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Factors predicting attitude toward disclosing personal data online

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ABSTRACT

To test a theoretical model, this study explores the effect of anxiety, trust, personality, and perceived benefits on the disclosure of personal information online. An online survey conducted among participants in the United States ($n = 248$, age range: 20–82 years) examined attitudes toward disclosing personal data online. Specifically, the study researches the impact of anxiety disclosing personal data, trust (both in the Internet and in institutions), the Big Five personality traits, and four sets of perceived shopping benefits (opportunity, bargain, purchase, and expected privacy benefits) in e-commerce disclosure and their role as antecedents for adoption and use of e-commerce. The study aligns with existing trust literature and corroborates other findings on how perceived purchase benefits impact individuals' attitudes toward disclosing personal data online. The data suggest that both trust in the Internet and trust in institutions positively influence attitude toward disclosing personal data online. Perceived purchase benefits were also significant positive predictors for attitude toward disclosing personal data online. Furthermore, personality dimensions can affect attitude toward disclosing: the more neurotic a person is, the more negative their attitude is about disclosing personal data online. The study underscores that consumers have a responsibility to educate themselves about online disclosure and marketing practices, and about how to protect their online privacy. Most importantly, fostering trust, reducing anxiety, and promoting benefits are essential to the future of e-commerce. Implications for theory, consumers, marketing practice, and public policy are also discussed.

KEYWORDS

Self-disclosure; privacy; perceived benefits; trust; e-commerce; personality; personal data; PII

Introduction

Acts of shopping online, or e-commerce, are described as "digitally enabled commercial transaction[s] between and among organizations and individuals" (Laudon and Traver 2003, p. 10). E-commerce provides many benefits to consumers, including convenience (Bhatnagar and Ghose 2004), lower prices (Hoffman, Novak, and Chatterjee 1995), the ability to compare prices (Chung-Hoon and Young-Gul 2003), a greater variety of products (Hoffman, Novak, and Chatterjee 1995), and the ability to read product reviews (Lu, Lu, and Wang 2012). And because individuals no longer have to visit a store to purchase a product, e-commerce allows for more discreet purchasing.

Even though e-commerce provides multiple benefits to consumers, overall adoption remains somewhat low, even in more developed nations (Rodríguez-Ardura and Meseguer-Artola 2010). In the United States, only 51% of consumers prefer shopping online versus in-store (BigCommerce and Square 2017). While 67% of individuals in the European Union (E.U.) use the Internet daily or almost daily, less than 40% of Romanians (18%), Bulgarians, Cypriots, and Italians shopped online in the last 12 months (Reinecke 2015).

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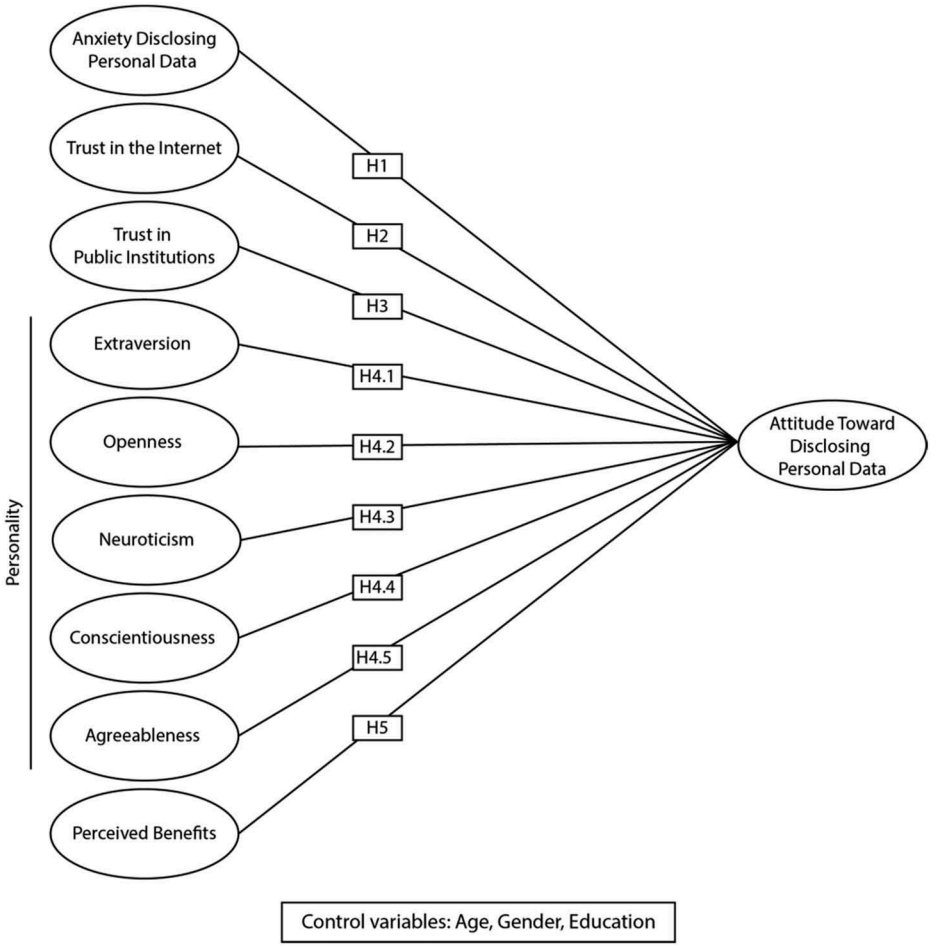

Figure 1. Research model.

One reason many of these users have not adopted online systems is a lack of trust, resulting in concerns of online security. A recent survey found that 77% of individuals in the United States and United Kingdom did not feel safe when buying goods online (NCC 2014). In the E.U., 27% of individuals cited fears regarding security or privacy when shopping online (Reinecke 2015). Furthermore, some of Americans' top e-commerce fears include concerns of submitting credit card information online, experiencing identity theft, and overall concerns of security (Paypal 2016).

It is rational for consumers to have concerns about using e-commerce; as shopping in a physical store allows consumers to see and interact with the store's employees, purchasing goods online does not. Other than providing details to complete the transaction, an individual shopping online may forgo any communication with the online vendor. Because consumers perceive that trust is lacking in online shopping and underscore this reason when not purchasing from online vendors (Kim et al. 2016; Lee and Rha 2016), exhibiting trust is required for consumers to overcome initial anxieties and complete online transactions. E-commerce has been described as lacking the warmth of human interaction (Hassanein and Head 2007; Lu, Fan, and Zhou 2016), which is found when shopping in physical stores and interacting one-on-one with store employees. In addition to trust deficiencies and the lack of actual interactive warmth when shopping online, consumers may also experience anxiety disclosing personal data online when engaging in e-commerce, which may negatively affect patronage intentions (Nagar 2016). Because of the potential risks and uncertainty about the prospective outcomes and consequences

of disclosing personally identifying information, users may become anxious, creating in them a state of anxiety. Therefore, understanding how to increase trust, reduce anxiety disclosing personal data online, and project positive attitude toward disclosure could improve adoption of e-commerce.

The current study explores the topics of anxiety disclosing personal data online, trust (in the Internet and public institutions), personality, and perceived benefits of exchanging personal data, and how these factors predict attitude toward disclosing personal data online. Second, the article aims to provide clear implications for marketing and consumer privacy regarding the study's variables and how they relate to adoption and usage of e-commerce and related electronic systems.

The article first provides an overview of literature related to the study's constructs. Building on the literature review, hypotheses are advanced. Data collection is outlined, and the results and analyses are presented. The paper concludes with practical recommendations for policy, industry, and consumers. This study introduces an explanatory model of anxiety, trust, personality, and perceived benefits as antecedents for attitude toward disclosing personal data online, a major factor affecting potential adoption of e-commerce.

The explanatory model builds on the theory of reasoned action (TRA), where attitude is the cornerstone of a widely used social science theory. Posited by Fishbein and Ajzen (1975), this theory presents an approach for predicting behavior, and contains three main constructs: attitude, subjective norm, and behavioral intent. Existing studies have examined the connection between trust and a user's behavior from the context of TRA (Bélanger and Carter 2008; Jarvenpaa et al. 1999; McKnight, Choudhury, and Kacmar 2002; Pavlou 2003). However, to the best of the author's knowledge, no studies have looked into the combination of variables presented herein, nor their impact on attitudes related to disclosure of personal data online. However, to clarify, views on disclosure of personal data have previously been utilized and examined as a predictor variable (Ledbetter et al. 2011a), but not as an outcome variable. Additionally, the variable of attitude toward online disclosure is a useful measure for assessing the likelihood that users will engage in personal information disclosure online; it serves as an alternative measure to the popular measure of willingness to disclose (Bansal, Zahedi, and Gefen 2016; Frost, Vermeulen, and Beekers 2014; Hirschprung et al. 2016; Robinson 2017a).

Hypotheses

The author derives the study's hypotheses from reviewing the literature, which informed the development of a research model (see Figure 1). The following section details how these hypotheses were inferred.

Dependent variables

Attitude toward disclosing personal data online

An attitude is "a learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object" (Fishbein and Ajzen 1975, p. 6). Rokeach (1968) defined an attitude as "a relatively enduring organization of beliefs around an object or situation predisposing one to respond in some preferential manner" (p. 112). Alternatively, the attitude construct can be viewed as a "psychological tendency that is expressed by evaluation of a particular entity with some degree of favor or disfavor" (Eagly and Chaiken 1993, 1). Further definitions exist (Dillard 1993; Ledbetter 2009).

Measuring attitude toward an activity, such as disclosing information, is a reasonably reliable indicator of a person's predisposition toward taking an action, although it falls short of measuring behavioral intent (Fishbein and Ajzen 1975). Research has explored attitude effects in the context of attitudes toward online self-disclosure (OSD), which is defined as "the extent to which an individual feels more comfortable when sharing private

information in online contexts" (Ledbetter, Broeckelman-Post, and Krawsczyn 2011, 226). As a first step toward validating this construct, Ledbetter (2009) developed an instrument to measure online communication attitudes. The measuring online communication attitude instrument addressed both cognitive and affective beliefs of communicating online, using five dimensions: self-disclosure, apprehension (of communicating online), miscommunication (online communication inhibits shared understanding), social connection (contact with an individual's network is facilitated by online communication), and ease (appreciation of joy and utility provided by online communication).

The notion that attitude toward OSD can predict communication was substantiated by Caplan (2007), who associated negative attitude toward OSD with low communication competency. Self-disclosure was found to be inversely associated with relational closeness, Facebook communication (Ledbetter et al. 2011a), and the amount of daily talk, both over the phone and face to face (Ledbetter et al. 2011b). In a related study, Mazer and Ledbetter (2012) concluded that online communication attitudes, specifically those of self-disclosure and social connection, positively predict compulsive and excessive Internet use. Individuals with positive attitude toward online disclosure use online communication more frequently (Ledbetter and Kuznekoff 2012), but may avoid some types of social media communication (Shoenberger and Tandoc 2014).

Independent variables

Anxiety disclosing personal data online

As a consequence of the potential risks and uncertainty about the prospective outcomes and consequences of disclosing personally identifying information, users may experience anxiety when shopping online. Fraud, identify theft, receiving the incorrect product, and other concerns validate these risks. Importantly, perceived risks of shopping online are higher than concerns of shopping in physical stores (Ferri, Grifoni, and Guzzo 2008). These concerns, stemming from shopping online, can be described as a general anxiety toward e-commerce. More specifically, anxiety has also been described as one's short-term negative emotional reaction to either a situation or stimulus (Gilbert, Lee-Kelley, and Barton 2003).

Being anxious is the opposite of being psychologically comfortable. The idea of comfort is an important concept in studies concerning self-disclosure. Much of the literature that attempts to conceptualize comfort has originated in the realm of health care, which most often defines the concept as "a state of comfort" (Siefert 2002, 16) that is "multi-dimensional, meaning different things to different people" (Hamilton 1989, 32). Comfort has been examined in the field of ergonomics (Branton 1969), psychotherapy (Parloff, Kelman, and Frank 1954), and psychology (Pineau 1982) as well.

Pineau's (1982) study, which used an open-ended question that asked respondents to define comfort, reported four common themes: personalization, space, warmth, and freedom of choice. Moreover, Kolcaba (1991) asserted that the construct of comfort consists of four concepts: physical, psycho-spiritual, environmental, and social. Several researchers have also identified a number of individual characteristics associated with comfort, including feeling at ease (Morse 1983) and being in control. Further, it is necessary to interpret comfort as either a noun or a verb, and either an outcome or a process (Kolcaba 1992). Comfort level is defined in the nursing literature as "contented enjoyment in physical or mental well-being brought about by lessening perception of discomfort or pain" (Flaherty and Fitzpatrick 1978, p. 353).

Building on these definitions of comfort, researchers have analyzed the construct of comfort (or the lack of anxiety) as it pertains to self-disclosure. Specifically, the Distress Disclosure Index (DDI), a scale for measuring comfort as self-disclosure, was developed by Kahn and Hessling (2001). The DDI measures the extent to which an individual is comfortable (lacks anxiety) talking with other individuals about personally distressing information. In one of the few relevant studies, Wei, Russell, and Zakalik

(2005) explored the relationship between self-disclosure and social self-efficacy as mediators of attachment and loneliness in college freshman. Researchers Wei, Russell, and Zakalik (2005) reported that comfort with self-disclosed feelings of distress served to mediate attachment avoidance (the fear of intimacy or dependence on others). Several studies have explored negative emotions related to using technology (Brosnan 1998; Meier 1985; Norris, Pauli, and Bray 2007). The author proposes:

H1. *Anxiety disclosing personal data online will be negatively related to attitude toward disclosing personal data online.*

Trust

Trust is a broad concept that has been explored across many disciplines. Mayer, Davis, and Schoorman (1995) defined trust as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party" (p. 712). Specifically, trust is correlated with frequency of using specific technologies (Guzzo, Ferri, and Grifoni 2016).

Trust in the Internet

A clear relationship exists between trust and perceived risk in conducting purchases (Park, Gunn, and Han 2012). Trust is a vital component of interaction for any Internet user and is important in conducting online transactions. Research confirms that the more a consumer trusts, the lower the perceived risk of purchasing (Pavlou 2003). Additionally, trust has a reciprocal relationship with online disclosure: information disclosure increases the impression of an individual's trustworthiness, which results in reciprocal disclosure by the other individual when conversing (Henderson and Gilding 2004).

Trust has been explored in many different purchasing contexts, including users' relationships with market researchers (Moorman, Deshpandé, and Zaltman 1993) and buyer-seller relationships (Doney and Cannon 1997). Trust is extremely important to consumers during online purchases and acts as an antecedent of perceived risk (Pavlou 2003). The more a consumer trusts a web site or online vendor, the lower the perceived risk of completing a transaction with the vendor.

Overall, trust in the Internet has been studied in the context of cybertrust, or "trust in the Internet and related information and communication technologies" (Dutton and Shepherd 2006, 433). Trust may be undermined online, and in e-commerce transactions, in particular, due to the lack of the kind of physical cues that are used by consumers to expose deceit in physical encounters (Wallace 2001). Further, individuals who are more trusting in general may be more inclined to trust the Internet than less trusting persons (Rose 2003). Moreover, trusting individuals are more likely to shop online (Uslaner 2004).

An individual's trust in e-commerce is influenced by three sources: the reputation of e-commerce, the consumer's previous online experiences, and the nature of the specific e-commerce site (Corbitt, Thanasankit, and Yi 2003). Trust in the Internet is defined as an individual's confidence (or lack thereof) in using the platform, or online web site, especially for purchasing products or services.

Dutton and Shepherd (2006) define two major dimensions of online trust: net confidence—having confidence both in Internet technology and the individual(s) being communicated with—and net risk—the perception of and exposure to risks while online. Distrust in the Internet is cited as a major reason for failing to use the Internet regularly. Therefore, lack of trust in the Internet may be a major determinant of whether or not someone is willing to engage in e-commerce (Boritz and No 2011). Additionally, those more experienced in Web usage tend to have a higher level of trust in e-commerce (Corbitt, Thanasankit, and Yi 2003). Adolescent decisions to disclose to a commercial web site have been found to be partially influenced by their trust in others and organizations (Heirman et al. 2013). The literature suggests that trust directly influences disclosure behavior (Fogel and Nehmad 2009; Frye and Dornisch 2010; Mesch 2012): users with a higher degree of

trust should be more comfortable disclosing personal information. Similarly, the author posits that individuals demonstrating greater trust in the Internet will possess positive attitudes toward disclosing data online. Based on the literature, the author proposes:

H2. *Trust in the Internet is positively related to attitude toward disclosing personal data online.*

Trust in institutions

A separate approach to measuring trust is exploring people's view of public, social, or government institutions. Trust in institutions can be defined as an individual's beliefs regarding the character and trustworthiness of public entities, including hospitals, schools, businesses, and government institutions (Mesch 2012). Trust, in general, is an important aspect of communication, whether interpersonally or online with a digital merchant. Offline trust, measured as trust in institutions, affects online interactions (Mesch 2012).

To further understand trust and its implications for disclosure, this study sought to recognize the degree to which people were trusting three types of organizations that might be involved in conducting e-commerce transactions, and organizations and institutions in general. Many businesses are involved in e-commerce to promote their services. However, various other organizations, including governments, engage in e-commerce-type activities to facilitate transactions, such as the payment of taxes and requests for government services.

Trust in government institutions has been measured by Torney-Purta, Barber, and Richardson (2004) who investigated trust levels in adolescents from multiple countries. Torney-Purta, Barber, and Richardson (2004) found that a threshold level of trust in government institutions allows individuals to explore and initiate their civic and political participation. One study investigated the relationship between institutional trust and consumer-perceived risk: as institutional trust increased, perceived risk decreased (Salam, Rao, and Pegels 2003). By lowering perceived risk in e-commerce, institutional trust is a critical element for increasing e-commerce and its maturity (Salam, Rao, and Pegels 2003). Trust levels vary between European national entities and the E.U., and some of these differences in trust levels are driven by country-level corruption levels (Arnold, Sapir, and Zapryanova 2012). Mediating the role of knowledge and compliance, the variable of trust has been found to be a significant predictor of disclosure (Castro and Bettencourt 2017). A recent study explored the relationship between trust in institutions and the disclosure of personal data, but the results were inconclusive (Mesch 2012). To clarify the role that trust in institutions has in disclosure of information, the author proposes to test the following hypothesis:

H3. *Trust in institutions is positively related to attitudes toward disclosing personal data online.*

Personality

Personality is defined as "individual differences in characteristic patterns of thinking, feeling, and behaving" (American Psychological Association 2014, 1). In various situations, one's personality influences behaviors and cognitions (Ryckman 2012). Many authors have attempted to measure personality, and contemporary efforts to measure personality have been developed, including the Neo Personality Inventory (Costa and McCrae 1985) and the Big Five Inventory (BFI) (John, Donahue, and Kentle 1991). The BFI contains five dimensions (extraversion, openness, neuroticism, conscientiousness, and agreeableness) that, when combined, describe an individual's personality. Extraverts tend to be sociable, outgoing, and able to have positive emotions. Openness (to experience) is demonstrated by an individual's willingness to try new things, and naturally be curious. Neuroticism reflects a tendency toward experiencing psychological distress, with high levels of neuroticism being associated with a sensitivity to threat. Individuals demonstrating agreeableness

reflect trust, cooperation, and sympathy. Lastly, conscientiousness reflects an individual who is organized and diligent.

The BFI personality traits have been studied extensively and, in more contemporary research, have been used to predict general online behavior. When investigating the relationship of personality to social media use, Correa, Hinsley, and De Zúñiga (2010) found that extraversion and openness were positively related to social media use. Those high in neuroticism have been found to use the Internet to avoid loneliness (Butt and Phillips 2008), demonstrate a strong interest in using the Internet for communication (Wolfradt and Doll 2001), and post accurate information of themselves on online profiles (Amichai-Hamburger, Wainapel, and Fox 2002). Extraverts have demonstrated belonging to more groups on Facebook than introverts (Ross et al. 2009), and constantly use social media to grow their network of friends (Correa, Hinsley, and De Zúñiga 2010). Those high in openness or agreeableness are less inclined to self-disclose on social networks (Loiacono et al. 2012). Conscientiousness has proven to be negatively related to Internet use (Butt and Phillips 2008). This nonuse of the Internet by those high in conscientiousness may be explained by a perception of the Internet as a distraction to the individual's daily tasks (Ross et al. 2009). As a result, it is hypothesized:

H4.1. *The personality dimension of extraversion will be positively related to attitude toward disclosing personal data online.*

H4.2. *The personality dimension of openness will be negatively related to attitude toward disclosing personal data online.*

H4.3. *The personality dimension of neuroticism will be positively related to attitude toward disclosing personal data online.*

H4.4. *The personality dimension of conscientiousness will be negatively related to attitude toward disclosing personal data online.*

H4.5. *The personality dimension of agreeableness will be negatively related to attitude toward disclosing personal data online.*

Perceived benefits of exchanging personal data

Marketing can be described as an exchange process involving transactions where, among other things, two parties believe it is appropriate or desirable to deal with one another. Kotler (1988) defines exchange as "the art of obtaining a desired product from someone by offering something in return" (p. 6). In general, marketers provide products or services to benefit the purchaser who, in turn, provides consideration, including but not limited to payments and the provision of information to facilitate the transaction and/or benefit the seller.

Providing personal information in exchange for benefits or incentives is a common practice in online marketing. In exchange for their email address or other personal information requested, individuals may be offered discounts on future purchases of a good or service. The result is a perceived benefit of exchanging personal data information. The use of financial benefits in exchange for personal data makes disclosure more likely (Beldad, De Jong, and Steehouder 2011; Xu et al. 2009). Individuals are motivated to disclose online for many reasons (relationship building, etc.), including these economic motivations (Benndorf and Normann 2017; Heirman, Walrave, and Ponnet 2012), which this study focuses on primarily.

Research suggests that consumers are enticed by offers and actually respond positively to revealing personal information in exchange for specific benefits, including information, entertainment, and financial value (Aydoğan, Øzturk, and Razeghi 2017; Milne and Gordon 1993). Additionally, consumers may provide personal information due to their desire for perceived individualized

attention from companies (Graeff and Harmon 2002). When consumers perceive that disclosure benefits exceed disclosure risks, they are more likely to disclose personal data (Milne and Culnan 2004). Liebermann and Stashevsky (2002) found that perceived benefits of information disclosure are vital for consumers in deciding whether or not to disclose information on web sites. Interestingly, perceived benefits vary depending whether they are utilized in social media or e-commerce (Sun, Wang, and Shen 2014). Understanding how consumers perceive potential benefits versus risks can shed light on the important question of what motivates people to disclose personally identifying information and under what conditions they might do so.

For this study, four types of potential e-commerce benefits were identified: opportunity benefits, bargain likelihood benefits, purchase benefits, and privacy expectation benefits. Opportunity benefits characterize the purchase of a product online which offers an opportunity for an upside gain or a positive outcome. Bargain likelihood benefits represent the prospect of obtaining a good deal or purchasing a product at an advantageous price, while shopping online. Purchase benefits involve value propositions (e.g., greater merchandise selection, better customer service, tailored product offerings, and special discounts) for customers in exchange for providing some personal information. Privacy expectation benefits are the conditions or guarantees the consumer hopes for in exchange for providing information.

Opportunity benefits and bargain likelihood benefits were adapted from the work of Jarvenpaa, Tractinsky, and Saarinen (1999) in their study examining the role of trust in e-commerce in cross-national settings. In the study, the authors explored risk perception and its relationship with trust and Internet usage, and found that citizens of Israel were reportedly less experienced in Web usage, but exhibited higher trust and lower risk perception than Australians.

Purchase benefits and privacy benefits arose from the work of Phelps, Nowak, and Ferrell (2000) and Sheehan and Hoy (2000), later adapted by Gupta, Iyer, and Weisskirch (2010). Control over information, short-term transactional relationships, and long-term relationships were found to influence consumers' privacy concern (Sheehan and Hoy 2000). Control over information presented several scenarios where individuals received unsolicited emails from companies, as well as situations where their personal information was sold. Consumers place varying importance on control over their personal information, and the level of control necessary for the information affects their privacy concern. Shopping benefits were measured as potential consequences and benefits: including increase/decrease in advertising mail, future shopping time and effort savings, and greater future merchandise selection. In addition, shopping benefits affect consumer purchase intentions: consumers are willing to make trade-offs when exchanging personal information for shopping benefits (Phelps, Nowak, and Ferrell 2000). On this basis of these findings, the author hypothesizes:

H5. *Perceived benefits of exchanging personal data will be positively related to attitude toward disclosing personal data online.*

Materials and methods

Procedures and participants

Individuals 18 and older were recruited in July 2014 from an incentivized market panel using quota sampling to complete an online survey administered through a major online survey research service (Qualtrics). While Internet sampling techniques are sufficient for obtaining a representative sample, the data allow the author to test the proposed model. Two filter questions were utilized in the survey: one to ensure participants had e-commerce experience and a second one to ensure participants resided in the United States. Those participants with no e-commerce experience, or did not live in the United States, were redirected to the end of the survey.

The total sample consisted of 257 participants. Of the 257 prospective participants, all agreed to the Institutional Review Board (IRB) Informed Consent statement, one reported having no

e-commerce experience, one reported residing outside the United States, and 7 were removed due to substantially incomplete responses. This resulted in 248 participant responses for data analysis. Of the 248 participants, 49% were males and 51% females with an age range of 20–82 years (M = 36.26, SD = 11.712). Participants reported their proficiency with e-commerce using a seven-point Likert scale (1 = Beginner, 7 = Expert). Overall, participants self-reported high proficiency with e-commerce (M = 5.75, SD = .933). Regarding education, 12.6% had attended or completed high school, 71.4% had attended or completed a bachelor's degree, and 16.1% had attended or completed a graduate degree. The collected data were analyzed using Statistical Package for the Social Sciences (SPSS) version 24.0.

Measures

Measures consisted of seven-point semantic differential or seven-point Likert scales. Scales with proven reliability and validity were adapted from previous studies; other measures were compiled by the author referencing definitions in the current literature (see Appendix A for construct items). The *attitude toward disclosing personal data online* was derived from research by Hallahan (1999), and consisted of seven items. *Anxiety disclosing personal data online* was a self-developed seven-item scale. *Trust in the Internet* consisted of four items adapted from Dinev and Hart (2006), while *Trust in Institutions* was adapted from Torney-Purta, Barber, and Richardson (2004) and had four items. The construct of personality was measured using a validated, factor analyzed shortened version of the Big Five Inventory (BFI-44) created by John, Donahue, and Kentle (1991). *Opportunity benefits* had three items originating from Jarvenpaa, Tractinsky, and Saarinen (1999), and *bargain likelihood* (three-item scale) was adapted from Jarvenpaa, Tractinsky, and Saarinen (1999) too. The scale for *purchase benefits* (five items) and *privacy expectation benefits* (five-item scale) originated as a single index used by Gupta, Iyer, and Weisskirch (2010).

Confirmatory factor analysis was performed on existing scales, and exploratory factor analysis was performed on scales created in this study. Each scale was tested using factor analysis and reliability analysis (see Appendix A). Confirmatory factor analysis using principal component analysis with Varimax rotation was performed on existing scales to test construct validity, and exploratory factor analysis was performed on scales created in this study. Furthermore, all scales demonstrated sufficient reliability with Cronbach $\alpha \geq .70$ (Cronbach 1951).

The author utilized Harman's single-factor test to check for common method variance (CMV), referring to "the variance that is attributable to the measurement method rather than to the construct of interest" (Podsakoff et al. 2003, 879). Testing for CMV, Harman's single-factor method involves exploratory factor analyses to "determine whether the majority of the variance can be accounted for by one general factor" (Podsakoff et al. 2003, 890). The result of the test indicated the first component accounted for only 20.1% of the variance; there was no general factor accounting for more than 50% of the variation (Mishra et al. 2012), indicating that common method bias is not a major problem in the study.

Other variables

Three covariate variables (age, gender, and education) were included in the regression analyses to help control for possible pre-existing factors. Gender was measured as three radio buttons in which participants indicated the biological sex with which they identified as male, female, or other. Participants indicated their age by typing in their age in years. Education was measured with participants selecting highest level completed from six choices displayed as radio buttons: some high school, high school, some college, college degree, some graduate school, and graduate school.

Results

Predicting attitude toward disclosing personal data online

A hierarchical multiple regression was conducted using attitude toward disclosing personal data online as the dependent variable. Because the median age of participants was 36 years, age was collapsed into two groups to facilitate regression analysis: those aged 36 and younger (dummy variable value = 0) and those aged 37 and older (dummy variable value = 1). Similar to age, the variable of education was collapsed into two groups for regression analysis: participants with only high school or some college (dummy variable value = 0) were sorted from those who held at least a college degree (dummy variable value = 1). The regression equation accounted for 49% of the variance of participants' attitude toward disclosing personal data online (R^2 = .490, $p \leq .001$). In the final model, five predictor variables were statistically significant, with trust in the Internet reporting the highest beta value (β = .347, $p \leq .001$), more than perceived benefits (β = .263, $p \leq .001$), anxiety disclosing personal data online (β = –.245, $p \leq .001$), trust in institutions (β = .166, $p \leq .01$), and the personality trait of neuroticism (β = .159, $p \leq .01$).

The results (Table 1) show that anxiety disclosing personal data online is a negative predictor of attitude toward disclosing personal data online, thus supporting H1. Trust in the Internet is a positive predictor of attitude toward disclosing personal data online, thus supporting H2. In addition, trust in institutions is also a significant positive predictor of attitude toward disclosing personal data online, therefore supporting H3. The construct of personality had mixed results: H4.1 (extraversion), H4.2 (openness), H4.4 (conscientious), and H4.5 (agreeableness) were not supported, as the only personality trait with significant findings was the trait of neuroticism (H4.3), found to be a significant positive predictor of attitude toward disclosing online. Individuals who perceived purchase benefits were also significant positive predictors for attitude toward disclosing personal data online (H5).

Table 1. Predictors for attitude toward disclosing personal data online.

Step and predictor variable	*B*	SE *B*	ß	R^2	ΔR^2
Step 1:				.001	—
Gender	−.002	.123	−-.001		
Age	.039	.127	.021		
Education	−.042	.121	−-.023		
Step 2:				.405***	.404***
Gender	−.003	.095	−.002		
Age	.024	.101	.013		
Education	−.073	.095	−.040		
Trust in the Internet	.349	.053	.376***		
Trust in institutions	.168	.053	.175**		
Perceived benefits	.232	.039	.329***		
Step 3:				.490***	.084***
Gender	−.102	.095	−.056		
Age	.132	.100	.071		
Education	−.037	.090	−.021		
Trust in the Internet	.330	.053	.347***		
Trust in institutions	.159	.052	.166**		
Perceived benefits	.185	.038	.263***		
Extroversion	.055	.034	.089		
Openness	−.064	.040	−.085		
Neuroticism	.095	.035	.159**		
Conscientiousness	−.055	.044	−.067		
Agreeableness	.035	.046	.045		
Anxiety disclosing	−.173	.039	−.245***		

*$p \leq .05$; **$p \leq .01$; ***$p \leq .001$

Discussion

Anxiety disclosing personal data online

Higher anxiety disclosing personal data online and negative attitude toward disclosing personal data online are associated ($\beta = -.245$, $p \leq .001$). These results for H1 (see Figure 2) suggest that individuals who perceive shopping online as offering positive shopping opportunities report less disclosure-related anxiety. In general, the more anxious one is about disclosing personal data, the more negative their attitude toward disclosing online.

What this means: Higher levels of trust have been previously explored in the literature, showing that higher levels of perceived risk and, in turn, higher anxiety lead to lower trust levels (Corbitt, Thanasankit, and Yi 2003). Because e-commerce anxiety negatively affects patronage intentions (Nagar 2016), it is vital that e-commerce vendors clearly embrace solutions for reducing patron anxiety. By displaying trust marks and statements of strong personal data protection, including General Data Protection Regulation compliant data protection policies and visual emblems of trust from entities such as the Better Business Bureau (BBB) or eTrust, vendors can assuage some consumer anxiety in attempts to encourage the disclosure necessary for completing online transactions. Also, given the increased frequency of hacking of online services and the resulting identity

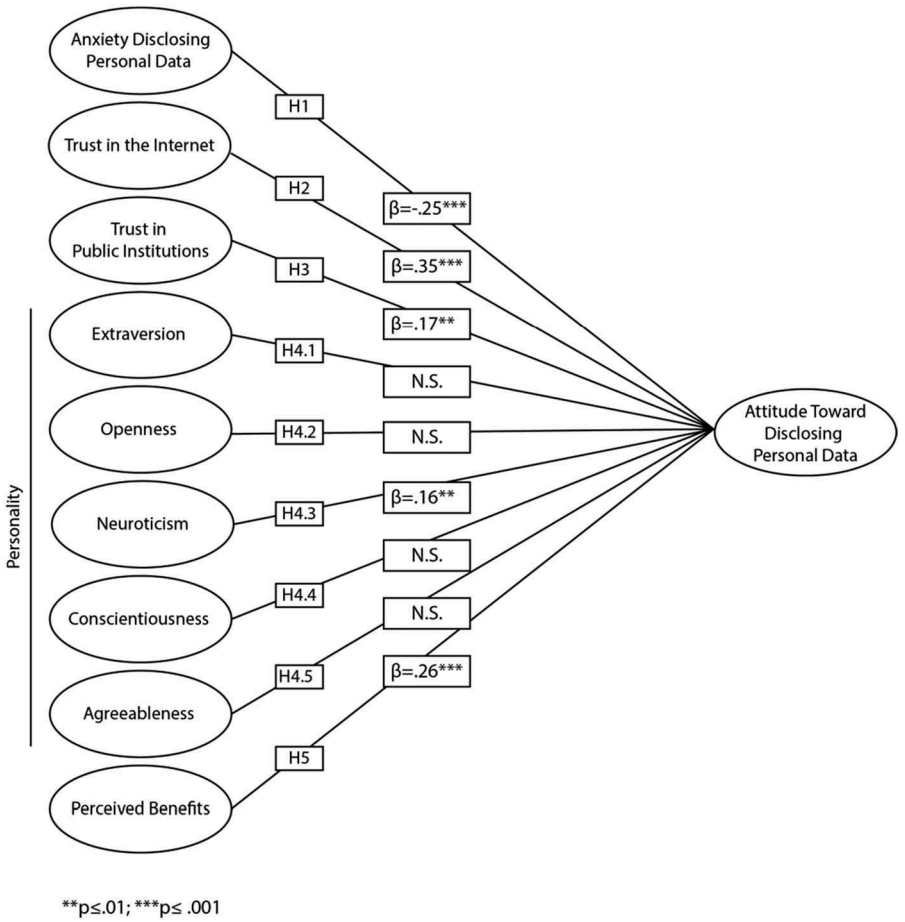

Figure 2. Research model results.

theft, e-vendors have a clear role and need in establishing and encouraging the lessening of anxiety associated with disclosing personal information online.

Trust—in the Internet and institutions

Trust was measured as both trust in the Internet and trust in institutions, including the entities of national government, local government, and businesses. Both trust in the Internet ($\beta = .347$, $p \leq .001$) and trust in institutions ($\beta = .166$, $p \leq .01$) were found to be statistically significant predictors of attitude toward disclosing personal data online. The study's findings support the notion that trust is an important factor to consider when examining disclosure behavior and correlates with literature that found a reciprocal relationship between trust and willingness to disclose (Heirman et al. 2013; Henderson and Gilding 2004; McKnight, Choudhury, and Kacmar 2002), a concept linked to attitudes toward disclosure. Research has demonstrated that those more inclined to trust, in general, are more inclined to trust the Internet (Rose 2003). This view of trust would seem logical because trust has been identified as a major determinant in individuals' completion of purchases (Pavlou and Chellappa 2001), both online and offline. These findings support previous research demonstrating higher trust results in lower perceived risk (Pavlou 2003; Salam, Rao, and Pegels 2003), which should result in lower anxiety disclosing personal data online.

What this means: Trust, in general, is a predictor of attitude toward disclosing personal data online and is important when consumers decide about making purchasing decisions online. Consumers should know and only disclose personal data to organizations they know and trust. Underscoring the importance and value of public privacy education programs, consumers should consult organizations that provide reviews of online merchants. In the United States, the BBB provides ratings and reviews for online merchants.

Online merchants who strive to be successful in encouraging disclosure of personal data must foster an environment of trust. For both business and government, there are a plethora of tools to increase trust. Merchant endorsements that attest to or approve the site's business or disclosure practices include displaying emblems from entities, such as the BBB or eTrust. Merchants may also allay concerns by allowing money-back guarantees, offering trial periods for purchases, featuring testimonials from satisfied users, and listing company contact information for verification. Professional design, presentation, and credible content may also help decrease consumer concerns. It would greatly benefit online merchants, as well as government and public institutions engaged in e-commerce, to encourage such public trust, as this may directly translate into increased levels of transactions, which can make organizations more efficient and effective.

It is also important to note that levels of trust in public institutions may fluctuate, as levels of trust may decrease in the face of hacking scenarios, such as the recent Equifax hack leading to the unauthorized access of personal information for every U.S. adult. Systemic, high-profile examples like this can have dramatic impacts on individuals' trust in public institutions.

Technologies encouraging trust in the Internet through systems such as blockchain, the underlying technology used in digital currency, (e.g., Bitcoin), and Estonia's powerful e-residency and e-government systems (Sullivan and Burger 2017) may lead to an increased trust in digital technologies. Blockchain is based on a public ledger system, where transactions are transparent and traceable: aspects highly important for creating atmospheres of trust.

Personality

In the hierarchical multiple regression analysis, neuroticism ($\beta = .159$, $p \leq .01$) was found to be a positive predictor of attitude toward disclosing personal data online; thus, H4.3 was supported. Based on the direction of the relationship, the more neurotic the person is, the more negative his or her attitude is about disclosing personal data online. Moreover, previous research has demonstrated

the negative relationship between neuroticism and willingness to disclose (Loiacono et al. 2012), a related measure of attitude toward disclosing personal data online.

What this means: Besides becoming informed about common online marketing practices, consumers should be aware of intrinsic factors that affect their attitude toward disclosing personal data online. From the results of this study, personality traits may affect attitude toward disclosing personal data online. Consequently, a consumer should know his or her personality and how it might affect disclosing online. For example, those demonstrating the personality dimension of neuroticism may be more anxious disclosing online and require extra assurance about the reasons for disclosing. However, by not disclosing, a neurotic person might miss out on benefits or opportunities.

The results from the study demonstrated that specific personality dimensions can be a potentially valuable factor in examining disclosure online based on the relationship among neuroticism and attitude toward disclosing personal data online. Using consumer personality traits to more effectively target product and service messages is another important component marketers should consider. Through data mining, marketers have a powerful mechanism for better identifying possible relevant messages. By tailoring messages based on a consumer's personality, merchants might be able to further encourage disclosure during purchases. For example, consumers high in neuroticism might be best reached using appeals involving messages that evoke calm, stress-free conditions. If future-related studies find agreeableness related to online disclosure, marketers might focus on attributes of products that stress being trusted, considerate to others, and cooperative.

Perceived purchase benefits

When presented with perceived purchase benefits, individuals will be more positive in their attitude toward disclosing personal data online ($\beta = .263$, $p \leq .001$). These findings suggest that to persuade consumers to disclose information, it is important for online shopping either to be characterized as an important opportunity or to provide purchase benefits (e.g., greater merchandise selection, better customer service, tailored product offerings, special discounts). These findings support existing research, which found individuals will disclose information when given a reason why to do so, such as in exchange for incentives (Aydoğan, Øzturk, and Razeghi 2017; Benndorf and Normann 2017; Heirman, Walrave, and Ponnet 2012; Milne and Gordon 1993) or for personalization and personalized services (Beldad, De Jong, and Steehouder 2011).

What this means: For marketers, it would be important to note the findings of the study, including the use of offering benefits. Offering benefits or incentives in exchange for personal information was shown in this study to function as an important predictor of inclination to disclosure with individuals being more positive in their attitude toward disclosing personal data online. The promotion of purchase benefits could better encourage individuals to disclose information, especially for services where personal data are necessary to better target products and services.

The need for closer examination of the use of various e-commerce benefits in exchange for disclosing information is also highlighted by the research, showing that many perceived benefits may be more effective marketing tools than information-gathering practices that may serve to alienate customers and citizens.

While all participants in the study were at least 18 years of age, it would be useful to extend this study's framework to minors, specifically their attitude toward disclosing particular personal data online (including items that might not be applicable to adults). It would be particularly important to investigate how marketers might use perceived shopping values or bargains (in the form of purchase benefits) or social opportunities to target minors.

Lastly, individuals today seem to almost expect some benefit (e.g., coupon) in exchange for their personal data. Might this change as the value of personal data becomes clearer? Because the value of individuals' personal data has not yet been properly established (Robinson, 2017b), the perceived

value of one's personal data may fluctuate. In turn, the incentive required for individuals to disclose their personal data may need to increase in value, too.

Limitations

A few weaknesses of the study must be acknowledged, including the fact that the study uses non-probability sampling to recruit participants. Second, the HRM models explain only 49% of variance in the dependent variables. Additional constructs (e.g., e-commerce proficiency, attitude toward privacy, or ICT proficiency) might be helpful to explain a greater amount of the variance in the dependent variables. Improving the conceptualization and operationalization of perceived purchase benefits would also be beneficial for future studies. The benefits examined in this study are not exhaustive, and identifying and measuring additional e-commerce benefits could provide additional insights into the relationship between disclosing information and the use of various shopping benefits. Identifying additional scenarios where consumers exchange information while shopping (including referrals) would allow extension of the current perceived purchase benefit measures. It would be useful in future studies to include trust propensity, or "a dispositional willingness to rely on others," (Colquitt, Scott, and LePine 2007, 909) as another potentially valuable measure of trust. Further, Mayer, Davis, and Schoorman's (1995) integrated model of organizational trust, which encompasses benevolence, integrity, and ability as antecedents to trust, is another worthwhile trust measure for future research.

Conclusion

Clear implications for consumers arose from the study, with consumers and their privacy apprehensions being an important focus. The relationship between the marketer and the consumer is the foundation for completing purchases online. With this in mind, several implications emerge from this study for how consumers can protect their privacy and obtain benefits while continuing or creating relationships with online marketers, retailers, or merchants. Specifically, it is important that shoppers educate themselves, understand the varying risks associated with different types of personal data, be aware of intrinsic factors (e.g., personality, trust) affecting attitude toward disclosing personal data online, and, lastly, learn to recognize reputable and trustworthy merchants.

In light of the need among marketers to solicit personal information, consumers should be aware that marketers might, in fact, entice them through use of shopping benefits in order to collect personal information. Consumers must become familiar with the practices employed by marketers to encourage them to disclose personal information online. Shoppers should take precautions to prevent the unsolicited and undesired gathering of their information. Examples include reading privacy statements and employing ad-blocking technologies where necessary. Consumers have a responsibility to be informed consumers, and organizations, such as the Electronic Frontier Foundation and the Federal Trade Commission in the United States, conduct consumer privacy education campaigns about how to protect personal information and how to wisely disclose it online when appropriate.

Encouraging trust and, thereby, positively influencing attitude toward disclosing information necessary for shopping online may encourage further increases in adoption of e-commerce. Understanding the impacts of anxiety, trust, personality, and perceived purchase benefits on attitude toward disclosing personal data online can provide insights for increasing adoption of e-commerce. This increased adoption could provide economic growth in global markets and provide consumers with the multitude of benefits associated with shopping online (e.g., price comparison, greater product variety, product reviews).

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References

American Psychological Association. 2014. Psychology topics: Personality. Accessed August 5, 2017. http://apa.org/topics/personality/

Amichai-Hamburger, Y., G. Wainapel, and S. Fox. 2002. On the Internet no one knows I'm an introvert: Extraversion, neuroticism, and Internet interaction. *CyberPsychology and Behavior* 5(2):125–28. doi:10.1089/109493102753770507.

Arnold, C., E. V. Sapir, and G. Zapryanova. 2012. Trust in the institutions of the European Union: A cross-country examination. *European Integration Online Papers* 16(2):29–59. doi:10.1695/2012008.

Aydoğan, R., P. Øzturk, and Y. Razeghi. 2017. Negotiation for incentive driven privacy-preserving information sharing. In *PRIMA 2017: Principles and practice of multi-agent systems*, B. An, A. Bazzan, J. Leite, S. Villata, and L. Van Der Torre. ed., 486–94. Cham: Springer.

Bansal, G., F. M. Zahedi, and D. Gefen. 2016. Do context and personality matter? Trust and privacy concerns in disclosing private information online. *Information and Management* 53(1):1–21. doi:10.1016/j.im.2015.08.001.

Bélanger, F., and L. Carter. 2008. Trust and risk in e-government adoption. *The Journal of Strategic Information Systems* 17(2):165–76. doi:10.1016/j.jsis.2007.12.002.

Beldad, A., M. De Jong, and M. Steehouder. 2011. A comprehensive theoretical framework for personal information-related behaviors on the Internet. *The Information Society* 27(4):220–32. doi:10.1080/01972243.2011.583802.

Benndorf, V., and H.-T. Normann. 2017. The willingness to sell personal data. *The Scandinavian Journal of Economics* 119(2):1–21. doi:10.1111/sjoe.12247.

Bhatnagar, A., and S. Ghose. 2004. Segmenting consumers based on the benefits and risks of Internet shopping. *Journal of Business Research* 57(12):1352–60. doi:10.1016/S0148-2963(03)00067-5.

BigCommerce and Square. 2017. Omni-channel retail in 2017: What brands need to know and modern consumer shopping habits. Accessed June 4, 2018. https://grow.bigcommerce.com/rs/695-JJT-333/images/theomni-channel-selling-guide.pdf

Boritz, J. E., and W. G. No. 2011. E-commerce and privacy: Exploring what we know and opportunities for future discovery. *Journal of Information Systems* 25(2):11–45. doi:10.2308/isys-10090.

Branton, P. 1969. Behaviour, body mechanics and discomfort. *Ergonomics* 12(2):316–27. doi:10.1080/00140136908931055.

Brosnan, M. J. 1998. The impact of computer anxiety and self-efficacy upon performance. *Journal of Computer Assisted Learning* 14(3):223–34. doi:10.1046/j.1365-2729.1998.143059.x.

Butt, S., and J. G. Phillips. 2008. Personality and self-reported mobile phone use. *Computers in Human Behavior* 24 (2):346–60. doi:10.1016/j.chb.2007.01.019.

Caplan, S. E. 2007. Relations among loneliness, social anxiety, and problematic Internet use. *CyberPsychology and Behavior* 10(2):234–42. doi:10.1089/cpb.2006.9963.

Castro, P., and L. Bettencourt. 2017. Exploring the predictors and the role of trust and concern in the context of data disclosure to governmental institutions. *Behaviour and Information Technology* 36(3):321–31. doi:10.1080/0144929X.2016.1234645.

Chung-Hoon, P., and K. Young-Gul. 2003. Identifying key factors affecting consumer purchase behavior in an online shopping context. *International Journal of Retail and Distribution Management* 31(1):16–29. doi:10.1108/09590550310457818.

Colquitt, J. A., B. A. Scott, and J. A. LePine. 2007. Trust, trustworthiness, and trust propensity: A meta-analytic test of their unique relationships with risk taking and job performance. *Journal of Applied Psychology* 92(4):909–27. doi:10.1037/0021-9010.92.4.909.

Corbitt, B. J., T. Thanasankit, and H. Yi. 2003. Trust and e-commerce: A study of consumer perceptions. *Electronic Commerce Research and Applications* 2 (3):203–15. doi:10.1016/S1567-4223(03)00024-3.

Correa, T., A. W. Hinsley, and H. G. De Zúñiga. 2010. Who interacts on the Web?: The intersection of users' personality and social media use. *Computers in Human Behavior* 26 (2):247–53. doi:10.1016/j.chb.2009.09.003.

Costa, P. T., and R. R. McCrae. 1985. *The NEO personality inventory manual*. Odessa, FL: Psychological Assessment Resources.

Cronbach, L. J. 1951. Coefficient alpha and the internal structure of tests. *Psychometrika* 16(3):297–334. doi:10.1007/bf02310555.

Dillard, J. P. 1993. Persuasion past and present: Attitudes aren't what they used to be. *Communication Monographs* 60 (1):90–97. doi:10.1080/03637759309376299.

Dinev, T., and P. Hart. 2006. An extended privacy calculus model for e-commerce transactions. *Information Systems Research* 17 (1):61–80. http://pubsonline.informs.org/doi/abs/10.1287/isre.1060.0080?journalCode=isre.

Doney, P. M., and J. P. Cannon. 1997. An examination of the nature of trust in buyer-seller relationships. *Journal of Marketing* 61 (2):35–51. http://www.jstor.org/discover/10.2307/1251829.

Dutton, W. H., and A. Shepherd. 2006. Trust in the Internet as an experience technology. *Information, Communication and Society* 9(4):433–51. doi:10.1080/13691180600858606.
Eagly, A. H., and S. Chaiken. 1993. *The psychology of attitudes*. Fort Worth, TX: Harcourt Brace, Jovanovich College Publishers.
Ferri, F., P. Grifoni, and T. Guzzo. 2008. Social aspects of mobile technologies on web tourism trend. In *Handbook of research on mobile business: Technical, methodological and social perspectives*, B. Unhelkar. ed., 293–303. Hershey, NY: IGI Global.
Fishbein, M., and I. Ajzen. 1975. *Belief, attitude, intention and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
Flaherty, G. G., and J. J. Fitzpatrick. 1978. Relaxation technique to increase comfort level of postoperative patients: A preliminary study. *Nursing Research* 27(6):352–55. doi:10.1097/00006199-197811000-00006.
Fogel, J., and E. Nehmad. 2009. Internet social network communities: Risk taking, trust, and privacy concerns. *Computers in Human Behavior* 25(1):153–60. doi:10.1016/j.chb.2008.08.006.
Frost, J., I. E. Vermeulen, and N. Beekers. 2014. Anonymity versus privacy: Selective information sharing in online cancer communities. *Journal of Medical Internet Research* 16(5):e126. doi:10.2196/jmir.2684.
Frye, N. E., and M. M. Dornisch. 2010. When is trust not enough? The role of perceived privacy of communication tools in comfort with self-disclosure. *Computers in Human Behavior* 26(5):1120–27. doi:10.1016/j.chb.2010.03.016.
Gilbert, D., L. Lee-Kelley, and M. Barton. 2003. Technophobia, gender influences and consumer decision-making for technology-related products. *European Journal of Innovation Management* 6(4):253–63. doi:10.1108/14601060310500968.
Graeff, T. R., and S. Harmon. 2002. Collecting and using PII: Consumers' awareness and concerns. *Journal of Consumer Marketing* 19 (4):302–18. http://www.emeraldinsight.com/doi/abs/10.1108/07363760210433627.
Gupta, B., L. S. Iyer, and R. S. Weisskirch. 2010. Facilitating global e-commerce: A comparison of consumers' willingness to disclose personal information online in the US and in India. *Journal of Electronic Commerce Research* 11 (1):41–52. http://www.questia.com/library/journal/1P3-1981541041/facilitating-global-e-commerce-a-comparison-of-consumers.
Guzzo, T., F. Ferri, and P. Grifoni. 2016. A model of e-commerce adoption (MOCA): Consumer's perceptions and behaviours. *Behaviour and Information Technology* 35(3):196–209. doi:10.1080/0144929X.2015.1132770.
Hallahan, K. 1999. Content class as a contextual cue in the cognitive processing of publicity versus advertising. *Journal of Public Relations Research* 11(4):293–320. doi:10.1207/s1532754xjprr1104_02.
Hamilton, J. 1989. Comfort and the hospitalized chronically ill. *Journal of Gerontological Nursing* 15 (4):28–33. http://www.ncbi.nlm.nih.gov/pubmed/2708793.
Hassanein, K., and M. Head. 2007. Manipulating perceived social presence through the web interface and its impact on attitude towards online shopping. *International Journal of Human-Computer Studies* 65(8):689–708. doi:10.1016/j.ijhcs.2006.11.018.
Heirman, W., M. Walrave, and K. Ponnet. 2012. Predicting adolescents' disclosure of personal information in exchange for commercial incentives: An application of an extended theory of planned behavior.. *CyberPsychology, Behavior, and Social Networking* 16(2):81–87.
Heirman, W., M. Walrave, K. Ponnet, and E. Van Gool. 2013. Predicting adolescents' willingness to disclose personal information to a commercial website: Testing the applicability of a trust-based model. *Cyberpsychology* 7(3):1–15. doi:10.5817/CP2013-3-3.
Henderson, S., and M. Gilding. 2004. 'I've never clicked this much with anyone in my life': Trust and hyperpersonal communication in online friendships. *New Media and Society* 6(4):487–506. doi:10.1177/146144804044331.
Hirschprung, R., E. Toch, F. Bolton, and O. Maimon. 2016. A methodology for estimating the value of privacy in information disclosure systems. *Computers in Human Behavior* 61:443–53. doi:10.1016/j.chb.2016.03.033.
Hoffman, D. L., T. P. Novak, and P. Chatterjee. 1995. Commercial scenarios for the web: Opportunities and challenges. *Journal of Computer-Mediated Communication* 1 (3). doi: 10.1111/j.1083-6101.1995.tb00165.x.
Jarvenpaa, S. L., N. Tractinsky, and L. Saarinen. 1999. Consumer trust in an Internet store: A cross-cultural validation. *Journal of Computer-Mediated Communication* 5(2). doi:10.1111/j.1083-6101.1999.tb00337.x.
John, O. P., E. M. Donahue, and R. L. Kentle. 1991. *The Big Five Inventory-versions 4a and 54*. Berkeley, CA: Institute of Personality and Social Research.
Kahn, J. H., and R. M. Hessling. 2001. Measuring the tendency to conceal versus disclose psychological distress. *Journal of Social and Clinical Psychology* 20(1):41–65. doi:10.1521/jscp.20.1.41.22254.
Kim, D. J., M.-S. Yim, V. Sugumaran, and H. R. Rao. 2016. Web assurance seal services, trust and consumers' concerns: An investigation of e-commerce transaction intentions across two nations. *European Journal of Information Systems* 25(3):252–73. doi:10.1057/ejis.2015.16.
Kolcaba, K. Y. 1991. A taxonomic structure for the concept comfort. *Journal of Nursing Scholarship* 23(4):237–40. doi:10.1111/j.1547-5069.1991.tb00678.x.
Kolcaba, K. Y. 1992. Holistic comfort: Operationalizing the construct as a nurse-sensitive outcome. *Advances in Nursing Science* 15(1):1–10. doi:10.1097/00012272-199209000-00003.
Kotler, P. 1988. *Marketing management: Analysis, planning, implementation, and control*. 9th ed. Englewood Cliffs, NJ: Prentice-Hall.

Laudon, K. C., and C. G. Traver. 2003. *E-commerce: Business, technology, society*. Upper Saddle River, NJ: Prentice Hall.
Ledbetter, A. M. 2009. Measuring online communication attitude: Instrument development and validation. *Communication Monographs* 76(4):463–86. doi:10.1080/03637750903300262.
Ledbetter, A. M., M. A. Broeckelman-Post, and A. M. Krawsczyn. 2011b. Modeling everyday talk: Differences across communication media and sex composition of friendship dyads. *Journal of Social and Personal Relationships* 28 (2):223–41. doi:10.1177/0265407510377904.
Ledbetter, A. M., and J. H. Kuznekoff. 2012. More than a game. *Communication Research* 39(2):269–90. doi:10.1177/0093650210397042.
Ledbetter, A. M., J. P. Mazer, J. M. DeGroot, K. R. Meyer, Y. Mao, and B. Swafford. 2011a. Attitudes toward online social connection and self-disclosure as predictors of Facebook communication and relational closeness. *Communication Research* 38(1):27–53. doi:10.1177/0093650210365537.
Lee, J.-M., and J.-Y. Rha. 2016. Personalization–privacy paradox and consumer conflict with the use of location-based mobile commerce. *Computers in Human Behavior* 63(Supplement C):453–62. doi:10.1016/j.chb.2016.05.056.
Liebermann, Y., and S. Stashevsky. 2002. Perceived risks as barriers to Internet and e-commerce usage. *Qualitative Market Research: An International Journal* 5(4):291–300. doi:10.1108/13522750210443245.
Loiacono, E., D. Carey, A. Misch, A. Spencer, and R. Speranza 2012. Personality impacts on self-disclosure behavior on social networking sites. Paper presented at the AMCIS 2012, Seattle, WA.
Lu, B., W. Fan, and M. Zhou. 2016. Social presence, trust, and social commerce purchase intention: An empirical research. *Computers in Human Behavior* 56(Supplement C):225–37. doi:10.1016/j.chb.2015.11.057.
Lu, Y., Y. Lu, and B. Wang. 2012. Effects of dissatisfaction on customer repurchase decisions in e-commerce—An emotion-based perspective. *Journal of Electronic Commerce Research* 13(3):224.
Mayer, R. C., J. H. Davis, and F. D. Schoorman. 1995. An integrative model of organizational trust. *Academy of Management Review* 20(3):709–34. doi:10.5465/AMR.1995.9508080335.
Mazer, J. P., and A. M. Ledbetter. 2012. Online communication attitudes as predictors of problematic Internet use and well-being outcomes. *Southern Communication Journal* 77(5):403–19. doi:10.1080/1041794X.2012.686558.
McKnight, D. H., V. Choudhury, and C. Kacmar. 2002. Developing and validating trust measures for e-commerce: An integrative typology. *Information Systems Research* 13(3):334–59. doi:10.1287/isre.13.3.334.81.
Meier, S. T. 1985. Computer aversion. *Computers in Human Behavior* 1(2):171–79. doi:10.1016/0747-5632(85)90030-5.
Mesch, G. S. 2012. Is online trust and trust in social institutions associated with online disclosure of identifiable information online? *Computers in Human Behavior* 28(4):1471–77. doi:10.1016/j.chb.2012.03.010.
Milne, G. R., and M. J. Culnan. 2004. Strategies for reducing online privacy risks: Why consumers read (or don't read) online privacy notices. *Journal of Interactive Marketing* 18(3):15–29. doi:10.1002/dir.20009.
Milne, G. R., and M. E. Gordon. 1993. Direct mail privacy-efficiency trade-offs within an implied social contract framework. *Journal of Public Policy and Marketing* 12 (2):206–15. http://www.jstor.org/stable/30000091.
Mishra, A. N., C. Anderson, C. M. Angst, and R. Agarwal. 2012. Electronic health records assimilation and physician identity evolution: An identity theory perspective. *Information Systems Research* 23(3):738–60. doi:10.1287/isre.1110.0407.
Moorman, C., R. Deshpandé, and G. Zaltman. 1993. Factors affecting trust in market research relationships. *Journal of Marketing* 57(1):81–101. doi:10.2307/1252059.
Morse, J. 1983. An ethnoscientific analysis of comfort: A preliminary investigation. *Nursing Papers: Perspectives in Nursing* 15(1):6–20.
Nagar, K. 2016. Drivers of e-store patronage intentions: Choice overload, Internet shopping anxiety, and impulse purchase tendency. *Journal of Internet Commerce* 15(2):97–124. doi:10.1080/15332861.2016.1148971.
NCC. 2014. *Trust in the Internet Survey*. Accessed August 17, 2016. https://www.nccgroup.trust/. . ./surveys. . ./nccg200115-trust-in-the-internet-survey.pdf.
Norris, J. T., R. Pauli, and D. E. Bray. 2007. Mood change and computer anxiety: A comparison between computerised and paper measures of negative affect. *Computers in Human Behavior* 23(6):2875–87. doi:10.1016/j.chb.2006.06.003.
Park, J., F. Gunn, and S. L. Han. 2012. Multidimensional trust building in e-retailing: Cross-cultural differences in trust formation and implications for perceived risk. *Journal of Retailing and Consumer Services* 19 (3):304–12. doi:10.1016/j.jretconser.2012.03.003.
Parloff, M. B., H. C. Kelman, and J. D. Frank. 1954. Comfort, effectiveness, and self-awareness as criteria of improvement in psychotherapy. *American Journal of Psychiatry* 111 (5):343–52. http://www.ncbi.nlm.nih.gov/pubmed/13197596.
Pavlou, P. 2003. Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce* 7(3):69–103.
Pavlou, P., and R. Chellappa. 2001. The role of perceived privacy and perceived security in the development of trust in electronic commerce transactions. *Information System Research* 11:18–36.
Paypal. 2016. PayPal cross-border consumer research 2016: Global summary report. Accessed September 25, 2017. https://www.paypalobjects.com/digitalassets/c/website/marketing/global/shared/global/media-resources/docu

ments/passport-citation.pdf?utm_source=Triggermail&utm_medium=email&utm_campaign=New%20Campaign&utm_term=BII%20List%20Payments%20ALL.
Phelps, J., G. Nowak, and E. Ferrell. 2000. Privacy concerns and consumer willingness to provide personal information. *Journal of Public Policy Marketing* 19(1):27–41. doi:10.2307/30000485.
Pineau, C. 1982. The psychological meaning of comfort. *Applied Psychology* 31(2):271–82. doi:10.1111/j.1464-0597.1982.tb00097.x.
Podsakoff, P. M., S. B. MacKenzie, J.-Y. Lee, and N. P. Podsakoff. 2003. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology* 88(5):879–903. doi:10.1037/0021-9010.88.5.879.
Reinecke, P. 2015. *E-commerce Statistics for Individuals*. Accessed March 15, 2017. http://ec.europa.eu/eurostat/statistics-explained/index.php/E-commerce_statistics_for_individuals
Robinson, S. C. 2017a. Disclosure of personal data in ecommerce: A cross-national comparison of Estonia and the United States. *Telematics and Informatics* 34(2):569–82. doi:10.1016/j.tele.2016.09.006.
Robinson, S. C. 2017b. What's your anonymity worth? Establishing a marketplace for the valuation and control of individuals' anonymity and personal data. *Digital Policy, Regulation and Governance* 19(5):353–66. doi:10.1108/DPRG-05-2017-0018.
Rodríguez-Ardura, I., and A. Meseguer-Artola. 2010. Toward a longitudinal model of e-commerce: Environmental, technological, and organizational drivers of B2C adoption. *Information Society* 26(3):209–27. doi:10.1080/01972241003712264.
Rokeach, M. 1968. *Beliefs, attitudes and values: A theory of organization and change*. San Francisco, CA: Jossey-Bass.
Rose, R. 2003. The dynamics of digital choice. Paper presented at the Information, Communication, Society Symposium, University of Oxford: Oxford, UK.
Ross, C., E. S. Orr, M. Sisic, J. M. Arseneault, M. G. Simmering, and R. R. Orr. 2009. Personality and motivations associated with Facebook use. *Computers in Human Behavior* 25(2):578–86. doi:10.1016/j.chb.2008.12.024.
Ryckman, R. 2012. *Theories of Personality*. Belmont, CA: Wadsworth, Cengage Learning.
Salam, A. F., H. R. Rao, and C. C. Pegels. 2003. Consumer-perceived risk in e-commerce transactions. *Communications of the ACM* 46(12):325–31. doi:10.1145/953460.953517.
Sheehan, K. B., and M. G. Hoy. 2000. Dimensions of privacy concern among online consumers. *Journal of Public Policy Marketing* 19(1):62–73. doi:10.2307/30000488.
Shoenberger, H., and E. Tandoc Jr. 2014. Updated statuses: Understanding Facebook use through explicit and implicit measures of attitudes and motivations. *Online Journal of Communication and Media Technologies* 4(1):217–44.
Siefert, M. L. 2002. Concept analysis of comfort. *Nursing Forum* 37(4):16–23. doi:10.1111/j.1744-6198.2002.tb01288.x.
Stevens, L. 2016. Survey shows rapid growth in online shopping. *The Wall Street Journal*. Accessed September 28, 2017. http://www.wsj.com/articles/survey-shows-rapid-growth-in-online-shopping-1465358582.
Sullivan, C., and E. Burger. 2017. E-residency and blockchain. *Computer Law Security Review* 33(4):470–81. doi:10.1016/j.clsr.2017.03.016.
Sun, Y., N. Wang, and X. L. Shen 2014. Perceived benefits, privacy risks, and perceived justice in location information disclosure: A moderated mediation analysis. *PACIS 2014 Proceedings*. 135.
Torney-Purta, J., C. H. Barber, and W. K. Richardson. 2004. Trust in government-related institutions and political engagement among adolescents in six countries. *Acta Politica* 39(4):380–406. doi:10.1057/palgrave.ap.5500080.
Uslaner, E. M. 2004. Trust, civic engagement, and the internet. *Political Communication* 21(2):223–42. doi:10.1080/10584600490443895.
Wallace, P. 2001. *The psychology of the internet*. New York, NY: Cambridge University Press.
Wei, M., D. W. Russell, and R. A. Zakalik. 2005. Adult attachment, social self-efficacy, self-disclosure, loneliness, and subsequent depression for freshman college students: A longitudinal study. *Journal of Counseling Psychology* 52(4):602–14. doi:10.1037/0022-0167.52.4.602.
Wolfradt, U., and J. Doll. 2001. Motives of adolescents to use the Internet as a function of personality traits, personal and social factors. *Journal of Educational Computing Research* 24(1):13–27. doi:10.2190/anpm-ln97-aut2-d2ej.
Xu, H., -H.-H. Teo, B. Tan, and R. Agarwal. 2009. The role of push-pull technology in privacy calculus: The case of location-based services. *Journal of Management Information Systems* 26(3):135–74. doi:10.2753/mis0742-1222260305.

Notes on contributor

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Appendix A: Variable measures and factor loadings

Variable	Item	Factor loading	Cronbach alpha	Variance
Attitude toward disclosing personal data online				
	Risky/safe	.843		
	Trustworthy/untrustworthy	.852		
	Unreliable/reliable	.838		
	Bad/good	.821		
	Unimportant/necessary	.616		
	Not valuable/valuable	.603		
	Always willing/never willing	.747		
			.91	59%
Anxiety disclosing personal data online				
	I felt uncomfortable providing the information.	.816		
	It wasn't stressful at all.	.837		
	I didn't feel intimidated.	.704		
	I was uncertain about providing information.	.858		
	I was anxious about being asked for my information.	.882		
	I would have preferred not to provide all the information.	.722		
	I was relaxed without any worries.	.840		
			.91	66%
Trust in the Internet				
	The Internet is a safe environment in which to exchange information with others.	.836		
	The Internet is a reliable environment in which to conduct business transactions or personal purchases.	.854		
	Internet merchants are dependable.	.793		
	The Internet can be trusted.	.868		
			.86	70%
Trust in institutions				
	National government	.843		
	Local government	.846		
	Local businesses	.736		
	International businesses	.707		
			.79	62%
Personality				
Extraversion				
	…is talkative	.834		
	…is outgoing, sociable	.850		
	…is reserved	.840		
	…is shy, inhibited	.815		
			.88	15%
Openness				
	…is inventive	.837		
	…has an active imagination	.807		
	…is curious about many different things	.759		
	…is original, has new ideas	.839		
			.85	15%
Neuroticism				
	…is relaxed, handles stress well	.777		
	…gets nervous easily	.855		
	…worries a lot	.860		
	…can be tense	.816		
			.88	16%
Conscientiousness				
	…does a thorough job	.779		
	…does things efficiently	.802		
	…tends to be disorganized	.826		
	…tends to be lazy	.741		
			.81	14%
Agreeableness				
	…is generally trusting	.724		

(*Continued*)

(Continued).

Variable	Item	Factor loading	Cronbach alpha	Variance
	…is considerate and kind to almost everyone	.802		
	…tends to find fault with others	.637		
	… likes to cooperate with others	.799		
			.74	12% (71%)
Perceived benefits of exchanging personal data information				
A. Opportunity benefits				
	Significant opportunity/significant risk	.845		
	High potential for loss/high potential for gain	.794		
	Very positive situation/very negative situation	.779		
			.79	14%
B. Bargain likelihood				
	Very unlikely/very likely	.858		
	Probably/not probable	.845		
	Happens all the time/never happens	.864		
			.84	15%
C. Purchase benefits				
	The company tailors their product offerings to my tastes.	.839		
	The company sends me special discounts on merchandise.	.686		
	It will help me save time when I make my next purchase from the same site.	.754		
	I can get better customer service from the company.	.840		
	It will provide a greater merchandise selection.	.723		
			.89	22%
D. **Privacy expectation benefits**				
	The company web site clearly states how my personal information will be used.	.815		
	The company web site lets me know that they respect my privacy rights.	.765		
	I always know the purpose of the information being collected.	.853		
	I have a choice in whether my personal information should be disclosed to a third party.	.874		
	At any time, I can delete or edit my personal information.	.815		
			.94	24% (75%)