International Journal of Information Management 44 (2019) 53–64

Contents lists available at ScienceDirect

International Journal of Information Management

journal homepage: www.elsevier.com/locate/ijinfomgt

'Understanding consumers' reactance of online personalized advertising: A new scheme of rational choice from a perspective of negative effects

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ARTICLE INFO

Keywords:
Reactance
Personalization paradox
Rational choice theory
Ownership
Vulnerability

ABSTRACT

Consumer reactance appears to be a major inhibiting result in the personalization paradox of online personalized advertising. The objective of this study is to uncover consumer reactance of online personalized advertising. We identify the rational choice factors rooted in the rational choice theory from a negative-effect perspective and examine their impacts on consumer reactance with consideration of affective factors. Our results confirm that three rational choice factors from a negative-effect perspective have significant impacts on consumer reactance, and affective factors such as ownership and vulnerability are dominant determinants of these rational choice factors. The effects of these affective factors on consumer reactance can be mediated by individual rational choice factors. The findings provide a new perspective on the paradox phenomenon and offer online personalized advertising providers new approaches to improving their performance.

1. Introduction

Many modern online companies (e.g., Tmall and Amazon) use advanced Internet and computing technologies to exploit user data in order to implement online personalized advertising (OPA) on their platforms (Kim & Dan, 2017). Consumers may perceive these services as more attractive and favourite (Lambrecht & Tucker, 2013; Shareef et al., 2017). However, OPA may cause consumers' unfavorable beliefs. For example, they may perceive privacy concerns in terms of personal data that is collected tacitly and limited capacities to choose and buy (Aguirre et al., 2015; Newell & Marabelli, 2015). This double-edged sword is a personalization paradox: there is tension between how online retailers exploit user information to offer personalized benefits, and users' concerns over the risks in the usage of OPA (Sutanto et al., 2013).

The personalization paradox often produces a negative response in individual reactance towards certain online shopping applications (Fitzsimons & Lehmann, 2004). Reactance may make users resist OPA when they find coercive or threatened of their freedom (Brehm, 1989). It was reported that "only 13% of consumers admitted to clicking on one of these retargeting ads" (Guild, 2013). User click-through rates suggest that individual OPA campaigns are generally unsuccessful. However, prior studies were centred on individual positive responses (e.g., psychological comfort and willingness to disclose information) while paid little attention to the negative ones (e.g., reactance) (Li et al., 2017; Sutanto et al., 2013). Therefore, an understanding of what factors of the personalization paradox influence consumer reactance is central to helping online retailers diagnose the deficiencies in their marketing strategies and providing them with ways to improve their performance.

The benefit and risk factors of the personalization paradox form users' reactance, while consumer reactance may in turn shape these factors (Sharot et al., 2010). Consumer reactance refers to an individual final negative response towards OPA. Hence, in the context of consumer reactance, users may develop benefit and risk beliefs from a negative-effect perspective by interpreting them as a perceived concern, risky nodes, or unfavorable expectations (Liu et al., 2014; Samba et al., 2018). Therefore, there is a pressing need for reconstructing the benefit and risk factors from a negative-effect perspective in terms of individual negative response.

Affective factors are strongly associated with individual benefit and risk assessments (Slovic et al., 2004). Positive affections towards a given stimulus have more effects on perceived benefits, while negative affections involve perceived risks (Finucane et al., 2000). For example, ownership and vulnerability are two major affective factors which influence cognitive perceptions (Aguirre et al., 2015; Bandyopadhyay, 2011). Accordingly, these findings compel us to examine the precise natures of affective factors and their roles in individual cognitive processes from a negative-effect perspective.

In this study, we intend to extend the knowledge about the consumer reactance towards OPA by combining the rational choice factors

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https://doi.org/10.1016/j.ijinfomgt.2018.09.001
Received 27 April 2018; Received in revised form 3 August 2018; Accepted 4 September 2018

from a negative-effect perspective rooted in the rational choice theory and affective factors. In particular, we aim to reconstruct the benefit factors of the rational choice theory from a negative-effect perspective defined as perceived costs of non-personalization. Privacy concerns and opportunity cost are suggested to be two main risk factors in the OPA context. Hence, we pose two research questions:

(1) How do individual rational choice factors from a negative-effect perspective affect consumer reactance towards online personalized advertising?
(2) How do affective factors affect individual rational choice factors from a negative-effect perspective in the OPA context?

The rest of this paper is organized as follows. Section 2 reviews the theoretical background of reactance, personalization paradox, and affective factors. Our research model and hypotheses are discussed in Sections 3. We then describe our research methodology and the results of our hypothesis tests in Section 4 and 5. The penultimate section discusses our findings in detail and drawes some implications. Section 7 provides a conclusion.

2. Theoretical background

2.1. Reactance

Reactance describes a negative psychological response that consumers resist a persuasion attempt where they find coercive by performing against to that intended (Bleier & Eisenbeiss, 2015; Tucker, 2014). Individual attitude changes in response to anything perceived as a threat to his or her freedom (Edwards et al., 2002). If an individual's aesthetic choices are predicted based on a personality test, for example, he or she may respond in reactance to any predictions presented to him or her based on those choices (Hannah et al., 1975).

OPA can give rise to consumer reactance in terms of an array of potential risks (Bleier & Eisenbeiss, 2015). OPA aims to present consumers certain offerings related to their personal needs and preferences, but consumers may feel that it manipulates or threatens their freedom of choice (Aguirre et al., 2015). Presenting only certain options also may hinder consumers' evaluations of the remaining alternatives, which can further produce reactance (Newell & Marabelli, 2015).

2.2. Personalization paradox under rational choice theory

Rational choice theory offers a theoretical explanation of how individuals make decisions when faced with choices. It demonstrates that individuals' decision-making process is determined by balancing the benefits and risks of his options (Bulgurcu et al., 2010; Wang et al., 2015). Rational choice theory focuses on the rational behavior of users rather than the irrational and immediate one such as the impulsive behavior. Rational behavior occurs when a balance between perceived benefits and risks towards the behavior is needed, whereas impulsive behavior is motivated by a stimulus such as individual trait tendency and normative judgment (Ramanathan & Menon, 2005). In the personalization context, the personalization paradox is often considered as a trade-off between benefit and risk factors (Li et al., 2017). For example, it may be defined as the tension between consumers' perceived benefits of receiving customized applications and their growing concerns about privacy (Chellappa & Sin, 2005; Guo et al., 2012; Karwatzki et al., 2017; Lee & Rha, 2016). Users need to determine how they will act according to the balance between the benefits and privacy concerns (Sutanto et al., 2013). Similarly, our study aims to investigate the personalization paradox where both perceived benefits and risks existed so that users need to achieve a balance among these factors to make decisions. Hence, considering the benefit-cost trade-off nature of the personalization paradox context, we focus on the rational choice perspective rather than the other perspectives such as the impulsive one.

Therefore, based on rational choice theory, our study intends to investigate the personalization paradox considering rational choice factors such as benefit and risk perceptions. Our major dependent variable *Consumer Reactance* is related to an individual negative response towards OPA. Extant literature has confirmed that users' initial beliefs can be predicted by their decisions (Sharot et al., 2010). As such, because of the final responses to OPA as consumer reactance, users may form their initial beliefs towards OPA from a negative-effect perspective by interpreting them as a perceived concern, risky nodes, or unfavorable expectations (Liu et al., 2014; Samba et al., 2018). Prior studies have attempted to examine the rational choice factors from a negative-effect perspective. For example, Bulgurcu et al. (2010) proposed a rational choice framework in terms of two conflict courses (e.g., non-compliance and compliance with information security policy) and empirically verified the competing influences of beneficial and risk factors, including perceived costs of non-compliance and compliance (Bulgurcu et al., 2010). The perceived costs of non-compliance were the overall expected unfavorable consequences from non-compliance with information security policy. They were related to beneficial factors of compliance with ISP from a negative-effect perspective. The perceived costs of compliance were the overall expected unfavorable consequences from compliance. They were associated with the risk factors of compliance.

Thus, we intend to investigate the effects of the rational choice factors of the personalization paradox from a negative-effect perspective on consumer reactance. Following the studies of Bulgurcu et al. (2010), we posit that the rational choice factors from a negative-effect perspective consist of two key distinct beliefs: the perceived costs of non-personalization and the perceived risks of OPA. The former is defined as the cost (i.e., money, time) of online shopping without the support of OPA, which means the beneficial factors of the usage of personalization from a negative-effect perspective. The latter is related to the expectations of unfavorable consequences of OPA, implying the risk factors of the usage of personalization.

More specifically, we focus on two main unfavorable consequences, the privacy concerns and opportunity cost. Privacy concerns refer to the potential loss of control over personal information when released to a firm (Featherman & Pavlou, 2003; Xu et al., 2011). They were considered as the major risks negatively influencing individual attitude or behavior intention in the personalization paradox context (Aguirre et al., 2015; Karwatzki et al., 2017). Opportunity cost occurs when consumers have unlimited wants but limited resources so that they may satisfy one want while not satisfying another (Spiller, 2011). Accordingly, the opportunity cost is triggered by the limited access to various resources. In the personalization context, the "free" access to information is increasingly controlled by the personalized service through the determination of what users see (Newell & Marabelli, 2015). For example, Facebook reportedly reviewed which links users clicked more on and edited these links out while the other links disappeared (Pariser, 2011). In our paper, OPA offers customized products for users based on their previous browsing and purchase activities. Users may only access similar product information they have already been familiar with while the alternative offerings are hidden by OPA. Therefore, OPA may limit users' options or inhibit their capacities to make informed decisions regarding not only purchases but attitudes (Newell & Marabelli, 2015). Thus, we consider the opportunity cost as a kind of risk perceptions which may bring some negative outcomes for users (Bauer, 1960). It is defined as the risk of the potential information constraints in the usage of OPA which cause users' loss of the opportunities to see alternative information.

Prior studies have considered individual rational decision-making as an affection-motivated process (Slovic et al., 2004). The relationships among rational choice factors related to a given behaviour depend on the strength of positive or negative affections associated with it (Alhakami & Slovic, 1994). As such, individual judgments of benefits and risks are determined by the affective evaluations of the stimulus

item towards the behaviour (Finucane et al., 2000). Previous studies have shown that various affections (e.g., anger or jealousy) influenced individual assessments of certain benefits and risks (McCarthy, 2002).

2.3. Affective factors: ownership and vulnerability

Affection refers to individual moods, emotions, and other mental states which swiftly and intuitively impact an individual's cognitive process (Aguirre et al., 2015; Kordzadeh et al., 2016; Zajonc, 1980). Individuals first respond to a new environment in the form of affection (Ittelson, 1973). They believe their affections render "correct" judgments, especially in any situation where their cognitive processing abilities are limited (Avnet et al., 2012). Following Aguirre et al. (2015), our study intends to examine the roles of affective factors such as ownership and vulnerability in the individual decision-making process.

Users may experience the affective factor of ownership when OPA's dominant features indicate that a service is tailored directly to them (Aguirre et al., 2015). Ownership is related to an affective state in which individuals feel as though certain external targets are theirs (Dawkins et al., 2017; Pierce et al., 2003). It occurs when individuals believe that the target makes possible desirable outcomes and that they intimately know the target and have a chance to identify themselves in relation to the target (Avey et al., 2009; Pirkkalainen et al., 2018). Users then may perceive a right to gain information about the target and take control over it (Aguirre et al., 2015). Recent studies supported the notion that ownership was a prominent feeling influencing personal attitude and behavior in the personalization context (Table 1) (Aaron Gabisch & Milne, 2014; Aguirre et al., 2015; Jussila et al., 2015; Lee & Chen, 2011).

In the OPA context, OPA enables a variety of activities which users may value, such as personalized product recommendations, specific consumption incentives, and process gratification (Sutanto et al., 2013). Thus, individuals may experience a sense of ownership for OPA because the service facilitates them find positive and desirable outcomes. Besides, OPA has become an expression of uniqueness enabling users to convey individuality by distinguishing the appearance of the service. It has been also suggested that ownership plays a significant part in social interaction. In this respect, OPA serves as a gateway to a form of technology-mediated communication between users and sellers. Hence, people may develop strong psychological attachments to OPA, which provide them with a sense of self and facilitate their social interaction (Anderson and Agarwal, 2010; Pierce et al., 2003). Ownership differs from other affective factors (e.g., love and joy). Love is a type of interpersonal emotion so that it is not suitable for consideration as belonging to the effective reactions to a personalized service (Li et al., 2011). Joy refers to the basic emotional state of pleasure but cannot highlight the influence of the personalized feature of OPA. Consumers may experience self-identification with the tailored products offered by OPA. However, compared with OPA, those tailored products may enable fewer activities which produce desirable outcomes such as process gratification. It may also exert a less significant impact on social interaction than OPA does. Therefore, we intend to investigate the ownership of OPA rather than the proposed product offered by OPA.

When lack of a sense of control over the service or feeling threat to their self-concept, consumers may experience the affection of vulnerability. Vulnerability pertains to a negative emotional state in which an individual feels powerless within the given situation (Malhotra et al., 2004). Consumers may experience vulnerability if online services make them feel exploited and even that their safety and well-being are exposed to risk (Andreasen et al., 1994; Zhao et al., 2017). Recent studies have highlighted the need for investigating consumers' vulnerability in the personalization context (Table 1) (Aguirre et al., 2015; Bleier & Eisenbeiss, 2015; Boerman et al., 2017; Kalaignanam et al., 2018). In the OPA context, information tailored to users may make them feel exploited or as though they are lacking control of their personal

Table 1
Literature review of ownership and vulnerability in the personalization context.

Study	Context	Targeted affection	Method	Key Findings
Aguirre et al. (2015)	Online personalized advertising	Ownership; vulnerability	Questionnaire survey and regression analyses	Results suggest that (1) Consumers' ownership is considered as a main affective feeling associated with the personalized service through the interviews. (2) Vulnerability occurs when online personalized advertising undertakes covert information collection strategies and may decrease consumers' click-through intentions
Jussila et al. (2015)	Personalized space	Ownership	Literature review	Findings suggest that individual feeling of ownership is associated with the personalization of space.
Aaron Gabisch and Milne (2014)	Online personalized service	Information ownership	Online scenario-based experiments	Results suggest that when compensated monetarily for their information, consumers are more likely to give the ownership of their data to online personalization services.
Lee and Chen (2011)	Virtual personalized service	Ownership	Questionnaire survey and structural equation modelling	Personalized space may induce strong consumers' ownership and attract them to spend more time, participate in more activities and revisit the space.
Kalaignanam et al. (2018)	Online personalized service	Vulnerability	Questionnaire survey and structural equation modeling	Findings suggest that reducing consumers' vulnerability is important to the creation of shareholder value for the online personalization providers.
Boerman et al. (2017)	Online personalized advertising	Vulnerability	Framework development	Findings suggest that individual vulnerability may be triggered in the personalized advertising context and consequently results in lower intentions to click and use the service.
Bleier and Eisenbeiss (2015)	Online personalized advertising	Vulnerability	Questionnaire survey and structural equation modeling	In the online personalized advertising context, a loss of control due to a privacy intrusion may reflect consumers' vulnerability to the service and enhance their privacy concerns.

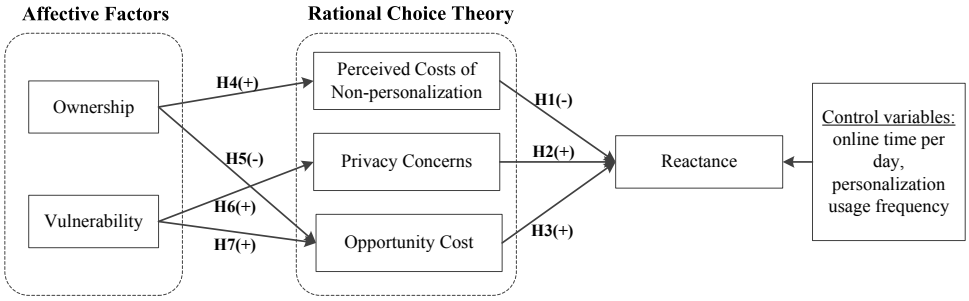

Fig. 1. The conceptual model.

information. Vulnerability may occur because users instantly realize their personal data are being collected by OPA (Aguirre et al., 2015). Other affective factors, such as sadness and fear, may not be prominent in the personalization context. For example, sadness often occurs when one has received some negative outcomes such as unpleasant or failed service or product (Li et al., 2011). However, this affection may be less common regarding the risk of information exposure. Fear refers to an emotional state of anxiety, which is the expectation of future health threat (Chorpita & Barlow, 1998). It may not be a current threat in the OPA context. Therefore, vulnerability may be more prominent than other affective factors (e.g., sadness and fear) involved in the OPA context.

3. Research model and hypotheses

Fig. 1 shows a conceptual model of the antecedents of consumer reactance based on the above literature review. We hypothesize that 1) rational choice factors have salient effects on consumer reactance towards OPA and 2) that affective factors jointly influence the rational choice factors.

3.1. Rational choice factors on consumer reactance towards online personalized advertising

In this study, we propose that rational choice factors from a negative-effect perspective, such as the perceived costs of non-personalization, privacy concerns, and opportunity cost, are associated with the consumer reactance towards OPA.

Rational choice theory suggests that an individual tends to favor a behavior believed to have desirable consequences and not to favor those with undesirable consequences (Bulgurcu et al., 2010; Li et al., 2017). Accordingly, if an individual perceives the disadvantages from not performing the behavior, a favorable attitude toward the behavior will be developed. Hence, the perceived costs of not performing the behavior provide users with incentives for a positive psychological response to the behavior. These findings are in line with the prior studies in the information security context. It suggested that the compliance behavior was suggested to be positively influenced by the reaction to the non-compliance behavior captured as a risk perception, such as organizational policy and personal damage (Tyler & Blader, 2005). Further, in the online social network context, the more costly not performing privacy control in terms of privacy risk and resource vulnerability, the more likely it is that individuals will use privacy control (Taneja et al., 2014).

In the OPA context, the service provides users with personalized product recommendations, specific consumption incentives and process gratification (Sutanto et al., 2013). Without the support of OPA, individuals may be overloaded with irrelevant information and time costs in attempting to make purchasing decisions in the non-personalization context (Ansari & Mela, 2003). We expect that consumers will experience less reactance when they believe that non-personalization will result in time and effort cost. Hence,

H1. *The perceived costs of non-personalization will have a negative effect on consumer reactance towards online personalized advertising.*

In addition to the effects of the perceived costs of non-personalization, privacy concerns are positively related to individual negative psychological response (Sutanto et al., 2013). Individuals experience privacy concerns in regards to the collection, control, and awareness of their personal information (Hossain & Dwivedi, 2014; Xu et al., 2011). Based on information boundary theory, an attempt to cross the boundary of personal information (e.g., when a marketer collects a consumer profile) may make users feel uncomfortable (Daniel, 2006). Hence, privacy concerns may result in an individual psychologically uncomfortable state because of the concern of losing control of personal information. This finding is in line with the prior studies. For example, prior studies have shown that privacy concerns have become key factors in triggering a lower level of users' acceptability and high level of reactance (Lee & Rha, 2016; Nam, 2018). In the personalization context, OPA relies on large amounts of individual personal data to provide targeted and convenient services. Consumers' personal information may be lost in an unethical or deliberate way by the OPA providers (Connon, 2002; Wang et al., 2016). We expect that privacy concerns lead to individual reactance towards OPA. Hence,

H2. *Privacy concerns will have a positive effect on consumer reactance towards online personalized advertising.*

Opportunity cost is proposed as another enabler of consumer reactance in the OPA context. In tailoring certain offerings per individual personal interests, OPA may limit the options available to users or inhibit their capacity to make informed decisions regarding not only purchases, but attitudes (Newell & Marabelli, 2015). Drawing on the rational choice theory, users' negative beliefs about the assessments of the consequences will negatively influence individual psychological response towards a particular behaviour. Thus, opportunity cost may result in user negative response towards OPA. As such, opportunity cost is a key factor triggering consumer reactance when alternative services are hidden from the consumer due to OPA. Indeed, it has been suggested that a narrow personalization breadth may cause consumer reactance due to only a subset of relevant information (Aguirre et al., 2015). In the OPA context, the more opportunity cost consumers experience, the more their reactance of those services may be motivated. Hence,

H3. *Opportunity cost will have a positive effect on consumer reactance of online personalized advertising.*

3.2. Affective factors on rational choice factors

In this study, we suggest that affective factors such as ownership and vulnerability are associated with individual rational choice factors in the OPA context.

Ownership may involve individual positive beliefs on the targets through the feeling of possession (Pierce et al., 2001). Cognitive dissonance theory suggests that users may refuse information which is

inconsistent with their beliefs while seek other evidence to support their beliefs (Festinger et al., 2008). As such, individuals with a sense of ownership may seek positive information to confirm the feeling of ownership (Clore & Gasper, 2000). Hence, ownership may promote individual benefit perceptions. Indeed, it has been suggested that individual ownership is positively connected to beneficial expectations towards the "owned" target (Pierce et al., 2001). In the OPA context, we expect that ownership of OPA is associated with the positive evaluations of OPA. As such, individuals with a high level of ownership of OPA may perceive more costs of non-personalization. Hence,

H4. *Ownership will have a positive effect on the perceived costs of the non-personalization.*

Psychological ownership theory suggested that individuals who feel ownership from the objects may have strong intentions to advance the targets of ownership (Jussila et al., 2015). They may be concerned with accomplishments and aspirations, and willing to display transformational behaviors (Kark & Van Dijk, 2007). Hence, ownership is a major promoter of the openness to change. It specifically encourages people to exchange currently or previously possessed objects (Ford & Staples, 2010). Indeed, it has been well established that ownership may make users share their owned targets with those of others to protect the existing competitive advantage. Similarly, in the organizational behavior context, the ownership of knowledge could increase individual knowledge sharing intention (Pirkkalainen et al., 2018). It is noteworthy that OPA can produce such a sense of ownership that can make users willing to exchange the owned personalized services with alternative ones. As such, users may have the opportunities to see alternative offerings. We expect that ownership is the starting point of a lower opportunity cost associated with potential information constraints in the usage of OPA. Hence,

H5. *Ownership will have a negative effect on the opportunity cost.*

Besides the effects of ownership, vulnerability may be another major affection in influencing rational choice factors. Recent research has confirmed that vulnerability is a negative affective consequence of information disclosure (Raab, 1998). The negative outcome of information disclosure may trigger more individual privacy invasion than the positive one (Fusilier & Hoyer, 1980). Hence, vulnerability is a major antecedent of privacy concerns when personal information is revealed. Indeed, studies have shown that perceived vulnerability is significantly associated with individual privacy concerns (Dinev & Hart, 2004; Petronio, 2012). In the OPA context, consumers may feel vulnerable when the tailored information makes them feel exploited and invasive (Aguirre et al., 2015; Baker, Gentry, & Rittenburg, 2005). As such, individual privacy concerns may be triggered by vulnerability. That is, users with a high level of vulnerability may perceive more privacy concerns. Hence,

H6. *Vulnerability will have a positive effect on privacy concerns.*

Recent research also indicates that vulnerability is so undesirable that consumers tend to avoid objects associated with such feeling (Aguirre et al., 2015). Thus, vulnerability may result in the avoidance of the target service. From the social capital perspective, "loose ties" in the social interaction with the service may reduce information diversity. Some advertisements of alternative service offerings on the same platform may also produce vulnerability and likewise be deemed unacceptable by the consumers. As such, individuals may have limited access to various information by foregoing the relevant information of alternative service offerings (Newell & Marabelli, 2015). Applying this logic here, we propose that in the OPA context, users who hold strong vulnerability affection would perceive more opportunity cost. Hence,

H7. *Vulnerability will have a positive effect on the opportunity cost.*

4. Research method and data

4.1. Instrument development

The measures for the study's principal constructs such as consumer reactance, privacy concerns, ownership, and vulnerability were primarily adapted from validated instruments, but they were reworded to fit our context. Consumer reactance (four items) was adapted from Bleier and Eisenbeiss (2015). Privacy concerns (three items) were measured using the instrument suggested by Xu et al. (2011). Ownership (four items) was adapted from Anderson and Agarwal (2010), whereas the items for vulnerability (three items) were adapted from Aguirre et al. (2015). According to the construct of "The perceived costs of non-compliance" proposed by Bulgurcu et al. (2010), we self-developed the scales for the perceived costs of non-personalization (three items). We also develop the scales for the opportunity cost (three items) in line with recent research of Newell and Marabelli (2015). The construct definations are seen in Appendix A.

Two control variables that may affect reactance were added to fully account for the differences among the participants: online time per day and personalization usage frequency. First, online time per day indicates consumers' usage of Internet per day. Because online personalized advertising involves Internet usage, the lack of Internet usage may impede individuals from engaging in OPA (Chiu & Huang, 2015). Hence, online time per day is proposed as a control variable on consumer reactance. Second, personalization usage frequency refers to the times individuals use OPA per day, per week and per month. It is related to users' experiences of using online personalized service (Neufeld et al., 2007). Individual experience with online service has been shown to have a positive impact on their attitude towards the service (Gefen et al., 2003). Besides, prior research in the online service context has examined consumers' online usage per week and per month (Baird & Raghu, 2015; Benlian, 2015). Hence, individuals who use OPA more frequently per day, per week, and per month in each month will experience less reactance.

4.2. Data collection

We commissioned a professional market research firm in China via an online survey. This company is one of the leaders in the market research area which can provide required samples from its panel to take part in various research projects. The panel has over 2.6 million members chosen through strict recruiting methods. Since this approach has been widely conducted in IS survey research (Beaudry & Pinsonneault, 2010; Khansa et al., 2017), it is helpful in obtaining the data from a wide range of participants objectively.

The survey was targeted at users familiar with online personalized advertising service such as the "Guess what you like" from Tmall, which is one of the biggest online marketplaces in China. "Guess what you like" recommends new products to consumers based on their recent purchases. Upon establishing their familiarities with the service, users were asked to complete a questionnaire based on their own experiences and perceptions. Participation in the survey was voluntary and anonymous, and bonus rewards were provided at the end of the survey by lottery.

We initially recruited 60 students from a local university to evaluate the measurement items. All participants were familiar with OPA. Since some items were self-developed, we conducted exploratory factor analysis (EFA) using SPSS to test the reliability and validity of the constructs. All the item loadings were above 0.7 and there was no cross-loading of items above 0.4 (Yang et al., 2005). Cronbach's alpha of each construct ranged from 0.832 to 0.909, indicating high internal consistency. Thus, the results of this pilot test suggested satisfactory reliability and validity.

Data collection were conducted from November 4, 2015 to November 26, 2015. A total of 308 individuals were recruited for the

Table 2
Respondent demographics.

Demographic variables	Category	Count (percent)
Gender	Female	109 (38.8%)
	Male	172 (61.2%)
Age	15–25	128 (45.6%)
	25–35	144 (51.2%)
	35 and over	9 (3.2%)
Online time per day (OTD)	1 h and below	16 (5.7%)
	1–5 h	206 (73.3%)
	5–10 h	42 (14.9%)
	10 h and over	17 (6.0%)
Personalization usage frequency (PUF)	Several times each day	31 (11.0%)
	Once to twice per day	58 (20.6%)
	Once to twice each week	79 (28.1%)
	Once to twice each month	61 (21.7%)
	Other	52 (18.5%)

study. Of these, 15 were deleted because they provided answers unreasonably rapidly. Another 12 samples were eliminated due to missing data. Finally, a total of 281 valid responses were received. Specific demographic information of participants is given in Table 2.

5. Data analysis and results

We used partial least square (PLS) to analyze the data. PLS is well-suited to our study because it employs a component-based approach with less restriction on sample size and residual distributions (Pavlou et al., 2006). Thus, the relationships among the constructs in our research model were tested using SmartPLS (2.0).

5.1. Measurement model analysis

We evaluated the measurement model per the convergent validity and discriminant validity of the research instrument. Convergent validity was tested in three steps. First, the composite reliability for each construct was ensured to be greater than 0.8 (Fornell & Larcker, 1981) and the Cronbach's alpha value was greater than 0.7 (Table 3) (Nunally & Bernstein, 1978). Second, all item factor loadings exceeded 0.84 (Table 4) (Fornell & Larcker, 1981). Third, the average variances extracted for the constructs were above 50% (or the square root of AVE > 0.707) (Fornell & Larcker, 1981).

To ensure the discriminant validity of constructs, the square root of the variance between a construct and its measures should be greater than the correlations between the construct and any other construct in the research model. We found that all items in our construct met the requirement for discriminant validity (Table 3).

We used several procedures to test for common method bias. First, Harman's one-factor test was employed based on an un-rotated exploratory factor analysis (Podsakoff & Organ, 1986). This produced five components that explained 77% of the variance, and the largest one captured only 34% of the variance, which is below the threshold of 40%. Second, UMLC analysis was followed by Liang, Saraf, Hu, and Xue, (2007). The results in Table B1 suggested that the average substantively variance explained by the indicators was 0.807, whereas the average method-based variance as 0.004. The ratio of substantive variance was 201.75. All expected loadings were notably larger than the loadings with the method factor (the lowest difference was 0.554 for the process indicator) and most of the method factor loadings were not significant. Taken together, both methods indicated that common method bias was not a serious concern in our study.

5.2. Structural model

5.2.1. Impact of affective and rational choice factors on reactance

We tested our hypotheses by examining the significance of the path coefficients via bootstrapping resampling (with 500 samples) (Fig. 2). The model without control variables explained 31.9% variance of reactance, while the model with control variables explained 32.0%. All the control variables showed non-significant effects.

As shown in Fig. 2, the perceived costs of non-personalization have strong negative influences on reactance ($\beta = -0.166$, $P < 0.05$). The positive impact of privacy concerns on reactance is significant ($\beta = 0.341$, $P < 0.001$). Opportunity cost also has a positive effect on consumer reactance ($\beta = 0.262$, $P < 0.001$).

Ownership and vulnerability were found to account for a substantial 21.0%, 31.9%, and 19.1% variance of the perceived costs of non-personalization, privacy concerns, and opportunity cost, respectively. As shown in Fig. 2, ownership is positively associated with the perceived costs of non-personalization ($\beta = 0.458$, $P < 0.001$) and opportunity cost ($\beta = 0.231$, $P < 0.01$). Vulnerability is positively related to both privacy concerns ($\beta = 0.565$, $P < 0.001$) and opportunity cost ($\beta = 0.367$, $P < 0.001$).

5.2.2. Mediation analysis

Consistent with prior studies (Baron & Kenny, 1986; Hu et al., 2012), the mediating roles of rational choice factors (RCF) such as the cost of non-personalization (NPC), privacy concerns (PCO), and opportunity cost (OC) were tested based on the three regression models (Table B2). As shown in Table B2, only vulnerability (VA) has a significant impact on consumer reactance (REA) at the $p < 0.001$ level in Model 2. This indicates that the direct effect of ownership (OA) on REA is not strong to begin with. In Model 3, OA and VA have less impact on REA when the mediators (NPC, PCO, and OC) are controlled. Thus, the results confirmed the mediation roles of rational choice factors.

In addition, the relative sizes of the mediating effects of RCF (e.g. full or partial mediation) were indicated by the value of variance accounted for (VAF). It was analysed based on a bootstrapping method (Table B3) (Hair Jr et al., 2016). We donated the path from the independent variable to the mediator as a, and the path from the mediator to the dependent variable as b (Wang et al., 2014). Indirect effect was calculated by a and b path coefficients with the significance confirmed by Sobel (1982) (Sobel, 1982). The results in Table B3 suggest that PCO and OC partially mediate the effect of VA. NPC partially mediates the effect of OA on REA and the mediation effect of OC meets the requirement of full mediation.

Table 3
Reliability, correlation coefficients and AVE results.

	Composite reliability	Cronbach's alpha	Average Variance Extracted	OA	VA	NPC	PCO	OC	REA
OA	0.913	0.857	0.779	0.883					
VA	0.942	0.908	0.845	0.020	0.919				
NPC	0.956	0.930	0.878	0.458	−0.059	0.937			
PCO	0.953	0.926	0.870	0.083	0.565	−0.086	0.933		
OC	0.908	0.848	0.766	0.238	0.371	0.0844	0.598	0.875	
REA	0.945	0.923	0.812	−0.045	0.511	−0.171	0.451	0.509	0.901

Table 4
Item loadings and cross-loadings.

Indicator	OA	VA	NPC	PCO	OC	REA
OA1	0.848	0.029	0.359	0.133	0.280	-0.081
OA2	0.918	-0.005	0.416	0.044	0.191	-0.043
OA3	0.880	0.027	0.436	0.042	0.162	0.004
VA1	0.070	0.893	-0.002	0.457	0.318	0.431
VA2	0.020	0.928	-0.079	0.537	0.343	0.503
VA3	-0.028	0.937	-0.074	0.556	0.360	0.471
NPC1	0.406	-0.002	0.924	-0.072	0.111	-0.150
NPC2	0.443	-0.043	0.948	-0.052	0.092	-0.147
NPC3	0.437	-0.116	0.939	-0.116	0.037	-0.183
PCO1	0.070	0.560	-0.077	0.940	0.545	0.508
PCO2	0.049	0.508	-0.102	0.937	0.583	0.460
PCO3	0.113	0.509	-0.061	0.922	0.547	0.453
OC1	0.266	0.394	0.079	0.546	0.865	0.408
OC2	0.174	0.276	0.098	0.522	0.895	0.371
OC3	0.172	0.287	0.045	0.495	0.866	0.400
REA1	-0.013	0.492	-0.135	0.537	0.483	0.916
REA2	-0.063	0.439	-0.189	0.440	0.416	0.909
REA3	-0.034	0.431	-0.161	0.419	0.355	0.889
REA4	-0.057	0.475	-0.133	0.421	0.352	0.889

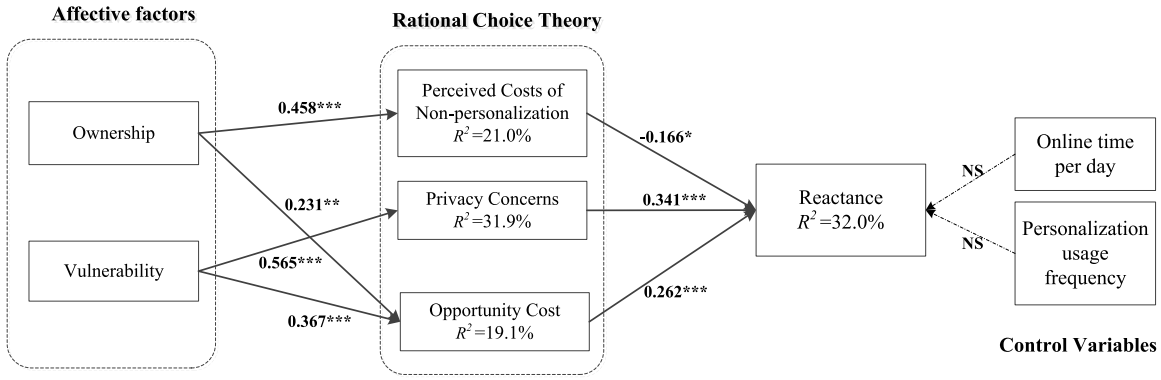

Fig. 2. PLS analysis results.

6. Discussion

6.1. Discussion of the findings

In this study, we sought to understand 1) three broad classes of rational choice factors in the personalization paradox context and their roles in consumer reactance towards OPA, and 2) how those rational choice factors may be influenced by affective factors. Based on data collected from 281 individuals who were familiar with OPA (e.g., Tmall's "Guess what you like"), most of the proposed hypotheses were supported.

Our findings highlight the important effects of rational choice factors in the personalization paradox context on consumer reactance. We found that the perceived costs of non-personalization have negative impacts on consumer reactance, while privacy concerns and opportunity cost may result in reactance. This is in line with the extant research on the personalization-privacy paradox (Sutanto et al., 2013). Perceived benefits may contribute to individual positive response, while perceived risks result in the negative one. We also found that various risk factors have almost equal influences on consumer reactance. To be specific, the path comparison method proposed by Cohen, Cohen, West, and Aiken (2013) was adopted to test the relative impacts of privacy concerns and opportunity cost on consumer reactance (Cohen et al., 2013; Li et al., 2013). The results indicated no significant difference between the effects of privacy concerns and opportunity cost on consumer reactance, suggesting that no single factor has a predominant effect on reactance. Both privacy concerns and opportunity cost should be carefully considered in regards to the personalization paradox.

Contrary to our expectations, ownership was positively associated with the opportunity cost. One plausible explanation for this positive influence is the "endowment effect", suggesting that a loss from giving an object away is greater than the gain from receiving an alternative offering (Kahneman et al., 1990). As such, from a loss-aversion perspective, ownership may motivate users to keep the object and make them reluctant to trade it for an alternative (Paolacci et al., 2011). In our study, the ownership of OPA may make users willing to keep the owned personalized offerings, which lead to a loss of the opportunities to see the alternative offerings. This positive effect of ownership is consistent with the results of other research in the extant literature. For example, ownership made consumers focus more on the negative aspects of alternative objects, resulting in their intentions to reject these objects and keep the already owned ones (Florack et al., 2014).

Our results also indicate that rational choice factors play significant roles in our research model by either partially or fully mediating the impacts of affections. Our mediation analysis suggested that the impact of ownership on consumer reactance was fully mediated by opportunity cost, while the impacts of ownership and vulnerability were partially mediated by the perceived costs of non-personalization, privacy concerns and opportunity cost, respectively. This finding is consistent with the prior literature. For example, the effects of specific emotions on individual behavior intention to the Website may be mediated by his or her general perceptions of the site (Li et al., 2011).

6.2. Theoretical implications

This study attempts to contribute to the literature on personalization in several ways. First, we seek to understand users' negative responses in the context of the personalization paradox by investigating consumer reactance. Previous studies have mostly centered around positive responses such as the willingness to disclose information or adopt personalized services (Karwatzki et al., 2017; Xu et al., 2011). However, consumers tend to hold negative responses to targeted advertisements (Turow et al., 2009). Although recent research suggested that some OPA might trigger reactance (Aguirre et al., 2015), little was known about the influence mechanism through which these services create consumer reactance. In this paper, we propose a theoretical model to investigate consumer reactance towards OPA and discuss how this reactance is affected by rational choice factors and individual affective factors.

Second, this study contributes to the bodies of literature on examining the personalization paradox from a negative-effect perspective. Prior studies mainly considered the personalization paradox as a tension between benefit and risk factors and their influences on individual positive responses. However, there is lack of investigating the personalization paradox from a negative-effect perspective in the individual negative response context. Our major dependent variable *Consumer reactance* is related to an individual negative response towards OPA. This negative response is suggested to predict users' initial beliefs from a negative-effect perspective (Sharot et al., 2010). Based on rational choice theory, our study develops a new scheme of rational choice factors of the personalization paradox from a negative-effect perspective. In particular, we propose the benefit factors from a negative-effect perspective based on the work of Bulgurcu et al. (2010). They are defined as the perceived costs of non-personalization to interpret the potential benefits users may perceive in the usage of OPA from a negative-effect perspective.

Third, this study empirically unpacks and validates an updated conceptualization of the personalization paradox (perceived costs of non-personalization, privacy concerns and opportunity cost). Existing literature, in exploring the personalization paradox, has mainly focused on the tension between consumers' values in receiving customized applications and growing concerns about information privacy but ignored other related risks. Personalization services were confirmed to have strong negative effects on individual possibility of choice and their capacities to make informed decisions (Newell & Marabelli, 2015). Based on rational choice theory, we extend the previous personalization paradox concept to include the potential risk of opportunity cost. Our results suggest that opportunity cost may play the same important role as privacy concerns in consumer reactance. Both of them may needed to be considered in the definition of the personalization paradox.

Fourth, we find that individual decision-making is indeed impacted by affections. Extant IS adoption literature suggests that users often make rational decisions regarding technological services but pay little attention to the influence of affective factors on their cognitive processes (Bleier & Eisenbeiss, 2015; Braun & Moe, 2013). In this study, we seek theoretical support for the roles of two affective factors – ownership and vulnerability – in individual rational choice process. Our results suggest that vulnerability is a significant factor in risk perceptions, while ownership has significant influences on both benefit and risk perceptions. In particular, the effect of ownership on benefit perceptions (e.g., the perceived costs of non-personalization) is greater than that on the risk one (e.g., opportunity cost) ($\beta_{\text{perceived costs of personalization}} = 0.458^{***} > \beta_{\text{opportunity cost}} = 0.231^{**}$). The finding of ownership raises an interesting question that warrants future research. Ownership can be seen as both promotion and prevention of the alternative offerings. Prior research provided initial evidence for such finding. For example, Avey et al. (2009) found that individuals holding promotive psychological ownership may share his owns and look for others' information, while those with the preventative one may carefully monitor and withhold information from others.

Finally, this study demonstrates that affective factors have strong indirect effects on consumer reactance through the mediation of individual rational choice factors. Previous studies predicted the significant influences of positive and negative affections on individual response to the usage of online service. For instance, ownership contributes to user positive response (Pirkkalainen et al., 2018), while vulnerability is positively related to a negative response (Aguirre et al., 2015; Zhao et al., 2017). We found that affective factors, however, are more inclined to indirectly influence individual responses in terms of the mediating effects of rational choice factors. Our findings provide new insight into the complex interrelationships among affective factors, rational choice factors, and consumer reactance in the mediation model.

6.3. Practical implications

OPA providers may use our results as a reference to effectively improve their performance. Firstly, services may be more effective when tailored to users' negative responses (e.g., reactance) rather than only their positive ones. Since consumer reactance is significantly influenced by rational choice factors, the providers should pinpoint several benefit and risk considerations. For example, they may improve their tailoring abilities to fulfill various service demands to reduce reactance. They also may consider privacy assurances to decrease individual privacy concerns. Alternative service offerings should be advertised appropriately to reduce consumers' perceived opportunity cost.

Our results also may lend recommendations in terms of consumers' affective factors based on the content of online platforms. Affective factors may directly influence individual rational choice factors and indirectly influence consumer reactance. To be specific, ownership has a more significant impact on benefit perceptions (e.g., perceived costs of non-personalization) than risk (e.g., opportunity cost), while vulnerability is correlated to users' risk perceptions. Providers should work to enhance the positive affection of ownership and minimize the negative affection of vulnerability. For instance, they should increase the targeted features of OPA to promote users feelings of ownership and engage in overt rather than covert data collection to minimize vulnerability (Aguirre et al., 2015).

6.4. Limitations and future research

Several limitations of our study need to be mentioned. We preliminarily explored consumer reactance towards OPA, but it is important to study how individual reactance towards OPA affects final purchasing behavior (Aguirre et al., 2015). Future research can examine how such reactance influences individual click-through intentions. Besides, we examined a subset of individual affections related to the features of online personalized platforms and their effects on individual benefit and risk perceptions. We did not intend to include an exhaustive list of feature factors, but rather focused on the most pertinent ones. Future research needs to better elucidate the effects of the personalization paradox on individual decision-making by exploring the roles of other affective factors (e.g., joy) or other features of the platforms (e.g., legislative privacy policies and guarantees). It is

possible that legislative privacy policies are more effective than guarantees in mitigating privacy concerns. Moreover, we focused on three main rational choice factors, including the perceived costs of non-personalization, privacy concerns, and opportunity cost. There may be other rational choice factors such as financial risk (Newell & Marabelli, 2015). Thus, additional efforts to determine the effects of these factors are required in future studies. Finally, the impulsive behavior is suggested to be another important issue in the personalization context which is different from the rational choice behavior in our study (Ertimur & Sandıkcı, 2014). Future studies can investigate the impulsive behavior in the personalization context.

7. Conclusion

This study attempts to extend our knowledge about consumer reactance towards online personalized advertising. Drawing on the rational choice theory, we identify rational choice factors in the personalization paradox context from a negative-effect perceptive and examine their impacts on reactance, with consideration of affective factors (ownership and vulnerability). The results confirm that individual rational choice factors are dominant determinants of consumer reactance towards OPA and affective factors can significantly influence these rational choice factors. We also find that the impacts of affective factors on consumer reactance are mediated by individual rational choice factors. We hope the results presented here provide a new perspective on the paradox phenomenon and offer OPA providers new approaches for improving their performance.

Acknowledgments

This work was supported by the National Natural Science Foundation of China [grant numbers #71472053, #71429001, #91646105, #71771064]; the Ph.D. Programs Foundation of Ministry of Education of China [grant number #20132302110017]; and the Postdoctoral Science Foundation of China [grant numbers #2014M550198, 2015T80363].

Appendix A. Constructs and Measurement Items

Construct	Source	Definition (Reference)	Measurement Items
Ownership affection (OA)	Adjusted from Anderson and Agarwal (2010)	The consumer feels as though the service belongs to them when OPA's dominant features indicate that the service is personalized	1. The online personalized service on Tmall is my own service. 2. I sense that the online personalized service on Tmall is mine. 3. I feel a high degree of personal ownership for the online personalized service on Tmall.
Vulnerability affection (VA)	Adjusted from Aguirre et al. (2015)	The individual feels lack of control over the situation and experiences a state of powerlessness when using OPA	1. OPA on Tmall makes me feel exposed. 2. OPA on Tmall makes me feel unprotected. 3. OPA on Tmall makes me feel unsafe.
Perceived costs of the non-personalization (NPC)	Self-developed	The perceived costs or sacrifices of online shopping without the support of OPA	1. I believe that without the support of OPA on Tmall, online shopping on Tmall would be time-consuming for me. 2. I believe that without the support of OPA on Tmall, online shopping on Tmall would be burdensome to me. 3. I believe that without the support of OPA on Tmall, online shopping on Tmall would create disadvantages for me.
Privacy concerns (PCO)	Adjusted from Xu et al. (2011)	The potential loss of control over personal information when released to a firm	1. I am concerned that the information I submit to Tmall could be misused. 2. I am concerned that others can find private information about me from Tmall. 3. I am concerned about providing personal information to Tmall because it could be used in a way I did not foresee.
Opportunity cost (OC)	Self-developed	The risk of the potential information constrains in the usage of OPA which cause their loss of the opportunity to see alternative information	1. When using OPA on Tmall, I am concerned that Tmall is determining what I see so that I would not be able to access alternative information. 2. When using OPA on Tmall, I am concerned that OPA offered by Tmall only presents what I seem to like so that I cannot see alternative information later. 3. When using OPA on Tmall, I am concerned that OPA offered by Tmall may not be my preference so that I cannot see alternative information I like.
Reactance	Adjusted from Bleier and Eisenbeiss (2015)	A negative psychological response that impels the consumers to perform against a persuasion attempt to OPA	1. The usage of OPA on Tmall is forced upon me. 2. The usage of OPA on Tmall is unwelcomed. 3. The usage of OPA on Tmall is interfering. 4. The usage of OPA on Tmall is intrusive.

Appendix B. Further Tables Underlining the Results

Table B1
Common method bias analysis.

Construct	Indicator	Substantive factor loading (R1)	$R1^2$	Method Factor Loading (R2)	$R2^2$
Ownership	OA1	0.842***	0.708964	0.031ns	0.000961
	OA2	0.924***	0.853776	−0.025ns	0.000400
	OA3	0.880***	0.7744	−0.003ns	0.000009
Vulnerability	VF1	0.812***	0.659344	−0.078ns	0.006084
	VF2	0.858***	0.736164	0.048ns	0.002304
	VF3	0.870***	0.7569	0.026ns	0.000676
Perceived costs of the non-personalization	NPC1	0.931***	0.866761	0.029ns	0.000841
	NPC2	0.950***	0.9025	0.023ns	0.000529
	NPC3	0.930***	0.8649	−0.051*	0.002601
Privacy concerns	PCO1	0.886***	0.784996	0.061ns	0.003721
	PCO2	0.958***	0.917764	−0.024ns	0.000576
	PCO3	0.956***	0.913936	−0.038ns	0.001444
Opportunity cost	OC1	0.754***	0.568516	0.119ns	0.014161
	OC2	0.968***	0.937024	−0.081ns	0.006561
	OC3	0.903***	0.815409	−0.033ns	0.001089
Reactance	REA-S-1	0.769***	0.591361	0.167**	0.027889
	REA-S-2	0.926***	0.857476	−0.024	0.000576
	REA-S-3	0.968***	0.937024	−0.089	0.007921
	REA-S-4	0.945***	0.893025	−0.058	0.003364
Average		–	0.807381053	–	0.004300368

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

Table B2
Testing the mediating effects of RCF on the relationships between affective factors and consumer reactance.

Category	Variables	Base model		Model 1a: Org. levers → NPC		Model 1a: Org. levers → PCO		Model 1a: Org. levers → OC		Model 2: Org. levers → REA		Model 3: RCF Variables + Org. levers → REA	
		β	t	β	t	β	t	β	t	β	t	β	t
Control variable	OTD	−0.008	0.090							−0.091	1.540	−0.077	1.555
	PUM	0.132	1.576							0.069	1.134	−0.004	0.078
RCF Variables	NPC											−0.128	1.967
	PCO											0.168	2.130
	OC											0.254	3.602
Org. levers	OA			0.458	7.363			0.235	3.427	−0.074	0.750	−0.065	1.052
	VA					0.565	11.611	0.371	5.913	0.522	9.942	0.326	5.245
R^2		0.018		0.211		0.319		0.196		0.284		0.393	

Notes: RCF: rational choice factors; OTD: online time per day; PUM: Personalization usage frequency; NPC: The perceived costs of non-personalization; PCO: privacy concerns; OC: opportunity cost; OA: ownership; VA: vulnerability; REA: consumer reactance.

Table B3
Mediation analysis results.

	Direct effect without mediation		Direct effect with mediation		a path coefficient		b path coefficient		Indirect effect		VAF	Mediation type observed
	β	t	β	t	β	t	β	t	β	t		
OA to NPC to REA	−0.072ns	0.698	−0.065 ns	1.052	0.458**	7.816	−0.128*	1.967	−0.059**	−4.106	0.473	Partial
OA to OC to REA	−0.072 ns	0.698	−0.065 ns	1.052	0.231**	3.216	0.254**	3.602	0.059**	5.424	9.833	Full
VA to PCO to REA	0.530**	10.664	0.326**	5.245	0.564**	11.443	0.168*	2.130	0.095**	4.883	0.226	Partial
VA to OC to REA	0.530**	10.664	0.326**	5.245	0.366**	5.591	0.254**	3.602	0.093**	6.720	0.222	Partial

Notes: NPC: The perceived costs of non-personalization; PCO: privacy concerns; OC: opportunity cost; OA: ownership; VA: vulnerability; REA: reactance.
VAF: Variance accounted for. VAF > 0.80: full mediation, 0.20 < VAF < 0.80: partial mediation, VAF < 0.20: no mediation. Significant at *p < 0.05, **p < 0.01; ns, not significant.

References

Aaron Gabisch, J., & Milne, G. R. (2014). The impact of compensation on information ownership and privacy control. *The Journal of Consumer Marketing, 31*(1), 13–26.

Aguirre, E., Mahr, D., Grewal, D., de Ruyter, K., & Wetzels, M. (2015). Unraveling the personalization paradox: The effect of information collection and trust-building strategies on online advertisement effectiveness. *Journal of Retailing, 91*(1), 34–49.

Alhakami, A. S., & Slovic, P. (1994). A psychological study of the inverse relationship between perceived risk and perceived benefit. *Risk Analysis, 14*(6), 1085–1096.

Anderson, C. L., & Agarwal, R. (2010). Practicing safe computing: A multimethod empirical examination of home computer user security behavioral intentions. *MIS Quarterly, 34*(3), A613–A615.

Andreasen, A. R., Cooper-Martin, E., & Smith, N. C. (1994). *Who is the vulnerable consumer? The implications for marketing and public policy of objective and subjective consumer vulnerability.* Retrieved from.

Ansari, A., & Mela, C. F. (2003). E-customization. *Journal of Marketing Research, 40*(2), 131–145.

Avey, J. B., Avolio, B. J., Crossley, C. D., & Luthans, F. (2009). Psychological ownership: Theoretical extensions, measurement and relation to work outcomes. *Journal of Organizational Behavior, 30*(2), 173–191.

Avnet, T., Pham, M. T., & Stephen, A. T. (2012). Consumers' trust in feelings as information. *The Journal of Consumer Research, 39*(4), 720–735.

Baird, A., & Raghu, T. S. (2015). Associating consumer perceived value with business models for digital services. *European Journal of Information Systems, 24*(1), 4–22.

Baker, S. M., Gentry, J. W., & Rittenburg, T. L. (2005). Building understanding of the domain of consumer vulnerability. *Journal of Macromarketing, 25*(2), 128–139.

Bandyopadhyay, S. (2011). Antecedents and consequences of consumers online privacy concerns. *Journal of Business & Economics Research (JBER), 7*(3).

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173.

Bauer, R. A. (1960). Consumer behavior as risk taking. *Dynamic marketing for a changing world, 398*.

Beaudry, A., & Pinsonneault, A. (2010). The other side of acceptance: Studying the direct and indirect effects of emotions on information technology use. *MIS Quarterly, 34*(4), 689–710.

Benlian, A. (2015). Web personalization cues and their differential effects on user assessments of website value. *Journal of Management Information Systems, 32*(1), 225–260.

Bleier, A., & Eisenbeiss, M. (2015). The importance of trust for personalized online advertising. *Journal of Retailing*.

Boerman, S. C., Kruikemeier, S., & Zuiderveen Borgesius, F. J. (2017). Online behavioral advertising: A literature review and research agenda. *Journal of Advertising, 46*(3), 363–376.

Braun, M., & Moe, W. W. (2013). Online display advertising: Modeling the effects of multiple creatives and individual impression histories. *Marketing Science, 32*(5), 753–767.

Brehm, J. W. (1989). Psychological reactance: Theory and applications. *Advances in Consumer Research, 16*(1), 72–75.

Bulgurcu, B., Cavusoglu, H., & Benbasat, I. (2010). Information security policy compliance: An empirical study of rationality-based beliefs and information security awareness. *MIS Quarterly, 34*(3), 523–548.

Chellappa, R. K., & Sin, R. G. (2005). Personalization versus privacy: An empirical examination of the online consumer's dilemma. *Information Technology and Management, 6*(2-3), 181–202.

Chiu, C. M., & Huang, H. Y. (2015). Examining the antecedents of user gratification and its effects on individuals' social network services usage: The moderating role of habit. *European Journal of Information Systems, 24*(4), 411–430.

Chorpita, B. F., & Barlow, D. H. (1998). The development of anxiety: The role of control in the early environment. *Psychological Bulletin, 124*(1), 3.

Clore, G. L., & Gasper, K. (2000). Feeling is believing: Some affective influences on belief. *Emotions and beliefs: How feelings influence thoughts,* 10–44.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2013). *Applied multiple regression/correlation analysis for the behavioral sciences.* Routledge.

Connon, D. A. (2002). The ethics of database marketing. *Information & Management, 36*(3), 42.

Daniel, J. S. (2006). A taxonomy of privacy. *University of Pennsylvania Law Review, 154*(3), 477–560.

Dawkins, S., Tian, A. W., Newman, A., & Martin, A. (2017). Psychological ownership: A review and research agenda. *Journal of Organizational Behavior, 38*(2).

Dinev, T., & Hart, P. (2004). Internet privacy concerns and their antecedents-measurement validity and a regression model. *Behaviour & Information Technology, 23*(6), 413–422.

Edwards, S. M., Li, H., & Lee, J.-H. (2002). Forced exposure and psychological reactance: Antecedents and consequences of the perceived intrusiveness of pop-up ads. *Journal of Advertising, 31*(3), 83–95.

Ertimur, B., & Sandıkcı, Ö. (2014). Alienable gifts: Uses and meanings of gold in Turkey. *Journal of Consumer Behaviour, 13*(3), 204–211.

Featherman, M. S., & Pavlou, P. A. (2003). Predicting e-services adoption: A perceived risk facets perspective. *International Journal of Human-computer Studies, 59*(4), 451–474.

Festinger, L., Riecken, H. W., & Schachter, S. (2008). *When prophecy fails.* Pinter & Martin Publishers.

Finucane, M. L., Alhakami, A., Slovic, P., & Johnson, S. M. (2000). The affect heuristic in judgments of risks and benefits. *Journal of Behavioral Decision Making, 13*(1), 1.

Fitzsimons, G. J., & Lehmann, D. R. (2004). Reactance to recommendations: When unsolicited advice yields contrary responses. *Marketing Science, 23*(1), 82–94.

Florack, A., Kleber, J., Busch, R., & Stöhr, D. (2014). Detaching the ties of ownership: The effects of hand washing on the exchange of endowed products. *Journal of Consumer Psychology, 24*(2), 284–289.

Ford, D. P., & Staples, S. (2010). Are full and partial knowledge sharing the same? *Journal of Knowledge Management, 14*(3), 394–409.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research,* 39–50.

Fusilier, M. R., & Hoyer, W. D. (1980). Variables affecting perceptions of invasion of privacy in a personnel selection situation. *The Journal of Applied Psychology, 65*(5), 623.

Gefen, D., Karahanna, E., & Straub, D. W. (2003). Trust and TAM in online shopping: An integrated model. *MIS Quarterly, 27*(1), 51–90.

Guild, B. (2013). *). 2013 choice stream survey: Consumer opinions on online advertising & audience targeting* (Accessed 18 February 2015 . Retrieved from http://www.choicestream.com/2013-survey/.

Guo, X., Sun, Y., Yan, Z., & Wang, N. (2012). *Privacy-personalization paradox in adoption of Mobile health service: The mediating role of trust. Paper Presented at the PACIS*.

Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage Publications.

Hannah, T. E., Hannah, E. R., & Wattie, B. (1975). Arousal of psychological reactance as a consequence of predicting an individual's behaviour. *Psychological Reports, 37*(2), 411–420.

Hossain, M. A., & Dwivedi, Y. K. (2014). What improves citizens' privacy perceptions toward RFID technology? A cross-country investigation using mixed method approach. *International Journal of Information Management, 34*(6), 711–719.

Hu, Q., Dinev, T., Hart, P., & Cooke, D. (2012). Managing employee compliance with information security policies: The critical role of top management and organizational culture. *Decision Sciences, 43*(4), 615–660.

Ittelson, W. H. (1973). *Environment perception and contemporary perceptual theory. Paper Presented at the W Ittelson: Environment & Cognition*.

Jussila, I., Tarkiainen, A., Sarstedt, M., & Hair, J. F. (2015). Individual psychological ownership: Concepts, evidence, and implications for research in marketing. *The Journal of Marketing Theory and Practice, 23*(2), 121–139.

Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1990). Experimental tests of the endowment effect and the Coase theorem. *The Journal of Political Economy, 98*(6), 1325–1348.

Kalaignanam, K., Kushwaha, T., & Rajavi, K. (2018). How does web personalization create value for online retailers? Lower cash flow volatility or enhanced cash flows. *Journal of Retailing* in press.

Kark, R., & Van Dijk, D. (2007). Motivation to lead, motivation to follow: The role of the self-regulatory focus in leadership processes. *The Academy of Management Review, 32*(2), 500–528.

Karwatzki, S., Dytynko, O., Trenz, M., & Veit, D. (2017). Beyond the personalization–Privacy paradox: Privacy valuation, transparency features, and service personalization. *Journal of Management Information Systems, 34*(2), 369–400.

Khansa, L., Kuem, J., Siponen, M., & Kim, S. S. (2017). To cyberloaf or not to cyberloaf: The impact of the announcement of formal organizational controls. *Journal of Management Information Systems, 34*(1), 141–176.

Kim, C., & Dan, J. K. (2017). Uncovering the value stream of digital content business from users' viewpoint. *International Journal of Information Management, 37*(6), 553–565.

Kordzadeh, N., Warren, J., & Seifi, A. (2016). Antecedents of privacy calculus components in virtual health communities. *International Journal of Information Management, 36*(5), 724–734.

Lambrecht, A., & Tucker, C. (2013). When does retargeting work? Information specificity in online advertising. *Journal of Marketing Research, 50*(5), 561–576.

Lee, Y., & Chen, A. N. K. (2011). Usability design and psychological ownership of a virtual world. *Journal of Management Information Systems, 28*(3), 269–308.

Lee, J.-M., & Rha, J.-Y. (2016). Personalization–privacy paradox and consumer conflict with the use of location-based mobile commerce. *Computers in Human Behavior, 63*, 453–462. https://doi.org/10.1016/j.chb.2016.05.056.

Li, H., Luo, X. R., Zhang, J., & Xu, H. (2017). Resolving the privacy paradox: Toward a cognitive appraisal and emotion approach to online privacy behaviors. *Information & Management, 54*(8), 1012–1022.

Li, H., Sarathy, R., & Xu, H. (2011). The role of affect and cognition on online consumers' decision to disclose personal information to unfamiliar online vendors. *Decision Support Systems, 51*(3), 434–445.

Li, X., Hsieh, J. P.-A., & Rai, A. (2013). Motivational differences across post-acceptance information system usage behaviors: An investigation in the business intelligence systems context. *Information Systems Research, 24*(3), 659–682.

Liang, H., Saraf, N., Hu, Q., & Xue, Y. (2007). Assimilation of enterprise systems: The effect of institutional pressures and the mediating role of top management. *MIS Quarterly,* 59–87.

Liu, G., Zhang, J., & Chen, G. (2014). An approach to finding the cost-effective immunization targets for information assurance. *Decision Support Systems, 67*(C), 40–52.

Malhotra, N. K., Kim, S. S., & Agarwal, J. (2004). Internet users' information privacy concerns (IUIPC): The construct, the scale, and a causal model. *Information Systems Research, 15*(4), 336–355.

McCarthy, B. (2002). New economics of sociological criminology. *Annual Review of Sociology,* 417–442.

Nam, T. (2018). Untangling the relationship between surveillance concerns and acceptability. *International Journal of Information Management, 38*(1), 262–269.

Neufeld, D. J., Dong, L., & Higgins, C. (2007). Charismatic leadership and user acceptance of information technology. *European Journal of Information Systems, 16*(4), 494–510.

Newell, S., & Marabelli, M. (2015). Strategic opportunities (and challenges) of

algorithmic decision-making: A call for action on the long-term societal effects of 'datification'. *The Journal of Strategic Information Systems, 24*(1), 3–14.
Nunally, J. C., & Bernstein, I. H. (1978). *Psychometric theory.* New York: McGraw-Hill.
Paolacci, G., Burson, K. A., & Rick, S. I. (2011). The intermediate alternative effect: Considering a small tradeoff increases subsequent willingness to make large tradeoffs. *Journal of Consumer Psychology, 21*(4), 384–392.
Pariser, E. (2011). *Eli Pariser: Beware online" filter bubbles": Ted*.
Pavlou, P. A., Liang, H., & Xue, Y. (2006). Understanding and mitigating uncertainty in online environments: A principal-agent perspective. *MIS Quarterly, 31*(1), 105–136.
Petronio, S. (2012). *Boundaries of privacy: Dialectics of disclosure.* Suny Press.
Pierce, J. L., Kostova, T., & Dirks, K. T. (2001). Toward a theory of psychological ownership in organizations. *The Academy of Management Review, 26*(2), 298–310.
Pierce, J. L., Kostova, T., & Dirks, K. T. (2003). The state of psychological ownership: Integrating and extending a century of research. *Review of General Psychology, 7*(1), 84.
Pirkkalainen, H., Pawlowski, J. M., Bick, M., & Tannhäuser, A.-C. (2018). Engaging in knowledge exchange: The instrumental psychological ownership in open innovation communities. *International Journal of Information Management, 38*(1), 277–287.
Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management, 12*(4), 531–544.
Raab, C. D. (1998). The distribution of privacy risks: Who needs protection? *The Information Society, 14*(4), 263–274.
Ramanathan, S., & Menon, G. (2005). Time-varying effects of chronic hedonic goals on impulsive behavior. *Journal of Marketing Research, 43*(4), 628–641.
Samba, C., Knippenberg, D. V., & Miller, C. C. (2018). The impact of strategic dissent on organizational outcomes: A meta-analytic integration. *Strategic Management Journal, 39*(2).
Shareef, M. A., Dwivedi, Y. K., Kumar, V., & Kumar, U. (2017). Content design of advertisement for consumer exposure: Mobile marketing through short messaging service. *International Journal of Information Management the Journal for Information Professionals, 37*(4), 257–268.
Sharot, T., Velasquez, C. M., & Dolan, R. J. (2010). Do decisions shape preference? Evidence from blind choice. *Psychological Science, 21*(9), 1231.
Slovic, P., Finucane, M. L., Peters, E., & MacGregor, D. G. (2004). Risk as analysis and risk as feelings: Some thoughts about affect, reason, risk, and rationality. *Risk Analysis, 24*(2), 311–322.
Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. *Sociological Methodology, 13*, 290–312.
Spiller, S. A. (2011). Opportunity cost consideration. *The Journal of Consumer Research, 38*(4), 595–610.
Sutanto, J., Palme, E., Tan, C.-H., & Phang, C. W. (2013). Addressing the personalization-privacy paradox: An empirical assessment from a field experiment on smartphone users. *MIS Quarterly, 37*(4), 1141–1164.
Taneja, A., Vitrano, J., & Gengo, N. J. (2014). Rationality-based beliefs affecting individual's attitude and intention to use privacy controls on Facebook: An empirical investigation. *Computers in Human Behavior, 38*, 159–173.
Tucker, C. E. (2014). Social networks, personalized advertising, and privacy controls. *Journal of Marketing Research, 51*(5), 546–562.
Turow, J., King, J., Hoofnagle, C. J., Bleakley, A., & Hennessy, M. (2009). *Americans reject tailored advertising and three activities that enable it.* Available at SSRN 1478214.
Tyler, T. R., & Blader, S. L. (2005). Can businesses effectively regulate employee conduct? The antecedents of rule following in work settings. *The Academy of Management Journal, 48*(6), 1143–1158.
Wang, T., Duong, T. D., & Chen, C. C. (2016). Intention to disclose personal information via mobile applications: A privacy calculus perspective. *International Journal of Information Management, 36*(4), 531–542.
Wang, J., Gupta, M., & Rao, H. R. (2015). Insider threats in a financial institution: Analysis of attack-proneness of information systems applications. *MIS Quarterly, 39*(1).
Wang, W., Liu, L., Feng, Y., & Wang, T. (2014). Innovation with IS usage: Individual absorptive capacity as a mediator. *Industrial Management & Data Systems, 114*(8), 1110–1130.
Xu, H., Luo, X. R., Carroll, J. M., & Rosson, M. B. (2011). The personalization privacy paradox: An exploratory study of decision making process for location-aware marketing. *Decision Support Systems, 51*(1), 42–52.
Yang, Z., Cai, S., Zhou, Z., & Zhou, N. (2005). Development and validation of an instrument to measure user perceived service quality of information presenting web portals. *Information & Management, 42*(4), 575–589.
Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. *The American Psychologist, 35*(2), 151.
Zhao, Y., Ni, Q., & Zhou, R. (2017). What factors influence the mobile health service adoption? A meta-analysis and the moderating role of age. *International Journal of Information Management* in press.