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Abstract

In recent years, loyalty programs have been established allowing the creation of detailed consumer profiles by collecting and processing purchase information. Collecting this information, however, raises privacy concerns of customers. In this work, we provide the results of an empirical study which reveal that privacy concerns have an impact on the probability of participating in loyalty programs. We identify a privacy-sensitive segment of customers using demographic and psychographic data that, in principle, would participate in a loyalty program, however, refrains from doing so because of privacy concerns. Moreover, we found that people participating in customer loyalty programs are more concerned about their privacy than non-participants, which is an interesting though counterintuitive result.

Keywords: Customer Loyalty Programs, Privacy, Anonymity, Segmentation

1   Introduction

For decades, retailers have pursued strategies which are product and transaction oriented. Hence, they focused on the profitability of an individual transaction with a customer, rather than the profitability of a long lasting customer relationship. But in the late eighties they became aware of customer relationships' value.

Consequently the focal point of research shifted from short-run profitability and acquisition to customer lifetime value, customer care, and identification of appropriate methods to account for those effects [FaHL05]. Marketing research was now focused on the effects of customer satisfaction and customer loyalty [HeJL94; Dill96] on overall profitability [ScMC87].

The proliferation of IT systems and the World Wide Web as well as weakening customer loyalty triggered the process of putting these scientific insights into practice. Especially the retail industry is now trying to derive clear benefits from both increasing customer retention and data mining. One instrument of customer relationship management is the application of customer loyalty programs (CLP) which helps pursuing those two objectives. Given that online buyers' effort for visiting the homepage of their patronized shop is the same as visiting a competitor's, CLPs are money well spent for online shops [Schw99]. The use of search engines facilitates consumers' search and buying process and additionally lowers their switching costs. To compensate those effects, vendors provide economic incentives to customers who take part in loyalty programs.

Beside customer retention, the possibility to observe their customers' purchase patterns is another stimulus for vendors to implement CLP. They can use the collected data to profile their customer base, use it for direct mailing or sell their data sets. On the other hand, customers clearly value the provided financial benefits but there might be a segment that fears an infringement of their privacy and thus does not take part in loyalty programs.

Several studies show that concern for privacy significantly influences customers' behaviour. For instance [NoPh04] reveal that some consumers can not be addressed with relationship marketing due to privacy concerns. Another empirical study by [ChSi05] shows that the usage of personalized service is negatively affected by the corresponding concern for privacy. Therefore, a large part of the vendors fears negative reactions due to privacy concerns and do not implement personalized or data collecting systems at all [SaSt05]. Adapted from these findings and the arguments by [HHLP05], we posit that privacy concerns have an impact on the usage of CLPs. Moreover, we propose that we can identify a segment which ignores loyalty programs because their privacy concerns outweigh the financial benefits obtained by participating in loyalty programs.

The aims of this paper are the following: i) to give a short introduction in objectives and requirements of CLPs ii) to investigate whether privacy concerns have a significant impact on the customers' choice of using CLPs, and iii) to investigate whether a segment exists that can not be addressed with common CLP in Electronic Commerce due to privacy concerns. The paper concludes with discussions and final remarks.

2   Objectives of Customer Loyalty Programs

At a very general level, loyalty is something that consumers may exhibit to brands, services, stores, activities, product categories. Unfortunately there is no universally agreed upon definition of loyalty [JacC78; DicK94; Oliv99]. But in the literature there are three popular conceptualizations [UnDH02]: First of all, loyalty is an attitude that sometimes leads to a relationship with a store [FoxG94; ReiK00]. Second, loyalty is received as an expression of patterns of past purchases [FadH96]. Third, loyalty is defined as buying moderated by an individual's characteristics and the purchase situation [Belk74].

Loyalty programs can be defined as schemes offering delayed or immediate, accumulating benefits to consumers who buy certain brands or buy in certain shops. Focusing on the first conceptualization, loyalty programs can be appreciated as vehicles to the following eight aims: increasing single-store loyalty, decreasing price sensitivity, enlarging switching costs, inducing greater consumer resistance to solicitations of competitors, dampening the desire to consider alternative brands, encouraging word-of-mouth support, attracting a larger pool of customers and increasing the amount of products bought [UnDH02]. In short, CLPs are instruments to increase profitability.

Switching costs in online shops are lower than in brick and mortar shops as real world barriers like geographical distance or inter-personal relationships which prevent customers from instantly switching vendors do not exist. Therefore, the implementation of CLPs is particularly advantageous for online shops [OCOK00]. By offering financial benefits for participation, CLPs increase retention rate, sales, profitability, and switching costs [Oliv99].

The second objective of implementing CLPs is to learn more about customers' intra-corporate, inter-branch, or even cross-company purchase patterns. This knowledge allows for up- and cross-selling as well as for custom-tailored solicitations. Therefore, vendors build profiles in terms of records of customers' purchases and personal data, e.g., names, addresses, dates of birth, etc. But this might be critical for two types of customers: First, those who would like to benefit from loyalty programs but have high privacy concerns and second, for customers valuing the monetary benefits but avoid any solicitations [HHLP05].

Overall, there might be types of data which are more critical to privacy than other types of data, e.g., the amount and frequency of alcoholic beverages purchased vs. the amount of gasoline refuelled. Nevertheless, we do not distinguish between these types of data. We assume that consumers are generally worried about their ability to control the terms by which their personal information is acquired and used.

We distinguish two different categories of CLPs – both can be implemented online and offline. First, point-based programs where points can be pooled or passed on to other participants in the form of tokens. Such tokens can be anonymously turned in for rewards, i.e., without disclosing information about the person who collected the tokens. Thus, we call these loyalty programs privacy-friendly CLPs (PFCLPs). Second, commonly used data collecting programs (DCCLP) that systematically gather data about purchase behaviour in different points of time or from different shops. **Error! Reference source not found.** summarizes our categorization and gives examples for each category.

Purpose	Offline	Online
Increase in Switching Costs only (PFCLP)	Point-based programs like Swops points (ESSO)	-
+ Data Collection (DCCLP)	Card-based programs like Payback, Miles & More	Online programs like Webmiles

Table 1: Categorization of Loyalty Programs

In the following section, we analyze customer's attitude towards loyalty programs in general. Moreover, we examine the impact of customers' privacy concerns on

their willingness to engage in loyalty programs. Note that our study does not distinguish between loyalty programs in different branches or industries and thus approaches the problem on a general level.

3 Impact of Privacy Concerns on Consumer Behaviour

3.1 Methodology

Information privacy has been identified as one important issue of management practice [Maso86]. Companies have tried to mitigate this concern by offering privacy policies regarding the collection, handling, and use of personal information and by offering benefits such as financial gains or convenience [HHLP06]. For the offline world, vendors can target different segments using PFCLP and DCCLP whereas in Electronic Commerce reliable solutions for PFCLP are missing (see **Error! Reference source not found.**). It is therefore mandatory to test whether privacy concerns have an impact on participating in CLP before we develop a system that can address such a concerned segment.

Hence, we conducted a survey to segment the customers using demographics and psychographics. Psychographics are any attributes relating to personality, interests, attitudes, or values and are used beside demographics and behavioural variables for market segmentation. Applying this methodology, we can identify potential obstacles that prevent customers from participating in CLPs. Since we expect privacy concerns to form an obstacle, we apply the well-known first-order Concern for Information Privacy Instrument (CFIP) [StSe02]. The model follows the recommendation by [SmMB96] of scaling the concern for information privacy construct by averaging the subscale scores to calculate an overall score. Thus, this model assumes that every item is equally important in computing each factor and each factor is equally important in computing an overall score for CFIP [StSe02].

The CFIP consists of 15 items measuring collection, unauthorized access, errors and secondary use concerns (see Appendix). Moreover, we measure the factors Computer Anxiety [PaIg90] and Behavioural Intention [SGGM83] that are used by [StSe02] for their second-order models.

Since we want to predict the participation in different kinds of CLPs, we also survey Coupon Proneness [LiNB90] and Trust [CoMc92]. Coupon Proneness is defined as an increased propensity to respond to a purchase because the coupon form of the purchase affects purchase evaluation. Finally, we examine the influence of demographics like age, gross income, gender and education.

Data for our approach were obtained through an online survey. Subjects were mainly recruited by the participating research institutions in Frankfurt/Main and Darmstadt, Germany. Although, the data set is not representative, we expect the results to be stable since we can find highly significant results and since the results are in line with several previous studies in the area of privacy.

Consistent with prior work, e.g., [SmMB96], confirmatory factor analysis (CFA) is utilized to assess the efficacy of the theorized model. CFA allows to specify, estimate and re-specify multiple and interrelated dependence relationships as well as unobserved constructs [Sega97]. The score for CFIP and the above described factors is then used as exogenous variables for regression models examining the impact of privacy concerns on consumer behaviour in the domain of CLPs.

3.2 Data Analysis

The online survey was accessible from 2006-02-16 to 2006-03-16 and we obtained 279 data sets that were deemed usable. 187 subjects were male, 90 female and 2 subjects did not answer this particular question. The majority of subjects were between 20 and 30 years old as the invitation for participation was mainly distributed amongst students.

46.6% of the subjects were already using CLPs whereas 53.4% did not participate in such programs. We differentiated the loyalty programs into privacy-friendly CLP (PFCLP) that issue points in form of tokens that can be collected, pooled or handed over (e.g. Swops Points from ESSO) and data collecting programs (DCCLP) that systematically gather data about purchase behaviour in different points of time or from different shops (e.g. Payback). 22 (7.9%) subjects were solely using PFCLP, 40 (14.3%) subjects exclusively DCCLP, 74 (26.5%) subjects participated in both sorts of programs, and 143 (51.3%) people did not participate in any CLP.

53.4% of all participants rated CLP beneficial for both, customer and vendor, 36.2% said that such systems are only beneficial for the vendor; a minority of 2.9% stated that only customers profited from these programs whereas 7.5% said that these programs are of no use, neither for the vendor nor for the customers. Especially privacy concerns (27.6%), convenience issues in the registration phase (22.2%), and sparse benefits (19%) were the main obstacles for the customers.

Using confirmatory factor analysis [BaHo96], we validated our constructs being presented in Section 3.1. We found strong support for the factors derived from literature resulting in acceptable goodness-of-fit measures. We respecified the CFIP factor eliminating the items C4, E3 and UA2 (see online appendix for the specific items). The NFI (Normed Fit Index), GFI (Goodness of Fit Index), AGFI (Adjusted Goodness of Fit Index), CFI (Comparative Fit Index) exhibit much stronger measures of fit for the parsimonious model in comparison to the proposed model by [StSe02] (see Table 2 for detailed model fit).

Measures of Model Fit	Original Model by [StSe02]	Parsimonious Model
NFI	.907	.962
GFI	.874	.943
AGFI	.820	.907
CFI	.930	.979
RMR	.092	.025

Table 2: Comparison of Measures for Model Fit

GFI rose from 0.874 to 0.943 and the AFGI increased from 0.82 to 0.907. The subtle distinction between the values reported by [StSe02] and our results may arise from cultural differences, translation issues, or an increased awareness for privacy issues in recent years. Additionally, the better fits can be a result of our sample that might behave more homogenously since a lot of them are of the same age and have the same education. However, following the principle of model parsimony we utilize the reduced model depicted in Figure 1 for our further investigations. The figure shows the factors representing the overall instrument of Concern for Information Privacy. Each factor consists of similar questions, so called items which can be found in detail in the Appendix.

With a mean of approx. 4 (1: strongly disagree … 5: strongly agree) for the scores of CFIP the results reveal a high Concern for Information Privacy amongst our survey participants. Nevertheless, customers are using CLP and it is even more surprising that customers participating in DCCLP have higher CFIP than customers using PFCLP (4.120 vs. 3.718, ANOVA-significant p<0.027). This counter-intuitive outcome may result from an increasing awareness for privacy issues when participating in data collecting programs. Moreover, it might also be the case that non-participants are less concerned about their privacy because they do not disclose private information and hence, protect their privacy in the first place. The result also signals that customers might migrate to a different CLP that guarantees higher privacy standards. But since such programs are not offered online they stay in DCCLP being highly concerned.
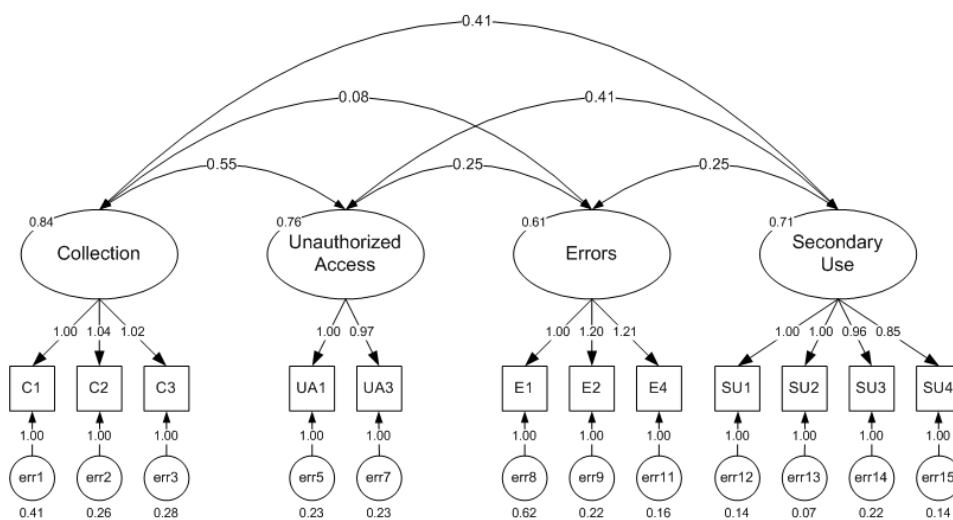

Figure 1: Parsimonious "Concern for Information Privacy" Instrument

In a first analysis, we apply a logistic regression to identify the drivers for participation in CLP. The following determinants have a significant influence on the probability of participating in CLP: Subjects prone to coupons are more likely to participate in CLP whereas high scores in CFIP and computer anxiety reduces this probability. Male subjects (p=0.013) and subjects with low gross income (though not significant) are also more likely to participate in CLP. Table 3 summarizes the findings.

	Coef.	Std. error	Wald	Sig.	Ex(B)
Factor Coupon Proneness	.868	.169	26.292	*.000*	2.383
Factor CFIP	-.407	.244	2.773	*.096*	.666
Factor Computer Anxiety	-.511	.202	6.399	*.011*	.600
Factor Behavioural Intention	.331	.192	2.985	*.084*	1.392
Gender (0: male, 1: female)	-.736	.296	6.207	*.013*	2.088
Gross Income (1: <1000€, 2: 1000-2000€, 3: 2000-3000€, 4: 3000-4000€, 5: 4000-5000€, 6: >5000€)	-.842	.906	.863	.353	.431
Constant	2.007	1.568	1.639	.200	7.444

-2 Log-Likelihood	336.762
Cox & Snell R-Square	.145
Nagelkerke R-Square	.194

Table 3: Logit model identifying drivers for participating in CLP (n=279)

Our first analysis reveals that there are several drivers including CFIP that advance or hinder the usage of CLP. Our study also reveals a remarkable interest (71.8% would use such a program assuming the same economic incentives) in an online privacy-friendly CLP. 13.7% of the subjects would prefer such a system accepting even lowered financial benefits. The interest in such a system depends on the subject's CFIP, with higher CFIP, we observe a higher willingness to use and to pay for such a system (p<0.01).

3.3 Identification of Segments

In this section, we use the confirmed constructs and demographics to segment our sample. For this purpose, we try to answer the question to what extend consumers will shy away from using CLP due to privacy concerns? In this regard, prior research argues that people place a premium on their privacy [Culn00]. Specifically, consumers may be willing to share their personal information and preferences, if they realize that there are benefits to be obtained in return [CuAr99]. The premium to be paid is nevertheless different for different segments.

Research in the area of privacy usually identifies three different segments: The segment of "Information Sellers" is very "privacy unconcerned" [HHLP06]. [West01] characterizes the segment with the words "5 cents off, they will give you any information you want about their family, their lifestyle, their travel plans, and so forth". We hypothesize that this segment can be successfully targeted with DCCLP since their willingness to share their personal information and preferences is high and small economic incentives are enough to persuade them.

In contrary, the "Privacy Fundamentalists" are not willing to sell any private information regardless of the incentives offered. These both segments are usually the minority of the customer base, whereas most customers belong to the third segment which is called "Pragmatists" according to their sensitivities to privacy. They are concerned about privacy but are willing to sell their information for a reasonable amount of money or are willing to participate in CLP when a high level of privacy is assured [HHLP06]. Using rigorous empirical techniques, we want to verify the latter described categorization and evaluate the segments' likelihood of participation in CLP.

The segment of information sellers can easily be identified by observing the economic incentives the customers are expecting for private information. In our sample, we can only identify 3.2% that are willing to sell their information for less than 5% discount. Therefore, the observed segment is smaller than reported in literature where usually approx. 10% of the customer base belongs to this segment [HHLP06]. As expected the CFIP score for this segment is significantly ($p<0.001$) lower with a score of 3.74 compared to the rest of the customer base. The segment consists above average of female subjects ($p<0.057$) with a high income ($p<0.002$) where gross incomes above 4000 EUR/month are considered as high. Moreover, this segment is not technophobe having low scores in computer anxiety ($p<0.055$). This is not utterly surprising since the data was collected through an online questionnaire so that our sample might be biased to some extent in terms of being tech-savvy.

On the other side of the spectrum, we identify the privacy fundamentalists who are not willing to sell private information for any amount of discount. In our sample we find 52 subjects (18.6%) in this segment which accords to previous findings in this area. Subjects in this segment are above-average male ($p<0.074$), have high privacy concerns ($p<0.008$) and have a low score on the general Trust factor ($p<0.003$) by [CoMc92] which measures the level of trust the respondent generally has towards other human beings. The privacy concerns are not accompanied by general computer anxiety.

The rest of our sample is categorized as privacy pragmatists leading to a segmentation depicted in Figure 2. About 2/3 of the pragmatists are already using CLP whereas 35.8% are not participating in CLP. 14.3% of the pragmatists stated that they were not using any CLP or only PFCLP due to privacy concerns. This segment is at present not using online CLP since there is no technical solution available that addresses this segment's concerns.
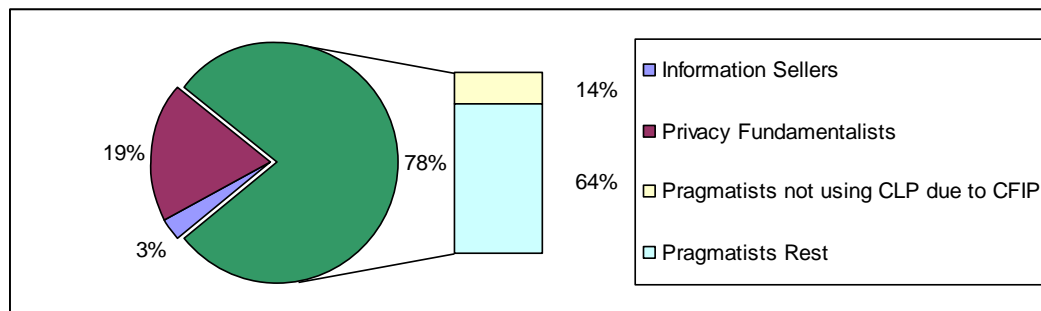

Figure 2: Customers segmented by Privacy Concerns

Although the study is not representative, the highly significant results show that there is interest for both, CLP and systems that preserve privacy. Such systems can be used to successfully target a privacy-sensitive segment that is currently not participating in online CLP due to privacy concerns and since current CLP in Electronic Commerce are not able to protect privacy.

4   Discussion and Future Work

Our survey confirms the general concern of online users regarding their privacy. This concern also has an impact on users' willingness to participate in online loyalty programs. Even customers who are already members of loyalty programs

expressed a desire for more privacy protection within the program they are participating in.

Additionally, we identified untapped potential for Internet vendors: In our survey we found a customer segment which has not been addressed by online loyalty programs so far. This segment consists of customers who, in general, would like to participate in online loyalty programs, however, refrain from doing so because of privacy concerns.

Two parallel loyalty programs might lead to cannibalisation which has not been addressed in research so far. Future research could analyze whether vendors with two parallel programs are able to maintain a more loyal customer base or if cannibalisation becomes a severe problem. However, we are quite optimistic that this differentiation and segmentation strategy should lead overall to a preferable outcome for a vendor since we already see the successful application of both program types in the offline world.

Compared to recent findings in [AwKr06], it is very interesting that our survey reveals that people participating in CLP are more concerned for their privacy than people not participating in CLP. Conversely, the results in [AwKr06] indicate that customers who desire greater information transparency are less willing to be profiled. For future research, it would be very interesting to examine the drivers of this counter-intuitive finding in our sample. For instance, are consumers getting concerned over time due to actions by the vendors, like direct mailing or direct advertising, or are they just more aware of problems in the domain of privacy protection?

On the one hand, our empirical study has confirmed previous research in information systems and marketing that has argued that information privacy concern is one of the most important issues in today's technology based environment. On the other hand, this paper revealed that, at least in Germany, there is a positive correlation between the participation in CLP and privacy concerns. Intuitively, we had expected a negative correlation due to Germany's strong privacy regulations. On this account, it might be the case that, despite privacy regulations, customers still distrust the vendors' privacy promises as they are unable to verify such claims.

To overcome this shortcoming, [EnzS04] propose a model for an online PFCLP which allows to anonymously issue and redeem loyalty points. Thus, no private information needs to be disclosed and customers do not have to rely on vendors' privacy claims. We have implemented this model and now plan to do an empirical study of the usability of online PFCLPs as well as to analyze its efficiency.

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Appendix (For Online Version & Reviewers only)

Collection
C1 It usually bothers me when companies ask me for personal information.
C2 When companies ask me for personal information, I sometimes think twice before providing it.
C3 It bothers me to give personal information to so many people.
C4 I am concerned that companies are collecting too much personal information about me.

Unauthorized Access
UA1 Companies should devote more time and effort to preventing unauthorized access to personal information.
UA2 Companies should take more steps to make sure that the personal information in their files is accurate.
UA3 Companies should take more steps to make sure that unauthorized people cannot access personal information in their computers.

Errors
E1 All the personal information in computer databases should be double-checked for accuracy—no matter how much this costs.
E2 Companies should take more steps to make sure that the personal information in their files is accurate.
E3 Companies should have better procedures to correct errors in personal information.
E4 Companies should devote more time and effort to verifying the accuracy of the personal information in their databases.

Secondary Use
SU1 Companies should not use personal information for any purposes unless it has been authorized by the individuals who provided the information.
SU2 When people give personal information to a company for some reason, the company should never use the information for any other purpose.
SU3 Companies should never sell the personal information in their computer databases to other companies.
SU4 Companies should never share personal information with other companies unless it has been authorized by the individuals who provided the information.

Computer Anxiety ([Palg90])
CA1 Computers are a real threat to privacy in this country.
CA2 Sometimes I am afraid the data processing department will lose my data.
CA3 I am anxious and concerned about the pace of automation in the world.
CA4 I am easily frustrated by computerized bills.
CA5 I am sometimes frustrated by increasing automation in my home.

Behavioural Intention ([SGGM83])
How likely are you, within the next three years to…
B1 (1) Decide not to apply for something like a job, credit, or insurance because you do not want to provide certain kinds of information about yourself?
B2 (2) Refuse to give information to a business or company because you think it is too personal?
B3 (3) Take action to have your name removed from direct mail lists for catalogs, products, and services?
B4 (4) Refuse to purchase a product because you disagree with the way a company uses personal information?