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# Innovation vs Privacy

Jessica Gallucci  
*Pace University*

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Innovation vs Privacy

Jessica Gallucci

Marketing

Professor Deborah Fain

Marketing Department

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## ABSTRACT

Personalization and privacy can be thought of as two ends on a spectrum: they are inversely related. While it is known that consumers want personalization from the products they purchase, the services they buy, and the brands they choose to follow-- privacy is becoming increasingly important to consumers. Marketers continuously assess where that threshold between personalization and privacy exists and under what circumstances they can push the boundary. This analysis studies the relationship between personalization and privacy in the context of high technology and social media. In the survey distributed, respondents were segmented into one of five segments based on their relationship with innovation using the Technology Readiness Index 2.0. In the second half of the survey, respondents were asked to indicate their comfort level with a number of different situations regarding high technology or social media. After analyzing the results, it was found that there is an overwhelming discomfort regarding privacy across all consumer segments. These findings demonstrate that consumers' attitudes regarding innovation and privacy are going unnoticed.

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## Innovation vs Privacy

Whether a borrower may realize it or not, the cost of using a mortgage to purchase a home is greater than just the price of the loan and the interest accrued. In order to apply for a mortgage, a potential borrower must relinquish an extensive amount of personal information to a bank. From a social security number to proof of employment and from tax documents to credit history- the cost one incurs to take out a mortgage is well beyond financial. This is just one example of the paradox that exists between personalization and privacy. In other words, purchasing a mortgage in one's name is a highly personalized and customized process. It cannot be accomplished without certain sacrifices of privacy. After all, how could one expect a personalized product if the provider does not know anything about them?

Personalization and privacy can be thought of as two ends on a spectrum: they are inversely related. One cannot inch closer to personalization without the release of some private information and vice versa. This is a concept with which marketers are well acquainted. While it is known that consumers want, and often demand, personalization from the products they purchase, the services they buy, and the brands they choose to follow-- privacy is becoming increasingly important to consumers. Marketers continuously assess where that threshold between personalization and privacy exists and under what circumstances they can push the boundary. This would be simple if the spectrum of these concepts was identical across all scenarios, but like many other topics in consumer behavior, it is unique to the context in which it is presented. Ultimately, personalization vs privacy is an exchange of information for some benefit, and consumers are tasked with the challenge of deciding what pieces of personal information are worth the benefit they are pursuing. For instance, a consumer may be

comfortable saving their credit card information on their online account for their favorite clothing brand so they can make the online check-out process quicker, but they may not be comfortable saving their credit card information into the Apple Wallet app which has the potential access to everything on their iPhone. It all depends on the context of the situation.

This study will analyze personalization and privacy in the context of two specific categories: high technology and social media. Each of these categories collects consumers' personal information in exchange for particular benefits. High technology uses personal information in exchange for convenience and social media exchanges it for relevant content and ads that reflect a user's interests. While research on this topic exists within these particular categorizations, this analysis will look further into this information to see if certain behavioral qualities of consumers have an impact on how much information they are willing to release across each category. More specifically, a consumer's willingness to adopt innovations is a particularly interesting conversation in today's world as the gap between human and machine continues to narrow and new technologies are fed by vast pools of data about the people they will serve. This analysis will test for a correlation between a consumer's tendency to accept innovations and their willingness to relinquish personal information across the said categories.

## LITERATURE REVIEW

*Innovation Acceptance.* Though the quality and pace at which innovations are released are forever evolving, the way consumers process these changes remains relatively constant. The study of innovation readiness is largely influenced by Everett Rogers, who theorized *The Diffusion of Innovation* in 1962. Before analyzing the theory itself, it is critical to understand a

few key definitions. In this context, innovation refers to an "...idea, practice, or object perceived as new by an individual or other unit of adoption" (Rogers 35). In his definition, Rogers noted that the characteristics of an innovation- relative advantage, compatibility, complexity, trialability, and observability- will determine its rate of adoption among the members of the society (Rogers 35). For example, the rate of adoption of electricity took decades to establish because people did not have the tools or knowledge to install it and, at that point, the labor required may have outweighed the benefit of electricity because all of society was accustomed to a world without it. On the other hand, the adoption of smartphones took less than a decade to adopt because most people had a cellphone already and it was just a matter of upgrading (*Interpreting Innovation* 3). This leads to the next definition: diffusion. Rogers states that "Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system. It is a special type of communication, in that the messages are concerned with new ideas" (Rogers 5). With this in mind, one could infer that the idea of diffusion in today's society is very different from the one Rogers envisioned over three decades ago. In the modern, digitalized world, new technologies have the potential to reach mass audiences in an incredibly short timeframe as the turnover of new inventions vastly exceeds what it was years ago. Still, the model serves as an adequate basis for understanding the role of innovation within society and, within the context of this analysis, serves as a suitable foundation for the way in which consumer technology readiness will be assessed.

*Personalization vs Privacy: High Technology.* In today's world, attempting to keep up with innovations in high tech is like trying to pick up sand: it is nearly impossible to grasp all of it. It

seems as though almost every week there are newsworthy innovations popping out of all industries, expanding capabilities to new lengths and dazzling consumers the whole way through, likely even frightening some along the way. As technology continues to surpass the comprehension of the average consumer, people are increasingly faced with choices that concern the fate of their privacy in the hands of these new inventions. Technological innovations offer benefits in the form of convenience, and once that convenience is normalized, people cannot go without it no matter what it means for their privacy. For example, while the price paid to smartphone companies in personal data is hefty, because society has completely adapted to a smartphone-enhanced lifestyle, consumers almost *have* to accept this loss of privacy just to function normally in the modern age. When certain technologies reach this point, consumers are willing to partake in new innovations even if it means a voluntary loss of personal privacy. When considering two specific high tech innovations coming into today's market, voice assistants and facial recognition, consumers want to adopt these technologies even though they lack confidence in the security of their information.

Although voice assistants are increasingly becoming a part of everyday life, consumers are not 100% trusting of the technology. As of 2018, 57.8 million Americans own a smart speaker. Smart speaker sales rose 22% in just the first 10 months of 2018 and remain on the rise (*Voice Assistant Consumer Adoption Report* 19). Among the most popular uses for a smart speaker are to ask a question (91%), listen to a streaming music service (89.5%), and check the weather (85.2%) (*Smart Speaker Consumer Adoption Report* 16). When it comes to more personalized needs, however-- such as accessing a personal calendar, messaging someone, or making a purchase-- consumers report much lower use (35.1%, 34.2%, and 26% respectively)

(*Smart Speaker Consumer Adoption Report* 16). According to an eMarketer article, a study by Bizrate Insights found that 58% of all U.S. internet users do not use and are not interested in using a smart speaker to make a purchase (Kats, “The Uncomfortable State of Voice Commerce”). She also found that a study by RetailMeNot revealed that 48% of consumers will not shop with a smart speaker because they are worried about the privacy of their personal information. While consumers are becoming more frequent users of various smart speaker features and increasingly adopting voice assistants, use drops dramatically for capabilities that the consumer feels may compromise their privacy.

Another high technology that has been gaining traction and stirring mixed emotions in recent years is facial recognition. The past several years have been huge for facial recognition technologies making their way into the market. In 2017 Apple launched the iPhone X, which became one of the first mainstream technologies to utilize facial recognition. “According to Apple, the device uses light projection and an infrared camera to create a 3-D map of a user’s face” writes Rimma Kats of eMarketer (Kats, “How Do Consumers Really Feel about Facial Recognition?”). While the iPhone X was the best-selling smartphone at the start of 2018, consumers are openly hesitant about facial recognition (Silver). Knowing that the iPhone X has to actively scan faces that pass in front of the phone at all times, one blogger writes, “As much as I want an iPhone X, I am not sure I want to compromise my privacy, and the security and privacy of those around me to be a part of Apple’s grand Face ID experiment for a \$1000+ price tag” (Lapinski). For this user, the loss of privacy was just not worth it. Facial recognition technology has also been making its way into the retail space. Last year, Amazon opened the Amazon Go store in Seattle, a convenience store that uses facial recognition to charge customers

for what they take home without a normal check-out process. 40.2% of consumers say that this use of technology is cool and 41.9% say it is creepy (“Some Technologies Creep Consumers Out”). While this tech giant was the first to try something of the sort, other retailers have considered using the technology for other purposes and consumers are not thrilled by it. A survey by RichRelevance shows that a whopping 69.4% of consumers say it is creepy if facial recognition technology could identify them as a loyal customer and relay their preferences to a salesperson in-store (King). In this instance, only 16.1% of consumers say it would be cool. Ready or not, Target, Walmart, and Lowes have all run biometric trials in 2018 and are sure to start rolling out these new capabilities in the coming years (Burt).

Voice assistants and facial recognition are two emerging technologies that are currently being adopted into society- making them worthy of analysis when looking at the relationship of consumers in varying adoption categories vs personalization and privacy habits. While it has been demonstrated that consumers are willing to surrender personal information for the convenience that technologies provide, they remain hesitant and concerned at the costs of releasing their personal information.

*Personalization vs Privacy: Social Media.* Unlike with high technology, consumers do not surrender personal information to social media sites in exchange for convenience. Social media does not necessarily make lives easier in the traditional sense, but it does foster highly connected online communities and serve as a breeding pool for brand engagement. As a result, any personal data released to social media sites are used to feed users more relevant content and ads. In many cases, the data is used to fuel connectivity within the site. These are the most basic principles of

how social media is able to pull in users. The simplest example of this would be that users on any major social media site can see who liked their content. In a more complex instance, advertisers can track users' locations on Instagram and serve them an in-feed ad when they are in close proximity to a store location. The possibilities are endless and growing. From site activity statuses to location tags, major social media sites compromise users' privacy in the very blood of their operation. On several top social media sites, users can see the status of others' activity on the site. To be able to see a user's status means that others can see when a user is currently looking at the social media site, or how long it has been since they were last browsing. On Facebook, users can only see their friends' statuses, but on Instagram, users can see the status of anyone they have messaged within the app. Social media users have a strained relationship with privacy vs personalization within this realm. While the benefits of social media have become so normalized and integrated into daily life, "creepy" advertisements, data breaches, and fake news scandals are making consumers think twice.

In the realm of social media, the push and pull between personalization and privacy is complex and multilayered. Understanding this phenomenon calls for an understanding of why people use social media in general. It is no secret that social media is used to connect people, but Lee Rainie from Pew Research adds, "Beyond that, we have documented how social media play a role in the way people participate in civic and political activities, launch and sustain protests, get and share health information, gather scientific information, engage in family matters, perform job-related activities and get news" (Rainie). As of 2018, 77% of the U.S. population has at least one social media account. Undoubtedly, the benefits of social media go beyond connectedness to others. It can be more honestly defined as connectedness to people, brands, causes, and interests-

touching so many more areas of life than just social. But what are the costs associated with these indispensable connections? On the surface level, every interaction made on social media- a user's friends, their posts, the type of content they view, and the ads they interact with is all recorded and attached to the personal information (name, age, email, and phone number) they used to sign up. The tradeoff does not even appear to be a tradeoff when the majority of consumers register their profiles. In fact, The Accenture Pulse Survey 2018 states that "83% of consumers are willing to share their data to enable a personalized experience as long as businesses are transparent about how they are going to use it and customers have control over it" (*Making It Personal* 4). Problems arise when consumers feel their information is being used for a situation in which they did not provide consent: notably, when experiences become too personal, especially regarding advertisements or when data breaches and discoveries of fake news start making headlines, consumers begin to think more critically and defensively about their engagement on social.

While consumers expect their online and social media experiences to be personalized, a high level of personalization can have a negative effect. According to a study by Tradedoubler, 36% of consumers are more likely to buy from a brand that sends them tailored messages. On the flip side- almost half of consumers will disregard a brand that sends them irrelevant ads, or too many ads overall (Briggs). In another study, 64% of consumers who reported a bad brand experience said that it was because "...the brand had information about the consumer that they didn't share knowingly or directly, such as a recommendation based on a purchase they made with a different business" (*Making It Personal* 4). This is where brands have the unfortunate potential to enter into the "creepy" classification. Consumers report that the third most "creepy"

personalization tactic is when they see ads on a social site for items browsed on a brand website (35%) (*Making It Personal* 5). Essentially, a crucial responsibility of social media is to provide users with tailored experiences, and although marketers may not know where it is yet, consumers are making it clear that there is a line between effective personalization and creepiness in social media advertising.

Above all else, consumers want transparency about their data usage, but that is far from what they have received as a multitude of data breaches and fake news reports have flooded the news. Among the most impactful and eye-opening scandals to have taken place in recent years was the Cambridge Analytica crime. Cambridge Analytica, an English political consultancy, was found to have obtained data from 87 million Facebook profiles. After obtaining the data, the agency then used it to target Facebook users with ads to sway the 2016 presidential election (*Overcoming the Personalization vs Privacy Paradox* 10). In the wake of this crisis, a poll by Techopinions revealed that 9% of all Facebook users deleted their accounts as a result of the incident (Durden). Unfortunately, that was not the only social media data scandal to wreak havoc. Fake news spread via social media has been another major issue within the industry. In 2018, 40 Indian citizens died when the spread of fake reports about child abductions spread throughout the Facebook-owned app, WhatsApp (Wolff-Mann). Incidents like these are what is causing consumers to crawl into their shells when it comes to privacy and trust. While 74% of social media users say it is very important to them to be in control of who can get information about them, only 9% say they feel they have a lot of control over the information collected about them (Rainie). According to the 2017 Edelman Trust Barometer, “consumer trust in mainstream institutions such as the media, CEOs, and government institutions sunk to historical lows”

(Edelman). Out of consumer trust in government, business, and NGOs- the public's trust in the media has declined the most. Additionally, "...50% of global respondents said that individuals are more believable than institutions. And a company's social media page is more believable than advertising" (Edelman). Because connectedness is a primary benefit of social media, and these sites serve as the main platform to get news- a lack of transparency and regulation within the industry is notably pushing consumers closer to the privacy end of the spectrum.

*The Decline of the Retail Industry.* A discussion on the personalization vs privacy paradox would be incomplete without mention of the retail industry. For most of the 20<sup>th</sup> century and some of the 21<sup>st</sup> century thus far, the retail industry served as a pinnacle example of how customers navigate that push and pull mentality. Before marketers could record and measure engagement on their websites and before they could get daily reports of their social media listening, retailers were collecting data about their consumer base the old fashioned way, face-to-face interactions at their brick and mortar stores. In the simplest example, a customer would rather go to a store where they know the cashier because that would mean they have a greater chance of knowing how to help you shop and you have a greater chance of getting a discount upon check out. As time passed and technology improved, this basic interaction grew more and more complex. In the mid to late 1900s, retailers began to offer store credit cards. At the cost of a credit check and one's banking information, frequent customers could be part of a store's credit club to receive special offers not available to the everyday shopper. In direct marketing, shoppers could give their address to retailers to receive coupons in the mail. As the internet came into play, customers could give retailers their email address to receive electronic coupons and discounts that were

often personalized to customers' shopping habits. The retail industry has gone through countless phases of what it means to offer a personalized experience.

While retail was once a prime example of personalization vs privacy, tactics to drive customers back to brick-and-mortar stores have been replaced by a multitude of tech-driven efforts to move stores into the e-tail space. E-tail, another word for e-commerce, is actively on the rise, much to the disadvantage of physical retail locations. Sears, Lord & Taylor, Kmart, and Macy's are just a few of the major retail/department store names that have begun to shut down their stores. Some, like Toys R Us, are already a thing of the past while others, like JCPenney, are hanging on by a thread. The surviving retailers are those with a successful standing in the e-tail space, such as Target. As Derek Thompson of *The Atlantic* states, "There is no question that the most significant trend affecting brick-and-mortar stores is the relentless march of Amazon and other online retail companies" (Thompson). Because e-tail is synonymous with the online, tech and social media-driven world, the distinction between these categories has significantly blurred. In light of that realization, the following study will not include brick-and-mortar retailers as a category of interest in the search to understand the relationship of personalization vs privacy among various contexts.

## METHODOLOGY

*Design.* This study was executed with the intent to better understand the relationship between a consumer's likelihood to accept innovation and their willingness to relinquish personal information for the benefit of personalization. Furthermore, this study concentrates on high technology and social media as categories of focus. In order to measure these variables, an online

survey was administered. The survey was designed to measure several data points that reflect the research question. To break it down more concretely, the points measured were as follows: (a) a consumer's likelihood to accept innovations, (b1) a consumer's willingness to trade privacy for personalization with high technology, and (b2) a consumer's willingness to trade privacy for personalization with social media. Additionally, participants were asked to indicate their gender and their age category.

The first part of the survey measured the consumer's likelihood to accept innovations. Because this is a common point of measurement in marketing and technology, a pre-established questionnaire was used. Developed in 2000 by Ananthanarayanan Parasuraman, The Technology Readiness Index is a widely used questionnaire that assesses a consumer's technology readiness on the basis of four dimensions: optimism, innovativeness, discomfort, and insecurity (Parasuraman and Colby 60). Each question correlates to one of the four. While the original survey consisted of 45 questions, in 2014, Parasuraman and Charles Colby revised the questionnaire into a shorter, 10-question assessment- TRI 2.0. Some questions were also updated to better reflect the current landscape of technology and innovation. This 10-question version, shown in Appendix 1, was used in this study. Each question asks the respondent to indicate his or her level of agreement with a statement on a 5-point scale from "strongly disagree" to "strongly agree".

In the second part of the analysis, the survey measured a consumer's personalization vs privacy relationship with high technology and social media. For both categories, participants were asked to indicate what personal information they have, or would, give up for particular benefits. As previously alluded to, the benefits presented in the technology section were of a

convenience factor. The benefits presented in the social media section were related to connectedness, advertisements, and content of interest. There were four questions relating to technology, located in Appendix 2, and four questions relating to social media, located in Appendix 3. Again, consumers were asked to indicate their level of agreement on a 5-point scale ranging from “strongly disagree” to “strongly agree”.

Data was collected in the form of an online Qualtrics survey. The link to the survey was distributed through several online channels in order to obtain a wide and heterogeneous sample. Altogether, 224 responses were obtained over the course of three days. Of those 224 responses, 221 were complete, usable submissions for analysis. While it was beneficial to do an online survey in order to quickly and effectively obtain a large, diverse sample, there were a few limitations as well. Firstly, although this survey was intended for adults age 18 and older, there is no way to be 100% sure that online survey respondents all fit this criterion. In order to minimize this risk, respondents were asked to consent that they were over the age of 18 before taking the survey. Additionally, there is no way to tell if respondents took the assessment twice or were answering the questions to the best of their ability. If this survey were to be replicated, an in-person assessment may be a better means to minimize these trade-offs. After fielding the survey, it was found that 31% of respondents in the sample were male and 67% were female. 1.4% of respondents chose not to disclose their gender. The age distributions are represented in Table 1 below. If this survey is repeated, it would be favorable to seek out a sample of a more even gender and age distribution.

Table 1:

Age Demographics Represented in The Survey

18 to 24	37%
25 to 34	24%
35 to 44	4%
45 to 54	18%
55 to 64	14%
65 or older	3%

*Analysis.* Once a sufficient number of responses were obtained, the survey data was downloaded from Qualtrics into an Excel workbook on a private computer. The data was cleaned to omit any incomplete responses. Only 2 responses from this study required omission. If the respondent completed a majority of the survey, but missed one or two answers, a neutral response was generated.

The data obtained from the TRI 2.0 portion of the survey was separated from the dataset at this point. Each response was coded to be represented by a number (strongly disagree = 1, somewhat disagree = 2, neutral = 3, somewhat agree = 4, and strongly agree = 5) Once this data was collected, it was sent back to Parasuraman and Colby for additional segmentation. With their algorithm, the researchers placed each respondent into one of five Technology Readiness segments: Explorers, skeptics, pioneers, hesitators, and avoiders (see Table 2). The researchers also provided each respondents total TRI score.

Table 2

Technology Readiness Segmentation

TRI Segment	Optimism	Innovativeness	Discomfort	Insecurity
Explorers	High	High	Low	Low
Skeptics	Low	Moderate	Low	Low
Pioneers	High	High	High	High
Hesitators	High	Low	Moderate	Moderate
Avoiders	Low	Low	High	High

Source: “Technology Readiness Index Primer.” *Rockbridge*, Rockbridge Associates, Inc., 10 May 2016, [rockresearch.com/technology-readiness-index-primer/](http://rockresearch.com/technology-readiness-index-primer/).

The other half of the data, that measures a consumer’s likelihood to give up privacy was analyzed to assess which respondents were likely and unlikely to do so for each category. For each category, those who selected “somewhat agree” or “strongly agree” for 1 or less of the 4 questions were deemed unlikely to relinquish privacy. Those who selected “somewhat agree” or “strongly agree” for 2 of the 4 questions were deemed somewhat likely to relinquish privacy. Those who selected “somewhat agree” or “strongly agree” for 3 or more of the 4 questions were deemed highly likely to relinquish privacy. Additionally, each response was coded to be represented by a number (strongly disagree = 1, somewhat disagree = 2, neutral = 3, somewhat agree = 4, and strongly agree = 5) and each respondent’s average score was calculated. This will be referred to as their Likelihood Score.

Next, using the TRI 2.0 segmentation in conjunction with the likelihood segments, the percent of each TRI 2.0 segment (Explorers, skeptics, pioneers, hesitators, and avoiders) that were unlikely, likely, or highly likely was calculated. Using Excel, the two variables, TRI Score

and Likelihood Score for technology, were tested for correlation. Similarly, TRI Score and Likelihood Score for social media were also tested for correlation.

## RESULTS

The results of the TRI segmentation confirm that the distribution of the sample obtained closely match the distribution of the total U.S. adult population as measured by Parasuraman and Colby. Table 3 displays the distribution of each segment among the total U.S. population in the grey column and the results of the sample at hand in the column labeled “Percent”. The percent difference between the sample and the population ranges from 0.9% to 6.9%.

Table 3

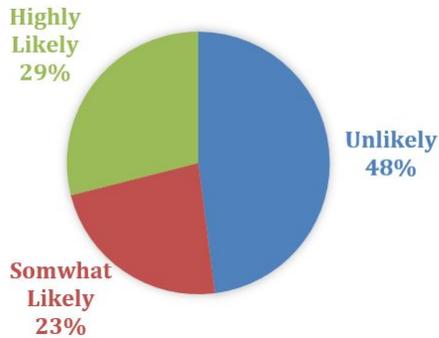
Distribution of Segments Among Total U.S. Adult Population vs Sample Data

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 skeptic- 24.5%	59	26.7	26.7	26.7
	2.00 explorer- 17.9%	34	15.4	15.4	42.1
	3.00 avoider- 19.2%	30	13.6	13.6	55.7
	4.00 pioneer- 18.9%	57	25.8	25.8	81.4
	5.00 hesitator- 19.5%	41	18.6	18.6	100.0
	Total	221	100.0	100.0	

Moving on to the outcome of the second part of the survey, measuring a consumer’s likelihood to relinquish privacy for personalization, the proportions significantly vary between the high technology and social media categories. Below, Graph 1 depicts consumer likelihood with technology and Graph 2 depicts the likelihood with social media.

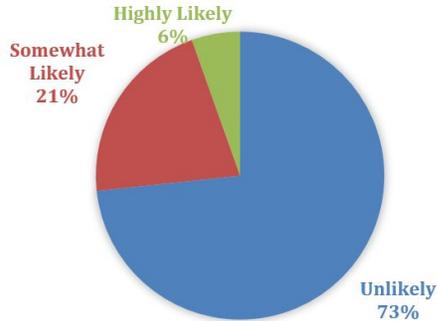
Graph 1

Likelihood to Relinquish Privacy with High Technology:



Graph 2

Likelihood to Relinquish Privacy with Social Media:

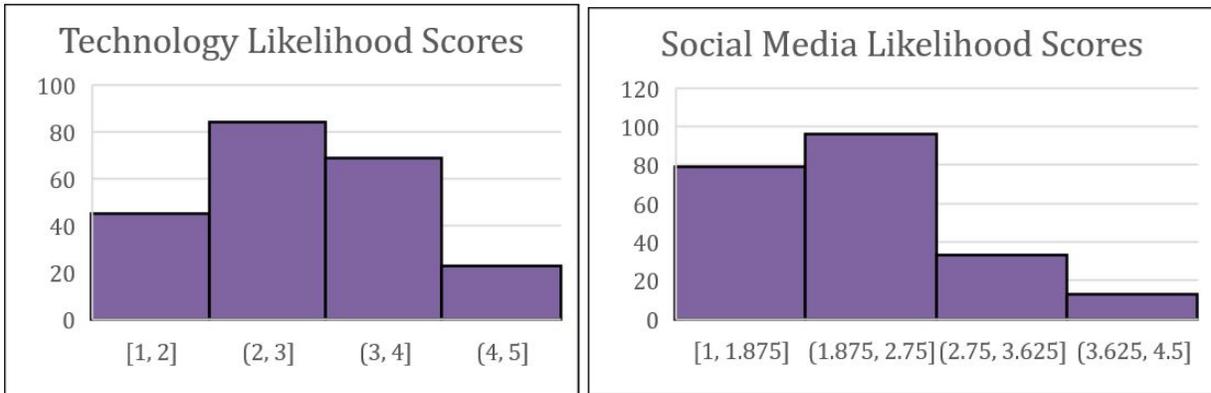


In both categories, the largest segment of consumers falls into the unlikely bin, with almost half of respondents doing so for high technology and a whopping 73% for social media. In both instances, almost the same proportion of respondents were somewhat likely to relinquish privacy in both categories. However, the two categories show massive differences when considering the highly likely segment. While 29% of respondents are highly likely to give up privacy with technology, only 6% are highly likely to do so with social media.

Likelihood scores were calculated for each category by averaging out each respondent's answers. The distribution of the scores is visualized in the histograms below.

Graphs 3 and 4

Likelihood Scores Histograms



The technology likelihood scores are slightly skewed to the right with a mean of 2.90, a median of 3. This indicates that the spread of data is relatively centered around the mean. In other words, if the mean is 2.90, this means that the majority of people within the sample have a low to moderate likelihood to give up privacy in exchange for personalization when it comes to high technology. Switching gears to social media, the likelihood scores in this category are also skewed right, with a mean of 2.17 and a median of 2.25. This indicated that most people in the sample have a low social media likelihood score.

The true intent behind this analysis is to establish if there is a connection between consumers' acceptance of innovation versus their likelihood to give up privacy in return for personalization. Tables 4 and 5 below display the percentages of the sample that both fall into one of the TRI 2.0 segments and one of the likelihood bins. For example, the first percentage in

Table 4 should be read as “13% of the sample are skeptics and unlikely to give up privacy within high technology”.

Table 4

Technology Privacy vs TRI Segmentation

	<b>1</b>		<b>2</b>		<b>3</b>		<b>4</b>		<b>5</b>	
	<b>Skeptic</b>		<b>Explorer</b>		<b>Avoider</b>		<b>Pioneer</b>		<b>Hesitator</b>	
<b>Unlikely</b>	28	13%	11	5%	20	9%	27	12%	20	9%
<b>Somewhat Likely</b>	16	7%	10	5%	4	2%	14	6%	7	3%
<b>Highly Likely</b>	15	7%	13	6%	6	3%	16	7%	14	6%

The percentages in Table 4 are spread out relatively even. All the percentages are under 10% with the exception of two. 13% of the respondents are skeptics who are unlikely to give up privacy for technology and 12% are pioneers that are unlikely to give up privacy for technology. It is interesting that the distributions of these segments are so similar because their attitudes toward innovation are on almost opposite sides of the spectrum. While pioneers exhibit high motivation (optimism and innovativeness) and high inhibition (discomfort and insecurity), skeptics are known for both low to moderate motivation and low inhibition.

Table 5

Social Media Privacy vs TRI Segmentation

	<b>1</b>		<b>2</b>		<b>3</b>		<b>4</b>		<b>5</b>	
	<b>Skeptic</b>		<b>Explorer</b>		<b>Avoider</b>		<b>Pioneer</b>		<b>Hesitator</b>	
<b>Unlikely</b>	48	22%	19	9%	23	10%	43	19%	29	13%
<b>Somewhat Likely</b>	8	4%	10	5%	6	3%	11	5%	12	5%
<b>Highly Likely</b>	3	1%	5	2%	1	0%	3	1%	0	0%

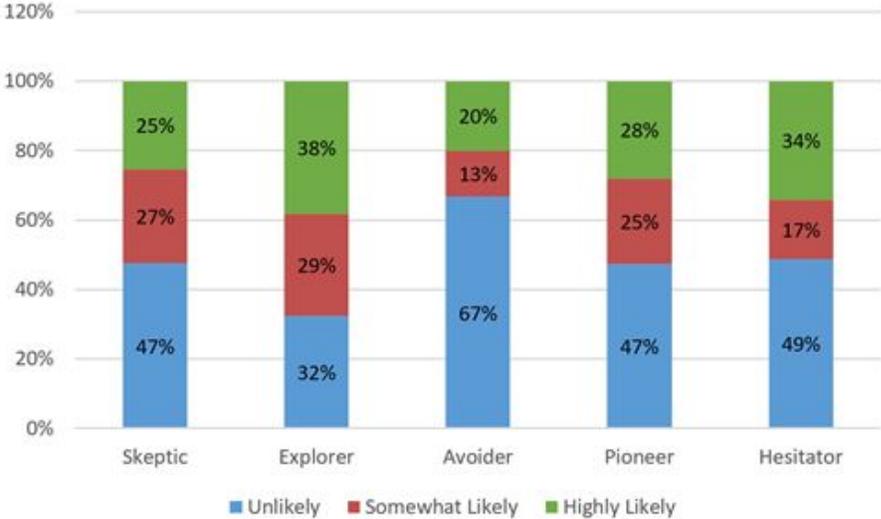
Similar to Graph 4, Social Media Likelihood Scores, there is an apparent skew in the results of social media privacy vs TRI segmentation. This table shows that 22% of respondents are skeptics who are unlikely to give up privacy with social media. Again, the second highest

segment is pioneers who are unlikely to give up privacy with social media at 19%. This unlikely similarity between skeptics and pioneers may indicate that these groups have more in common than they are given credit for when it comes to their thoughts on privacy.

Another way to look at the data would be to visualize what percentage of each segment is unlikely, somewhat likely, and highly likely to relinquish privacy. This gives insights into how the segments each approach privacy vs personalization. This is displayed in Graphs 5 and 6.

Graph 5

Likelihood of Each TRI Segment to Relinquish Privacy with High Technology

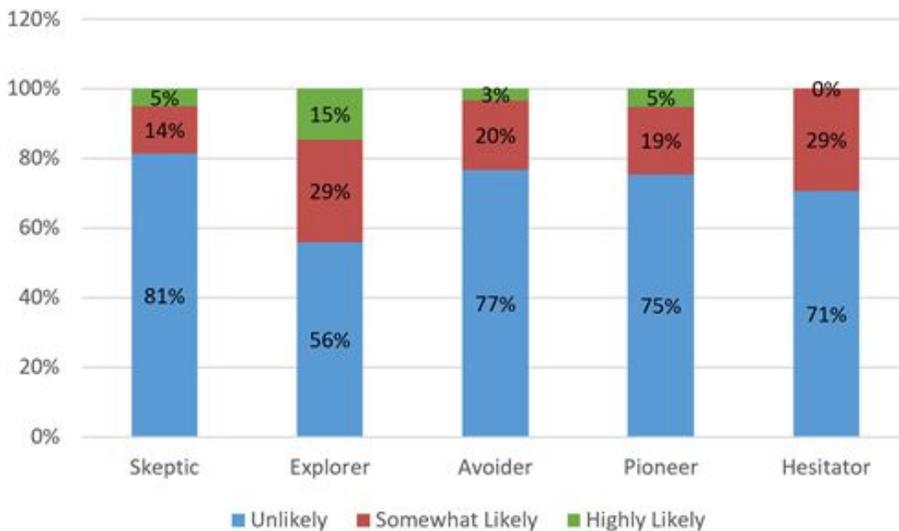


In Graph 5, it is evident that no matter what segment a consumer is in, there is a decent chance that they are unlikely to be willing to give up privacy within situations regarding high technology. The only segment in which the most likely category is greater than the unlikely category is Explorers. This is expected since Explorers score high for optimism and innovativeness. Again in this distribution, Skeptics and Pioneers mirror each other closely. Another interesting find is that although Hesitators score low on innovation and are seemingly

moderate on matters of discomfort and insecurity, 34% are still highly likely to give up privacy in the context of high technology.

Graph 6

Likelihood of Each TRI Segment to Relinquish Privacy with Social Media

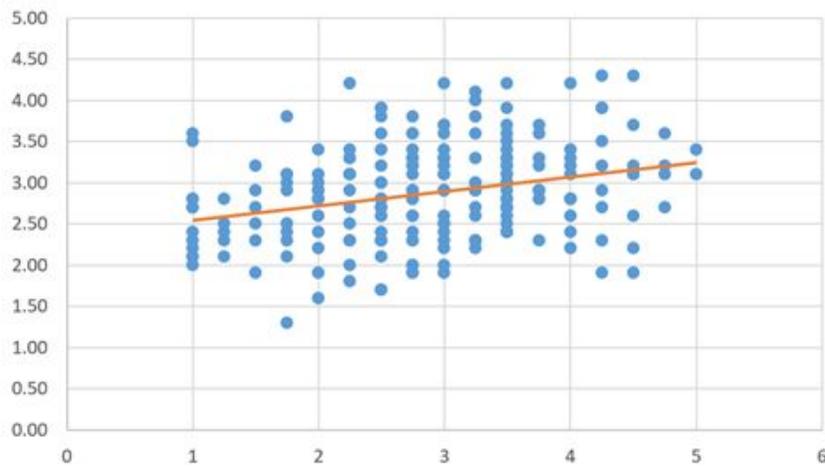


As for social media, the distribution of each segment's likelihood to relinquish privacy is overwhelmingly unlikely. Here, Explorers again take the lead for the largest percentage of those in the highly likely category, but only at 15%. There were zero respondents in the survey who are both Hesitators and highly likely to relinquish privacy within social media. This time, Sceptics, Avoiders, and Pioneers all show similar distributions- specially Avoiders and Pioneers. This is especially noteworthy because like Pioneers and Sceptics are *almost* at opposite ends of the innovation attitudes spectrum, Pioneers and Avoiders are on *complete* opposite ends when it comes to optimism and innovativeness. In spite of their opposing opinion, both segments are in similar agreement on their attitudes toward personalization in social media.

In the last part of the analysis, the Likelihood Scores were tested for a correlation with the TRI Scores. Before testing correlation, the covariance in both categories was calculated in Excel. Likelihood Scores for high technology vs TRI Scores yielded a covariance of 0.154874. Likelihood Scores for social media vs TRI Scores revealed a covariance of 0.130229. Because these covariance calculations are both positive numbers, this indicates that there is co-movement among the two scores in each category- or that the scores simply move up or down with each other. Graphs 7 and 8 show scatter plots of these correlations within high technology and social media, respectively.

#### Graph 7

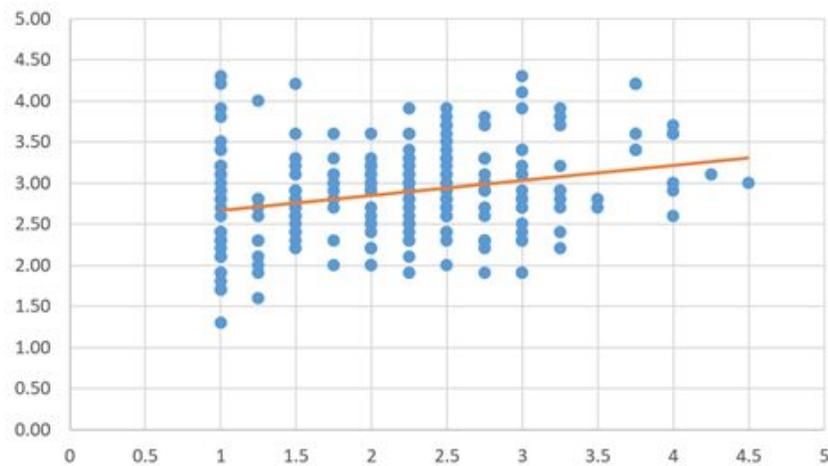
#### Correlation of Likelihood Scores for High Technology with TRI Scores



From the looks of the scatter plot, there is no apparent correlation between the two variables for high technology. The Pearson's correlation test done in Excel confirmed that there is a weak positive correlation with a correlation coefficient of 0.285. This means that innovation acceptance is loosely correlated to a consumer's likelihood to give up privacy with technology.

Graph 8

Correlation of Likelihood Scores for Social Media with TRI Scores.



Now considering Graph 8, there is even less of an apparent correlation between the variables on the scatter plot. The Pearson's correlation coefficient for social media equals 0.269. Similar to the technology category, this low positive correlation indicates that there is a weak relationship between a consumer's acceptance of innovation and their likelihood to give up privacy for personalization with social media.

## CONCLUSION

*High Technology.* As previously discussed, personalization often comes in the form of convenience when talking about high technology. The survey distributed in this analysis specifically focused on two high technologies breaking into the modern market, voice assistants and facial recognition technology, both of which have the capability to make life a little easier for consumers at the expense of their personal, identifying information. When considering the personalization vs privacy paradox in the area of high technology, almost half of consumers are

unlikely to trade in their private information. This study also found that 29% are highly likely to be willing to make the trade. While this may be so, when consumers' likelihood was measured alongside TRI segments, it was found that the largest proportions of the sample are unlikely Skeptics and unlikely Pioneers. Interestingly enough, these two segments also mirror each other when looking at a breakdown of likelihood per TRI segment. Another surprising find in this breakdown is that slightly over half of Hesitators are at least somewhat likely to relinquish privacy with high technology, with 34% being highly likely to do so. Even Avoiders, who score low on optimism and innovativeness and high on discomfort and insecurity, still show that 20% of their segment are highly likely to relinquish privacy when it comes to high technology. Taking all of this into consideration, it is not surprising that Likelihood and TRI Scores have only a weak, positive correlation.

A few key insights can be derived from the realizations in this analysis. First, consumers, in general, are split, roughly in half, on their likelihood to release personal information with high technology. This indicates that even in a nation like the U.S. that values and churns out new technologies daily, there is still a significant amount of hesitation and anxiety surrounding the nature of this progress. Second, anxiety about innovation often overrules optimism towards it. As mentioned, Skeptics and Pioneers both exhibit similar negative results even though Skeptics have low discomfort and insecurity while pioneers score high on those factors as well as motivating ones. Even Explorers who also score low on discomfort and insecurity, are still only split into thirds when it comes to measuring their likelihood to give up privacy. This shows that no matter how a consumer regards innovation, there is still an overall anxiety among consumers, even among the most optimistic segments.

*Social Media.* With social media, consumers are asked to give up privacy for the gain of connectivity and relevancy with content. This idea outlines the context of the situations presented in the survey. Respondents were asked two questions related to connectivity as a benefit and two questions related to relevancy as a benefit. One of the relevancy questions focused on the organization of content within social media while the other was related to the relevancy of ads in a site. Differing from high technology, well over half of the respondents indicated that they were unlikely to relinquish privacy in this area (73%). Only 6% overall said they would be highly likely to do so. Unsurprisingly, the Likelihood Scores for social media were evidently skewed to show for consumers' unwillingness to give up privacy in this realm. This time, well over half of all the TRI segments expressed an unlikeliness to relinquish privacy with very few respondents across the board indicating that they would be highly likely to relinquish privacy in this context. Again, this category showed a very weak, positive correlation between the two variables.

After analyzing the results of the social media section, it is apparent that the findings show some similarities and some differences when compared to high technology. Like technology, there is an overall hesitation among consumers to feel comfortable inching closer to personalization in this area. The difference is that this hesitation and anxiety is much stronger for social media. Even Explorers and Skeptics, who experience low rates of discomfort and insecurity with innovative technologies, still have astoundingly high rates of unlikelihood. It does not matter what segment consumers are a part of because all consumers are uncomfortable with a higher level of personalization with social media.

*Final Thoughts.* Personalization vs privacy is an inevitable conundrum associated with the development of innovative technologies, but consumers are highly uncomfortable with the landscape of innovation they are faced with today. Although high technology and social media can offer different personalized benefits at the cost of private information, consumers are uncomfortable doing so. Whether or not their uncomfortable state is enough for them to actually exclude themselves from consuming highly personalized product and services is something to consider. After all, the world would not exist in its highly digital, current fashion if consumers' attitudes toward innovation were enough to cause everyone to reject technology. For marketers, engineers, and consumers alike, it is important to realize that although high technology and social media are defining factors of today's era, the people who are creating and consuming them are highly uncomfortable with their implications. Going forward, this information should serve as a reminder that consumers' attitudes are going unnoticed.

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## Appendix 1

### Technology Readiness Index 2.0

<b>1</b>	Technology gives me more freedom of mobility.
<b>2</b>	Technology makes me more productive in my personal life.
<b>3</b>	Other people come to me for advice on new technologies.
<b>4</b>	In general, I am among the first in my circle of friends to acquire new technology when it appears.
<b>5</b>	I keep up with the latest technological developments in my areas of interest.
<b>6</b>	Technical support lines are not helpful because they don't explain things in terms I understand.
<b>7</b>	Sometimes, I think that technology systems are not designed for use by ordinary people.
<b>8</b>	People are too dependent on technology to do things for them.
<b>9</b>	Too much technology distracts people to a point that is harmful.
<b>10</b>	Technology lowers the quality of relationships by reducing personal interaction.

Source: Parasuraman and Colby

## Appendix 2

### Technology Category Questions

<b>1</b>	I would be comfortable relaying my debit/credit card information to a voice assistant in order to make a purchase.
<b>2</b>	I would be comfortable storing upcoming events to my personal calendar with a voice assistant.
<b>3</b>	I would be comfortable if an airport used facial recognition technology to confirm my identity instead of waiting on line at security and having to present a boarding pass and passport.
<b>4</b>	I would be comfortable shopping at stores where facial recognition technology identifies my presence and relays my preferences to store clerks.

## Appendix 3

### Social Media Category Questions

<b>1</b>	I would be comfortable enabling automatic status updates on a social media site so my friends can see when I am on the site or how much time has passed since my last session.
<b>2</b>	I would be comfortable enabling location services on a social media site so my friends can see where I am.
<b>3</b>	I am comfortable with social media sites tracking what I view in order to show me more relevant, personalized content within the site.
<b>4</b>	I am comfortable with social media sites tracking the brands I interact with in order to serve me relevant, personalized ads on social media rather than serving me random, irrelevant ads.