the company [Homburg and Bruhn, 2013; Ziehe and Stoll, 2011]. These instruments coined the term "relationship marketing" [Graßmann, 2013].

In the consumer goods market, there is strong competition for customers. This industry is characterized by a decline in product innovation. This lack of innovation leads to insufficient differentiation of the product range offered by the individual suppliers. As a result, customers perceive the product range as being homogeneous and interchangeable [Hoffmann, 2008]. This development is encouraged by the numerous alternative offers and the increasing transparency of offers and prices, especially through the diffusion of new media [Rust and Chung, 2006; Weitz and Withfield, 2006].

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Customer loyalty programs based on customer cards are an instrument of relationship marketing. As a result of legislation on discounts in 2001, card-based customer loyalty programs enjoyed great popularity. They no longer only allowed immediate discounts, but also the systematic granting of discounts in the form of point systems [Schirmbacher, 2006]. By 2005, more than 300 customer loyalty programs based on customer cards had already been created [Hoffmann, 2008]. By 2008, the number had more than doubled again to approximately 750 loyalty card programs [Piel, 2018].

Participation in loyalty card programs is declining, partly due to the high number of different loyalty card programs. Mobile loyalty cards for smartphones have been developed to ensure that it is possible and convenient to differentiate them from physical loyalty cards and still combine the permanent carrying of a loyalty card.

In 2019, 77% of the German population used the internet via their smartphone. In other European countries such as Denmark or Sweden, the figure is even higher at over 90% [Eurostat, 2020]. This medium is becoming increasingly relevant for marketing purposes and can replace the conventional loyalty card [Prein, 2011].

However, to implement this development and to achieve a success of the mobile loyalty card system, a sufficiently high acceptance by consumers must be assumed.

However, very few scientific publications exist that deal exclusively with the acceptance of customer loyalty programs in a mobile form on the smartphone. Prein [2011] dealt with consumers' intention to switch from loyalty cards to mobile loyalty cards in the form of mobile applications. At that time, however, the function was little known.

Due to the relevance of the topics of loyalty card programs and mobile applications (apps), as well as the existing research gap in the literature on this topic, the goal of this article is to identify the factors influencing the acceptance of mobile loyalty card programs. This causes the following research question: "Which factors have an influence on the acceptance of mobile loyalty cards in the German B2C consumer goods market?" Subsequently, it should be possible to make a recommendation for marketing practice on this basis.

In this article, the attitude of acceptance is focused on and tested against reality with the help of a hypothesis model. Based on the theoretical reference points, both economic and psychological factors are taken into account.

2 Theory and literature review

2.1 Loyalty card functions from the customer's point of view

From the customer's point of view, a loyalty card has various functions. The main function in most programs is a collection or loyalty function to which the discount or bonus function is linked. In these programs, the provider creates a bonus system that encourages the consumer to use the loyalty card when shopping. The consumer then benefits from discounts or bonus offers that nonparticipants cannot take advantage of [Blacha, 2014; Allaway, 2003]. The loyalty card can also include a payment function, which can also offer the consumer a financing function. These functions lead to an economic benefit for the consumer.

In addition to material incentives, immaterial incentives complement the functions from a consumer perspective. These include the service function, through which the consumer receives additional services that provide added value beyond the normal performance of the company and convenience benefits when contacting the company or advantages in the purchasing process, such as an extended right of return [Blacha, 2014; Götz et al., 2007].

Another intangible incentive is the communication and interaction function, which offers consumers the opportunity to find out about points, products, and price offers and the means to exchange information with the supplier [Prein, 2011]. The mobile loyalty card offers a supplement to the stationary POS and is highlighted here as a shopping assistant [Wohllebe et al., 2020]. The status function shows the consumer's

affiliation to a program. The card legitimizes the holder to use certain program services or shows his status (e.g., in the case of classifications by turnover) [Hoffmann, 2008]. A status gain is created, which leads to an emotional benefit for the consumer [Schneider, 2011]. All immaterial incentives lead to a sociopsychological benefit for the consumer.

2.2 Mobile loyalty card

The mobile loyalty card is a widespread form of the virtual customer card. It is displayed on the smartphone using a two-dimensional barcode (Data Matrix Code or Quick Response code). It is personalized and thus serves to identify a program participant and to confirm the use of services from the loyalty card program [Mann and Prein, 2010].

Two-dimensional Quick Response codes are used because they can store more information than onedimensional barcodes [Schürmann, 2013]. The codes are read at the point-of-sale (POS) using the cash register scanning system [Prein, 2011; Schürrmann, 2013]. In the past, these codes were sent by MMS to the consumer's mobile phone or codes were generated via the mobile website of the provider. This code was then downloaded onto the mobile phone. Today, companies create apps that contain the identification part.

In addition, these apps enable consumers to communicate directly with the company and to request various elements of information such as current offers, points, coupons, and user data [Schürrmann, 2013].

Identification can also be carried out via the near field communication (NFC) radio chips contained in the smartphone. Here, contactless transmission from the smartphone to the POS system at the POS is possible. The radio signals have a range of about 10 cm [Wiedmann et al., 2010; Prein, 2011]. This method is also used for mobile payment [Schürrmann, 2013]. More and more smartphones contain this chip and can be used for this purpose, but actual use in Germany is still limited [Statista, 2020].

2.3 Conceptualization of acceptance and technology acceptance model

In the literature, the term "acceptance" is used in different conceptions depending on the research field [Mokhtar, 2006; Wiedmann and Frenzel, 2004; Schrader, 2001]. Despite slightly different meanings of the term in terms of content, common features of the term can be found in its application. These include the presentation of a subjective attitude toward a certain situation, the general willingness to accept something, a decision-making character, and a positive meaning for the facts to be decided [Hecker, 1997].

The technology acceptance model (TAM) was developed by Davis in 1989. Its primary purpose was to help explain the acceptance of information technologies in an organizational context. In this model, acceptance is reflected by the strength of the intention to use the technology [Huber et al., 2011].

Davis et al. [1989] showed that the perceived usefulness and ease of use of a technology determines the behavior and intention of use. The perceived usefulness represents the expected benefit of an innovation for a person, with regard to the fulfilment of the task in relation to which the need for innovation is felt. Ease of use represents the effort required by a person to use the innovation [Prein, 2011; Venkatesh and Davis, 2000]. Numerous empirical studies have shown that the TAM consistently explains a considerable proportion of the variance (typically around 40%) in the intention to use and behavior [Venkatesh and Davis, 2000].

The TAM does not consider social factors such as the subjective norm. To change this, the extended TAM2 model was developed by Davis and Venkatesh in 2000. Using TAM as a starting point, TAM2 integrates additional theoretical constructs that extend across processes of social influence (subjective norm, voluntariness, and image) and cognitive instrumental processes (job relevance, output quality, experience, and result demonstrability) [Venkatesh and Davis, 2000].

2.4 Research hypotheses

When participating in a loyalty card program, the participant has to carry the loyalty card and coupons that are necessary to use the program. With the increasing number of loyalty card programs, the number

of plastic cards and paper coupons in the wallet would increase. As carry-along is limited, participants must decide which plastic cards and paper coupons they wish to carry before shopping. In 2016, according to a survey, each participant owned 3.7 loyalty cards [Statista, 2017]. This sorting process takes time and limits the convenience of using the program. For spontaneous purchases, it is possible not to carry the loyalty cards with you and thus not be able to use the program advantages. From the company's point of view, no information on the participant's purchasing behavior can be collected in the event of non-use [Prein, 2011].

The mobile loyalty cards should reduce these objections. Various studies on mobile apps have shown that perceived convenience has positive effects on the use of mobile services [Davis et al., 1992; Höflich and Rössler, 2001; Nysveen et al., 2005]. Perceived convenience in particular is also identified in the literature as an intrinsic motivation for using information technologies [Malone, 1981; Davis et al., 1992].

According to the incentive-contribution theory of March and Simon [1976], the mobile function is an incentive for the consumer to participate in the mobile loyalty card scheme. The contribution to the company is generated by the use and thus by the product purchase and the provision of purchasing and master data, which can be used for specific marketing purposes that are elucidated in the subsequent subsections. Participation based on the above-mentioned facilitations will continue as long as the participant feels a perceived benefit from it. This leads to the hypotheses H1 to H3.

- Hypothesis H1: The higher the expectation is to carry fewer loyalty cards and coupons, the greater the perceived usefulness of the mobile loyalty card program.
- Hypothesis H2: The greater the expectation of being able to realize a convenience benefit compared to the physical loyalty card, the greater the perceived usefulness of the mobile loyalty card program.
- Hypothesis H3: The greater the expectation of having loyalty cards permanently available, the greater the perceived usefulness of the mobile customer card program.

In the terminology of information economics, the actual relevance of information or sources of information to decision-making is referred to as negative or positive information benefit [Hopf, 1983]. In this context, information benefit refers to the change in the degree to which a goal is achieved, as a consequence of including additional information or information sources during the decision-making process [Huber, 2011]. Among other things, the mobile loyalty card program serves as a source of information for calling up points and coupons, but product information and offers can also be compared. The possibility of mobile information retrieval enables the participant at the point of sale to access the desired information and to include it in the decision-making process.

The TAM has confirmed the assessment of information benefit as a determining factor of the benefit construct [Prein, 2011; Huber, 2011]. This confirmation has facilitated the derivation of hypothesis H4 for the purpose of the present study, and the hypothesis is stated as follows:

Hypothesis H4: The greater the expectation of an information value by using the mobile loyalty card program, the greater the perceived usefulness of the mobile loyalty card program.

A major incentive for participating in a loyalty card program is to receive a financial advantage over not using it. Peterson [1995] already showed this in a consumer survey on loyalty programs. Later, Mann and Prein [2010] confirmed the positive effect of financial incentives on the acceptance of mobile loyalty cards by means of a survey and the application of the TAM. At a later stage, it was also confirmed by Eneizan et al. [2019].

Hypothesis H5: The greater the expectation of realizing a financial advantage by using the mobile loyalty card program, the greater the perceived usefulness of the mobile loyalty card program.

By registering and using mobile loyalty card programs, companies can collect master and purchasing data about consumers and use it for marketing purposes. Especially in multipartner programs, it is not apparent to consumers whether and to what extent master data and data on their purchasing behavior is exchanged between the participating companies.

There are many discussions regarding the violation of data protection and violations in an ethnic sense [Prein, 2011]. Furthermore, various studies show that consumers in this area have a strong need for protection and react to concerns with behavior that is not conducive to marketing activities [Chellappa and Sin, 2005; Sheehan and Hoy, 1999; Milne et al., 2004]. Hypothesis H6 can be formulated on the above-mentioned basis.

Hypothesis H6: The greater the expectation about the loss of control of the data, the lower the perceived usefulness of the mobile loyalty card program.

The social construct "subjective norm" or social influence has already been suggested as a determinant of customer intent in other studies and is therefore a confirmed construct of TAM2. It reflects how the actions of consumers are influenced by their social environment. Consumers want to meet the expectations of their environment and be certain that their behavior is approved by others [Ajzen and Fischbien, 1980; Bauer et al., 2008; Eneizan et al., 2019; Yuen et al., 2020a; Vahdat et al., 2020]. The variable "subjective norm" is used to illustrate how the environment views mobile loyalty cards and whether there is an influence on the perceived usefulness and the intention-to-use of the consumer.

Based on the theories, the following hypotheses can be formulated for the subjective norm.

- Hypothesis H7: The greater the subjective norm regarding mobile loyalty card programs, the greater the perceived usefulness of a mobile loyalty card program.
- Hypothesis H8: The greater the subjective norm regarding mobile loyalty card programs, the more positive the intention-to-use of a mobile loyalty card program.

The mobile loyalty card program has an innovative character. Due to this, it can be assumed that not all consumers will be able to use this program without problems and consequentially benefit from its advantages. Some studies indicate that to gain experience concerning an innovation, habit and the ability and willingness to make a trial exert a positive effect on the intention-to-use [Eneizan, 2019; Yuen et al., 2020a, b]. Experience is also a confirmed component of the TAM2 model.

Hypothesis H9: The greater a consumer's experience with mobile phones, the more positive is the intention to use a mobile loyalty card program.

Various studies examined the joy of innovation as a personality trait in relation to brands or products. Königstorfer [2008] understands this in relation to mobile internet services as an intrinsic motivation of a consumer to get to know and try out new apps while on the move.

In the field of e-commerce and m-commerce, various empirical studies have confirmed the innovative spirit as an indicator of user acceptance [Citrin et al., 2000; Limayem et al., 2000; Prins and Verhoef, 2007]. Others prove the positive correlation between the innovativeness and the perceived usefulness of a new technology [Königstorfer, 2008; Lin et al., 2007]. From this, hypothesis H10 can be derived for this study.

Hypothesis H10: The more innovative a consumer is, the more positive is the intention to use a mobile loyalty card program.

According to the incentive-contribution theory, to participate in a customer loyalty program, contributions must be made to the company by the consumer. These contributions include the disclosure of personal data. Due to the concerns about data protection that are often discussed, disclosure of personal data should be included in this article as a potentially negative effect on participation in mobile loyalty card programs [Hoffmann, 2008].

A further theoretical foundation can be provided by the theory of mental reactance. Taking into account that the consumer claims a kind of self-determination over the use and disclosure of his personal data and that self-determination occupies a subjectively important position for him, it can be assumed that the loss of self-determination over personal data triggers a corresponding reactance effect. According to the reactance theory, this could lead to a further prioritization of self-determination and, at the same time, trigger a change in attitude and behavior toward the mobile customer card program, which is negative from the company's point of view [Hoffmann, 2008].

- Hypothesis H11: The greater a consumer's reservations about the use of personal data by a company, the more negative is the intention to use of a mobile loyalty card program.
- Hypothesis H12: The greater a consumer's reservations about the use of personal data by a company, the lower the usage behavior of a mobile loyalty card program.

The above-mentioned hypotheses H1–H12 are based on the TAM2 model, which has been extended for this work. The following hypotheses H13–H16 are intended to summarize the frequently tested effects of the main TAM components (perceived usefulness, perceived ease of use, intention-to-use, and usage behavior) with regard to the acceptance of mobile customer cards [Stüber, 2013; Yuen et al. 2020a; Vahdat et al. 2020].

- Hypothesis H13: The greater the perceived ease of use of the mobile loyalty card, the greater the perceived usefulness of the mobile loyalty card program.
- Hypothesis H14: The greater the perceived ease of use of the mobile loyalty card, the more positive the intention to use the mobile loyalty card program.
- Hypothesis H15: The greater the perceived usefulness of the mobile loyalty card program, the more positive is the intention to use the mobile loyalty card program.
- Hypothesis H16: The more positive the intention-to-use of a mobile loyalty card program, the greater is the usage behavior of a mobile loyalty card program.

3 Research methodology

In social science, structural equation modeling (SEM) is widely used for explanatory and predictive purposes. There are different methods such as covariance-based structural equation modeling (COV-SEM or CB-SEM) and variance-based structural equation modeling (PLS-SEM) [Hair et al., 2017]. CB-SEM is mainly used for the confirmation (rejection) of theories. This is used to determine how well a model can estimate the covariance matrix for a data set. PLS-SEM is mainly used in exploratory research to develop theories. Here, the focus is on explaining the variance of the dependent variable in the model. Hair et al. [2017] recommend using PLS-SEM when the goal is to predict important target constructs, when the model contains formative measured constructs, when the structural model is complex and contains many constructs, when the sample size is small or not normally distributed, and when the latent variable values are to be used subsequently in further analyses. These recommendations apply to the research method of this thesis. Thus, the variance-based procedure partial least squares (PLS) is chosen as the appropriate analysis procedure to examine the causal relationships. This enables the investigation of dependency structures between observable and latent variables [Boßow-Thies and Albers, 2009]. A structural model and a measurement model are created. The structural model specifies the causal dependencies between the constructs. The measurement model specifies the relationships between the manifest indicators for recording the dependent (endogenous) and independent (exogenous) latent variables [Hair et al., 2017]. Of the fourteen constructs mentioned above, nine variables were measured reflectively. These are permanent availability [Prein, 2011], perceived information value [Wilke, 2006], mobile phone experience [Prein, 2011], innovativeness [Im and Ha, 2012; Prein, 2011], use of personal data [Mann and Prein, 2008], perceived ease of use [Pousttchi and Goeke, 2011], perceived usefulness [Pousttchi and Goeke, 2011], intention-to-use [Mann and Prein, 2008], and usage behavior [Prein, 2011; Mann and Prein, 2008]. Two constructs are measured as single items. These are less cards and expected convenience benefit. They were already confirmed as single items by Prein [2011]. The other constructs (financial advantages [Prein, 2011], expected loss of control [Prein, 2011], and subjective norm [Pousttchi and Goeke, 2011]) were measured formatively. All items were tested using a 5-point Likert scale from "1 = disagree strongly" to "5 = agree strongly." The only exception is the construct intention-to-use. For the first item, the expressions were marked from "1 = bad" to "5 = good" and for the second item from "1 = uninteresting" to "5 = interesting." [Table A1 in Appendix]. To test the hypotheses, an online survey of private individuals in Germany was conducted. This form of questioning gives the opportunity to reach many geographically independent participants. There was a total of 302 responses. Of these, 47 data sets had to be excluded due to missing values, the values missing by more than 20% [Weiber and Mühlhaus, 2013; Prein, 2011]. It is shown that 57.26% of the respondents were female and 42.75% male. Comparing this with the actual population distribution in Germany (50.66%/49.34%) [Statistisches Bundesamt, 2020], this is a sufficiently good level of representativeness. Almost 70% of the participants were between 18 and 37 years old. Just under 18% of the respondents were 48 years old and older. The respondents who are over 60 years of age are relatively underrepresented.

The model was evaluated using the SmartPLS3 software [Ringle et al., 2015].

For the first assessment of the data set, the position and dispersion measures are checked. It can be seen that the respondents used the entire scale (1–5) for all indicators. For two indicators, the median for the outer scale levels was 1 or 5 and the standard deviation was 1.03 and 1.23. This suggests that most of the respondents have the same subjective perception for these two indicators. For the remaining indicators, the mean values, the median, skewness and kurtosis, and the standard deviation show no abnormalities.

4 Results

The measurement model was analyzed first and then the structural model was analyzed based on a valid measurement model. In this process, both the explanatory power of the model and the predictive power of the respective independent variables were examined. The first step was to check the reliability of the items in the measurement models. The loadings of the items were >0.78 and at p < 0.001 significant. Subsequently, the reliability and validity of the latent variables were verified. The internal consistency reliability and convergent validity of the reflective multi-item scales were assessed by calculating Cronbach's alpha, average variance extracted (AVE), and internal consistence (IC) value. All values for Cronbach's alpha exceeded the required value of 0.7 [Nunnally and Bernstein, 1994] and each AVE and IC value exceeded the required threshold of 0.5 and 0.6, respectively [Bagozzi and Yi, 1988]. The discriminatory validity according to Fornell-Larcker was fulfilled. All HTMT values are less than 0.86, which indicates an appropriate level of discriminant validity [Franke and Sarstedt, 2019]. Table 1 shows that the correlations between the latent variables are smaller than the root of the average recorded variance. In addition, the evaluation of the cross-loadings showed that no item has a higher loading for another variable than for its own variable [Boßow-Thies and Albers, 2009].

The reflective constructs can thus all be described as one-dimensional, reliable, and valid.

The content validity of the formative constructs is fulfilled. In the case of the formative variables, four out of six *t*-values were significant. The external VIF values showed values smaller than 5, for which reason it becomes possible for us to conclude that no problems due to multicollinearities are to be expected [Hair et al., 2017].

Based on valid measurement models, the structural models were analyzed in a second step. As the internal VIF values were smaller than 5, no problem regarding multicollinearity was seen [Weiber and Mühlhaus, 2013]. The explanatory power of the $R^2_{adj.}$ of the dependent variables was used as an important evaluation criterion. The perceived usefulness shows an $R^2_{adj.}$ of 75% and thus has a substantial value. The intention-to-use with an $R^2_{adj.}$ of 57% and the usage behavior with an $R^2_{adj.}$ of 61% have a moderate explanatory power. In the next step, the predictive power of the exogenous variables was analyzed by examining the standardized estimated values of the path coefficients and their significance. In addition, the effect sizes (f^2) of the latent exogenous variables were evaluated.

Tabl	e 1. Fornell–Lacker criterion ar	nd construct	t correlation												
		1	2	e	4	5	6	7	8	6	10	11	12	13	14
	Less cards	1.00													
7	Exp. convenience benefit	0.82	1.00												
ŝ	Permanent availability	0.66	0.67	06.0											
4	Per. information value	0.44	0.47	0.51	0.89										
Ŝ	Financial advantages	0.60	0.59	0.66	0.51	I									
9	Exp. loss of control	0.21	0.19	0.21	0.35	0.22	I								
7	Subjective norm	0.31	0.32	0.36	0.49	0.38	0.29	I							
8	Mobile phone experience	0.16	0.19	0.21	0.19	0.22	0.06	0.10	0.83						
6	Innovativeness	0.32	0.36	0.42	0.44	0.32	0.17	0.34	0.57	0.85					
10	Use of personal data	-0.16	-0.10	-0.17	-0.20	-0.14	-0.26	-0.18	-0.03	-0.12	0.87				
11	Per. ease of use	0.58	0.58	0.62	0.56	0.62	0.30	0.51	0.29	0.50	-0.19	0.85			
12	Per. usefulness	0.61	0.66	0.76	0.57	0.74	0.30	0.43	0.25	0.41	-0.22	0.75	0.87		
13	Intention-to-use	0.57	0.60	0.61	0.57	0.64	0.27	0.52	0.21	0.40	-0.20	0.67	0.70	0.92	
14	Usage behavior	0.66	0.67	0.69	0.59	0.70	0.26	0.47	0.23	0.51	-0.26	0.74	0.74	0.77	0.92
Diag	onal elements are the roots fro	om AVE, inc	luding the co	rrelation of i	the latent cor	nstructs.									



Figure 1. Path Coefficients (*** $p \le 0.001$; **p < 0.01; *p < 0.1; n.s. = not significant).

Figure 1 shows the results of the structural model. In the structural model, 10 of 16 path coefficients are significant.

After analyzing the model based on the empirical data, the following statements can be made. The presumed positive influence of less cards on perceived usefulness could not be confirmed. The evaluation showed an unhypothesized negative one ($\beta = -0.10$; $p \le 0.08$; $f^2 = 0.01$). However, the expected convenience benefit ($\beta = 0.16$; $p \le 0.01$; $f^2 = 0.03$), the permanent availability ($\beta = 0.30$; $p \le 0.001$; $f^2 = 0.15$), the financial advantages ($\beta = 0.27$; $p \le 0.001$; $f^2 = 0.14$), and the perceived ease of use ($\beta = 0.33$; $p \le 0.001$; $f^2 = 0.19$) confirm a positive influence on perceived usefulness and contribute to a large part of its explained variance. The positive influence of perceived information value ($\beta = 0.06$; n.s.) and the negative influence of expected loss of control ($\beta = 0.05$; n.s.) show very low and not significant path coefficients for the influence on perceived usefulness. Furthermore, for the dependent variable perceived usefulness, the expected loss of control and subjective norm ($\beta = -0.01$; n.s.) did not show the hypothesized path directions. However, the positive influence of the subjective norm ($\beta = 0.21$; $p \le 0.001$; $f^2 = 0.07$) on the intention-to-use could be confirmed. For perceived usefulness ($\beta = 0.43$; $p \le 0.001$; $f^2 = 0.18$) and perceived ease of use ($\beta = 0.22$; $p \le 0.01$; $f^2 = 0.04$) the hypotheses formulated on intention-to-use are also confirmed as significant. The results of mobile phone experience/competence ($\beta = -0.01$; n.s.), innovativeness ($\beta = -0.10$; n.s.), and use of personal data ($\beta = -0.10$; n.s.) have no impact on intention-to-use. The target variable in the model is usage behavior. For this, both a strong positive influence of intention-to-use ($\beta = 0.75$; $p \le 0.001$; $f^2 = 1.38$) and a slight negative influence of use of personal data ($\beta = -0.12$; $p \le 0.001$; $f^2 = 0.03$) can be confirmed.

5 Discussion

A basic prerequisite for adaptation and permanent use is the given acceptance of the consumers' attitudes. To check this, the following question was at the center of the work:

"Which factors have an impact on the acceptance of mobile loyalty cards in the German B2C consumer goods market?"

For the area of perceived usefulness, several theoretically sound components can be empirically validated. The data show that the greatest factor affecting perceived usefulness is perceived ease of use. This finding points to the need for facilitating ease of use. Consumers want an understandable app which they can learn to use easily. This has been confirmed in previous studies such as Prein [2011].

Likewise, the permanent availability compared to the physical customer card is considered to be perceived usefulness by consumers. As Fogelgren-Pedersen [2005] also confirmed, consumers appreciate being able to obtain information about offers and points, regardless of their location, and to experience cognitive relief through constant availability on their mobile phone.

Another driver is the financial advantages achieved through the use of a mobile loyalty card program [Mann and Prein, 2008]. The data show that consumers attach the most importance to their loyalty being honored with rewards. Also, the opportunity to receive more benefits for the same price is seen as being useful. On the other hand, the opportunity to save money by using a mobile loyalty card is not perceived as being useful.

A fourth confirmed influence on perceived usefulness is the perceived convenience benefit. Consumers expect the use of a mobile loyalty card to be more convenient than that of physical loyalty cards and coupons. From this it can also be deduced that consumers perceive the carrying of classic loyalty cards and coupons as an expense.

With regard to the intention-to-use, perceived usefulness can be identified as the strongest factor. The participants appreciate the flexibility and the advantage of using only one device for different applications. In addition, the positive evaluation of the perceived ease of use of a mobile loyalty card program is also evident in the intention-to-use.

The subjective norm has a further influence on the intention-to-use. However, the data show that few participants recommend the use of friends and experts. Likewise, only a few participants could confirm that friends and acquaintances already use mobile loyalty card programs. Negative factors, such as an expected loss of control or the use of personal data, had no effect on perceived usefulness or the intention-to-use, as shown in the study of Mann & Prein [2008]. Likewise, factors such as innovativeness or mobile phone experience/competence do not seem to have any effect on the acceptance of mobile loyalty card programs.

Two variables with effects on usage behavior were validated in the model. According to this, the intention-to-use has the greatest impact on usage behavior. Although the data show that the participants classify mobile loyalty card programs as moderately interesting, the positive usage attitude is the basis for the intention-to-use. A negative usage setting makes actual use unlikely [Huber et al., 2011].

The use of personal data is a negative factor in the acceptance of mobile loyalty card programs. The data show that the disclosure of personal data and subsequent collection by companies is seen as a nuisance or frightening by most participants.

5.1 Practical implication

From the present work, some recommendations for action in relation to marketing practices in the B2C consumer goods market can be derived.

For consumers, mobile loyalty cards create various incentives for use. From the company's point of view, the increased use and reduced transferability of a physical customer card to other people leads to an improved database on the purchasing behavior of consumers. Information on purchasing behavior and on reactions to offers can be allocated and evaluated more precisely to individual consumers. Subsequent marketing activities such as location- and time-bound offers or discounts for preferred product areas (e.g., nutrition or baby products) can be addressed in an optimized, targeted, and timely manner. Data protection must be observed, and the customer's consent must be requested.

The following incentives for consumers should be promoted by businesses:

The participants confirmed the convenience benefit of the mobile loyalty card program compared to the classic loyalty card program. This shows that the use of classic loyalty cards is perceived by consumers to be an expense or an intangible transaction cost.

In the present study, this advantage had an important impact on the perceived usefulness and should therefore be analyzed in the planning process of the companies. To check whether the convenience advantage exists for the customers of the company, focus group interviews can be conducted and evaluated. If the perceived convenience advantage is confirmed for the customers, the company should actively promote it to increase the customers' willingness to participate. The survey should be repeated after the introductory phase to check whether the convenience advantage can still be confirmed and not, as is the case with the interviewees of this work, show any little positive influence on usefulness.

It was also shown that consumers appreciate financial benefits. The data show that a direct discount is not perceived as positively as a loyalty promotion, bonus, or an increase in service for the same price.

Companies should be aware of this fact when designing their offers. To cover all areas of financial advantage, a combination of discounts or coupons and a loyalty program could be established.

The users of loyalty cards are generally price-conscious customers. Due to the advantage of the permanent availability of the mobile loyalty card, compared to classical physical loyalty cards, it can be suggested that no offer or coupon ought to be left unused because the customer card was not physically available at the required time. This argumentation should be integrated into the marketing concept.

In addition to the consumer benefits to be advertised, further advice should be considered from the company's point of view:

The usability of the mobile loyalty card program is governed by the extent up to which the app (through which the program is offered) is easy to use and understand. Furthermore, the survey showed that experts and acquaintances of the participants recommend the use of mobile loyalty cards only very little so far. When developing a marketing strategy for the introduction and establishment of mobile loyalty card programs, companies should take up this point and include people who are trustworthy from the consumer's point-of-view. This could also improve the general attitude toward loyalty card programs, which has so far been considered only moderately interesting.

The disclosure and use of personal data are a negative factor for consumers. To counteract this, confidence in the company must be constantly maintained and improved. Consumers must always be given the opportunity to define the purpose for which their data may be collected and when individual data must be deleted. One way of creating trust is to use a third-party seal of approval or to cooperate with a data protection or consumer institution as a supervisory body.

By using mobile loyalty cards, entrepreneurs can collect a lot of information about their customers and use it for marketing activities. The knowledge gained can be used for a differentiated customer processing strategy and a more optimal exploitation of potential. However, in conclusion, it should be noted that mobile loyalty card programs bring not only advantages but also expenses and new challenges for companies. These include not only the creation of a program and the setup requirements, but also the challenges that arise during use.

For example, offers, premiums, and coupons must be prepared for display on mobile phones and program updates must be carried out regularly. For this reason, it is necessary to verify whether the participants in the mobile loyalty card scheme change their purchasing behavior in favor of the company or whether the discounts only have a windfall effect. In the latter case, profitability would fall, and the company should adapt the incentive structures to the behavior of consumers [Prein, 2011].

5.2 Limitations

The variables examined in the model explain only part of the variance in perceived usefulness, intentionto-use, and usage behavior. This suggests that there are other influencing factors that can contribute to the explanation of the behavior exhibited by these variables. To close this research gap, further research is recommended.

This work focused on the attitude underlying the acceptance of mobile loyalty card programs. The acceptance of settings is the basis for the later level of action and use. However, the literature analysis shows that these later levels cannot be fully explained by attitude acceptance due to the strong influence of situational barriers to use (e.g., lack of program knowledge and application possibilities) [Hoffmann, 2008; Prein, 2011]. For this reason, future work should focus on the factors influencing acceptance of action and use, to contribute to an explanation of the adaptation and actual use of mobile customer cards.

The results of the model test showed a high significance of the ease of use and the convenience benefit. To support marketing practice, a further study could analyze which factors lead to ease of use. Furthermore, it could be empirically proven as to which applications can be transferred to the mobile phone that can lead to an ease of use benefit for the consumer.

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Appendix

Table A1. Constructs and measurement items

Construct [Source]	Measurement item	Stand. Loadings/ Stand. Weights	Cron. alpha	AVE	IC	VIF
Less Cards [Prein, 2011]						
	By using the mobile loyalty card, I expect to have to keep fewer cards and coupons in my wallet.	-				
Expected convenience benefit [Prein, 2011]						
	By using the mobile loyalty card, I expect to be able to use the loyalty card program more conveniently than a conventional program with a plastic loyalty card and paper coupons.	-				
Permanent availability [Prein, 2011]			0.88	0.81	0.93	
	By using the mobile loyalty card, I expect to worry less about which loyalty cards to take with me before shopping because I always have my cell phone in my pocket.	0.859				
	By using the mobile loyalty card, I expect to always be able to find out about offers and points statuses while on the move.	0.907				
	By using the mobile loyalty card, I expect not to miss out on any offers because I forgot the necessary coupons at home, since I have all the coupons with me on my cell phone.	0.933				
Perceived information value [Wilke, 2006]			0.87	0.79	0.92	
	Through mobile loyalty cards, I learn so much that I can make better decisions while shopping.	0.845				
	Using the mobile loyalty card to inform me about the offer, products, and coupons while shopping makes the decision easier.	0.912				

Table A1. (Continued)

Construct [Source]	Measurement item	Stand. Loadings/ Stand. Weights	Cron. alpha	AVE	IC	VIF
	I am quite confident that I can make the right decisions when shopping through the mobile loyalty card.	0.902				
Financial advantages— formative [Prein, 2011]						2.18
	By using mobile loyalty cards, I expect to be rewarded with attractive rewards for my loyalty as a customer.	0.654				
	By using the mobile loyalty card on my cell phone, I expect to save money.	0.061				
	By using the mobile loyalty card on my cell phone, I expect to receive more/better services for the same price.	0.341				
Expected loss of control— formative [Prein, 2011]						1.18
	I believe that the provider uses my master data and information about my purchases only for the purposes I want.	0.977				
	I believe that by using the mobile loyalty card, I no longer have control over entities who might have access to my master data and information about my shopping behavior.	-0.105 (n.s.)				
Subjective norm— formative [Pousttchi and Goeke, 2011]						1.50
	Friends recommend using this mobile service.	0.158 (n.s.)				
	Experts recommend using this mobile service.	0.555				
	Friends and colleagues use this mobile service.	0.463				
Mobile phone experience/ competence [Prein, 2011]			0.78	0.70	0.87	
	Compared to other people around me, using a cell phone is easy for me.	0.786				
	I know the functions of my cell phone well.	0.832				

(Continued)

Table A1. (Continued)

Construct [Source]	Measurement item	Stand. Loadings/ Stand. Weights	Cron. alpha	AVE	IC	VIF
	I often help friends, acquaintances, and relatives to operate their cell phones.	0.880				
<i>Innovativeness</i> [Im and Ha, 2012; Prein, 2011]			0.88	0.73	0.92	
	I regularly find out about new cell phone apps.	0.830				
	I enjoy discovering and trying new cell phone apps.	0.900				
	When I hear about new mobile services for my cell phone, I want to learn about them and try them out as soon as possible.	0.888				
	In my circle of friends, I am often the first to try out new and innovative cell phone apps.	0.795				
Use of personal data [Mann and Prein, 2008]			0.89	0.75	0.92	
	It annoys me when companies want personal information from me.	0.859				
	When companies ask me for personal information, I think twice before giving it out.	0.862				
	It scares me that companies are collecting more and more private information about me.	0.904				
	It's risky to disclose my personal information to mobile loyalty card providers.	0.838				
Perceived ease of use [Pousttchi and Goeke, 2011]			0.87	0.72	0.91	
	Using mobile loyalty cards is enjoyable for me.	0.854				
	Using mobile loyalty cards is convenient.	0.908				
	Using mobile loyalty cards is understandable.	0.849				
	Learning to use mobile loyalty cards is easy.	0.777				
Perceived usefulness [Pousttchi and Goeke, 2011]			0.86	0.79	0.92	

Table /	A1. (Contir	ued)
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Construct [Source]	Measurement item	Stand. Loadings/ Stand. Weights	Cron. alpha	AVE	IC	VIF
	Using mobile loyalty cards makes me more flexible.	0.893				
	l only need one device and can do different things with it.	0.886				
	I believe the use of mobile loyalty cards is rewarding.	0.880				
<i>Intention to use</i> [Mann and Prein, 2008]			0.83	0.86	0.92	
	How do you rate mobile loyalty card programs in general?	0.931				
	How do you rate mobile loyalty card programs in principle?	0.918				
<i>Usage behavior</i> [Mann and Prein, 2008; Prein, 2011]			0.96	0.85	0.96	
	I could imagine using my cell phone to collect bonus points.	0.926				
	I could imagine calling up coupons via app as a QR code and redeeming them.	0.908				
	I could imagine using the cell phone to access the Internet and/or request location-based coupons and offers via an app.	0.919				
	I could imagine using my cell phone to go online and/or retrieve information such as bonus point balance via an app.	0.931				
	l could see myself signing up for a mobile loyalty card program.	0.918				

apps, applications; n.s., not significant