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Revisiting Trust and Privacy Concern in Consumers' Perceptions of Marketing Information Management Practices: Replication and Extension

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Abstract

The marketing literature has continued to examine trust and consumer privacy concern. A 1999 study that examined 17 industries found that improving trust and reducing privacy concern are two distinct approaches to managing consumer information, with the former being a more effective strategy than the latter (Milne & Boza, 1999). However, considering the shifting levels of consumer vulnerability due to technologies, managerial actions, and legal environment in the past two decades, a re-evaluation and extension of their findings is warranted. The current study uses a new and expanded dataset as well as new analytical techniques to re-examine the role of trust and privacy concern in managing consumer information. The new analysis shows that building trust still has a greater effect than reducing privacy concern on consumers' willingness to participate in information markets. Although trust and privacy concern have a negative relationship with each other, we find that privacy concern, paradoxically, is not negatively but positively related to direct marketing usage. This study also assesses the impact of trust and privacy concern across a typology for four quadrants of industries, the relationship of trust and concern with the managerial levels of transparency and control, and the moderating influence of age and sex.

Keywords: Trust; Privacy concern; Privacy; Information privacy; Direct marketing; Replication

Introduction

Enhancing consumer trust is an essential strategy for firms managing consumer information and privacy. To encourage consumers' decision to make the trade-off to provide information, early research found that a self-regulation strategy of increasing trust was more effective for increasing direct marketing usage than a strategy of reducing privacy concerns (Milne & Boza, 1999). Subsequently, there has been robust discussion in academia and industry about consumer trust and privacy concerns (Martin, 2018; Martin, Borah, & Palmatier, 2017; Phelps, Nowak, & Ferrell, 2000; Schoenbachler & Gordon, 2002; Söllner, Benbasat, Gefen, Leimeister, & Pavlou, 2016; Urban, Amyx, & Lorenzon, 2009; Wirtz & Lwin, 2009) and the role of privacy calculus in consumers' decisions to share information (Culnan & Armstrong, 1999; Dinev & Hart, 2006).

Privacy continues to be a major research issue (Martin & Murphy, 2017), and therefore examining the progress that industries have made and the theoretical understanding in this area is important. Research suggests the evolution of online relationship marketing tools (Steinhoff, Arli, Weaven, & Kozlenkova, 2019) has presented consumers and marketers with new privacy issues. While consumers gain experience and comfort with data-driven marketing, the constant introduction of new marketing technologies over time (Martin et al., 2017; Milne & Bahl, 2010) and the difficulty of protecting privacy in the digital age (Acquisti, Brandimarte, & Loewenstein, 2020) make consumers vulnerable, especially as their knowledge of privacy violations grows (Janakiraman, Lim, & Rishika, 2018;

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Martin, 2018). Marketers' efforts to increase transparency through privacy policies can reduce the impact of vulnerability; however, industry transparency of industry failings make consumers less trusting and more emotionally violated (Martin et al., 2017). Given the sea changes that have occurred over the past two decades, Milne and Boza's (1999) findings regarding the impact of privacy concerns on direct marketing usage need reexamination.

Replication research is one method to examine potential industry and theoretical changes over time (Easley, Madden, & Dunn, 2000). Replication is the cornerstone of science and it is an important component of collective science (Hallikainen & Laukkanen, 2020; Simons, 2014). Replication when conducted at a different time and with different people is preferable because it provides additional information on the scope or boundary of the replicated study's outcomes (Monroe, 1992).

Although there are several barriers to replication research in the marketing discipline, there is a growing consensus among researchers on the importance and relevance of replication work, especially the critical role it serves in theory building and modification (Kerr, Schultz, & Lings, 2016). Indeed, many journals have undertaken the challenge of publishing replications to further our understanding of key marketing issues (e.g., *Journal of Marketing Research*, *Journal of Consumer Research*, *Journal of Business Research*, *International Journal of Research in Marketing*, and *Journal of Advertising*). It is to this effort we contribute by partially replicating and extending Milne and Boza's (1999) seminal work.

Based on the above discussion, we partially replicate and extend Milne and Boza's (1999) original findings after two decades. Building on a conceptual model highlighting three temporal forces, we extend the replication to cover the time shift from 1997 to 2017 by increasing the number of industries from 17 to 25. We also apply additional methodological rigor to evaluate the potential changes. We further extend the research inquiry by examining the moderating role of sex and age and exploring how managerial levers of transparency and control are associated with trust and privacy concern levels across various industries. Thus, this research pursues the recommended replication approach "replications and extensions" rather than the flawed "exact replication" approach (Lynch Jr., Bradlow, Huber, & Lehmann, 2015).

This research makes four main contributions to privacy and interactive marketing literature. First, it reveals that some of the antecedents of trust, privacy concern, and direct marketing usage have changed in the past two decades. Although many of our results are consistent with those of Milne and Boza (1999), we find shifting relationships. Trust and relationship marketing activities are still the strongest path for reducing privacy concern and enhancing direct marketing usage. While trust and privacy concern have a negative relationship with each other, paradoxically, privacy concern is not negatively but positively related to direct marketing usage. Furthermore, the impact of attitudes toward relationship marketing has turned positive for trust and negative for privacy concern, and the effect of knowledge of direct marketing on privacy concern and direct marketing usage is now positive. These shifting effects have important managerial implications because they indicate evolving consumer attitudes and intentions. Second, we find that the perceptions of historic industries do not shift much. We find that consumers do not trust and are concerned with four new industries that support e-commerce. Interestingly, consumers trust the e-commerce industry despite high levels of privacy concern. Third, it links consumer perceptions of trust and concern of particular industries with the managerial actions of transparency and control and shows that across all industries transparency and control have a strong positive association with trust. Furthermore, transparency and control have weaker associations with privacy concern, which is positive in low concern industries but negative in high concern industries. Fourth, this research identifies key demographic moderators that predict different outcomes, thus contributing to managerial actions.

Background

Milne and Boza (1999) examined the role of trust and privacy concern with each other and with direct marketing usage with 1997 survey data. They also examined several antecedents of trust, privacy concern, and direct marketing usage: perceived control, knowledge of direct marketing, relationship marketing attitude, direct marketing attitude, and demographics. Building on Martin et al.'s (2017) framework, we argue that this replication with extension conducted 20 years later with data from 2017 is subject to three temporal forces: vulnerability, transparency, and control—as shown in Fig. 1. In this section, we review the literature on trust and concern and then discuss how the three temporal forces potentially influence the components of the 1997 model 20 years later.

Trust and Concern

Trust, or consumers' expectation of how data will be handled in the future, is an important component of information exchanges. Trust-based relationships exist between people or groups, between people and organizations, between organizations, and between people and technology (Söllner et al., 2016). Online trust has gained importance as firms rely more on digital strategies (Bart, Shankar, Sultan, & Urban, 2005; Urban et al., 2009). Within the domain of privacy, trust can counteract privacy concern and may partly explain why consumers paradoxically engage with marketers despite these concerns (Culnan & Armstrong, 1999; Hoffman, Novak, & Peralta, 1999; Luo, 2002). Furthermore, trust can vary by industry (Milne & Boza, 1999; Schoenbachler & Gordon, 2002; Sirdeshmukh, Singh, & Sabol, 2002). Milne, Rohm, and Boza (1999) argue that in an industry, a firm can strategically improve trust by developing positive market signals of reputation and credibility, while also using communication to promote benefits and safeguards. Luo (2002) suggests that mechanisms such as community, repeated purchases, and digital certificates help increase trust in e-commerce and reduce privacy concerns. Furthermore, violating privacy expectations

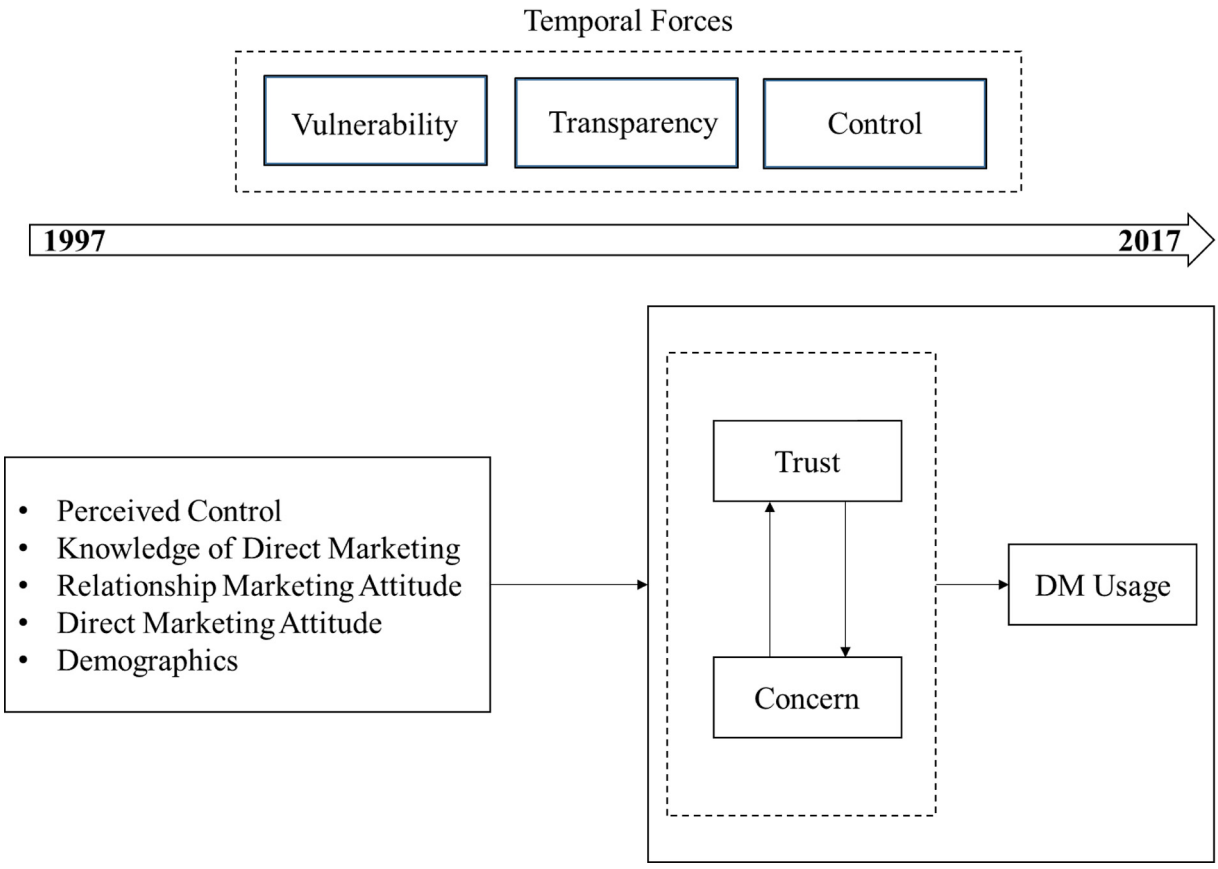

Fig. 1. Conceptual model.

online negatively impacts trust and diminishes key trust developing factors such as integrity and ability on trust (Martin, 2018).

Privacy concern which represent consumers' beliefs, attitudes, and perceptions about their privacy, has been used as a proxy for measuring consumer privacy across many contexts (Martin & Murphy, 2017). It has been treated as an antecedent (Mothersbaugh, Foxx, Beatty, & Wang, 2012; Son & Kim, 2008), a consequence (John, Acquisti, & Lowenstein, 2011; Xu, Teo, Tan, & Agarwal, 2012), a mediator (Bleier & Eisenbeiss, 2015; Wirtz & Lwin, 2009), and a moderating influence (Angst & Agarwal, 2009; McCole, Ramsey, & Williams, 2010). Phelps et al. (2000) note that privacy concern varies depending on attitudes toward marketers, situational characteristics, and shopping habits and influences consumers' willingness to provide data to marketers.

Privacy concern and trust have often been conceptualized as the two primary, but opposing forces within a consumers' privacy calculus (Dinev & Hart, 2006; Milne & Boza, 1999). This perspective posits that if one's level of trust outweighs their concern, they will likely share their information. Although distinct constructs, privacy concern and trust are usually negatively correlated. A recent meta-analysis study of 127 effect sizes indicates that privacy concern is negatively correlated with trust (Okazaki, Eisend, Plangger, de Ruyter, & Grewal, 2020). Trust has been defined as one's willingness to rely on an exchange partner in the face of risk (Aiken & Boush, 2006) and is thought to reduce privacy concerns by assuring consumers that their data will be safe and free of exploitation (Bleier & Eisenbeiss, 2015; Wirtz & Lwin, 2009). Likewise, those with high levels of privacy concerns may not be trusting since they judge the situation to be riskier (Malhotra, Kim, & Agarwal, 2004; Martin, 2018).

Indeed, the trade-offs of benefits versus privacy concerns (Milne & Gordon, 1993; Phelps, D'Souza, & Nowak, 2001) and different confounding expectations (Martin & Nissenbaum, 2016) affect consumers' willingness to provide information. However, research indicates that consumers are often willing to gain the benefits of direct and online marketing despite privacy concerns (Norberg, Horne, & Horne, 2007). Known as the "privacy paradox," this phenomenon has spurred ongoing debate in the academic community (Kokolakis, 2017; Solove, 2020).

The Role of Temporal Changes on the Replication

Vulnerability

Consumers in direct marketing and online environments are vulnerable to their data being used in ways they did not intend. Vulnerability has the impact of increasing concern and lowering trust for a firm (Martin et al., 2017). Consumers are vulnerable when there is limited knowledge or control of direct marketing practices (Culnan, 1995), excessive targeting (Smith & Cooper-Martin, 1997), technologies are used to collect the

data (Milne & Bahl, 2010), and when data that is collected is deemed sensitive (Markos, Labrecque, & Milne, 2018). From the perspective of managers, data practices have been cited for heightening consumer vulnerability (Martin et al., 2017) due to increased data access, data breaches, and data misuse. In the 20 years since 1997, we have seen the rise of e-commerce, mobile marketing, and Internet-of-Things (IoT). Moreover, new marketing techniques such as online behavioral advertising, geo-tracking, covert marketing, and online surveillance through apps have added to consumer vulnerability. Consumers also might feel vulnerable as they learn that major data breaches have increased in the last 20 years. For instance, in the last 15 years over 9,000 data breaches, involving over 10 billion affected records, have been reported in the U.S.A. (Privacy Rights Clearinghouse, 2020). While Milne and Boza (1999) did not measure vulnerability directly, they did measure privacy concern which is manifested within the consumer vulnerability construct (Martin et al., 2017).

Transparency

Transparency occurs when consumers are aware of how organizations handle and share their data with other organizations (Martin et al., 2017). Transparency thus provides consumers with knowledge on how firms manage their personal information. Throughout the last couple of decades, research has documented that consumers are not very knowledgeable about data handling processes (Auxier et al., 2019; Milne, Labrecque, & Cromer, 2009; Morey, Forbath, & Schoop, 2015). This gets amplified as new technologies are employed to collect, use, and transmit consumer data. In 1997, 75% of consumers purchased products or services by mail, 64% by phone, and 12% by Internet (Milne & Boza, 1999). Twenty years later we find the distribution of database marketing has shifted among the channels: 17.7% of consumers use mail, 18.3% use phone, and 91.4% use the Internet to purchase products or services. These traditional channels are now being augmented with the IoT (Weinberg, Milne, Andonova, & Hajjat, 2015), AI data bots (Thomaz, Salge, Karahanna, & Hulland, 2020), and computational advertising (Helberger, Huh, Milne, Strycharz, & Sundaram, 2020), which reduce transparency since consumers are not fully aware of how these new technologies work. With the shift to digital marketing, marketers have communicated transparency via privacy notices with varying success (Martin, Borah, & Palmatier, 2018). Yet, research has shown the consumers often do not read privacy notices (Milne & Culnan, 2004), which offsets these efforts.

Control

Control is the extent to which consumers believe they can manage the flow of information (Emler, 1994), and a lack of control can increase the negative effects of data vulnerability (Martin et al., 2017). Control of personal information empowers consumers to decide whether to engage with a firm. When given control, consumers have the opportunity to opt into data-sharing arrangements. However, much of the data collection today does not directly ask consumers but rather is often scraped and transferred among organizations without consumers' knowledge. Given the increased vulnerability, new laws such as the Health Insurance Portability and Accountability Act (HIPAA), the Gramm-Leach-Bliley Act, and the Children's Online Privacy Protection Act have been implemented (Peltier, Milne, & Phelps, 2009).

Research Questions

Given our review of shifts in vulnerability, transparency, and control over time, have antecedents and perceptions of trust and privacy concern changed? More specifically, in this paper we address six research question across four separate analyses of: (1) linear models, (2) industry clusters, (3) correlations, and (4) moderating effects:

RQ1a. Has the relationship among trust, privacy concern, and other predictor variables changed?

RQ1b. Has the influence of trust, privacy concern, and other predictor variables on consumer direct marketing usage changed?

RQ2a. Have trust and privacy concern perceptions changed for established industries?

RQ2b. How are new industries viewed in terms of trust and privacy concern?

RQ3. Do trust and privacy concern have a strong association with the managerial levers of transparency and control by industry quadrants?

RQ4. Do age and sex moderate models that predict trust, privacy concern, and direct marketing usage?

In this partial replication with extension, we examine these research questions by incorporating the same measures used in their 1997 data collection by Milne and Boza (1999). We expand the number of industries examined from 17 to 25 (collected in 2017) to account for changes in the marketplace. We also use new approaches for analyzing data, including structural equation modeling [SEM], testing for possible endogeneity, and exploring the demographic differences through multi-group analysis. We also collect additional data to explore the relationship of trust and concern with transparency and control by industry quadrants.

Method

To date, research has not replicated Milne and Boza's (1999) study, though studies have continued to examine trust and privacy concern. As noted previously, technological developments in the past two decades have resulted in changes to industries (transparency), consumers (vulnerability), and laws (control). Of the particular need for replication is the importance of trust and privacy concern concepts in the 17 industries Milne and Boza (1999) examined in 1997.

Replications within social sciences can be classified as Type I, a faithful duplication of a prior study; Type II, a close replication; or Type III, a deliberate modification of a previous study (Easley et al., 2000). We undertake a Type III modification by including eight new industries and reporting data collected 20 years after that of Milne and Boza (1999).

To compare the perception of consumer privacy between 1997 and 2017 (our data), we designed a questionnaire similar to that used by Milne and Boza (1999). To reflect current perceptions, we included certain additions to the survey, most notably additional industries. Moreover, the attitude toward direct marketing and relationship marketing measures included items on technology, such as email and Amazon.com.

Survey

The respondents first answered demographic questions on age (less than 30 years, 30–49 years, or 50 years or older), sex (male, female, or do not identify as either male or female), level of education, political philosophy (conservative, moderate, or liberal), ethnicity, and income. Then, they read the definition of direct marketing and responded to 11 items on attitude toward direct marketing. Next, they reported the level of importance on the issue of requiring environmentally safe packaging (1 = "very important"; 4 = "not at all important"; 5 = "not sure") and their awareness of any ways to remove names from direct response lists for catalogs, products, and services (yes, no, or don't know). The respondents then reported their knowledge on whether organizations can obtain their name and contact information, email address, phone number, products purchased, and price and date of purchase from 28 sources. They checked all the information they believed organizations could obtain from the listed sources. They further indicated how concerned they would be if a company with which they did not previously do business purchased a customer list for psychology profile, income, and purchase behavior by category (e.g., types of books read) (1 = "very concerned"; 4 = "not at all concerned"; 5 = "not sure"). Next, the respondents indicated their level of privacy concern (1 = "not at all concerned"; 10 = "very concerned"; 11 = "not sure") on a single-item measure for 25 industries. They also indicated their attitude toward relationship marketing on a 13-item scale (1 = "agree strongly"; 4 = "disagree strongly"; 5 = "not sure") as well as their level of trust for 25 industries (1 = "do not trust at all"; 10 = "trust completely"; 11 = "not sure"). Finally, the respondents reported their direct marketing usage of mail, phone, and the Internet ("How many times in the last six months have you purchased goods or services using the following methods?") and their computer usage at home and work (yes, no, or don't know).

Respondents

We recruited respondents from a Qualtrics panel of U.S. consumers. To ensure data quality, we employed two procedures. First, we added two items in the survey as attention checks, in which respondents were instructed to select a specific response. Respondents who failed either one of these checks went directly to the end of the survey. Second, we evaluated the straight-lining issue on a random set of questions. In total, we retained 1,000 respondents who did not fail either quality check.

Sample Coding and Characteristics

We reserve-coded the measures for attitude toward direct marketing and relationship marketing. To handle the "not sure" responses for items that measured attitude toward direct marketing, attitude toward relationship marketing, and industry trust and privacy concern levels, we computed series means imputation to replace these responses. The mean imputation is one of the most common and best techniques for handling missing data (Kamakura & Wedel, 2000; Lix, Berger, & Magliozzi, 1995). For replicability, we treated the measures the same as Milne and Boza (1999). Similarly to Milne and Boza (1999), we coded age (1 = 50 years and over, 0 = under 50 years), sex (female = 1, male = 0), political philosophy (conservative = 1, moderate/liberal = 0), perceived control (1 = yes on removal mechanism, 0 = no or don't know), and computer usage (1 = yes [work or home], 0 = no). Following Milne and Boza (1999), we created the trust and privacy concern scores by summing scores across the industries (we computed these variables with only direct marketing industries for models specific to those industries). We computed knowledge of direct marketing practice scores by summating correct responses from 28 sources in which organizations could obtain names and contact information (the only incorrect source was "tax forms"). Furthermore, in line with Milne and Boza (1999), we computed direct marketing usage by summing across mail, phone, and Internet (coded as 0 for none/don't know, 1 for once, 3 for 2–3 times, 5 for 4–5 times, and 6 for 6 or more times).

We eliminated 20 respondents who indicated "don't know" for their income level and one respondent who indicated "do not identify as either male or female," leaving 979 cases for the final analysis. The final sample consisted of respondents who were 49.9% female, 59.6% under 50 years of age, and 79.2% white. Moreover, 76% of respondents had an income level under $75,000, 31.2% identified as politically conservative, and 43.6% indicated being moderate. Finally, 46.6% were college graduates or had post-graduate degrees. Table 1 provides sample characteristics.

Measurement and Common Method Bias

Attitudinal Measures: Validity and Reliability

To test the validity and reliability of the two reflective attitudinal constructs (attitude toward direct marketing and attitude toward relationship marketing), we conducted a confirmatory factor analysis (CFA) using Mplus software. The direct marketing measure was a first-order factor, while relationship marketing was a second-factor measure with three subfactors (Milne & Boza, 1999). We further verified this by running exploratory factor analysis for each measure.

In the CFA, we included the attitudinal constructs and their items and added single items for perceived control, direct marketing usage, knowledge of direct marketing, trust, and privacy concern. To improve model fit, we eliminated the items with factor loading less than 0.50. In doing so, we eliminated two items from the direct marketing measure and four items

Table 1
Sample characteristics.

	Percentage		Percentage
Age		*Education*	
Less than 50 years	59.60%	Less than high school graduate	2.30%
50 years and over	40.40%	High school graduate or equivalent (GED)	22.80%
Sex		Some college, but no degree	28.30%
Male	50.10%	College graduate	36.20%
Female	49.90%	Post-graduate	10.40%
Political philosophy		*Ethnicity*	
Conservative	31.20%	White	79.20%
Moderate/liberal	68.80%	Black	6.80%
Income		African American	2.10%
Less than $11,250	7.00%	Native American or Alaskan Native	1.00%
$11,250 to under $22,500	13.70%	Asian or Pacific Islander	3.50%
$22,500 to under $37,500	21.10%	Hispanic	6.00%
$37,500 to under $52,500	18.20%	Other	1.30%
$52,500 to under $75,000	16.00%	*Computer usage*	
$75,000 to under $112,500	15.70%	Yes	98.40%
$112,500 to under $150,000	5.20%	No	1.60%
$150,000 to under $187,500	1.50%		
$187,500 to under $225,000	0.70%		
$225,000 and above	0.70%		

N = 979.

from the relationship marketing measure (see Appendix A). The overall model fit was good ($\chi^2_{(211)}$= 606.811, comparative fit index [CFI] = 0.948, root mean square error of approximation [RMSEA] = 0.044) (Hair, Babin, & Krey, 2017). The average variance extracted (AVE) for each measure was approximately 50% and the square root of AVE for each measure (0.70) was higher than the highest correlation among the variables (Fornell & Larcker, 1981). Furthermore, the composite reliabilities for the two measures were above 0.70 (direct marketing: 0.90; relationship marketing: 0.90). These results provide evidence of validity and reliability for our two attitudinal constructs under examination (Hair et. al., 2017) (see Appendix A for the CFA results and Appendix B for the correlations among the study constructs).

Common Method Bias

We tested the issue of common method bias using two procedures: Harman's one-factor analysis and the marker variable technique (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In Harman's one-factor analysis, all items were loaded onto a single factor. The overall model fit of one factor was poor ($\chi^2_{(211)}$= 2,639.211, CFI = 0.680, RMSEA = 0.103), and the overall model explained only 26.15% of the variance, below the desired level of 50% and over. For the marker variable technique, we used the item “environmentally safe packaging” as the marker indicator. The lowest correlation between the marker indicator and the variables under consideration was 0.007. Furthermore, after we controlled for the marker variable, the correlations among the variables did not change. The results from these two common bias tests suggest that common method bias is not a serious concern.

Results and Discussion for Antecedents and Consequences of Trust and Privacy Concern (RQ1a-1b)

Linear Models

Incorporating the same variables in the ordinary least squares models specified by Milne and Boza (1999), we ran the analysis to test the antecedents and consequences of trust and privacy concern using Mplus software. Table 2 reports the results of seven structural equation models. Models 1 and 2 estimated the antecedent variables' impact on trust and privacy concern, respectively, for the 17 industries reported in Milne and Boza (1999). Models 3, 4, and 5 estimated the impact on trust, privacy concern, and direct marketing usage, respectively, for direct marketing industries, which include magazines, catalogs, and direct mail clubs. Models 6 and 7 estimated the impact on trust and privacy concern, respectively, for the expanded list of 25 industries, which, in addition to the original 17 industries, included online e-commerce, online music, wireless smartphones, online search, social media, cable companies, car companies, and household appliance companies.

Model 1 tests the impact of privacy concern and other antecedents on trust, while model 2 tests the impact of trust and other antecedents on privacy concern across 17 industries. Overall, the fit of models 1 and 2 was good ($\chi^2_{(96)}$= 239.319, CFI = 0.954, RMSEA = 0.039) (Hair et al., 2017). The results from model 1 indicate that privacy concern ($\beta = -0.209$, $p < 0.01$) and knowledge of direct marketing ($\beta = -0.067$, $p < 0.05$) have negative effects on trust while attitude toward relationship marketing has a positive effect ($\beta = 0.305$, $p < 0.01$). The results from model 2 show negative

Table 2
Model results for trust, privacy concern, and direct marketing usage.

	All 17 industries		Direct marketing industries			All 25 industries	
	Model 1[a] Trust	Model 2[a] Privacy concern	Model 3[b] Trust	Model 4[b] Privacy concern	Model 5[c] Usage	Model 6[d] Trust	Model 7[d] Privacy concern
Trust		−0.228 **		−0.195 **	0.096 **		−0.238 **
Privacy concern	−0.209 **		−0.180 **		0.064 *	−0.215 **	
Perceived control	0.001	−0.032	0.009	−0.011	0.127 **	0.002	−0.034
Knowledge of direct marketing	−0.067 *	0.077 *	−0.008	0.080 **	0.085 **	−0.072 *	0.077 *
Relationship mkt. attitude	0.305 **	−0.102 **	0.133 **	−0.165 **	0.100 *	0.321 **	−0.098 *
Direct mkt. attitude			0.225 **	0.065	0.058		
Sex (female = 1, male = 0)	−0.021	0.062	−0.064	0.010	−0.116 **	−0.028	0.060
Age	−0.007	−0.002	−0.040	0.027	−0.130 **	−0.009	−0.003
Income	0.037	0.027	0.007	0.021	0.135 **	0.031	0.027
Political philosophy	0.015	0.036	−0.032	0.025	−0.082 **	−0.004	0.029
Computer usage	−0.056	−0.026	−0.035	−0.011	0.102 **	−0.056	−0.024
Adjusted R^2	0.169	0.099	0.155	0.083	0.120	0.186	0.099

Standardized betas reported in table. We ran separate models for trust, privacy concern, and direct marketing usage because the model with trust and privacy concern was not identified due to a non-recursive relationship. N = 979.

** $p \leq 0.01$.

* $p \leq 0.05$.

[a] Model fit: ($\chi^2_{(96)}$= 239.319, CFI = 0.954, RMSEA = 0.039).

[b] Model fit: ($\chi^2_{(275)}$= 709.735, CFI = 0.942, RMSEA = 0.040).

[c] Model fit: ($\chi^2_{(291)}$= 725.945, CFI = 0.942, RMSEA = 0.039).

[d] Model fit: ($\chi^2_{(96)}$= 246.028, CFI = 0.953, RMSEA = 0.040).

relationships between trust and privacy concern (β = −0.228, p < 0.01) and between attitude toward relationship marketing and privacy concern (β = −0.102, p < 0.01). The effect of knowledge of direct marketing on privacy concern is positive (β = 0.077, p < 0.05).

Next, we ran an analysis for three direct marketing industries (magazines, catalogs, and direct mail) in separate models with trust, privacy concern, and direct marketing usage as dependent measures. The overall fit of models 3 and 4 was good ($\chi^2_{(275)}$= 709.735, CFI = 0.942, RMSEA = 0.040) (Hair et. al., 2017). In model 3, we find that the effect of privacy concern on trust is negative and significant (β = −0.180, p < 0.01) while the effects of attitude toward relationship marketing (β = 0.133, p < 0.01) and attitude toward direct marketing (β = 0.225, p < 0.01) are positive and significant. The results from model 4 and model 2 were similar. The effects of trust (β = −0.195, p < 0.01) and attitude toward relationship marketing (β = −0.165, p < 0.01) on privacy concern are negative and significant, while the effect of knowledge of direct marketing is positive (β = 0.080, p < 0.01).

Model 5 tests the effects of trust, privacy concern, and their antecedents on direct marketing usage for direct marketing industries. The overall fit of the model was good ($\chi^2_{(291)}$= 725.945, CFI = 0.942, RMSEA = 0.039) (Hair et. al., 2017). The results indicate positive and significant effects of trust (β = 0.096, p < 0.01), privacy concern (β = 0.064, p < 0.05), perceived control (β = 0.127, p < 0.01), knowledge of direct marketing (β = 0.085, p < 0.01), attitude toward relationship marketing (β = 0.100, p < 0.05), and income (β = 0.135, p < 0.01) on direct marketing usage. The results further suggest that men have higher direct marketing usage than women (β = −0.116, p < 0.01) and people younger than 50 years have higher direct marketing usage than those 50 years and over (β = −0.130, p < 0.01). People with conservative views have lower direct marketing usage than those with moderate/liberal views (β = −0.082, p < 0.01), and those who often use a computer (vs. no usage) have higher direct marketing usage (β = 0.102, p < 0.01).

Next, we ran an analysis for trust and privacy concern (models 1 and 2) for all 25 industries. Overall, models 6 and 7 have a good fit ($\chi^2_{(96)}$= 246.028, CFI = 0.953, RMSEA = 0.040). The results for trust and privacy concern for the 25 industries were similar to those Milne and Boza (1999) found for the 17 industries. As model 6 shows, privacy concern (β = −0.215, p < 0.01) and knowledge of direct marketing (β = −0.072, p < 0.05) have a negative effect on trust, while attitude toward relationship marketing has a positive effect (β = 0.321, p < 0.01). Model 7 shows negative impacts of trust (β = −0.238, p < 0.01) and attitude toward relationship marketing (β = −0.098, p < 0.05) on privacy concern. The effect of knowledge of direct marketing on privacy concern is positive (β = 0.077, p < 0.05).

Endogeneity

Following Milne and Boza (1999), we ran analyses in which we tested the impact of privacy concern on trust and, in turn, the impact of trust on privacy concern, for the original 17 industries, 25 industries, and direct marketing industries. In the privacy context, consumer trust and privacy concern are interrelated (Okazaki et al., 2020). However, reverse causality between trust and privacy concern may create issues of endogeneity. Specifically, privacy concern may exhibit endogeneity because of the simultaneity between trust and privacy concern (a correlation of privacy concern with the error term). The presence of endogeneity for privacy concern may

undermine the validity of its effect on trust. Thus, we need to correct for endogeneity, if present.

We addressed the issue of endogeneity by using the instrumental variable (IV) approach, the most common approach to control for it (Sande & Ghosh, 2018). We used three items as instruments for the original 17, 25, and direct marketing industries: how concerned consumers would be if a company they did not previously do business with purchased a customer list for: (1) psychology profile, (2) income, and (3) purchase behavior by category (e.g. types of books read).

Theoretically, these three measures should be highly correlated with the (endogenous) privacy concern measure. The concern levels of using an individual's information by a company with whom they have not done business should increase their overall privacy concern levels. Thus, the IVs should be relevant. Furthermore, we do not anticipate the IVs to be closely related to the overall trust measure and omitted variables, partly because the trust variable and IVs are different and theoretically unrelated. Trust is measured as trust in the fair use of an individual's personal information by organizations whereas the IVs reflect concern levels for specific information acquired by a company with whom they never did business with. Furthermore, IVs derived from the survey measure individual information whereas, the trust and privacy concern variables measure information at the industry level. Based on Sande and Ghosh (2018), IVs can be classified as variables describing phenomena outside the unit of analysis but may still be affected by the unit of analysis. Such a classification of IVs indicates sufficient relevancy and exogeneity conditions.

For the original 17 industries, the instruments were relevant (Cragg–Donald Wald F-statistic = 69.108; 5% maximal IV relative bias = 13.910) indicating that the IVs are strongly related to the endogenous variable privacy concern. The instruments were also exogenous (Sargan statistic: $\chi^2_{(2)}$= 0.148, $p > 0.05$) suggesting that they meet exclusion restriction. The endogeneity (Durbin–Wu–Hausman) test was not significant ($\chi^2_{(1)}$= 3.277, $p > 0.05$), indicating that endogeneity is not a problem and privacy concern can be treated as exogeneous. We conducted a similar endogeneity test for all 25 industries; the results were similar to those for the 17 industries. The instruments again were relevant (Cragg–Donald Wald F-statistic = 75.214; 5% maximal IV relative bias = 13.910) and exogenous (Sargan statistic: $\chi^2_{(2)}$= 0.317, $p > 0.05$). The endogeneity (Durbin–Wu–Hausman) test was not significant ($\chi^2_{(1)}$= 3.694, $p > 0.05$), indicating that endogeneity is not a problem and privacy concern can be treated as exogeneous. For direct marketing industries, the instruments were again relevant (Cragg–Donald Wald F-statistic = 47.995; 5% maximal IV relative bias = 13.910) and exogenous (Sargan statistic: $\chi^2_{(2)}$= 3.612, $p > 0.05$). However, the endogeneity (Durbin–Wu–Hausman) test was significant ($\chi^2_{(1)}$= 7.780, $p < 0.01$), indicating that endogeneity is a problem.

After we corrected for endogeneity, the effect of privacy concern on trust was significant ($\beta = -0.270$, $p < 0.01$) for all 17 industries, all 25 industries ($\beta = -0.281$, $p < 0.01$), and direct marketing industries ($\beta = -0.329$, $p < 0.01$). Appendix C provides detailed results. These endogeneity tests indicate that the effect of privacy concern on trust is negative and significant.

Robustness Checks

Series mean imputation may have affected our results. To test this issue, we first ran a similar analysis to those for models 1–7 using only the respondents who did not indicate “not sure” in their responses. Appendix D provides the results from this analysis. A comparison of the results shows similarities. Although some of the relationships became non-significant, their relationship direction remained the same. The non-significant effect may be due to significant losses in the data sample resulting from “not sure” responses (23.5% and 46.37%). Furthermore, the demographic distribution of the two reduced data samples was very similar to those reported for main study in Table 1. Second, we analyzed the data using a multiple imputation technique in which knowledge of direct marketing, perceived control, and demographic variables were used to predict missing values. The analysis from 100 imputed datasets revealed similar results for key variables (results available on request). Thus, we conclude that the impact of series mean imputation has minimal effect on the results.

Discussion of Linear Models

The results indicate that the antecedents of trust and privacy concern are fairly consistent, with only a few subtle changes. However, the influence of trust, privacy concern, and other antecedents on direct marketing usage has changed considerably. Models 1–4 show similar results when we compare the 1997 data and the 2017 data (see Table 3). The effect of attitude toward relationship marketing on trust became positive, while it became negative for privacy concern. Furthermore, the influence of knowledge of direct marketing on privacy concern became positive. These changes suggest that relationship marketing efforts to build trust and reduce privacy concern have been effective. Also, sex was no longer a significant predictor of trust and age was no longer a significant predictor of privacy concern.

In model 5, we find that both trust and privacy concern have a significant, positive effect on direct marketing usage. Although prior research has also highlighted trust's positive relationship to usage (Dinev & Hart, 2006; Wirtz & Lwin, 2009), privacy concern's positive impact on direct marketing usage differs from previous findings. This confirms the privacy paradox claim that consumers are concerned that their privacy is at risk when using direct marketing channels. The other differences in our results from those of Milne and Boza (1999) are that knowledge of direct marketing now exerts a positive influence on direct marketing usage and age, sex, and political philosophy are all significant predictors of direct marketing usage.

It is important to note that we estimated the Milne and Boza (1999) OLS models with SEM, which better accounts for measurement error. We also examined endogeneity and found that it was not a problem. The robustness checks of estimating

Table 3
Comparison of models 1–5 using 1997 and 2017 data.

	All 17 industries				Direct marketing industries					
	(1)		(2)		(3)		(4)		(5)	
	Trust	Trust [a]	Privacy concern	Privacy concern [a]	Trust	Trust [b]	Privacy concern	Privacy concern [b]	Usage	Usage [c]
	1997	2017	1997	2017	1997	2017	1997	2017	1997	2017
Trust			−0.35**	−0.228**			−0.30**	−0.195**	0.11**	0.096**
Privacy concern	−0.35**	−0.209**			−0.30**	−0.180**			−0.07*	0.064*
Perceived control	0.02	0.001	−0.05	−0.032	0.05	0.009	−0.09**	−0.011	0.08**	0.127**
Knowledge of direct marketing	−0.18**	−0.067*	−0.04	0.077*	−0.01	−0.008	0.03	0.080**	0.02	0.085**
Relationship mkt. attitude	0.11	0.305**	−0.01	−0.102**	0.04	0.133**	−0.04	−0.165**	0.08**	0.100*
Direct mkt. attitude					0.16**	0.225**	−0.02	0.065	0.04	0.058
Sex (female = 1, male = 0)	0.06*	−0.021	0.05	0.062	0.07*	−0.064	0.05	0.010	0.03	−0.116**
Age	−0.02	−0.007	0.18**	−0.002	−0.04	−0.040	0.21**	0.027	−0.01	−0.130**
Income	−0.01	0.037	−0.03	0.027	−0.05	0.007	−0.06*	0.021	0.20**	0.135**
Political philosophy	−0.01	0.015	−0.02	0.036	0.01	−0.032	−0.02	0.025	0.04	−0.082**
Computer usage	−0.01	−0.056	−0.01	−0.026	−0.05	−0.035	−0.01	−0.011	0.07*	0.102**
Adjusted R^2	0.18	0.169	0.16	0.099	0.15	0.155	0.16	0.083	0.10	0.120

Standardized betas reported in table. We ran separate models for trust, privacy concern, and direct marketing usage because the model with trust and privacy concern was not identified due to non-recursive relationship. N = 979.

** $p \leq 0.01$.

* $p \leq 0.05$.

[a] Model fit: $\chi^2_{(96)} = 239.319$, CFI = 0.954, RMSEA = 0.039).

[b] Model fit: ($\chi^2_{(275)} = 709.735$, CFI = 0.942, RMSEA = 0.040).

[c] Model fit: ($\chi^2_{(291)} = 725.945$, CFI = 0.942, RMSEA = 0.039).

models with and without imputation and multiple imputation technique, as well as the extension of the models to include eight additional industries (for 25 in total), shows that the pattern of results is fairly consistent.

Results and Discussion for Levels of Trust and Privacy Concern across 25 Industries (RQ2a–b)

Cluster Analysis

To further understand the differences across industries, we mapped the 25 industries on their average standardized trust and privacy concern levels. Specifically, following Milne and Boza (1999), we conducted hierarchical cluster analysis using the average link algorithm. Our results indicated a seven-cluster solution (see Fig. 2).

Cluster 1 (traditional direct marketing) includes direct marketing industries (magazines, catalogs, and direct mail), which engender a low level of trust and a moderate level of privacy concern. Cluster 2 (opinion-based) includes political organizations and social media companies (e.g., Facebook). This cluster shows a low level of trust but a high level of privacy concern. Credit card issuers, Internet access providers, telephone companies, online search companies (e.g., Google), wireless phone providers, and cable companies make up cluster 3 (modern digital-based), which shows a moderate level of trust but a high level of privacy concern. Cluster 4 (traditional data enabled) consists of alumni associations, airlines, book stores, video stores, charities, car companies, household appliance companies, and music-providing companies (e.g., Spotify). The level of trust in this cluster was moderate, while the privacy concern level was low. Insurance companies and online e-commerce companies (e.g., Amazon.com) make up cluster 5 (data-intensive services), which engenders high trust and concern levels. Cluster 6 (stores) includes drugstores and grocery stores; for this cluster, the trust level was high, while the concern level was low. Finally, cluster 7 (business with sensitive data) comprises banks that process checks and employers; it generates high levels of both trust and privacy concern.

In comparing these results with Milne and Boza's (1999), we find that the relative trust and privacy concern levels for most industries did not change much. The Spearman rank-order correlation for trust between 2017 and 1997 data was 0.88 and for privacy concern was 0.90 (see Appendix E). To further validate our findings and discern whether differences exist across industry clusters, we ran structural models to test the impact of privacy concern and antecedents on trust and the impact of trust and antecedents on privacy concern across the seven clusters. The relationship between trust and privacy concern across the clusters shows similar results to the aggregate industry level. Trust and privacy concern coefficients were statistically significant and negatively affected each other. Thus, the effects of trust and privacy concern are robust. We found few differences in the impact of antecedents on trust and privacy concerns across the seven industry clusters. Appendix F reports the results for each cluster.

Discussion of Cluster Results

The results indicate that trust and privacy concern perceptions have not changed drastically over time for established

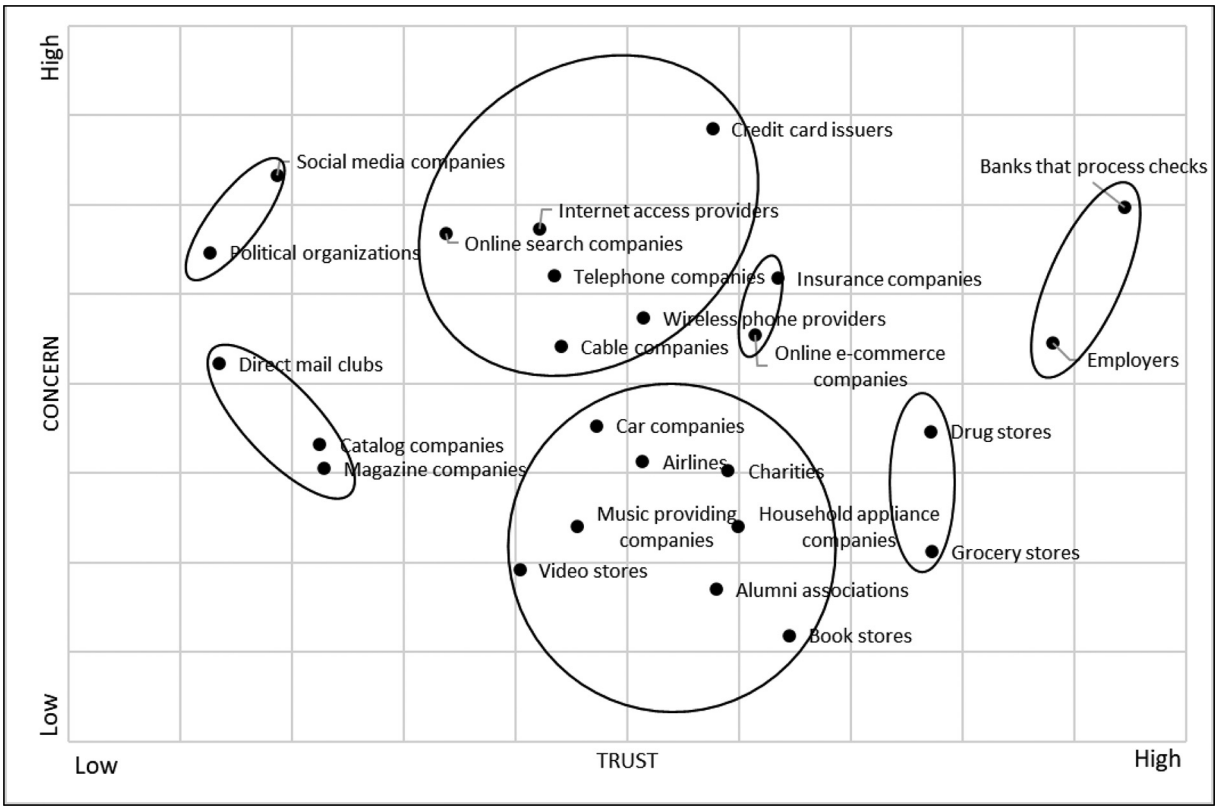

Fig. 2. Relative trust and privacy concern for 25 industries.

industries, supporting the theory of contextual integrity which posits that information exchanges are consistent with the norms of the specific context in which they occur (Nissenbaum, 2004). Of the original 17 industries, only four changed cluster membership: Internet access providers, insurance companies, drugstores, and grocery stores. For some of these industries, exogenous factors may be affecting trust and privacy concern levels beyond the effect of contextual integrity. For example, regulation of health information in the form of HIPAA may help explain why consumers were more trusting of and less concerned with insurance companies in 2017 than in 1997. Furthermore, Internet access providers, which was an emerging industry in 1997, have become normalized in the past 20 years, thereby increasing consumer trust.

We created a typology to categorize industries into a trust (high/low) × privacy concern (low/high) matrix based on the metrics used to identify industry cluster positions (see Table 4). Four of the new industries fell in the low trust/high privacy concern quadrant: social media companies, cable companies, online search companies, and wireless phone providers. All these industries are fundamentally tied to the online economy. Moreover, pre-existing non-digital versions of these industries are absent; as such, these industries needed to establish their own contextual norms for information sharing. Unfortunately, their past exploitative behavior of consumer data has resulted in an unfavorable contextual norm that lowers trust and heightens privacy concerns. By contrast, online e-commerce companies have high levels of trust despite also having high levels of privacy concern. IoT-enabled industries and online music-providing companies had low privacy concern. The IoT-enabled home appliance industry even has high levels of trust. This may be because e-commerce, music-providing companies, and IoT-enabled industries are augmentations of previously existing industries and thus benefit from their already-established norms.

Table 4
Typology of 25 industries classified by trust and privacy concern levels. *

	Low privacy concern	High privacy concern
High trust	***Safe industries***	***Established data-based industries***
	Drugstores	Banks that process checks
	Grocery stores	Employers
	Book stores	Insurance companies
	Household appliance companies	*Online e-commerce companies*
	Charities	Credit card issuers
	Alumni associations	
	Airlines	
Low trust	***Less Obvious Data Collectors***	***Outward Facing Data Collectors***
	Car companies	*Wireless phone providers*
	Music-providing companies	*Cable companies*
	Video stores	Telephone companies
	Magazine companies	Internet Access Providers
	Catalog companies	*Online search companies*
		Social media companies
		Direct mail clubs
		Political organizations

* New industries in italics.

Exploring the Relationship: Trust, Privacy Concern, Transparency, and Control Across Industry Quadrants (RQ3)

To evaluate the relationship between trust, privacy concern, transparency, and control (RQ3), we collected additional data. Similarly to the main study, participants indicated their level of privacy concern as well as their level of trust for 25 industries. They further indicated their level of transparency for 25 industries when it comes to managing their personal information on a single item (1 = "not at all transparent"; 10 = "very transparent"). Similarly, they indicated the level of control they believe they have over what happens to their personal information for the 25 industries on a single item (1 = "no control at all"; 10 = "total control"). They then responded to demographic questions on age, education, political philosophy, ethnicity, income, and sex. Unlike the main study, this survey did not include "not sure" responses.

Respondents were recruited from Prolific's consumer online panel and were compensated for their participation ($1.25). 118 participants completed the survey, of which 18 failed a randomly placed attention check question where they were asked to select a specific response. In Appendix G we report the sample characteristics for 101 usable responses.

Means and Correlations of Industry Quadrants

In Table 5 we report the means and correlations for trust, privacy concern, transparency, and control across each of the four industry quadrants. The means for trust and privacy concern mimic those for the quadrants thus providing generalizability of the findings for the industry quadrants. Furthermore, the mean values for transparency were higher in high trust versus low trust quadrants. Similar patterns were observed for control. It is not surprising to see high levels for transparency and control in the high trust and low concern quadrant (safe industries) and low levels of transparency and control in the high privacy concern and low trust quadrant (outward-facing data collectors). Trust, in general, has a strong positive significant correlation with both transparency and control. Privacy concern, on the other hand, has weak positive associations with transparency and control in low privacy concern quadrants and weak negative associations in high privacy concern quadrants.

Discussion of Correlation Analysis

The results further support the four industry quadrants and provide an interesting association of transparency and control with trust and privacy concern levels across the four quadrants. The stronger correlations of trust with transparency and control support the notion that both transparency and control promote trust (Martin et al., 2017). The results, in general, further support the diminishing role of privacy concern given the low to no association with trust, transparency, and control. It is interesting to note the positive correlations of privacy concern for low privacy concern industries (safe industries and less obvious data collectors) compared to the negative correlations for high privacy concern industries (established data-based industries and outward-facing data collectors). This might imply that level of privacy concern might help explain the privacy paradox phenomenon.

Exploring Moderating Effects of Age and Sex (RQ4)

The linear models used to answer R1a-b did not consider moderation effects attributed to demographics. Given the role of demographics in other research on trust and privacy concern (Phelps et al., 2000), we explore the moderating effects of age and sex. In particular, we ran a multi-group analysis to test these moderating effects on the proposed model. We analyzed each moderating variable by (1) establishing measurement invariance and (2) testing differences between regression coefficients across the groups.

Measurement Invariance

We conducted measurement invariance for the two reflective measures, attitude toward relationship marketing and attitude toward direct marketing. We now outline the general process of conducting first- and second-order invariance (Chen, Sousa, & West, 2005). The measurement invariance for a second-order factor needs to fulfill invariance at the first-order level and then at the second-order level (Chen et al., 2005). We tested the first-

Table 5
Means and correlations among trust, privacy concern, transparency, and control for industry quadrants.

	Mean	1	2	3		Mean	1	2	3
Safe industries					*Established data-based industries*				
1. Trust	5.62				1. Trust	5.27			
2. Privacy Concern	5.14	−0.053			2. Privacy Concern	6.77	**−0.239**		
3. Transparency	5.15	**0.517**	**0.144**		3. Transparency	5.12	**0.562**	**−0.103**	
4. Control	5.10	**0.449**	**0.106**	**0.457**	4. Control	4.73	**0.510**	−0.050	**0.499**
Less obvious data collectors					*Outward facing data collectors*				
1. Trust	4.64				1. Trust	3.89			
2. Privacy concern	5.24	0.000			2. Privacy Concern	6.99	**−0.154**		
3. Transparency	4.56	**0.582**	**0.129**		3. Transparency	3.95	**0.595**	***−0.088***	
4. Control	4.65	**0.473**	***0.088***	**0.471**	4. Control	3.93	**0.552**	***−0.080***	**0.516**

Bold correlations are significant at 0.01 level. Bold and italicized significant at 0.05.

order invariance by running a configural model (baseline) for each group to determine whether the data fit was adequate across the two groups. The configural model kept the first-order factor loadings (one loading fixed at 1), intercepts, and residual variances free across the two groups and fixed the factor means at zero. Then, we estimated a metric model, in which first-order factor loadings were constrained to be equal across groups (one loading fixed at 1), intercepts and residual variances were free across groups, and factor means were fixed at zero. Any difference between the models for each group would determine metric invariance when a change in chi-square is non-significant or CFI is less than 0.01 (Chen, 2007; Cheung & Rensvold, 2002).

After the first-order invariance is established, second-order invariance can be tested by running the first-order metric model and adding the second-order factor loading free and then constrained. We tested the difference between these models (free and constrained) using the same parameters as in the first-order difference. Table 6 reports the invariance test results.

The results indicate the first-order invariance for the two groups, as the difference between the configural and metric models were not significant ($p > 0.05$) and the change in CFI across the models was less than 0.01. For the second-order invariance test, the results indicate no difference across the second-order loadings for attitude toward relationship marketing (see Table 6). The chi-square difference across the two models for age was not significant ($p > 0.05$), and the change in CFI was zero. The chi-square difference across the two models for sex was significant ($p < 0.05$), but the change in CFI was still less than 0.01. However, given large sample size (above 300), a CFI difference not larger than 0.01 across models implies that the model fit does not deteriorate considerably (Chen, 2007; Cheung & Rensvold, 2002), suggesting minimal effects of invariance.

Analysis and Results

We ran the multi-group analysis for each group (age and sex) for models 3–7 tested previously: trust, privacy concern, and direct marketing usage for direct marketing industries and trust and privacy concern for all 25 industries. To test the moderating effects, we constrained each regression coefficient between-group variables.

We present the moderating effect of age in Table 7. The results indicate that women become more trusting as they age, while men become less trusting for both direct marketing industries ($\beta_{50over} = 0.111$, $p < 0.01$; $\beta_{Under50} = -0.120$, $p < 0.01$; $\chi^2_{(1)} = 13.927$, $p < 0.01$) and all 25 industries ($\beta_{50over} = 0.118$, $p < 0.01$; $\beta_{Under50} = -0.090$, $p < 0.05$; $\chi^2_{(1)} = 11.874$, $p < 0.01$). The results also show that for all industries, knowledge of direct marketing negatively influences trust for older consumers ($\beta_{50over} = -0.153$, $p < 0.01$; $\beta_{Under50} = -0.031$, $p > 0.05$; $\chi^2_{(1)} = 4.706$, $p < 0.01$) and that women are more concerned about privacy than men when they are age 50 years or older ($\beta_{50over} = 0.117$, $p < 0.01$; $\beta_{Under50} = 0.004$, $p > 0.05$; $\chi^2_{(1)} = 4.340$, $p < 0.05$). Last, income was a significant predictor of direct marketing usage for older consumers ($\beta_{50over} = 0.231$, $p < 0.01$; $\beta_{Under50} = 0.073$, $p > 0.05$; $\chi^2_{(1)} = 7.645$, $p < 0.01$).

The results for sex show that women are more trusting overall, while men are less trusting (see Table 8). This is true for both the direct marketing industries specifically ($\beta_{Female} = 0.096$, $p < 0.05$; $\beta_{Male} = -0.124$, $p < 0.01$; $\chi^2_{(1)} = 11.688$, $p < 0.01$) and all 25 industries ($\beta_{Female} = 0.117$, $p < 0.01$; $\beta_{Male} = -0.087$, $p < 0.05$; $\chi^2_{(1)} = 11.598$, $p < 0.01$). The results also indicate that privacy concern is a stronger predictor of trust for women than men overall ($\beta_{Female} = -0.284$, $p < 0.01$; $\beta_{Male} = -0.156$, $p < 0.01$; $\chi^2_{(1)} = 5.347$, $p < 0.05$), but this difference is not statistically significant for direct marketing industries. Last, income ($\beta_{Female} = 0.074$, $p > 0.05$; $\beta_{Male} = 0.177$, $p < 0.01$; $\chi^2_{(1)} = 4.575$, $p < 0.05$) and computer usage ($\beta_{Female} = 0.045$, $p > 0.05$; $\beta_{Male} = 0.166$, $p < 0.01$; $\chi^2_{(1)} = 7.002$, $p < 0.01$) increased direct marketing usage for men only.

Discussion of the Moderating Effects

The analysis showed important interactions involving age and sex. In terms of predicting trust across all industries, we

Table 6
Measurement invariance: attitude toward relationship marketing and direct marketing.

Groups	Model	χ^2(d.f.)	RMSEA	CFI	Model Difference
Sex	***First-order***				
	Configural	$\chi^2_{(258)} = 634.623$	0.055	0.947	$\Delta\chi^2_{(14)} = 11.327$, $p > 0.05$
	Metric	$\chi^2_{(272)} = 645.950$	0.053	0.947	Δ CFI = 0
	Second-order				
	Loadings free	$\chi^2_{(276)} = 675.614$	0.054	0.944	$\Delta\chi^2_{(2)} = 10.381$, $p < 0.05$
	Loadings constrained	$\chi^2_{(278)} = 685.995$	0.055	0.943	ΔCFI = 0.001
Age	***First-order***				
	Configural	$\chi^2_{(258)} = 637.121$	0.055	0.946	$\Delta\chi^2_{(14)} = 9.744$, $p > 0.05$
	Metric	$\chi^2_{(272)} = 646.865$	0.053	0.947	Δ CFI = 0.001
	Second-order				
	Loadings free	$\chi^2_{(276)} = 673.128$	0.054	0.943	$\Delta\chi^2_{(2)} = 3.882$, $p > 0.05$
	Loadings constrained	$\chi^2_{(278)} = 677.010$	0.054	0.943	ΔCFI = 0

Model difference for the first order is calculated between configural and metric models. Model difference for second order is calculated between models with second-order loadings free and constrained. N = 979.

Table 7
Results of moderating effects of age for trust, privacy concern, and direct marketing usage.

	All 25 industries						Direct marketing industries							
	Under 50	Over 50	$\chi^2_{(1)}$	Under 50	Over 50	$\chi^2_{(1)}$	Under 50	Over 50	$\chi^2_{(1)}$	Under 50	Over 50	$\chi^2_{(1)}$	Under 50	Over 50	$\chi^2_{(1)}$
	Trust[a]			Privacy concern[a]			Trust[b]			Privacy concern[b]			Usage[c]		
Trust				−0.262 **	−0.205 **	0.088				−0.204 **	−0.184 **	0.035	0.100 *	0.084	0.001
Privacy concern	−0.232 **	−0.184 *	1.721				−0.185 **	−0.170 **	0.538				0.086 *	0.036	0.645
Perceived control	−0.017	0.036	0.771	−0.003	−0.077	1.500	−0.022	0.059	1.684	0.007	−0.036	0.466	0.107 **	0.150 **	0.555
Knowledge of direct mkt.	−0.031	−0.153 **	4.706 **	0.061	0.098 *	0.761	0.026	−0.078	2.980	0.060	0.105 *	0.947	0.080 *	0.095 *	0.257
Relationship mkt. attitude	0.325 **	0.329 **	1.119	−0.048	−0.153 **	1.399	0.129	0.167 **	0.006	−0.138 **	−0.192 **	0.118	0.100	0.092	0.058
Direct mkt. attitude							0.224 **	0.193 **	0.466	0.073	0.050	0.055	0.051	0.073	0.084
Sex (female)	−0.090 *	0.118 **	11.874 **	0.004	0.117 **	4.34 *	−0.120 **	0.111 **	13.927 **	−0.030	0.076	2.951	−0.105 **	−0.061	0.070
Income	0.022	0.056	0.325	0.025	0.040	0.102	−0.002	0.030	0.260	0.015	0.036	0.141	0.073	0.231 **	7.645 **
Political philosophy	0.009	−0.015	0.154	0.023	0.046	0.109	−0.023	−0.034	0.003	0.029	0.026	0.007	−0.089 *	−0.078	0.117
Computer usage	−0.090 *	0.028	2.716	−0.012	−0.076	1.808	−0.048	0.002	0.397	0.011	−0.073	2.201	0.101 *	0.107 *	0.041
Adjusted R^2	0.189	0.228		0.087	0.139		0.157	0.175		0.067	0.112		0.094	0.148	

Standardized betas reported in table. Meaningful difference is when chi-square is significant and at least one of the coefficients is significant. See results inboxes. Under 50 N = 583; 50 Over N = 396.

** $p < 0.01$.

* $p < 0.05$.

[a] Model fit: ($\chi^2_{(184)}$ = 330.341, CFI = 0.953, RMSEA = 0.040).

[b] Model fit: ($\chi^2_{(534)}$ = 990.158, CFI = 0.937, RMSEA = 0.042).

[c] Model fit: ($\chi^2_{(566)}$ = 1,020.674, CFI = 0.938, RMSEA = 0.041).

find that older women are more trusting while older men are less trusting. Regarding privacy concern levels, women over 50 years of age show a strong negative relationship, but there is no significant relationship for either women or men under 50 years. For younger consumers, the level of privacy concern does not differ by sex, perhaps reflecting more widespread acceptance of database marketing techniques. Overall, this suggests that age and sex should be examined in concert when examining trust and privacy concern levels. The models that examined the impact of income and computer knowledge on direct marketing usage show that sex (men) amplifies the positive relationship. This result suggests that affluent, computer-savvy men engage in more shopping than other men.

General Discussion

This research contributes to privacy and interactive marketing literature, and the results provide important managerial implications. This study posed six research questions, as summarized along with the key findings and managerial implications in Table 9.

RQ1a examined whether the relationship between trust, privacy concern, and other predictor variables changed from 1997 to 2017. We find that 20 years later, the strong negative relationship between trust and privacy concern remains. However, the strength of the relationship is less now that it was. That is, privacy concern exerts a smaller negative impact on trust in 2017 (−0.209) than in 1997 (−0.350) based on data from 17 industries. Also, attitudes toward relationship and direct marketing are more predictive for trust now than in the past. Furthermore, knowledge of direct marketing increases privacy concern levels now, while attitude toward relationship marketing reduces it. Overall, these findings suggest that relationship marketing efforts for building trust and reducing privacy concern have been effective. RQ1b examined whether the influence of trust, privacy concern, and other predictor variables on consumer direct marketing usage changed. Unlike in 1997, when trust and privacy concern had different effects (positive and negative, respectively) on direct marketing usage, in 2017 both trust and privacy concern were positively related to direct marketing usage. These results confirm the privacy paradox effect (Norberg et al., 2007) and empirically show that privacy concern can increase usage in specific contexts. Furthermore, consumers indicate that relationship marketing efforts are critical to generating trust and usage in direct marketing industries. At the same time, relationship marketing helps to decrease privacy concerns with particular industries. Also, demographics were more predictive of direct marketing usage, suggesting possible managerial segmentation strategies. RQ2a examined whether trust and privacy concern perceptions changed over time for established industries. Most industries reported trust and privacy concern levels similar to those reported previously. Given the stability of these clusters despite the changes caused by technological advances in the past 20 years, these results provide strong evidence of Nissenbaum's (2004) theory of contextual integrity. RQ2b asked how the new industries were viewed in

Table 8
Results of moderating effects of sex on trust, privacy concern, and direct marketing usage.

	All 25 industries						Direct marketing industries							
	Male	Female	$\chi^2_{(1)}$	Male	Female	$\chi^2_{(1)}$	Male	Female	$\chi^2_{(1)}$	Male	Female	$\chi^2_{(1)}$	Male	Female	$\chi^2_{(1)}$
	Trust [a]			Privacy concern [a]			Trust [b]			Privacy concern [b]			Usage [c]		
Trust				−0.180 **	−0.306 **	2.737				−0.151 **	−0.250 **	1.605	0.100 *	0.075	0.394
Privacy concern	−0.156 **	−0.284 **	5.347 *				−0.134 **	−0.231 **	3.241				0.072	0.045	0.288
Perceived control	0.022	−0.015	0.380	−0.010	−0.063	0.688	0.025	−0.007	0.281	0.016	−0.040	0.795	0.163 **	0.085	2.444
Knowledge of direct mkt.	−0.102 **	−0.046	1.157	0.073	0.081	0.006	−0.041	0.015	0.944	0.079	0.080	0.020	0.057	0.119 **	0.400
Relationship mkt. attitude	0.362 **	0.282 **	0.138	−0.141 *	−0.039	1.36	0.221 **	0.046	2.591	−0.186 **	−0.138 **	0.095	0.108 *	0.088	0.045
Direct mkt. attitude							0.158 **	0.283 **	3.101	0.071	0.068	0.001	0.061	0.070	0.001
Age	−0.087 *	0.117 **	11.598 **	−0.046	0.081	4.59 *	−0.124 **	0.096 *	11.688 **	−0.006	0.078	2.330	−0.105 *	−0.082	0.008
Income	0.032	0.025	0.020	0.055	0.002	0.835	0.040	−0.034	1.499	0.055	−0.012	1.229	0.177 **	0.074	4.575 *
Political philosophy	0.019	−0.019	0.411	0.050	0.008	0.402	−0.018	−0.033	0.101	0.046	0.005	0.379	−0.094 *	−0.061	0.332
Computer usage	−0.013	−0.090 *	1.224	−0.027	−0.031	0.004	−0.013	−0.049	0.232	−0.015	−0.013	0.009	0.166 **	0.045	7.002 **
Adjusted R^2	0.211	0.191		0.090	0.127		0.181	0.167		0.077	0.100		0.179	0.076	

Standardized betas reported in table. The meaningful difference is when chi-square is significant and at least one of the coefficients is significant. See results inboxes. Male N = 490; Female N = 489.

** $p < 0.01$.

* $p < 0.05$.

[a] Model fit: ($\chi^2_{(184)}$ = 345.195, CFI = 0.948, RMSEA = 0.042).

[b] Model fit: ($\chi^2_{(534)}$ = 1,002.259, CFI = 0.936, RMSEA = 0.042).

[c] Model fit: ($\chi^2_{(566)}$ = 1,033.351, CFI = 0.937, RMSEA = 0.041).

2017. As the trust (high/low) × privacy concern (high/low) matrix in Table 4 shows, new industries that have low trust/high privacy concern support e-commerce (wireless phone providers, cable companies, online search companies, and social media companies). By contrast, online e-commerce companies were classified as high trust/high privacy concern. Consumers were also not concerned about their privacy when interacting with car companies (low trust), household appliance companies (high trust), or online music-providing companies (low trust).

For RQ3, we find that trust is strongly associated with transparency and control. The significant correlations of these managerial levers with privacy concern were positive (negative) in low (high) concern industries. For RQ4, we found that age and sex moderated the results. Overall, the results of our moderation analyses provide important segmentation implications for practitioners. Table 9 lists the key moderating differences and managerial implications.

Limitations and Future Research

This research has several limitations that should be noted. First, the single-item measures replicated from Milne and Boza (1999) may have created measurement biases. Second, the sample demographics closely represented those in Milne and Boza's (1999) analysis after we adjusted for inflation in income, which may somewhat limit the generalizability of the results. Third, although the data collection from a Qualtrics Panel used various quality checks such as attention check questions and straight lining, we did not record the number of participants who failed these quality checks which limits us from assessing those cases who failed quality checks. Fourth, other key predictors not included in the study may affect trust, privacy concern, and direct marketing usage. For example, privacy risks, privacy violations, and privacy expectations may influence trust and privacy concern (Martin et al., 2017; Solove, 2020). Future research could test these factors as well as others that may affect trust, privacy concern, and consumer behaviors. However, these limitations do not invalidate the research results, because our objective was to replicate and extend Milne and Boza's (1999) findings. The results do provide new insights into shifting consumer attitudes toward organizations' information management.

This research also offers four avenues for future research. First, although we tested the simultaneity of trust and privacy concern through endogeneity, future research could validate their exogeneous effects using experimental designs. Second, future research could extend our study cross-culturally. For example, comparing results across the United States and the United Kingdom might reveal different factors that affect trust, privacy concern, and direct marketing usage. Third, future research could examine why industries have different levels of trust and privacy concern. A few possible reasons include the type of sensitive information exchanged (Markos et al., 2018), the level of industry regulation (Martin & Murphy, 2017), data protection and security

Table 9
Summary of research questions, results, and managerial implications.

Research questions	Key results	Managerial implications
Linear models		
RQ1a: Has the relationship among trust, privacy concern, and other predictor variables changed?	• Trust and privacy concern are inversely related. • In this study, the relationship marketing attitude is predictive of trust and privacy concern. • In this study, the effect of direct marketing knowledge on privacy concern is significant and positive.	• Trust continues to be critical in reducing privacy concerns. • Relationship marketing efforts are effective in building trust and reducing privacy concern. • Data transparency might help mitigate the ill effects of consumer knowledge of direct marketing practices.
RQ1b: Has the influence of trust, privacy concern, and other predictor variables on consumer direct marketing usage changed?	• Trust levels continue to be positively and significantly related to direct marketing usage. • Concern is no longer negatively related to direct marketing usage but is now positively related. • Perceived control and attitude toward relationship marketing are now stronger predictors of direct marketing usage. • Knowledge of direct marketing positively affects direct marketing usage. • Demographics are more predictive of direct marketing usage than in 1997.	• Trust building continues to be better than reducing privacy concern levels for market participation. • Negative repercussions of privacy concern on usage have dissipated. • Giving consumers control over their information increases market participation. • Emphasizing consumer education and advocating transparency of direct marketing practices is important. • Demographics are a good segmentation base for explaining direct marketing usage.
Industry clusters		
RQ2a: Have trust and privacy concern perceptions changed for established industries?	• The rank order of trust and privacy concern in industries across two decades is fairly stable. • The predictive power of trust and privacy concern in industries is fairly consistent.	• Marketing efforts within industries need to strategize in increasing consumer trust levels when it comes to managing consumer information.
RQ2b: How are new industries viewed in terms of trust and privacy concern?	• Consumers have lower trust and higher privacy concern for wireless phone providers, Internet access providers, online search companies, and social media companies. • Consumers have high trust in and high privacy concern about online e-commerce companies. • Consumers have low trust and low privacy concern for car companies and music-providing companies. Consumers have high trust in and low privacy concern for household appliances.	• Supporting e-commerce industries need to improve their marketing efforts in building consumer trust and reducing privacy concerns. • E-commerce industries should continue their successful efforts in building consumer trust • Consumers do not seem to be leery of modern household appliances.
Relationship to transparency and control		
RQ3: Do trust and privacy concern have a strong association with transparency and control by industry quadrants?	• Across all industries, trust has a stronger positive association with transparency and control. • Privacy concern has a weaker association with transparency and control; positive (negative) in low (high) concern industries.	• Managerial levers of transparency and control may help elevate trust levels. • By increasing transparency of their data practices and giving consumers data control, managers can be able to reduce privacy concerns in high concerning situations/industries.
Moderating variables		
RQ4: Do age and sex moderate models that predict trust, privacy concern, and direct marketing usage?	• For trust across all industries, women over 50 had a positive relationship, while men over 50 had a negative relationship. • Among older consumers, women had higher levels of privacy concern compared to men; this difference did not occur for younger consumers.	• Demographic segmentation: age and sex are effective segmentation bases. • Marketers should focus on building trust when targeting older men and should focus on reducing concern for older women.

(Aiken & Boush, 2006), or the extent to which engaging with the industry is necessary or not an option. Fourth, level of privacy concern might be an interesting moderator to further explore.

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Appendix A: Attitude Toward Direct Marketing and Relationship Marketing Items and Their Loadings

Attitude toward direct marketing	Loadings
Direct marketing ... - offers result in lower prices for the consumer	0.656
Direct marketing ... - is convenient for the consumer	0.732
Direct marketing ... - stimulates the development of new products and services	0.628
Direct marketing ... - helps save the consumer time	0.727
Direct marketing ... - allows for comparative shopping	0.668
Direct marketing ... - is a fun way to shop	0.786
Direct marketing ... - is hassle-free	0.694
Direct marketing ... - provides a wider selection	0.686
Direct marketing ... - is my preferred way to shop	0.745
Attitude toward relationship marketing	*Loadings*
Factor 1 (0.681) * Comfort	
It is easy to buy from organizations that I have done business with in the past.	0.642
It is safe to buy from organizations that I have done business with in the past.	0.668
Factor 2 (0.887) * Relationships	
Customers gain from developing long term relationships with organizations.	0.733
I really like to maintain long term relationships with organizations.	0.686
Frequent customer programs are a good way to reward me for my loyalty.	0.555
Factor 3 (0.805) * Informed	
I very much enjoy receiving individual attention from the organizations I do business with.	0.689
I like organizations I do business with to keep me informed of new products and services.	0.758
I appreciate getting e-mails about things the organizations that I do business with feel would be of interest to me.	0.795
I appreciate receiving online advertising about things the organizations that I do business with feel would be of interest to me.	0.771

Two items eliminated from the attitude toward direct marketing: (1) Direct marketing ... - is more convenient through Amazon Prime and (2) Direct marketing ... – leads to overconsumption.

Four items eliminated from the attitude toward relationship marketing: (1) I am much more reluctant to buy from organizations that I have not done business with in the past, (2) It is boring to always buy from the same organizations, (3) I appreciate getting phone calls about things the organizations that I do business with feel would be of interest to me, and (4) It is unrealistic to expect organizations to have their customers' best interest at heart.

* Subfactor loading on overall attitude toward relationship marketing construct.

Appendix B: Correlations, Means, and Standard Deviations

	1	2	3	4	5	6	7	8	9	10	11	12
1. Direct marketing usage												
2. Trust	0.130**											
3. Privacy concern	0.019	−0.281**										
4. Relationship mkt. attitude	0.153**	0.341**	−0.164**									
5. Knowledge of direct mkt.	0.083**	−0.110**	0.107**	−0.038								
6. Perceived control	0.179**	0.047	−0.047	0.095**	0.054							
7. Direct mkt. attitude	0.144**	0.288**	−0.046	0.445**	0.002	0.073*						
8. Age (older than 50 = 1)	−0.124**	−0.064*	0.003	−0.171**	0.021	−0.127**	−0.209**					
9. Income	0.142**	0.019	0.024	−0.025	−0.004	0.095**	0.004	−0.038				
10. Political philosophy (cons = 1)	−0.080*	−0.023	0.035	−0.038	0.034	−0.040	−0.027	0.192**	0.106**			
11. Computer usage (yes = 1)	0.093*	−0.030	−0.028	0.036	−0.052	0.051	−0.042	0.057	0.001	0.052		
12. Sex (female = 1)	0.012	0.031	0.029	0.135**	−0.034	0.083**	0.169**	−0.640**	−0.001	−0.151**	−0.032	
Mean	5.362	4.986	6.401	2.946	20.444	0.509	2.805	0.405	4.07	0.312	0.984	0.500
SD	2.999	1.793	2.178	0.494	5.74	0.500	0.596	0.491	1.825	0.463	0.127	0.500

N = 979.

Appendix C: Privacy Concern Endogeneity Corrected Results

	All 17 Industries Trust	Direct Marketing Industries Trust	All 25 Industries Trust
Privacy concern	−0.270**	−0.329**	−0.281**
Perceived control	0.012	0.032	0.022
Knowledge of direct marketing	−0.189*	0.003	−0.020*
Relationship mkt. attitude	0.983**	0.502**	1.030**
Direct mkt. attitude		0.749**	
Sex (female)	−0.020	−0.234	−0.043
Age	−0.050	−0.154	−0.060
Income	0.038	0.014	0.032
Political philosophy	0.084	−0.107	0.010
Computer usage	−0.751	−0.628	−0.752

Privacy concern endogeneity corrected results reported. Endogeneity was significant for direct marketing industries but not for the 17 and 25 industries. N = 979.
** $p < 0.01$.
* $p < 0.05$.

Appendix D: Robustness Check

	All 17 industries[a]		Direct marketing industries[b]			All 25 industries[a]	
	Trust	Privacy concern	Trust	Privacy concern	Usage	Trust	Privacy concern
Trust		−0.207**		−0.166**	0.066		−0.221**
Privacy concern	−0.203**		−0.150**		0.054	−0.204**	
Perceived control	0.020	−0.055	0.060	−0.016	0.145**	0.020	−0.057
Knowledge of direct marketing	−0.051	0.084*	−0.023	0.096*	0.088*	−0.057	0.082*
Relationship mkt. attitude	0.278**	−0.114*	0.069	−0.183**	0.147*	0.296**	−0.115*
Direct mkt. attitude			0.275**	0.094	0.008		
Sex (female)	0.009	0.043	−0.049	−0.028	−0.152**	−0.010	0.034
Age	0.011	−0.016	−0.065	−0.004	−0.152**	−0.002	−0.021
Income	0.033	0.054	0.040	0.037	0.133**	0.025	0.053
Political philosophy	−0.026	0.041	−0.057	0.032	−0.050	−0.038	0.035
Computer usage	−0.075*	−0.007	−0.077	0.018	0.059	−0.074*	−0.005
Adjusted R^2	0.152	0.096	0.166	0.075	0.120	0.167	0.099

Standardized betas reported in the table. We ran separate models for trust, privacy concern, and direct marketing usage because the model with trust and privacy concern was not identified due to non-recursive relationships.
** $p < 0.01$.
* $p < 0.05$.
[a] N = 749.
[b] N = 525.

Appendix E: Industry Analysis by Trust and Privacy Concern: Rank Order of Industries

Industry	High trust 2017 (a)	Low privacy concern 2017 (a)	High trust 2017	Low privacy concern 2017	High trust 1997	Low privacy concern 1997
Banks that process checks	1	23	1	16	2	17
Employers	2	15	2	11	1	13
Drugstores	3	11	4	9	3	6
Grocery stores	4	4	3	4	5	1
Book stores	5	1	5	1	10	2
Insurance companies	6	18	6	12	7	15
Online e-commerce companies	7	16				
Household appliance companies	8	5				
Charities	9	7	7	5	9	9
Alumni associations	10	2	8	2	4	4
Credit card issuers	11	25	9	17	11	16
Airlines	12	9	10	7	8	5
Wireless phone providers	13	17				
Car companies	14	12				
Music-providing companies	15	6				
Cable companies	16	14				
Telephone companies	17	19	11	13	6	14
Internet access providers	18	22	12	15	14	12
Video stores	19	3	13	3	12	3
Online search companies	20	21				
Magazine companies	21	8	14	6	15	8
Catalog companies	22	10	15	8	13	7
Social media companies	23	24				
Direct mail clubs	24	13	16	10	17	10
Political organizations	25	20	17	14	16	11

High trust (a) =1, low trust (a) = 25; high trust = 1, low trust = 17.
Low privacy concern (a) = 1, high privacy concern (a) = 25; low privacy concern =1, high privacy concern =17.
Spearman rank-order correlation between 2017 trust and 1997 trust = 0.88.
Spearman rank-order correlation between 2017 privacy concern and 1997 privacy concern = 0.90.

Appendix F: Model Results for Trust and Privacy Concern for Seven Industry Clusters

	Cluster 1		Cluster 2		Cluster 3		Cluster 4		Cluster 5		Cluster 6		Cluster 7	
	Trust	Privacy concern	Trust	Privacy concern	Trust	Privacy concern	Trust	Privacy concern	Trust	Privacy concern	Trust	Privacy concern	Trust	Privacy concern
Trust		−0.188 **		−0.252 **		−0.259 **		−0.199 **		−0.236 **		−0.217 **		−0.199 **
Privacy concern	−0.182 **		−0.239 **		−0.234 **		−0.185 **		−0.216 **		−0.202 **		−0.186 **	
Perceived control	0.011	−0.011	0.006	−0.005	−0.010	−0.019	0.029	−0.039	−0.026	−0.049	−0.006	−0.043	−0.020	−0.050
Knowledge of direct mkt.	−0.002	0.081 **	−0.036	0.081 **	−0.083 **	0.081 **	−0.059 *	0.069 *	−0.092 **	0.050	−0.086 **	0.069 *	−0.075 *	0.047
Relationship mkt. att.	0.225 **	−0.133 **	0.210 **	−0.047	0.311 **	−0.066	0.267 **	−0.123 **	0.293 **	−0.087 *	0.290 **	−1.08 **	0.250 **	−0.017
Sex (female)	−0.055	0.013	−0.030	0.045	−0.015	0.039	−0.053	0.065	0.015	0.044	0.001	0.088 *	0.024	0.097 *
Age	−0.066	0.021	−0.078 *	−0.004	0.075	−0.005	−0.092 *	−0.018	0.040	−0.012	0.076	0.017	0.040	0.026
Income	0.008	0.022	0.022	0.008	0.027	−0.002	0.042	0.054	0.028	0.002	−0.016	0.036	0.029	0.003
Political philosophy	−0.029	0.026	−0.039	0.031	0.009	0.027	−0.031	0.029	0.010	0.007	0.025	0.050	0.073 *	0.007
Computer usage	−0.048	−0.015	−0.033	−0.001	−0.060	−0.023	−0.040	−0.023	−0.051	−0.021	−0.068 *	−0.046	−0.026	−0.005
Adjusted R^2	0.109	0.080	0.130	0.083	0.184	0.098	0.149	0.086	0.164	0.086	0.157	0.094	0.116	0.053

Standardized betas reported in table.

New industries in **bold.**

Model fit cluster 1- low trust, moderate privacy concern (magazine companies, catalog companies and direct mail clubs): ($\chi^2_{(96)}$= 264.306, CFI = 0.946, RMSEA = 0.042).

Model fit cluster 2- low trust, high privacy concern (political organizations and **social media companies** (e.g., Facebook)): ($\chi^2_{(96)}$= 265.048, CFI = 0.946, RMSEA = 0.042).

Model fit cluster 3- moderate trust, high privacy concern (credit card issuers, Internet access providers, telephone companies, online search companies (e.g., Google), **wireless phone providers, cable companies**): ($\chi^2_{(96)}$= 234.480, CFI = 0.956, RMSEA = 0.038).

Model fit cluster 4 – moderate trust, low privacy concern (alumni associations, airlines, book stores, video stores, charities, **car companies, household appliance companies, music-providing companies** (e.g., Spotify)): ($\chi^2_{(96)}$= 243.028, CFI = 0.953, RMSEA = 0.040).

Model fit cluster 5- high trust, high privacy concern (insurance companies and **online e-commerce companies** (e.g., Amazon)): ($\chi^2_{(96)}$= 225.428, CFI = 0.959, RMSEA = 0.037).

Model fit cluster 6- high trust, low privacy concern (drugstores and grocery stores): ($\chi^2_{(96)}$= 210.113, CFI = 0.963, RMSEA = 0.035).

Model fit cluster 7- high trust, high privacy concern (banks that process checks and employers): ($\chi^2_{(96)}$= 200.979, CFI = 0.966, RMSEA = 0.033).

** $p < 0.01$.

* $p < 0.05$.

Appendix G: Study 2 Sample Characteristics

	Percentage		Percentage
Age		*Education*	
Less than 50 years	90.10%	Less than high school graduate	2.30%
50 years and over	9.90%	High school graduate or equivalent (GED)	22.80%
Sex		Some college, but no degree	28.30%
Male	42.60%	College graduate	36.20%
Female	55.40%	Post-graduate	10.40%
Political philosophy		*Ethnicity*	
Conservative	17.80%	White	65.30%
Moderate/liberal	82.20%	Black	10.90%
Income		African American	3.00%
Less than $11,250	5.00%	Native American or Alaskan Native	1.00%
$11,250 to under $22,500	4.00%	Asian or Pacific Islander	6.90%
$22,500 to under $37,500	15.80%	Hispanic	9.90%
$37,500 to under $52,500	16.80%	Other	3.00%
$52,500 to under $75,000	20.80%		
$75,000 to under $112,500	21.80%		
$112,500 to under $150,000	5.90%		
$150,000 to under $187,500	5.00%		
$187,500 to under $225,000	1.00%		
$225,000 and above	4.00%		

N = 101.

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