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Article

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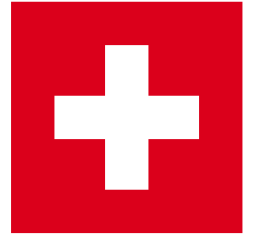
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Location-Based Advertising: Privacy Concerns No Big Deal

Location-Based Advertising (LBA) is an innovative advertising channel to deliver highly personalized advertising messages. Based on an empirical study the negative effect of privacy concerns on the intention to use LBA is considerably weaker than the positive effect of advertising value.

Dr. Michael Schade, Dr. Rico Piehler, Dr. Claudius Warwitz, Prof. Dr. Christoph Burmann

The increasing diffusion rate of GPS-enabled smart phones and the possibility to collect and handle a huge amount of data in real time (so called Big Data) equip marketing managers with an innovative advertising channel: Location-Based Advertising (LBA) (Richard/Meuli 2013). Unni and Harmon (2007, p. 28) define LBA as „targeting advertising initiatives delivered to a mobile device from an identified sponsor that is specific to the location of the consumer.“ GPS enables to track the location of smart phones within a range of a few meters. Traditional advertising (e.g., TV commercials) and early internet advertising (e.g., web banners) have been used as channels for mass communication. However, personalized one-to-one communication is seen as a more profitable approach (Nowak/Phelps 1997). LBA enables marketers to deliver advertisements, promotions, coupons, etc. that are customized to consumer preferences, their geographical location and time of day. As a consequence, LBA provides information and offers to consumers based on their location and, therefore, represents a powerful way to individually interact with consumers (Zhou 2013).

Despite the vast opportunities offered by LBA, consumers are still skeptical about this innovative advertising channel (Xu/Oh/Teo 2009). While consumers may see benefits of LBA, privacy becomes an important concern (so called personalization-privacy-paradox; (Chelleppa/Sin 2005). In order to operate, LBA has to collect and utilize users' location and further personal data (e.g., sociodemographic data, buying behavior), which may increase privacy concerns (Zhou 2013). Therefore, it is very important for LBA providers (e.g., Google, Facebook, Coupies, Sprint, O₂, Vodafone) to identify factors influencing the intention to use LBA and, thereby, the willingness to disclose personal information.

Prior studies (e.g., Xu/Oh/Teo 2009; Xu et al. 2011) investigating these factors only used student samples from one university with small sample sizes. In order to derive valuable practical implications, it is necessary to analyze this topic with a more general sample. Therefore, the aim of this study is to empirically investigate factors influencing the intention to use LBA not only based on student samples but based on a more general sample including different age and education groups.

Conceptual Framework

LBA is a part of Location-Based Services (LBS) that use technologies of global positioning systems (GPS), multi-function mobile devices, and internet network services to provide users with flexibility to access networks and services

while on their move (Wu/Kao/Yang 2012). The functioning of LBA is distinguished in pull- and push-LBA. The main difference between these two strategies is the initiator of the communication process: the marketer or the consumer (Okazaki/Molina/Hirose 2012). In the pull strategy, consumers initiate the request for advertising for preferred product categories close to their location. In contrast, push-LBA is any content sent to a consumer's smart phone based on that consumer's location and stated product preferences without any specific request (Unni/Harmon 2007). Users receive related advertisements when they are close to retail stores. This study focuses on push-LBA as it provides an effective way to trigger impulse buying and it is more susceptible to privacy concerns since consumers are aware of being tracked whenever and wherever they are (Xu/Oh/Teo 2009).

In order to identify factors influencing the intention to use LBA, the privacy calculus theory offers a suitable conceptual framework (Dinev/Hart 2006; Laufer/Wolfe 1977; Li 2012). According to this theory, individuals calculate the perceived benefits (in the context of LBA: advertising value)

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versus the perceived risks (in the context of LBA: privacy concerns) of LBA usage to decide whether they disclose personal data. Individuals behave in order to maximize positive outcomes and minimize negative outcomes. Therefore, individuals will disclose personal information and use LBA if they perceive that the overall benefits of their behavior at least compensate the perceived risks (risk-benefit analysis) (Dinev/Hart 2006). Culnan and Bies (2003, p. 327) argue that „a positive net outcome should mean that people are more likely to accept the loss of privacy that accompanies any disclosure of personal information as long as an acceptable level of risk accompanies the benefits.“

The dependent variable in the present study is the intention to use LBA and, consequently, the willingness to disclose personal data. According to the privacy calculus theory, this behavioral intention is determined by contrary beliefs: perceived benefits of the usage of LBA and perceived risks concerning the disclosure of personal information. Perceived benefits in the context of LBA are represented by advertising value (Xu et al. 2011). Advertising value represents personalized advertisements, promotions, coupons, etc. for preferred products and services that are relevant to the location of LBA users (Ducoffe 1996; Xu/Oh/Teo 2009). Due to the fact that advertising value represents a positive outcome it can be assumed that a high perception of advertising value increases the intention to use LBA and, consequently, to disclose personal information. Empirical studies with students in the US show that advertising value positively influences the intention to use LBA (Xu/Oh/Teo 2009; Xu et al. 2011).

H₁: Advertising value has a positive influence on the intention to use LBA.

In contrast to advertising value as perceived benefit, privacy concerns are perceived risks in context of LBA usage. Risk is a subjective concept and defined as „the possibility of loss“ (Yates/Stone 1992, p. 4). The perception of risk is related to the uncertainty caused by the possibility of opportunistic behavior by LBA providers. Sources of such opportunistic behavior are unauthorized access, selling personal data, and sharing information with third parties. This opportunistic behavior could result in the mining of location data and further personal information and may enhance the visibility of individuals' behavior and, consequently, increase the scope for situations that may be embarrassing for LBA users (privacy invasion). Privacy concerns reflect an internalization of the possibility of opportunistic behavior of LBA providers and the risk of privacy invasion (Pee 2011). Consumers' behavioral intention to use LBA will be low if they have the feeling that high risks of privacy invasion exist. In an empirical study with students in the US, Xu et al. (2011) show that „perceived risks of info disclosure“ negatively influences the willingness to use LBA.

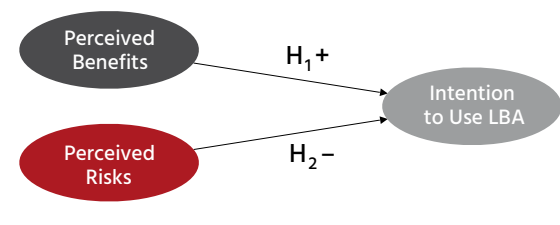
H₂: Privacy concerns have a negative influence on the intention to use LBA.

The conceptual model is shown in figure 1.

Empirical Study Methodology

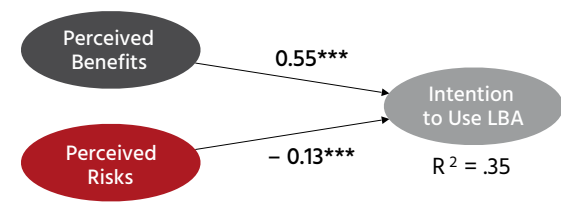
In order to empirically investigate the hypotheses, 1,253 respondents were interviewed using an online-panel from a large German market research agency in November and December 2014. The sample of participants were actual smart phone users from Germany. The participants rated the advertising value of

Fig. 1: Conceptual model



Source: Own illustration.

Fig. 2: Empirical results



* p<.05, ** p<.01, *** p<.001, n. s. = not significant

Source: Own illustration.



Development of the survey instrument began with a careful review of literature to identify relevant measures. In general, we were able to find existing measures that we could either directly apply or slightly adapt to fit our research goals. To measure advertising value we used the scale by Xu, Oh, and Teo (2009). Privacy concerns were measured using a scale by Xu et al. (2012). Intention to use LBA was measured by a scale from Lee and Hill (2013). A five-point Likert-type response format with 1 = „strongly agree“ and 5 = „strongly disagree“ was applied for the measures. Initially, the questionnaire was developed in English and then translated into German and modified as necessary to eliminate discrepancies between the two versions to verify the accuracy of translation. The back-translation method was used to ensure semantic equivalence.

Empirical Study Results

To analyze the model we chose variance-based SmartPLS (Ringle/Wende/Will 2005) because the research goal is to predict the intention to use LBA. Moreover, the research is exploratory in nature and the data are non-normal (Hair et al. 2012). First, reliability and validity of the reflective measurement models were evaluated (Hair et al. 2012). Regarding indicator reliability all indicator loadings were significant (p < .001) and above the recommended .70 parameter value. Reliability on the latent construct level was assessed using composite reliability (CR). The threshold of .70 for CR was exceeded for all constructs. Convergent validity was assessed using average variance extracted (AVE). The threshold of .50 for AVE was also clearly exceeded for all constructs. Finally, discriminant validity was assessed using Fornell-Larcker criterion and cross loadings. Concerning Fornell-Larcker criterion, the square root of AVE of each construct exceeded the construct's highest correlation with any other construct. In addition, all indicators loaded highest on the respective constructs. Therefore, reliability and validity

LBA in the context of LBA usage. Moreover, each participant rated privacy concerns and the intention to use LBA for one LBA provider brand. The participants only answered questions about a LBA provider brand they were familiar with. The measurement relied on the subjective knowledge of the consumer as no other information or clues regarding the provider brands were given. In total, we captured the evaluation of six LBA provider brands from the German market (Google, O₂, Facebook, Gettings, Coupies, and Bild.de). After data cleansing, we had an effective sample size of 1,121 respondents. 58 percent were men and most of the respondents were 20–49 years old (42% from the age group of 20–29, 32% from 30–39, 13% from 40–49). Only 22 percent of the sample consisted of students.

Management Summary

In order to use Location-Based Advertising (LBA) as innovative advertising channel effectively, it is important to identify factors influencing the consumers' intention to use LBA. Based on an empirical study with 1,121 German smart phone users, the positive effect of advertising value on intention to use LBA is larger than the negative effect of privacy concerns. In order to increase advertising value, managers should ensure that LBA is informative, entertaining, and does not irritate consumers. In addition, companies should invest in building a trusted brand to reduce privacy concerns.

Lessons Learned

- 1. In order to increase the intention to use LBA, companies should engage in measures that enhance advertising value and reduce privacy concerns.
- 2. Companies could enhance advertising value by ensuring that the advertisements are entertaining and informative and do not irritate the user.
- 3. Companies could reduce privacy concerns by building brand trust and ensuring that the LBA offer is transparent and easy and that consumers have control over the use.

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dity were confirmed for all measurement models. We based the structural model evaluation on explained variance R^2 , absolute values for path coefficient estimates, significance of path coefficient estimates, and effect size f^2 (Hair et al. 2012). Figure 2 shows the structural relationships.

According to hypothesis H_1 , there was a significant positive effect of advertising value on the intention to use LBA ($\beta = .55***$, $t = 23.5$, 95% $CI = [.51; .60]$). As expected and confirming hypothesis H_2 , there was a significant negative relationship between privacy concerns and the intention to use LBA ($\beta = -.13***$, $t = 4.86$, 95% $CI = [-.19; -.08]$). To summarize, using a more general (not student-only sample) our study confirmed the results of Xu et al. (2011): Perceived benefits (advertising value) have a significant positive effect on the intention to use LBA while perceived risks (privacy concerns) have a significant negative effect on the intention to use LBA. Comparing both antecedents, advertising value had a stronger effect ($f^2 = .45$) than privacy concerns ($f^2 = .03$).

Practical Implications

Based on our empirical results, privacy concerns significantly decrease the intention to use LBA, but the negative effect is small compared to the large positive effect of advertising value. In order to increase the intention to use LBA, companies should engage in measures that enhance advertising value and reduce privacy concerns.

Taking previous research regarding antecedents of advertising value (Ducoffe 1996) into account, companies have to ensure that the advertisements are entertaining and informative. Entertainment refers to the extent of fun and entertainment provided by the advertisement (Xu/Oh/Teo 2009). Entertainment fulfils users' needs for hedonic pleasure (McQuail 1983). Informativeness is defined as the extent to which advertising provides resourceful and helpful information (Xu/Oh/Teo 2009), which depends on the quality of the technology (reliability of data, exactness of data, etc.). In addition to entertainment and informativeness, the perceived advertising value is negatively affected by irritation caused by the advertisement. Even with personalized advertisements, it could be annoying if users receive too many LBA messages (Xu/Oh/Teo 2009) or if the timing is inappropriate. In the context of LBA, Xu, Oh, and Teo (2009) show in an empirical study that entertainment and informativeness have a significant positive influence on advertising value, while irritation has a significant negative effect. Therefore, managers should ensure that LBA is informative (i.e. relevant, up-to-date, immediate, and convenient product information), entertaining (i.e. enjoyable, exciting, and fun-to-use), and does not irritate consumers (i.e. not cumbersome, annoying, and irritating).



For example, the German LBA provider O₂ More Local focuses on informative benefits (discounts and 2for1 offers for popular partner brands like Coca Cola, Nike and Häagen Dasz, opening offers, and discounted admissions for cinema, theater, and museums) in order to communicate the benefits of their LBA service. In addition, O₂ More Local also ensures that users do not receive advertisements more than once when they visit a location several times, thus reducing irritation.

In order to reduce privacy concerns, companies should invest in building brand trust as trust is one of the most salient beliefs in information privacy contexts (Malhotra/Kim/Agarwal 2004). It can be defined as „the willingness of a party to be vulnerable to the actions of another party, based on the expectations that the other will perform a particular action important to the trustor, irrespective of the ability to

Main Propositions

- 1. LBA as targeted marketing initiative enables marketers to deliver highly customized advertisements.
- 2. Despite the vast opportunities offered by LBA, consumers are still skeptical about this innovative advertising channel due to privacy concerns.
- 3. In comparison to the positive effect of advertising value privacy concerns do not play an important role.

monitor or control that other party“ (Mayer/Davis/Schoorman 1995, p. 712). Corritore, Kracher and Wiedenbeck (2003, p. 740) specify trust in online context as „an attitude of confident expectation in an online situation of risk that one’s vulnerabilities will not be exploited.“ Based on literature, confidence can be seen as an important element in the construct of trust (Gambetta 1988; Okazaki/Molina/Hirose 2012; Zand 1972). If a LBA user is confident that a specific LBA provider brand will not behave in an opportunistic way, the perceived risk of privacy invasion (privacy concerns) will be low. Therefore, privacy concerns toward a specific LBA provider can be reduced by brand trust toward this provider. Especially in a technologically rapidly developing environment the LBA provider brand serves as a trust anchor and reduces complexity for the LBA user. Therefore, it can be assumed that brand trust is of high relevance in LBA context. As a consequence, it is important for managers to monitor brand trust and to avoid trust damaging behavior. For example, the German LBA provider O₂ More Local guarantees that the collected personal data are not shared with third parties and that the location data are deleted after eight hours in order to build up brand trust and reduce privacy concerns.

In addition to brand trust, personal factors can also reduce privacy concerns. In this context, self-efficacy is an important personal factor (Lee/Hill 2013; Richard/Meuli 2013). Self-efficacy is defined as „People’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performances. It is concerned not with the skills one has but with judgments of what one can do with whatever skills one possesses“ (Bandura, 1986, p. 391). Transferred to the LBA context, self-efficacy is users’ judgment of their capabilities to deal with potential privacy invasions while using LBA. Therefore, LBA providers should ensure that their LBA offer is transparent and easy and that consumers have control over the use (i.e. ability to turn on and off, ability to block specific content).

Limitations and Implications for Future Research

As this study was only carried out in Germany, replication studies are suggested for other countries and cultural areas as it is assumed that the relevance of privacy concerns is culture-specific (e.g., higher relevance in Western Europe in comparison to the US). In addition, the suggested antecedents of advertising value and brand trust should be empirically investigated by applying a more general sample than the typically used student samples. Finally, as this study does not investigate moderators, future research should include moderators such as personal variables like age in order to give more detailed answers to managers.

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