Disclosing personal data to unfamiliar apps

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Acknowledgements:
The first author have a scholarship from CNPq --- Conselho Nacional de Desenvolvimento Científico e Tecnológico

Cite as:
Freitas Silveira Netto Carla, Rohden Simoni, Lugoch Marina, Englert Natália, Ubal Valentina (2019), Disclosing personal data to unfamiliar apps. *Proceedings of the European Marketing Academy*, 48th, (9632)

Paper presented at the 48th Annual EMAC Conference, Hamburg, May 24-27, 2019.

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Abstract:

Consumers give personal data in exchange for mobile apps. One exploratory study and two between subjects experimental studies tested how trust, risk, hedonic and utilitarian perceptions are related to self-disclosure. The first experiment confirmed the influence of trust, which was expected, and familiarity, that was not expected since the scenario described an unknown brand. Mediation analysis showed that trust mediates the relation between hedonic/utilitarian perceptions and disclosure. Hedonic and utilitarian perceptions had a positive impact on trust and disclosure. A moderation analysis of endorsement and trust was significant, positively influencing disclosure. Study two verified these relations, except the moderation of endorsement, and confirmed the mediation effect of trust on the relation of risk and disclosure. Finally, it also allowed to explore the mediation of risk perception on (1) hedonic/utilitarian perceptions and disclosure, and (2) hedonic/utilitarian perceptions and trust relations.

Keywords: technology-based service (apps), privacy, self-disclosure

Track: Digital Marketing & Social Media

1. Introduction

While using apps on mobile phones, consumers leave "virtual footprints" with their information (Wirtz & Lwin, 2009) being aware of that or not. In this context, data has become a valuable asset to organizations and data processing systems evolved a lot throughout the years, allowing companies to store and use consumers' data to personalize their offers (Dinev & Hart, 2006). This "virtual footprint", intrinsic to mobile usage, is related to the act of self-disclosure (Wirtz & Lwin, 2009), and consequently, to privacy. The way companies are using the data associated to registration has become an issue to some users (Keith, Thompson, Hale, Lowry & Greer, 2013), creating a sense of vulnerability and greater risk perception (Aguirre, Roggeveen, Grewal & Wetzels, 2015).

However, the trusting behavior of self-disclosure is a very popular way of getting access to mobile services (e.g. apps). What variables are influencing this decision is a concern not only for companies that provide such services but also for public policy makers. Very little is known about how consumers behave when they use online apps. Studying this phenomenon could help avoid consumers being tricked into disclosing for companies that are not real or that could misuse their data. We conducted one exploratory study and two experimental studies to test how trust, risk, familiarity, hedonic and utilitarian perceptions are related to disclosure of personal information to apps.

2 Literature review

Consumers disclose personal information to apps that they had no previous contact with. Literature states that disclosing personal data is a trusting behavior that is influenced by trust in the company, privacy concerns, risk perception and cues that can convey a sense of security (Christofides, Muise & Desmarais, 2009; Martin & Murphy, 2017). Trust, on the other hand is explained by the familiarity with the company and satisfaction with the product or service provided. Trust comes with cues such as the company communication, branding, or recommendations (Norberg, Horne & Horne, 2007). These cues are not always present on apps' context since they usually do not have a known brand or even any endorsement from other people.

Users perceive benefit in the exchange of personal information, motivating self-disclosure behavior. Sharing personal information, in this context, represents a payment method for the service provided by the app. Therefore, the decision to share or not personal information is on consumer's hands (Mothersbaugh, Foxx, Beatty & Wang, 2012, Martin &

Murphy, 2017). We discuss how hedonic/utilitarian perceptions, trust, risk, and familiarity are related to this decision.

2.1 Hedonic and utilitarian perceptions

Holbrook and Hirschman (1982) defined hedonic consumption as related to subjective and emotive aspects of product usage. In contrast, utilitarian consumption is the one related to functional and useful aspects of product usage (Kim, Kim, & Wachter, 2013). Likewise, information systems (e.g. apps) can be more instrumental and productivity oriented (utilitarian) or more enjoyable and fun oriented (hedonic) (Van der Heijden, 2004).

Customers process utilitarian and hedonic attributes differently. When facing a self-disclosure situation, consumers tend to prefer utilitarian to hedonic products or services due to the cognitive process needed to evaluate hedonic variables (Dhar & Wertenbroch, 2000) while utilitarian decisions are easier to justify because of its clear benefits (Dinev & Hart, 2006). Considering that self-disclosure situations make consumers feel more vulnerable and concerned about privacy (Aguirre et al., 2015), the cognitive justification process of choosing a hedonic app would add a problem to the decision process. Thus, we hypothesize that hedonic perception of the app affects negatively and utilitarian affects positively disclosure (H1).

2.2 Familiarity

Familiarity refers to the number of experiences with the brand accumulated by a consumer. It generates greater expertise demanding lower cognitive effort regarding this brand (Alba & Hutchinson, 1987) and decreasing uncertainty (Norberg et al., 2007). It also influences behaviors such as purchase intent, since a consumer can access in his memory information about previous experiences that help the decision process versus having to base decision-making on information that is available at the moment (Chen & Chang, 2012).

Regarding the virtual context, risk perception and uncertainty with a brand or company are usually higher when there is no familiarity between the parties (McKnight, Choudhury & Kacmar, 2002). Consequently, in familiar situations consumers tend to be willing to provide data to companies (Norberg et al., 2007) and probably a similar effect would exist in the context of providing data for social media apps. Therefore, familiarity should have a positive impact on disclosure and, in the context of a non-familiar brand, familiarity will not impact on disclosure (H2).

2.3 Trust

Trust is a multidimensional construct. In this study, the perception of trust is measured as trust in the company that is selling the service. Trust is associated with three attributes. The first is competence, which concerns the ability of the company to meet the needs of the consumer who is relying on them. The second is benevolence or the concern of the company to act in accordance with consumers' interest. Finally, the last attribute of trust is integrity or the ability to keep promises and be honest (McKnight et al., 2002).

In a virtual context, trust perceptions influence the behavior itself, such as positively influencing user's intention to disclose personal information (Dinev & Hart, 2006). In general, the virtual environment stimulates disclosure behavior and in online communication there is a connection between trust and sharing personal information (Christofides et al., 2009). Thus, in accordance to the literature, we expect that trust will have a positive effect on disclosure. In addition, we suggest that trust has a risk-mitigating role helping to explain the "difficult" choice of self-disclosure to access the hedonic app. Therefore, the relationship between hedonic perception of the app and disclosure is mediated by trust in the company (H3).

2.4 Endorsement

In an online environment, many forms of endorsement (or clues) can be found, such as number of downloads, other customer's reviews and comments. Endorsement can be represented as the information from other users who previously used the service (Hoffmann, Lutz & Meckel, 2014). It can be used by companies to accelerate the decision to provide personal data (Norberg et al., 2007), as it alleviates feelings of insecurity, giving hints that the app is reliable. Therefore, clients use these clues from websites to infer trust (Norberg et al., 2007). According to Köksal and Penez (2015), there is a significant relationship between comments (e.g. a kind of endorsement) and online trust. In this sense, we suggest that endorsement moderates the relationship between trust and disclosure (H4).

2.5 Privacy concerns and risk perception

Privacy concern is operationalized as consumers' beliefs, attitudes, and perceptions about their privacy (Martin & Murphy, 2017). Consumers with privacy concerns see more negatively personalized ads on the Internet (Bleier & Eisenbeiss, 2015) as well as demonstrate less trust in a website (Martin & Murphy, 2017). On the other hand, consumers believe their

personal data is safe when they trust the retailer, thus reducing these concerns as well as risk perception, which could reduce willingness to buy a product in an online store (Jarvenpaa, Tractinsky & Vitale, 2000).

Privacy concerns and risk perceptions are associated with distrust regarding the company that will take possession of personal data. Thus, lack of trust can negatively influence consumers, in the sense of not engaging in self-disclosure and revealing their data to the company (Krafft, Arden & Verhoef, 2017). So, risk affects self-disclosure negatively (H5) and trust mediates the relation between risk perception and self-disclosure (H6).

3 Method

We first ran an exploratory study with respondents recruited on Social Media (Facebook, Instagram, and WhatsApp). They answered about the last app that they had downloaded over the last three months. After that, they were presented with the scales we intended to use on the experimental studies, and questions that explored their behavior when deciding to disclose information to apps.

Then, two experimental studies were developed, with respondents recruited on MTurk, randomly assigned to conditions. Written scenarios described an app's download from an unknown company that required disclosure of personal information. They were asked about their intention to disclose, but no actual data was collected or was the app downloaded by them. Manipulation involved the perception of the app as hedonic (game app) or utilitarian (budget manager app) and presence or absence of endorsement. The complete scales, description of the scenarios, as well as the R codes used are available at request.

4 Results

In the experimental studies, all scenarios had significantly different utilitarian and hedonic perceptions. The respondents also perceived the presence and absence of endorsement correctly. There was also no difference on the perception of realism on the different scenarios.

4.1 Exploratory study

The exploratory study (n=107) gave insight about the relation of trust, risk, privacy concern and familiarity on self-disclosure. Trust had a significant and positive effect ($t(4,102)=8.72$ e $p<0.001$), privacy concern had a significant and negative effect ($t(4,102)= -$

2.35 e p<0.001), risk was also significant (t(4,102)= -3.62 e p<0.001) confirming H5, and familiarity was only marginally significant (t(2,102)=1.89, p=0.06), confirming H2. The full model was significant with an R^2= 0.62. The experiments that followed, investigated what makes consumers willing to disclose even if they are not familiar with a brand.

4.2 Experiment 1

Study 1 (n=116) confirmed the positive effect of trust (t(2,113)=8.65 e p<0.001). However, familiarity (t(2,113)=4.14, p<0.001) was once again significant, which was not expected (H2). Mediation analysis showed that trust mediates the relation of hedonic perception and disclosure, confirming H3. Hedonic perception had a positive effect on self-disclosure, partially rejecting H1 (F(1,114) = 25.95, p= <.001, R^2= .18, b = .39, t(114) = 5.09, p = <.001). Hedonic perception also had a positive effect on trust (F(1, 114) = 28.24, p= <.001, R^2= .19, b = .43, t(114) = 5.31, p = <.001). In the total effect model, trust also positively impacted self-disclosure (F(2,113) = 50.33, p= <.001, R^2= .46, b = .57, t(113) = 7.81, p= <.001) and hedonic perception became only marginally significant (b = .15 t(113) = 2.15, p= .03).

Although, hedonic perception had significant impact on self-disclosure, utilitarian perceptions had the same effects. Thus, seemed that it was not hedonic or utilitarian perceptions that were affecting trust, but revealing additional information (cues) about the app, such as endorsement. Moderation analysis of endorsement was significant (F(3,112)=37.87, p= <.001, R^2= 0.49, b = 0.32, t(112) = 2.49, p= 0.01), confirming H4.

The first experiment confirmed the influence of trust, which was expected, but also of familiarity, which was not expected (since they were not familiar to the app's provider). This result could be related to individual's being used to online environment (i.e. heavy users) and therefore presenting reduced levels of risk perception and privacy concerns (Tsay-Vogel et.al, 2018). Experiment two verified these relations.

4.3 Experiment 2

Study two (n=132) confirmed the negative impact of risk perception (H5) and privacy concerns on self-disclosure, either meaning that MTurkers are not heavy users or that this relation does not hold to the app's context. Trust effect was significant (b = 0.25, t(125) = 4.19, p <.001), and so were risk perceptions (b = -0.39, t(125) = -4.95, p <.001) and privacy concerns (b = -0.25, t(125) = -3.79, p <.001).

Mediation of trust (H3) was once again significant, rejecting partially H1, since hedonic perception had a direct positive effect on the DV ($F(1,130) = 11.97$, $p = <.001$, $R^2 = .07$, $b = .26$, $t(130) = 3.46$, $p = <.001$) and trust as well ($F(1, 130) = 13.31$, $p = <.001$, $R^2 = .08$, $b = .28$, $t(130) = 3.65$, $p = <.001$). In the total effect model, trust also impacted self-disclosure ($F(2,129) = 53.84$, $p = <.001$, $R^2 = .45$, $b = .63$, $t(129) = 9.37$, $p = <.001$), but the hedonic perception did not ($b = .09$ $t(129) = 1.4$, $p = .16$).

Study two also allowed to confirm H6, the mediation effect of trust on the relation between risk and self-disclosure. Risk had a negative effect on trust ($F(1, 129) = 93.8$, $p = <.001$, $R^2 = .42$, $b = -.61$, $t(129) = -9.68$, $p = <.001$), and disclosure ($F(1, 129) = 239.4$, $p = <.001$, $R^2 = .64$, $b = -.75$, $t(129) = -15.47$, $p = <.001$). In the total effect model, risk also impacted self-disclosure ($F(2,128) = 141.1$, $p = <.001$, $R^2 = .68$, $b = -.60$, $t(128) = -9.85$, $p = <.001$), and trust still impacted with a lower b value ($b = .25$ $t(128) = 3.9$, $p = <.001$) than the direct effect ($F(1,130) = 104.9$, $p = <.001$, $R^2 = .44$, $b = .65$ $t(130) = 10.2$, $p = <.001$).

This study also permitted to explore the mediation of risk in the relations of (1) hedonic perceptions and disclosure, and of (2) hedonic perceptions and trust. As described before, hedonic perception had a positive and significant impact on disclosure and trust. Risk also influenced trust and disclosure, but negatively. Finally, hedonic perception impacted risk significantly and negatively ($F(1, 129) = 15.76$, $p = <.001$, $R^2 = .10$, $b = -.31$, $t(129) = -3.97$, $p = <.001$). In the total effect model of risk mediation considering the relation of hedonic perception and disclosure, risk also impacts disclosure ($F(2,128) = 119.1$, $p = <.001$, $R^2 = .64$, $b = -0.74$, $t(128) = -14.39$, $p = <.001$), but the hedonic perception did not ($b = .02$ $t(128) = 0.5$, $p = .61$). Finally, the total effect model of the of the mediation of risk, in the relation of hedonic perception and trust, risk had a negative significant impact on trust ($F(2,128) = 48.33$, $p = <.001$, $R^2 = .42$, $b = -0.58$, $t(128) = -8.7$, $p = <.001$), but, again the hedonic perception no longer has a significant impact ($b = .09$ $t(128) = 1.4$, $p = .15$).

Interestingly, the app's perception as utilitarian also has impact on trust, risk and disclosure. All the mediations analysis returns the same results also using the utilitarian perception as mediator. These results could again be explained by the fact that it is not the perception as hedonic or utilitarian that is influencing disclosure, but additional information about the app, acting as cues. However, differently from study one, the additional information provided in the description of the scenarios as endorsement was not significant as a moderator ($F(3,128) = 36.73$, $p = <.001$, $R^2 = 0.45$, $b = 0.019$, $t(128) = 0.149$, $p = 0.88$), rejecting H4, or as a direct effect on disclosure ($F(1,130) = 36.73$, $p = <.001$, $R^2 = 0.45$, $b = 0.019$, $t(128) = 0.149$, $p = 0.88$).

5 Discussions and conclusions

Results of the two experimental studies confirmed the effects expected that trust positively affects disclosure and that it mediates the relation between hedonic/utilitarian perceptions of the app and disclosure (H3). This is an intriguing result, since we expected that only familiar companies would be trusted (H2) and, because of that trust, the willingness to disclose would be higher. Hedonic perception positively effects self-disclosure, partially rejecting H1. The presence of cues such as endorsement (H4) could help explain the results but was only partially confirmed and still needs to be considered in the future. Another explanation is that the effect of risk perception and privacy concerns could be reduced on Mturk's respondents since they could be used to online environment. However, the variables impact self-disclosure and trust (confirming H5 and H6) which means that, in the app context, Mturk's respondents are not immune to perceived risk and privacy concerns and that those influence their disclosure behavior.

Consumers intention to self-disclose even to companies they do not know is still an intriguing result that requires further investigation. One possibility is that reciprocity affects this relation. Studies identified that in websites, reciprocity applies to relations among individuals even with anonymity (Schumann, Wangenheim & Groene, 2014). Therefore, future research could analyze the impact of reciprocity on social networks.

Another interesting result is the mediation of trust and risk on the relation of hedonic and utilitarian perceptions and disclosure. This is partially explained by prior studies. Van der Heijden (2004) asserts that perception of hedonism determines the use of information systems more strongly than the perception of utilitarianism. Additionally, Jia, Jia, Hsee & Shiv (2017) state that, after natural disasters, increase in use of hedonic apps reduced risk perception. The relation between risk and disclosure is well established in the literature and was covered on the literature review section. Nevertheless, the relation between hedonism/utilitarian perceptions, trust and disclosure needs further investigating.

Future research could examine the relation between hedonism/utilitarian perceptions and the privacy paradox. Hedonic apps may induce people to perceive the risk as more psychologically distant than utilitarian apps, helping explain the gap between privacy concern and disclosure behavior (Hallam & Zanella, 2017).

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