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An Information Privacy Examination of the Practices of Pharmaceutical Companies Regarding Use of Information Collected Through Their Websites

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An Information Privacy Examination of the Practices of Pharmaceutical Companies Regarding Use of Information Collected Through Their Websites

by

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A dissertation submitted in partial fulfillment of the requirements for the degree of
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We hereby certify that this dissertation, submitted by Shonda Brown, conforms to acceptable standards and is fully adequate in scope and quality to fulfill the dissertation requirements for the degree of Doctor of Philosophy.

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Consumers have begun to take a more proactive approach to their healthcare by accessing pharmaceutical companies Websites to obtain health and drug information, support groups, rebates, coupons, as well as free drug trials. In exchange for these benefits, companies require consumers to voluntarily disclose information. However, research has shown that consumers continue to be concerned about how their information is managed, used, and distributed by companies, especially if accessed via the Web. To date, there has been limited empirical research to examine the actual online practices of companies when it comes to privacy, especially those of pharmaceutical companies. Using Delphi expert panel process, the components of a benchmarking index were identified to examine the documented and actual online practices of 100 Website registrations with pharmaceutical companies. The evolution for the development of an index to measure the personal information privacy violations of pharmaceutical companies is presented. Second, empirical evidence is provided regarding the magnitude of voluntary adherence to the Fair Information Practices (FIPs) by pharmaceutical companies based upon the personal information privacy violations. The results revealed that companies with headquarters in Europe had fewer personal information privacy violations than those in Asia, UK, and the US. Moreover, the results indicate that fewer personal information privacy violations occur for chronic conditions than for non-chronic conditions, as well as fewer violations occur with Website registrations for updates than for discounts. Finally, both Europe and UK demonstrated more overall adherence to FIPs than the US and Asia. This suggests that self-regulation may not be sufficient, while more enforcement may be necessary to decrease personal information privacy violations.

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Table of Contents

List of Tables

Tables

List of Figures

Figures

Chapter 1

Introduction

Background

The technological advancement of the Internet has revolutionized the way companies interact with consumers by enabling the ability to collect, store, transfer, sell, and analyze consumer information (Jaisingh, Barron, Mehta, & Chaturvedi, 2008; Kim & Byramjee, 2014; Lanier & Saini, 2008; Rapp, Hill, Gaines, & Wilson, 2009; Xu, 2009). Companies are able to leverage the Internet to establish relationships with consumers through the selling of products and services or to be a source for information. However, in order to establish this relationship and engage in target marketing, companies must collect information either by voluntary or involuntary methods (Christiansen, 2011). "A user's voluntary sharing of such information" (Christiansen, 2011, p. 509) is considered voluntary disclosure and one of the methods of collecting information. Another method of voluntary disclosure is by providing information on blogs or social networking sites (Christiansen, 2011). Christiansen (2011) also noted that involuntary methods are malicious and "involve the use of technology to collect data and track movements by Internet users without their knowledge and/or permission" (p. 511). Examples of involuntary methods include cookies, deep packet inspection, and scraping. Cookies are used to track consumer activities such as Internet viewing history (Christiansen, 2011). Contrary to one's belief, according to Vega (2010), cookies can re-establish themselves even if the file has been deleted. Deep packet inspection is used to monitor all consumer

online activity by reading and analyzing packets of information across the Internet (Stecklow & Sonne, 2010). Christiansen (2011) noted that:

> Scraping, a particularly worrisome method of data collection, involves gathering personal details shared on forum discussions and social media sites in order to expand and flesh-out personal profiles of specific people, even when sites are for members only or are intended to be confidential (p. 511).

The company manages the storage, access, and distribution after the information is collected (Milne, Rohm, & Bahl, 2004). As a result, the information becomes at risk for secondary use, unauthorized access, and sharing with third parties (Milne et al., 2004). Hoffman, Novak, and Peralta (1999) defined secondary use as "the use of personal information for other purposes, subsequent to the transaction where the information was originally collected" (p. 131). In the same context, Hoffman et al. (1999) noted that online practice of information sharing (OPIS) is "manifested by consumers' concern that Web providers are selling their personal information to third parties without their knowledge or permission" (p. 131). Because of these risks, consumers are exposed to threats, such as identity theft and unsolicited marketing, which contribute to an elevation of consumer personal information privacy concerns (Federal Trade Commission [FTC], 2000; Zorotheos & Kafeza, 2009). As a result, consumers are hesitant to provide personal information on the Internet (Nam, Song, Lee, & Park, 2006). Likewise, Lanier and Saini (2008) noted that, while consumers appreciate the convenience and benefits of various technological advancements, they are concerned about how the voluntary and involuntary information collection practices impact their privacy. Therefore, consumers take prudent actions, such as decreasing Internet use,

fabricating or falsifying their information, and refusing to disclose information about themselves (Cromer, 2010; Poddar, Mosteller, & Ellen, 2009; Yang & Wang, 2009). In this respect, Meinert, Peterson, Criswell, and Crossland (2006) noted that e-commerce suffered an approximate $15 billion in unrealized revenue due to lack of consumer trust regarding companies' ability to protect or use their personal information in an ethical manner. In an effort to alleviate consumer concerns, companies post privacy seals and privacy policies on their Website to provide awareness of their information handling practices (Pollach, 2007). Jafarr and Abdullat (2009) defined the documented practices of the privacy policy (DPPP) as a "written, published statement that articulates the policy position of an organization on how it handles the personally identifiable information that it gathers and uses in the normal course of business" (p. 126). Regardless of privacy seals and DPPP, consumers expect companies to have an ethical responsibility to engage in practices that maintain information integrity and protect consumer information from unauthorized disclosure, access, use, or loss (Kelly & Rowland, 2000; Peltier, Milne, & Phelps, 2009). Geva (2008) noted that society expectations of companies regarding corporate social responsibility (CSR) are four fold: "economic ('make profit'), legal ('obey the law'), ethical ('be ethical'), and philanthropic ('be a good corporate citizen')" (p. 7). Mohr, Webb, and Harris (2001) defined CSR as "a company's commitment to minimizing or eliminating any harmful effects and maximizing its long run beneficial impact on society" (p. 47). Moreover, customers' expectations are heightened for financial, medical, and health information (Gupta, Iyer, & Weisskirch, 2010; Yang & Wang 2009). Therefore, given the significant rise in the use of healthcare Websites (Davis, 2012; Kim & King, 2009) and the sensitivity of consumers' information privacy,

pharmaceutical companies' Websites are the focus of this research study. The purpose of this research study was to investigate the documented practices of the privacy policy and the actual online practices of information sharing and consumer control that are contributing to the proliferation of personal information privacy violations (PIPV).

This research study developed a benchmarking instrument that assessed and compared the documented and actual online practices implemented by pharmaceutical Websites. Using multiple hierarchical measures, a single composite index was derived that represents an assessment of PIPV. The Personal Information Privacy Violations Index (PIPVI) benchmarking instrument was used to compare the practices implemented from 100 Website registrations of pharmaceutical companies that market chronic and non-chronic prescription medications directly to consumers. These two sub-categories of the pharmaceutical markets were selected, as both appear to have a significant market share and appear to collect personal information. A breach of such personal information can cause substantial embarrassment or even harm to consumers. For example, revealing the names of elected officials who are taking medications for a mental or other disorder can certainly be harmful to their reputation, possibly threatening their ability to stay in office. The remainder of this paper is organized to describe the problem statement, dissertation goals, and research questions any hypotheses that this research study addressed. Next, a literature review of the independent and dependent variables, along with the methodology are presented, followed by the barriers and issues, as well as the approach for this research study. Afterwards, the results, conclusions, study limitations, and recommendations for future research are presented. Finally, the appendix includes the PIPVI benchmark instrument that was used to record the data for each pharmaceutical

Website and the PIPVI expert panel instrument that was used to elicit responses from the expert panel.

Problem Statement

The research problem that this research study addressed is the proliferation of online privacy violations by companies (Anton, Earp, & Young, 2010; 2013; Kim & Byramjee, 2014; Li, Sarathy, & Xu, 2011; Nam et al., 2006; Nhan, Kinkade, & Burns, 2009; Peltier et al., 2009). Westin (1976) noted that information privacy is defined as, "the right of individuals, groups, or institutions, to determine for themselves when, how, and to what extent information about them is communicated to others" (p. 7). Jafar and Abdullat (2009) noted that "the personal information privacy of an individual is violated when electronic personal information that was entrusted to third parties is electronically shared or crossed referenced with other parties without the consent of the individual" (p. 126). Specifically, consumers continue to be concerned with unsolicited email, identity theft, and negligent information loss through the selling and unauthorized use of their information when using the Internet (Anton et al., 2010; Lanier & Saini, 2008; Pollach, 2007). Therefore, prior to disclosing information, consumers engage in a risk-benefit analysis to evaluate if the benefit of the transaction surpasses the risk of information disclosure (Xie, Teo, & Wan, 2006; Xu, 2009; Yang & Wang, 2009). For example, when conducting online banking transactions, consumers will voluntarily disclose information, but information sharing by the bank to third parties is unacceptable. This behavior is consistent with the value and stimulus propositions of the Social Exchange Theory (SET). The value proposition noted that "the more valuable to a person is the result of

his action, the more likely he is to perform the action" (Emerson, 1976, p. 340). The stimulus proposition noted that:

> If in the past the occurrence of a particular stimulus, or set of stimuli, has been the occasion on which a person's action has been rewarded, then the more similar the present stimuli are to the past ones, the more likely the person is to perform the action, or some similar action now. (Emerson, 1976, p. 339)

In other words, Emerson (1967) noted that if the consumers perceived that the expected benefit would prevail over the risk of information disclosure, they would voluntarily disclose information. Likewise, if consumers have previously disclosed information and received the reward without perceptions of PIPV, they will be more willing to disclose information in similar conditions (Emerson, 1976). However, Nam et al. (2006) noted that "media scrutiny of Internet fraud, hacking, and identity theft has heightened people's awareness of the risks of conducting transactions on the Internet" (p. 212).

Identity theft and other personal information privacy violations in the United States (US) have continued to rise and receive media attention. As a result of a breach in 2010, the federal regulators issued its largest HIPPA penalty that totaled $4.8 million due to an incident involving unsecured patient data for 6,800 patients (McGhee, 2014). FTC (2013) reported that in 2012, identity theft was the top consumer complaint, with 369,212 incidents. Likewise, the Privacy Rights Clearinghouse (2013) reported that since 2005, 932,729,111 records have been breached containing personal information from 4,478 reported incidents. Meanwhile, the Internet Crime Complaint Center (IC3) (2014) noted that over three million incidents have been reported since 2000. It is important to note that the IC3 reported that the first million complaints occurred over seven years, with the

next million occurring in 3.5 years, indicating a significant escalation in cyber crimes each year. The IC3 (2010) indicated that a substantial number of complaints are due to loss of personally identifiable information (PII). Culnan and Armstrong (1999) defined PII as "information identifiable to an individual" (p. 105). PII is represented by information such as name, postal address, email address, phone or fax number, Social Security Number (SSN), or credit card number (FTC, 2000). Similarly, non-PII is defined as "information that, taken alone, cannot be used to identify or locate an individual" (FTC, 2000, p. 170). Age, gender, income, and education level are examples of non-PII. The aforementioned incidents are significant indicators of the growth and occurrence of personal information privacy violations occurring through the use of the Internet and are key contributors to the escalation of consumer concerns (Lanier & Saini, 2008; Zorotheos & Kafeza, 2009).

The online practices of consumer control (OPCC) are also important to consumers (Liu, Marchewka, Lu, & Yu, 2005). In this context, Hoffman et al. (1999) defined consumer control as "the consumer's ability to control the dissemination of information related to or provided during such transactions or behaviors to those who were not present" (p. 131). Liu et al. (2005) noted that consumers expect to maintain some level of control over how their information is used and distributed. However, the above incidents give rise to consumer concern regarding the inability to control their information. Consumers' concerns regarding the loss of control are substantiated by Clarke, Flaherty, and Zugelder (2005), who noted that 16% of major email marketers' OPCC did not comply with the opt-out requirements established by the FTC. By not honoring consumers' requests to opt-out of further communications, consumers will

continue to receive unsolicited emails, also known as spam, and perceive that their personal information privacy has been violated. Ahmed and Oppenheim (2006) noted that the Mail Abuse Prevention System defined spam as:

> An email is "spam" IF: (1) the recipient's personal identity and context are irrelevant because the message is equally applicable to many other potential recipients; AND (2) the recipient has not verifiably granted deliberate, explicit, and still-revocable permission for it to be sent; AND (3) the transmission and reception of the message appears to the recipient to give a disproportionate benefit to the sender. (p. 157)

In fact, Bhuleskar, Sherlekar, and Pandit (2009) reported that 45% of emails represent spam and approximately 14.5 billion spam emails are distributed on a daily basis with consumers receiving an estimated annual spam of 2,500 emails.

Given the consistent rise in personal information privacy violations over the years, the FTC has made consumer protection a critical aspect of its mission (FTC, n.d). The FTC has the statutory authority and responsibility for prohibiting unfair and deceptive practices by holding companies accountable for privacy practices regarding information collection, use, and security (Earp & Baumer, 2003). Mohr, Webb, and Harris (2001) noted that companies continue to be confronted with pressure to maintain profitability and govern themselves in a socially responsible manner. Geva (2006) stated that "the greatest problem of ethical conduct in business, lies in compliance" (p. 7). Geva (2008) further noted that "it is the financial interest of businesses to comply with the law, to engage in ethical behavior, and to exercise philanthropy" (p. 14). In response to the reoccurrence of information breaches in the US, the FTC established and adopted laws

and regulations to protect consumers online. First, the Fair Information Practices (FIPs) are "global principles that fairly balance the need for business to collect and use personal information with the legitimate privacy interests of consumers to be able to exercise control over the disclosure and subsequent uses of their personal information" (Milne, & Culnan, 2002, p. 345). FIPs are generally contained in a Website's DPPP. Next, the Controlling the Assault of Non-Solicited Pornography and Marketing Act of 2003 (CAN-SPAM Act) is "a law that sets rules for commercial email, establishes requirements for commercial messages, gives recipients the right to have you stop emailing them, and spells out tough penalties for violations" (FTC, 2009, para. 1). As a result, some companies enable consumers to opt-in or opt-out of email communications. However, enforcement of FIPS and CAN-SPAM Act occur through self-regulation (FTC, 2000; Lanier & Saini, 2008; Nemati & Dyke, 2009; Xu, 2009). According to Xu (2009), "self-regulation involves the setting of standards by an industry group or certifying agency and the voluntary adherence to the set of standards by members or associates" (p. 24). In other words, companies are responsible for voluntarily compliance with these laws and regulations (Nemati & Dyke, 2009; Storey, Kane, & Schwaig, 2009). Geva (2006) noted that "a compliance problem is primarily one of ability and willingness (p. 137). Despite the existence of a Website's DPPP and other US laws and regulations, the FTC (2013) noted that it continues to address cases of personal information privacy violations in the US with multi-million dollar settlements.

Although consumers' concerns are increasingly rising, Internet use is also on the rise, which implies that consumers are being more meticulous about interaction with particular Websites (Cromer, 2010). For instance, Nam et al. (2006) noted that the use of

the Internet as an informational source has surpassed the purchasing of products. In this respect, as consumers begin to take a more proactive approach to their healthcare, the use of the Internet to obtain medical drug information is also on the rise (Davis, 2012). Davis (2012) indicated that the Internet is the second most used source for prescription drug information after healthcare physicians. However, Davis (2012) further noted that consumers prefer pharmaceutical companies' Websites as a primary source of information. Kim and King (2009) noted that consumers' access of pharmaceutical companies' Websites tripled from 2000 to 2003. Joseph, Spake, and Finney (2008) supported this proliferation and also noted that less than 10% of consumers indicated physicians should be the primary source for pharmaceutical information. This is evident by consumer use of pharmaceutical companies' Websites to access health and drug information, support groups, free drug samples, and rebates (Sheehan, 2005). It is important to note that to acquire those benefits, consumers are required to disclose personal information. Equally important, consumers are more cautious about disclosing personal information with health Websites due to the sensitivity of information that may be required and the risk of companies developing inferences using information collected. For example, Bansal, Zahedi, and Gefen (2010) noted that employers or insurance agencies could use personal health information to discriminate against consumers. Therefore, it is important for consumers to understand the documented and online practices of the company (Milne, Rohm, & Bahl, 2004; Van Dyke, 2007). Thus, additional research of the online information practices of Websites was warranted to understand the practices that are contributing to the proliferation of personal information

privacy violations (Kim & Byramjee, 2014; Lanier & Saini, 2008; Schwaig, Kane, & Storey, 2005).

Dissertation Goals

The main goal of this research study was to develop the Personal Information Privacy Violation Index (PIPVI) benchmarking instrument that can be used to assess the DPPP, OPIS, OPCC, and compute the PIPVI while using it to compare 100 Website registrations of pharmaceutical companies that market chronic and non-chronic prescription medications. For example, Palmer (2012) noted that contraceptives are an $8 billion annual drug market. In addition, Chordas (2011) stated that "in 2009, more than 90 million prescriptions for contraceptives were dispensed" (p. 64). Likewise, a report by Global Industry Analysts, Inc. (GIA) (2010) noted that consumers experiencing allergies are constantly rising, and by 2015, this market is expected to surpass $14.7 billion. Hoy and Park (2014) and Davis (2012) noted that consumers use the Internet as a source for medical information in addition to their physician. Kim and King (2009) also asserted that, "internet sources are more important for prescription drugs than for non-prescription drugs" (p. 5). Likewise, consumers use of the Internet as a source for prescription drugs increased from 45.7 million in 2004 to 116 million in 2012 (Hoy & Park, 2014). Moreover, Hoy and Park (2014) noted that pharmaceutical companies are predicted to spend $1.86 billion by 2015 on online advertising. Based upon the growth projections for prescription medications and the projected expenditure in online advertising, it is expected that consumer use of pharmaceutical Websites will continue to rise. Therefore, it is important to understand the documented and actual online

information practices of pharmaceutical companies to gain insight into how information is used that is collected through their Websites. With the use of actual counting of violations, as opposed to perception-based survey, the expectation was that this research study would provide insight into the practices that are contributing to PIPV. Given the heightened concerns of consumers regarding personal information privacy, the results of this research study provided consumers with empirical evidence of how information is managed and used by pharmaceutical companies. In addition, consumers will be able to assess the magnitude of information sharing and ability (or lack thereof) to control their information. A high magnitude of personal information privacy violations could negatively impact consumers' trust, concerns, and interactions with the Websites, which could continue to constrain the growth of e-commerce. Because enforcement of the FIPs occurs through self-regulation, the results of this research study provided evidence regarding the magnitude of voluntary adherence to the FIPs by pharmaceutical companies. This evidence can assist advocacy groups and regulators with understanding the effectiveness of self-regulation. Furthermore, it can aid in determining if more stringent laws and regulations or enforcement are necessary. In addition, companies can use the PIPVI benchmarking instrument to perform a self-assessment of their Website documented and online practices, while seeing how these differ or change over time.

The need for this research was demonstrated by the work of Schwaig et al. (2005), who examined the DPPP for Fortune 500 companies and their adherence to the FIPs. Their results indicated that only 3% of the DPPP included all notices of the FIPs, while 31% contained at least one item for each notice. In comparison to the FTC (2000), which noted that 32% of the sites examined partially implemented four of the FIPs, there has

been minimal improvement over the years. Schwaig et al. (2005) contended that companies considered the existence of the DPPP more important than the content or enforcement. They argued that some companies use the DPPP as disguises for their limited practices, and further research is warranted to determine the gap between the DPPP and the actual online information practices. O'Connor (2007) examined the DPPP, OPIS, and OPCC of hotel Websites. O'Connor (2007) further indicated that none of the hotel Websites fully complied with the FIPS. Even though O'Connor (2007) also assessed OPIS and OPCC, only overall percentages of the online practices were provided. Therefore, this research study will extend O'Connor's (2007) study with a different population and provide an extended focus on the volume of third-party emails received.

This dissertation builds on the previous research by Schwaig et al. (2005), Sheehan (2005), and White (2010). Sheehan (2005) examined the Websites of 94 branded-drug companies' types of information collected, planned use, and communication of the DPPP. First, Sheehan's (2005) results indicated that 94% of the Websites displayed privacy notices. Second, even though approximately 80% to 90% of the Websites complied with the FIPs for notice, less than 30% complied with access, choice, and security. Third, the types of information consumers were expected to disclose represented over 50% demographic, 40% medical, and 33% other information. Finally, Sheehan (2005) contended that the evaluation of the DPPP represented claims and does not constitute the actual practices implemented. Sheehan (2005) was limited to the DPPP and did not assess the online practices. Similar to Sheehan (2005), this research study assessed the documented practices of the privacy policy against the FIPs and the PII collected by the Websites. However, this research study overcame Sheehan's

(2005) limitation by assessing the DPPP, OPIS, and the OPCC to provide a holistic view of how pharmaceutical companies are using the information collected through their Websites.

The first specific goal of this research study was to develop and assess the experts' approved components and weights for the DPPP implemented by pharmaceutical companies using the Delphi expert methodology. The second specific goal of this research study was to develop and assess the experts' approved components and weights for the OPIS implemented by pharmaceutical companies using the Delphi expert methodology. The third specific goal of this research study was to develop and assess the experts' approved components and weights for the OPCC implemented by pharmaceutical companies using the Delphi expert methodology. The fourth specific goal of this research study was to develop the components of the single, integrated measure of PIPVI and assess the DPPP, OPIS, and the OPCC implemented by pharmaceutical companies using the Delphi expert methodology. The fifth specific goal was to assess and compare the DPPPM of pharmaceutical companies whose headquarters are based in the United States versus Europe, Asia, or United Kingdom. The sixth specific goal was to assess and compare the OPISM, OPCCM, and PIPVI for 100 Website registrations of pharmaceutical companies that a) market chronic versus non-chronic prescription medications, b) market registrations for prescription medication discounts versus updates, c) their headquarters are based in United States versus Europe, Asia, or United Kingdom. The seventh specific goal was to assess and compare the differences for 100 Website registrations between the documented and actual online practices of consumer control for choice and access of pharmaceutical companies that a)

market chronic versus non-chronic prescription medications, b) market registrations for prescription medication discounts versus updates, c) their headquarters are based in United States, versus Europe, Asia, or United Kingdom. The eighth specific goal of this research study is to assess and compare the OPISM, OPCCM, and PIPVI between pharmaceutical companies that collect a limited amount of PII and those that collect a high amount of PII. The last and ninth goal is to measure if there are any significant differences in the pharmaceutical companies' DPPPM, OPISM, OPCCM, and PIPVI based on their size, reported annual revenues, and years in existence. Figure 1 represents the conceptual model for the PIPVI.

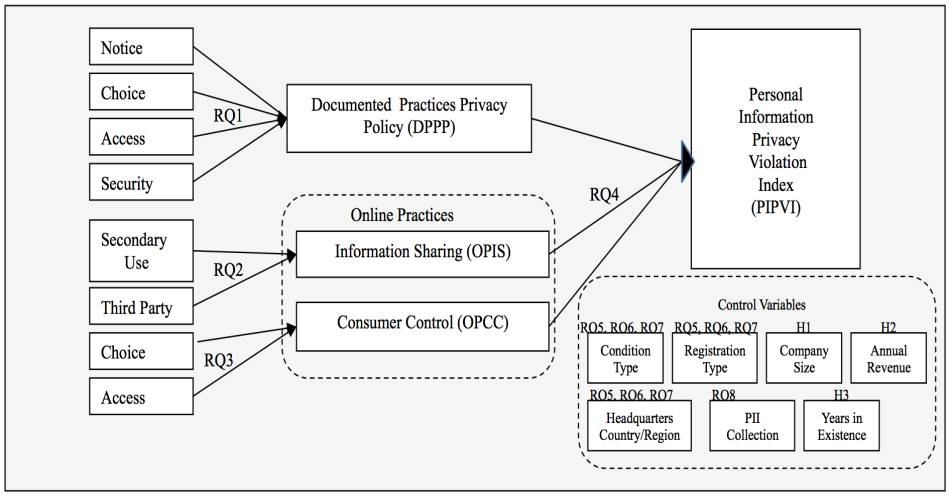


Figure 1: Conceptual Model for the Personal Information Privacy Violations Index (PIPVI)

Research Questions and Hypotheses

The main research question (RQ) that this research study addressed was: are there any significant differences in the PIPVI, DPPPM, OPISM, and the OPCCM between pharmaceutical companies that market chronic and non-chronic prescription medications

directly to consumers? This entailed using the PIPVI benchmarking instrument to assess the DPPPM, OPISM, OPCCM, and PIPVI scores for pharmaceutical companies' Websites that market prescription medications directly to consumers. Afterwards, the DPPPM, OPISM, and OPCCM scores were used to derive the PIPVI for each sample and then used to compare the groups of pharmaceutical companies' Websites.

The first seven research questions are focused on the examination of the documented and the actual online information practices of pharmaceutical companies as well as their adherence to U.S. laws and regulations. To date, there have been several studies that examined how well a company's documented DPPP adhered to the FIPs (FTC, 1998, 2000; Milne, & Culnan, 2002; Pollach, 2007; Schwaig et al., 2005; Storey et al., 2009). Schwaig et al. (2005) and Sheehan (2005) noted that the DPPP do not guarantee the actual practices. Therefore, this research study addressed the gap in the literature by assessing the DPPP, OPIS, and OPCC over a five-month period with a focus on pharmaceutical companies' Websites that market chronic and non-chronic prescription medications directly to consumers.

RQ1a: What are the experts' approved components of the DPPP implemented by pharmaceutical companies using a Delphi expert methodology?

RQ1b: What are the experts' approved weights of the DPPP's components implemented by pharmaceutical companies using a Delphi expert methodology?

RQ2a: What are the experts' approved components of the OPIS implemented by pharmaceutical companies using a Delphi expert methodology?

RQ2b: What are the experts' approved weights of the OPIS's components implemented by pharmaceutical companies using a Delphi expert methodology?

RQ3a: What are the experts' approved components of the OPCC implemented by pharmaceutical companies using a Delphi expert methodology?

RQ3b: What are the experts' approved weights of the OPCC's components implemented by pharmaceutical companies using a Delphi expert methodology?

RQ4: What are the experts' approved weights of the single, integrated hierarchical measure of PIPVI's components of DPPP, OPIS, and the OPCC implemented by pharmaceutical companies using a Delphi expert methodology?

RQ5: Are there any statistical significance mean differences for DPPM between pharmaceutical companies that headquarters are based in United States versus Europe, Asia, or United Kingdom?

RQ6: Are there any statistical significance mean differences for OPISM, OPCCM, and PIPVI between pharmaceutical companies that a) market chronic versus non-chronic prescription medications, b) market registrations for prescription medication discounts versus updates, c) their headquarters are based in United States, versus Europe, Asia, or United Kingdom?

RQ7: Are there any significant differences between the documented and the actual online practices for choice, and access of pharmaceutical companies that a) market chronic versus non-chronic prescription medications, b)

market registrations for prescription medication discounts versus updates, c) their headquarters are based in United States, versus Europe, Asia, or United Kingdom?

The next research question addressed the quantity of PII collected by pharmaceutical companies. Sheehan (2005) noted that pharmaceutical companies' Websites collect PII or anonymous information through mechanisms such as site registrations and questionnaires in exchange for information, rebates, and free trials. The type of information collected influences the consumer's level of privacy concern and interaction with the Website (Li et al., 2011; Sheehan, 2005; Xu, 2009; Yang & Wang, 2009). In this respect, Sheehan (2005) argued that consumers are most concerned about disclosing financial and health information. According to Zimmer et al. (2010), "consumers have become increasingly protective of the information they disclose" (p. 395) because they continue to be concerned about information management by companies. Therefore, this research study examined the PII collected by pharmaceutical companies' Websites to gain insight into what PII consumers are expected to disclose.

RQ8: Are there any statistical significance mean differences for OPISM, OPCCM and PIPVI between pharmaceutical companies that collect a limited amount of PII and those that collect a high amount of PII?

Last, the three null hypotheses used the demographic information collected for each pharmaceutical company to assess if there are significant differences in the pharmaceutical company's DPPPM, OPISM, OPCCM, and PIPVI based on its size, annual revenues, and years in existence.

H_1: The pharmaceutical company's DPPPM, OPISM, OPCCM, and PIPVI will not be significantly different when controlling for company size.

H_2: The pharmaceutical company's DPPPM, OPISM, OPCCM, and PIPVI will not be significantly different when controlling for annual revenue.

H_3: The pharmaceutical company's DPPPM, OPISM, OPCCM, and PIPVI will not be significantly different when controlling for years in existence.

Relevance and Significance of the Study

Relevance

Due to the occurrence of online privacy violations, research in this area continues to be relevant (Belanger & Crossler, 2011; Peltier et al., 2009). The proliferation of online privacy violations continues to be a problem for consumers (K. Kim & Kim, 2011; Koorzaan & Boswell, 2008; Li et al., 2011). Lee, Ahn, and Bang (2011) noted that even though companies have implemented FIPs, personal information privacy violations continue to rise. In addition, online identity theft has rapidly emerged as the top identity crime, and the number of threats to consumers continues to rise year after year (Racolta-Paina & Luca, 2010). As previously noted, the FTC (2010) continues to address cases of personal information privacy violations in the US with multi-million dollar settlements. Because adherence to the FIPs is self-regulated, it is challenging to regulate and enforce. Pratt and Conger (2009) noted that technological advancements have contributed to the erosion of personal information privacy over the last 30 years. Technology maturity has significantly decreased the challenges for companies to collect, integrate, and aggregate consumer information (Nemati & Dyke, 2009; Pratt & Conger, 2009; Taylor, Davis, &

Jillapalli, 2009). It is important to note that prior to the Internet, this capability was practically impossible (Pratt & Conger, 2009), except through a manual effort. For example, prior to the Internet, consumers may have completed a post card in a physician's office, clinic, or hospital, which became at risk for unauthorized use or information sharing by the staff or mail handlers if reply was sent by mail.

A poll by CBS News and The New York Times reported that 83% of 1,167 Americans interviewed expressed negative views of companies' information collection practices (Roberts, 2009). Once consumers disclose information, they have relinquished control and are unaware of how their information will be managed and used (Li et al., 2011; Rapp et al., 2009; Reay, Dick, & Miller, 2009). Therefore, consumers will continue to be at risk for personal information privacy violations if their information is exposed to threats such as unauthorized access, secondary use, or sold to third parties. Secondary use is defined as "use of information for other purposes, subsequent to the transaction where the information was originally collected" (Hoffman et al., 1999, p. 131). Because of the consistent occurrence of personal information violations, the growth of e-commerce is at risk (Kim & Byramjee, 2014; K. Kim & Kim, 2011; Li et al., 2011). However, Lee et al. (2011) noted that implementation of the FIPs could mitigate consumer concerns and increase their willingness to disclose personal information. As Internet use of pharmaceutical companies' Websites continues to rise, it is important to understand the extent their privacy policy complies with the FIPs, information sharing, and consumer control to assess their contribution to personal information privacy violations (Sheehan, 2005). This will assist consumers with determining if

pharmaceutical companies can be trusted with their information, given the sensitivity of health information.

Although there are several research studies (Earp & Baumer, 2003; Gupta et al, 2010; Joinson, Reips, Buchanan, & Schofield, 2010; K. Kim & Kim, 2011; Li et al, 2011; Phelps, Norwak, & Ferrell, 2000; Vlasic, 2006) evaluating different aspects of consumer information privacy concerns, research that examines the actual online practices of companies is limited. Various studies have examined specific aspects of online practices, such as assessment of privacy policies against the FIPs, consumer control, and secondary use (FTC, 1998, 2000; Lai & Hui, 2006; Milne & Culnan, 2002; O'Connor, 2007; Pollach, 2007; Schwaig et al., 2005; Storey et al., 2009; White, 2010). However, there is a gap in the literature of comprehensive empirical research examining information privacy with an assessment of privacy policies against the FIPs, information sharing, and consumer control in one study for a particular population. This research study addressed that gap by conducting an assessment of these constructs for pharmaceutical companies' Websites that provide information about prescription drugs. Websites that sell prescription drugs were excluded from this research study.

W. J. Kim and King (2009) noted that "the pharmaceutical market is one of the world's leading industrial sectors with worldwide sales volume estimated as $534.8 billion in 2005" (p. 5). The pharmaceutical industry is under the regulation of the Federal and Drug Administration (FDA) under the authority of the Federal Food, Drug and Cosmetic Act and, therefore, must comply with more stringent guidelines than other industries. The pharmaceutical market is comprised of both prescription and non-prescription drugs. W. J. Kim and King (2009) defined prescription drugs as drugs that

cannot be dispensed without a prescription, while a prescription is not required for non-prescription drugs. They also noted that prescription drugs represent significant revenue for this industry. Prior to 1997, pharmaceutical marketing was primarily directed toward physicians. Because of the relaxation of direct-to-consumer (DTC) advertising regulations in 1997, pharmaceutical companies expanded advertising to include DTC. Because considerable profits have been realized from advertising, the pharmaceutical industry has radically increased their direct-to-consumer (DTC) advertising (Joseph et al., 2008; W. J. Kim & King, 2009). For example, pharmaceutical companies in the US have increased DTC advertising spending for prescription drugs from $242 million in 1994 to an estimated $4.2 billion in 2005 (W. J. Kim & King, 2009). Advertising of prescription drugs is not limited to such media as television and radio, but also includes the Internet. W. J. Kim and King (2009) noted that the Internet has increasingly become a popular medium for consumers to obtain information regarding prescription drugs. The aforementioned factors provide impetus for pharmaceutical companies' Website being selected as the unit of analysis.

Significance

The significance of this research study is its results provided an understanding of the magnitude of personal information privacy violations by pharmaceutical companies. Since the FIPs are governed by self-regulation (FTC, 2000; Lanier & Saini, 2008; Nemati & Dyke, 2009; Xu, 2009), this research study provided evidence regarding the extent of voluntary adherence by pharmaceutical companies. Next, this research study also provided insight into the secondary use and third party sharing of consumer information. Because consumers are highly concerned about information management and use, the

results of this research study provided insight into how well pharmaceutical companies are addressing consumer concerns.

Furthermore, other researchers can use the PIPVI benchmarking instrument to assess Websites for new populations. This research study sought to provide a mechanism to assess the document and actual online practices of a Website to gain a better understanding of the practices contributing to PIPV. Those responsible for the design and development of companies' Websites can use this tool to conduct a self-assessment of the Website's documented and online practices. The use of the PIPVI can also provide an increased awareness of the practices that are important to regulators and consumers to assist with improving the Website's practices. Furthermore, this evidence will assist advocacy groups and regulators with understanding the effectiveness of self-regulation to aide in determining if more stringent laws and regulations or enforcement are necessary.

Barriers and Issues

This research study had several potential issues with conducting this experiment. First, an issue of concern was that the responses of the experts solicited for participation in the expert review panel might not be constructive. Therefore, to address this concern, the expert panel survey consisted of questions that elicited both binary and open-ended responses. Because this research study developed the PIPVI benchmarking tool, the reliability of this instrument was also a concern. To address this concern, a methodical analysis of literature and evaluation by the expert panel was conducted to ensure the intention of the instrument.

In addition, the data collection for this research study was an issue due to potential revisions to the Websites or practices during the length of the study because the data collection from the Websites occurred over a five-month period. For instance, the privacy policy or online practice could have been revised during the five months that may alter the results. O'Connor (2007) noted that it is common practice for companies to provide notification of privacy policy updates. To address this issue, a copy of the privacy policy was downloaded and assessed at the beginning and the end of the research study. If notifications were received during data collection or analysis, the privacy policy would have been reviewed for modifications that would significantly alter the results and determine if the Website results should be excluded from the study or updated. However, no notifications were received, nor changes to the privacy policy occurred. In addition, the results represented data for a specific date range. Data received after the specified date was excluded.

Another issue that required consideration was that because information was collected from online transactions, aggregation of information by the Websites of pharmaceutical companies could be an issue. To mitigate this issue, a unique email and name was identified for each Website registration initiated on the pharmaceutical company Website to ensure results were maintained separately. A new domain name was purchased to set up an email account for each registration for the pharmaceutical companies' Websites. For example, a Website may allow separate registrations for a newsletter and discounts. Therefore, registration for the newsletter had a different name and email address than the registration for the discount for the same pharmaceutical company Website.

Because secondary use by the pharmaceutical companies was measured by emails, the use of personal information may be understated because postal mail received cannot be measured by pharmaceutical company, since all Website registrations used the same postal address. Therefore, to address this concern, a unique name was used for all Website registrations to ensure postal mail received could be aggregated appropriately.

One more issue that required consideration is that because some Website registrations required an address, the same P.O. Box was used for all registrations. Therefore, it may have been difficult to determine which pharmaceutical company Website the mail originated from. To address this issue, as mentioned above, a unique name was used for each pharmaceutical company Website registration to assist with determining the origin of the mail.

Furthermore, the sample represents a random selection of pharmaceutical companies' Websites and results may not be representative of the industry as whole. This research study was conducted using pharmaceutical companies' Websites that provide information about chronic and non-chronic prescription drugs in the US. The companies may be headquartered in and outside of the US, such as in France, Germany, Japan, Switzerland, or the UK. In an effort to get a valid cross section of pharmaceutical companies' Websites, the sample included 100 registrations initiated through 53 Websites across 25 pharmaceutical companies with a proportionate distribution between US and non-US headquarters. The sample excluded pharmaceutical companies' Websites that sell prescription drugs.

Limitations and Delimitations

Limitations

Because this research study developed a new benchmarking instrument, one limitation was the set of measures that was combined to form the PIPVI. Another limitation was that the reliability and validation of the instrument relied on an expert panel. The expert panel assigned the relative weights for the document and online practices measures. As a result, generalization of the results from this research study was cautioned. Further studies will be required with other populations to increase generalizability of the results.

An additional limitation of this research study was the inability to assess the actual security practice. The inability to observe the companies' actual information protection methods for transmittal and storage prohibits observation and information collection for examination. Next, it is important to note that while the focus of this research study is online practices, it is believed that information is being shared through other sources, such as physician offices and pharmacies. The actual practices for OPIS for several of the Websites could not be adequately assessed because no emails were received during the research study. Moreover, the actual practices of OPCC regarding the deletion of personal information could not be assessed. Most of the pharmaceutical companies required a request for deletion to be submitted by email, phone, or mail, which was beyond the scope of this research study. The last limitation is that the information represented a point in time due to unpredictable modifications of privacy policies or practices that could occur after data collection.

Delimitations

First, a delimitation of this research study was that the experts recruited for the panel were based upon a convenience sampling. Sekaran (2003) defined convenience sampling as "the collection of information from members of the population who are conveniently available to provide it" (p. 276). Experts, including professional contacts with those associated with this project, and members in professional societies and social media networking sites, were solicited to participate. Because of this convenience sampling, other qualified experts may not have been contacted and therefore not included in the expert panel.

Second, another delimitation of this research study was that the pharmaceutical companies' Websites included in the examination were limited to prescription drugs and not over-the-counter drugs. A third delimitation was that the pharmaceutical companies' Websites were limited to manufacturers that advertise pharmaceutical drugs in the US even though their headquarters may be located in and outside the US, such as in France, Germany, Japan, Switzerland, or the UK. A fourth delimitation was that if a postal address is required, a P. O. Box was used instead of a street address. The P. O. Box is preferred to mitigate receipt of a high volume of mail at the personal home address. After completion of this research study, the P. O. Box was terminated with no forwarding address. A fifth delimitation was that the Website registration was limited to newsletters, updates, discounts or support programs. Last, a delimitation regarding confinement of the Website registrations was that secondary use and email metrics may be understated because specific triggers may not have been invoked for other transactions not included in this research study. For example, the experiment included Website registrations for

newsletters, discounts, or support programs, which may not trigger the same processes as completion of a survey or quiz.

Definition of Terms

The following represent terms and definitions.

Analysis of Variance (ANOVA) - "to determine group differences when two or more factors create these groups" (Mertler & Vannatta, 2010, p. 90)

Analysis of Covariance (ANCOVA) - "adjusts the effects of variables that are related to the dependent variables" (Mertler & Vannatta, 2010, p. 93)

Cronbach Alpha - "a reliability coefficient that indicates how well the items in a set are positively correlated to one another" (Sekaran, 2003, p. 307)

Construct Validity - "a determination of the significance, meaning, purpose, and use of scores from an instrument" (Creswell, 2002, p. 184)

Consumer Control (OPCC) – "individuals could exercise control over the accuracy, completeness, timeliness, use, distribution, and disposition of their personal information" (Zuo et al., 2007, p. 452)

Content Validity - "the extent to which the questions on the instrument and the scores from the questions are representative of all the possible questions that could be asked about the content or skills" (Creswell, 2002, p. 18)

Controlling the Assault of Non-Solicited Pornography and Marketing Act (CAN-SPAM Act) - "a law that sets rules for commercial email, establishes requirements for commercial messages, gives recipients the right to have you stop emailing them, and spells out tough penalties for violations" (FTC, 2009, para. 1).

Convenience Sampling – "the collection of information from members of the population who are conveniently available to provide it" (Sekaran, 2003, p. 276)

Corporate Social Responsibility (CSR) - "a company's commitment to minimizing or eliminating any harmful effects and maximizing its long run beneficial impact on society" (Mohr, Webb, & Harris, 2001, p. 47)

Delphi Expert Methodology – "devised in order to obtain the most reliable opinion consensus of a group of experts by subjecting them to a series of questionnaires in depth interspersed with controlled opinion feedback" (Dalkey & Helmer, 1963, p. 458)

Fair Information Practices (FIPs) - "global principles that fairly balance the need for business to collect and use personal information with the legitimate privacy interests of consumers to be able to exercise control over the disclosure and subsequent uses of their personal information" (Milne, & Culnan, 2002, p. 345).

Federal Trade Commission (FTC) - A U.S. government organization whose mission is "to prevent business practices that are anticompetitive or deceptive or unfair to consumers; to enhance informed consumer choice and public understanding of the competitive process; and to accomplish this without unduly burdening legitimate business activity" (FTC, n.d., para. 1).

Homogeneity of Variance - "the degree of variance within each of the samples should be about the same" (Terrell, 2012, p. 245)

Inter-rater Reliability - "two or more individuals observe an individual's behavior and record scores, and then the scores of the observers are compared to determine whether they are similar" (Creswell, 2002, p. 182)

Involuntary Disclosure - "this malicious method involves the use of technology to collect data and track movements by Internet users without their knowledge and/or permission" (Christiansen, 2011, p. 511)

Non-Personally Identifiable Information (Non-PII) - "information that, taken alone, cannot be used to identify or locate an individual" (FTC, 2000, p. 169).

Online Practices of Information Sharing (OPIS) - "manifested by consumers' concern that Web providers are selling their personal information to third parties without their knowledge or permission" (Hoffman et al., 1999, p. 131)

Opt-in – "consumers must give permission before marketer can use their personal information" (Milne & Rohm, 2000, p. 238)

Opt-out - "consumers can remove their names from a list by checking a box on a form provided by the marketer or by calling or writing the marketer" (Milne & Rohm, 2000, p. 238)

Outlier - "cases with unusual or extreme values at one or both ends of a sample distribution" (Mertler & Vannatta, 2010, p. 27)

Personal Information Privacy Violation - "the personal information privacy of an individual is violated when electronic personal information that was entrusted to third parties is electronically shared or crossed referenced with other parties without the consent of the individual" (Jafar & Abdullat, 2009, p. 126).

Personally Identifiable Information (PII) - "information that can be used to locate or identify an individual" (FTC, 2000, p. 169).

Pre-Analysis Data Screening - "pre-analysis data preparation deals with the process of detecting irregularities or problems with the collected data" (Levy, 2006, p. 150).

Privacy - "the right of individuals, groups, or institutions, to determine for themselves when, how, and to what extent information about them is communicated to others" (Peltier et al., 2009, p. 192).

Privacy Policy (DPPP) - "a written, published statement that articulates the policy position of an organization on how it handles the personally identifiable information that it gathers and uses in the normal course of business" (Jafarr & Abdullat, 2009, p. 126).

Ratio Scale – "a scale that has an absolute zero origin, and hence indicates not only the magnitude, but also the proportion of the differences" (Sekaran, 2003, p. 422)

Reliability - "individual scores from an instrument should be nearly the same or stable on repeated administrations of the instrument, they should be free from sources of measurement error, and they should be consistent" (Creswell, 2002, p. 180)

Response Set - "cases where respondents submitted the same score for all items" (Levy, 2006, p. 151)

Secondary Use - "use of information for other purposes, subsequent to the transaction where the information was originally collected" (Hoffman et al., 1999, p. 131).

Self-regulation - "the setting of standards by an industry group or certifying agency and the voluntary adherence to the set of standards by members or associates" (Xu, 2009, p. 24)

Spam - "an email is 'spam' IF: (1) the recipient's personal identity and context are irrelevant because the message is equally applicable to many other potential recipients. AND (2) the recipient has not verifiably granted deliberate, explicit, and still-revocable permission for it to be sent; AND (3) the transmission and reception of the message

appears to the recipient to give a disproportionate benefit to the sender" (Ahmed & Oppenheim, 2006, p. 157).

Validity - "draw meaningful and justifiable inferences from scores about a sample or population" (Cresswell, 2002, p. 185)

Voluntary Disclosure - "a user's voluntary sharing of such information" (Christiansen, 2011, p. 1).

Summary

The purpose of chapter one was to first introduce the research study. Identification of the research problem, barriers and issues, along with the limitations to conducting this research study, were discussed. Next, a theoretical justification for the research study was provided. The research problem that this study addressed was that although there are laws and regulations for consumer protection when interacting online, there continues to be a proliferation of online privacy violations by companies. Valid literature supporting the research problem and the need for this study was presented.

Furthermore, chapter one presented the main goal, specific goals, research questions, and hypotheses for this research study. The main goal of this research study was to develop the Personal PIPVI benchmarking instrument that can be used to assess the DPPP, OPIS, OPCC, and compute PIPVI while using it to compare 100 registrations initiated through 53 Websites of 25 pharmaceutical companies that market chronic and non-chronic prescription medications. Prior literature that supports the main goal was presented (Belanger & Crossler, 2011; Lee, Ahn & Bang, 2011; Li et al., 2011; K. Kim & Kim, 2011; Peltier et al., 2009; Koorzaan & Boswell, 2008). The nine specific goals,

along with the relevance and significance for this research study, were also discussed. According to literature, the number of threats to consumers, such as online identity theft, continues to rise year after year (Racolta-Paina & Luca, 2010). Because of the consistent rise in online privacy violations such as online identity theft, research in this area continues to be relevant (Belanger & Crossler, 2011; Peltier et al., 2009). This research study added to the body of knowledge by providing insight into the documented and actual online practices of pharmaceutical companies that contribute to personal information privacy violations. In addition, this research study provided empirical evidence on how information is managed and used by pharmaceutical companies' Websites.

Furthermore, chapter one continued by identifying the barriers, issues, and mitigations for this research study pertaining to the expert panel participation, data collection, aggregation of the information, and Website registrations. The limitations and delimitation of the research study were discussed. The chapter concluded with a definition of terms used during the research study along with relevant acronyms.

Chapter 2

Literature Review

Introduction

In this chapter, a literature review was presented to provide a synopsis of the relevant literature pertaining to Website practices and to lay the theoretical foundation for this research study. Hart (1998) noted that the literature review provided the foundation for the research and stressed the importance of adequate knowledge of the history and current research to identify areas of concerns, interest, and neglect. To acquire the knowledge and understanding, a comprehensive literature search for quality peer reviewed and secondary literature was conducted that was also used to lay the foundation for this research study. This is a critical process and, as noted by Levy and Ellis (2006), "in any systematic approach, if the system input is either incorrect, of low quality, or irrelevant, the resulted output is going to be ineffective regardless of the quality of the processing stage or, colloquially, *garbage-in/garbage-out"* (p. 185). This examination is interdisciplinary in nature and, therefore, an extensive search of the Information Systems (IS) literature domain was conducted using several databases from multiple fields including the following: IS, business, and marketing. From this literature review process, three important constructs were identified in the literature domain relating to personal information violations: privacy policy, information sharing, and consumer control. A comprehensive examination of these areas was conducted to ascertain what is already known, research questions, approach, and theoretical foundation for this research.

Moreover, information regarding composite indices and the Delphi expert methodology was presented.

Personal Information Privacy Violations

Personal information privacy violations using the Internet continue to receive media attention and continue to be a growing concern for consumers (K. Kim & Kim, 2011; Koorzaan & Boswell, 2008; Li et al., 2011). While the advancement of technology has provided significant benefits to companies and consumers, it has also had an adverse effect. Research has shown that information privacy remains a top concern for consumers (Smith, Dinev, & Xu, 2011).

Personal information privacy violations can occur in multiple ways through the information collection and management practices by companies. Companies collect information through voluntary and involuntary methods (Christiansen, 2011). Even though consumers are voluntarily providing information, companies are able to collect additional information without consumer consent, using methods such as cookies and Web bugs (Smith et al., 2011). Cookies and Web bugs are designed to capture information about consumers, including their Web browsing activities. The information collected from those activities can be aggregated and used to create a consumer profile. Therefore, whether information has been collected through voluntary or involuntary methods, the information becomes at risk for unauthorized use, management, and distribution (Milne et al., 2004). The persistent growth of identity theft and spam are also key indicators that companies are mismanaging consumer information. Gomez, Pinnick, and Soltani (2009) indicated that companies such as Google®, Yahoo®, Microsoft®, and

Facebook® share consumer information with a significant quantity of affiliates. Because of the persistent personal information privacy violations and the heightened concerns of consumers, Van Dyke (2007) noted the importance of understanding the online practices of Websites. Furthermore, Smith et al. (2011) stated that there are very limited empirical descriptive studies that address the organizational unit of analysis.

Table 1

Summary of Personal Information Privacy Violations Literature

Study	Methodology	Sample	Instrument or Construct	Main Finding or Contribution
Christiansen, 2011	Standard		Personal privacy and Internet marketing	Provides an overview of technology and personal privacy in marketing along with recommendations for the marketing and government industries.
Gomez et al., 2009	Literature review and experiment	50 Websites	Data handling practices, consumer concerns	Consumers are concerned about privacy and do not support information collection and disclosure by Websites without their permission.
K. Kim & J. Kim, 2011	Empirical study via experiment	223 Under-graduate students	Trusting intentions, trusting beliefs, perceived privacy empowerment, purchase decision involvement, disposition to trust, privacy-protection self-efficacy	The presence of a well-known third party seal on an unfamiliar retailer website increased trust in the website and the seal presence was mediated by perceived privacy empowerment.

Table 1

Summary of Personal Information Privacy Violations Literature (continued)

Study	Methodology	Sample	Instrument or Construct	Main Finding or Contribution
Koorzaan & Boswell, 2008	Empirical study via survey	230 under-graduate students	International personality item pool	Personality traits impacts concern for information privacy.
Li et al., 2011	Empirical study via experiment	220 students	Emotions, fairness levers, general privacy concern, situation specific privacy calculus, sensitivity of information	Emotions influence information disclosure. During e-commerce transactions with an unfamiliar vendor, information disclosure is based upon competing influences of exchange benefits along with privacy protection belief and privacy risk belief.
Milne et al., 2004	Empirical study via survey	2468 adults, 300 students, 40 non-students	Online protection behavior, attitudinal behaviors, demographic antecedent	Consumers are not taking adequate precautions to protect themselves against identity theft.
Smith et al., 2011	Literature review and analysis	320 privacy articles, 128 books and book sections	APCO macro model	Provides an interdisciplinary review of privacy-related research and recommendations for future research.
Van Dyke, 2007	Empirical study via experiment	124 employees, under-graduate and	Privacy concern, website personalization preference	Increased awareness of data collection techniques elevated consumer privacy concerns and reduced

	graduate students	preference for Web site personalization.

Privacy Policy and the Fair Information Practices

Websites' compliance with the FIPs has been a topic of discussion for personal information privacy when using the Internet. The FTC has been examining online privacy violations since 1995. In 1998, the FTC issued its first FIPs report to Congress with a recommendation for Websites to implement the FIPs (FTC, 1998). These principles were established prior to the Web and have been recognized by government agencies in the US, Canada, and Europe since 1973 (FTC, 2000). Park (2011) noted that "the FIPs are global principles that balance business needs for data collection with consumer protection" (p. 651). However, enforcement of the FIPs is through self-regulation and companies are responsible for voluntary compliance and monitoring. The four widely accepted FIP principles are notice, choice, access, and security (FTC, 2000). The FTC (2000, p. iii) defined these principles as:

- Notice – Websites would be required to provide consumers clear and conspicuous notice of their information practices, including what information they collect, how they collect it (e.g., directly or through non-obvious means such as cookies), how they use it, how they provide choice, access, and security to consumers, whether they disclose the information collected to other entities, and whether other entities are collecting information through the site.

- Choice – Websites would be required to offer consumers choices as to how their personal identifying information is used beyond the use for which the information was provided (e.g., to consummate a transaction). Such choice would encompass both internal secondary uses (such as marketing back to consumers) and external secondary uses (such as disclosing data to other entities).
- Access – Websites would be required to offer consumers reasonable access to the information a Website has collected about them, including a reasonable opportunity to review information and to correct inaccuracies or delete information.
- Security – Websites would be required to take reasonable steps to protect the security of the information they collect from consumers.

In 1998, the FTC examined the online practices of 1402 US commercial Websites. While 85% of the Websites collected large amounts of information, only 14% of the random sample disclosed some type of information regarding the Website's information practices and only approximately 2% provided notice in a comprehensive privacy policy (FTC, 1998). Two years later, the FTC (2000) examined 426 US commercial Websites and over 90% of those Websites collected PII. While there was an increase in posting at least one privacy disclosure for these Websites, there continued to be very limited compliance of at least one element for each principle of the FIPs. The FTC (1998, 2000) also indicated that a significant number of companies failed to provide the basic principle of notice and overall had not implemented the FIPs. It is important to note that, because privacy policies are not required, some companies cannot be held

accountable for their privacy practices until they are stated (Storey et al., 2009). For example, it may be difficult to file a claim against a company without posted privacy policies because they have not made any declarations regarding information collection nor usage practices. The FTC (1998) report to Congress noted that there is a need for companies to implement the basic principles of the FIPs, but no legislation was recommended at that time. In addition, the FTC (1998) noted that if consumer concerns are not addressed, "electronic commerce will not reach its full potential" (FTC, 1998, p. 43). Two years later, based upon minimal improvement in adherence to the FIPs, the FTC's report to Congress recommended that Websites that collect PII comply with the following FIPs: notice, choice, access, and security (FTC, 2000).

In response to the FTC (1998), Culnan (2000) examined 361 of the most visited US commercial Websites using the FTC (1998) as the foundation to provide support for self-regulation and to discourage legislation. Culnan (2000) argued that the FTC sample was not representative of Websites consumers frequently visited. The results suggested that 65% posted some type of privacy notice, which was higher than the FTC (1998). The Direct Marketing Association (DMA) argued that Culnan (2000) provided evidence that companies were voluntarily adhering to the FIPs and self-regulation was an effective approach (Culnan, 2000). To the contrary, Consumer Federation of America supported the FTC (1998) and noted that "meaningful and effective privacy protections for consumers are largely missing" (Culnan, 2000, p. 24). Likewise, the Center for Democracy and Technology (CDT) (1999) also disagreed with the DMA and stated that "privacy policies are the exception and not the rule" (p. 10). The CDT (1999) also noted that there is very limited adherence to the complete set of FIPs. While Culnan (2000)

noted that the DMA reported positive results regarding posting of privacy policies, the CDT (1999) argued that the information presented in the privacy policies were not reflective of consumer concerns. The CDT (1999) acknowledged that while some progress is apparent, more is required to establish information privacy as the rule rather than the exception. Years later, O'Connor's (2007) examination of hotel Websites continued to reveal evidence of non-adherence to the complete set of FIPs and privacy policies continued to ignore the concerns of consumers. The FTC (1998, 2000) and Culnan (2000) focused on a broad population of commercial Websites across multiple industries. In contrast, this research study will focus on a specific industry. Belanger and Crossler (2011) noted that the type of industry impacts a company's privacy concerns and practices because some industries may be required to adhere to certain regulations. In addition, well-known brand names may take additional precautions regarding privacy in an endeavor to maintain brand reputation (Belanger & Crossler, 2011).

Likewise, Storey et al. (2009) examined the privacy policies of U.S. Fortune 500 companies against the FIPs. Storey et al. (2009) believed these companies were expected to be leaders in personal information privacy issues and were scrutinized more closely by privacy advocates and the government. Their results indicated that a company's dependency on consumer information influenced the quality of the privacy policy. For example, business to consumer, electronic commerce, informational, heavy traffic, and large company Websites that are dependent upon consumer information are more likely to adhere to the FIPs than those of companies that are not dependent upon consumer information. Storey et al. (2009) stated that the results contradict consumers' perceptions that information dependent companies are more likely to violate consumers' information

privacy. However, Storey et al. 's (2009) findings were concluded based upon the stated practices opposed to actual practices. Pratt and Conger (2009) argued that, while the FIPs are commendable, they could give consumers a false illusion of privacy protection. While the privacy policy quality may be high, the statements do not guarantee actual practices (Schwaig et al., 2005; Sheehan, 2005), as is evident by the continued growth in personal information privacy violations (Lee et al., 2011). Lee et al. (2011) noted that, even though companies have implemented the FIPs, personal information privacy violations continued to rise. But there is a belief that implementation of the FIPs could reduce consumer concerns (Beldad, Jong, & Steehouder, 2009; Culnan &Armstrong, 1999; Lee et al., 2011). Furthermore, the CDT (2011) stated that "Fair Information Practices (FIPPS) must be the foundation of any comprehensive privacy framework" (p. 7).

Table 2

Summary of Privacy Policy and the Fair Information Practices Literature

Study	**Methodology**	**Sample**	**Instrument or Construct**	**Main Finding or Contribution**
Belanger & Crossler, 2011	Literature review and analysis	142 journal articles, 102 conference proceedings	Information privacy	There is more to be explored or explained about Information Privacy research.
Beldad et al., 2009	Empirical study via experiment	77 Dutch municipal Websites	Fair Information Practices	While 50% complied with notice, they fell short in access, choice, and security.

Table 2

Summary of Privacy Policy and the Fair Information Practices Literature (continued)

Study	**Methodology**	**Sample**	**Instrument or Construct**	**Main Finding or Contribution**
CDT, 1999	Literature review and analysis	Industry reports	Fair information practices, privacy	Companies are not fully adhering to the Fair Information Practices.
CDT, 2011	Literature review and proposal		Data breach	Summarized the framework of federal and state data breach and security laws, as well as recommended legislative proposals.
Culnan & Armstrong, 1999	Empirical study via secondary data analysis	1000 US adults 18 years or older	Information privacy concerns, procedural fairness, impersonal trust	Companies can increase customer retention by recognizing procedural fairness.
FTC, 1998	Empirical study via experiment	1400 Websites	Fair information practices	Companies are not adhering to guidelines regarding online collection and use of consumer information.
FTC, 2000	Empirical study via experiment	521 Websites	Fair Information Practices	Industries have made limited progress in protecting consumer privacy online.

Table 2

Summary of Privacy Policy and the Fair Information Practices Literature (continued)

Study	Methodology	Sample	Instrument or Construct	Main Finding or Contribution
Lee et al., 2011	Literature review and analysis		Privacy protection	Enforcement of the Fair Information Practices can be beneficial from the social welfare perspective by limiting the competition-mitigation firm incentives.
O'Connor, 2007	Empirical study via experiment	97 hotel Websites	Fair Information Practices	No website fully complies with the Fair Information Practices.
Park, 2011	Empirical study via experiment	398 Websites	Notice, Choice	The minimal levels of privacy provision suggested the deficiency of marketplace benefits.
Pratt & Conger, 2009	Literature review and analysis		Personal information privacy	Privacy violations are still occurring despite legal and self-protection policies.
Schwaig et al., 2005	Empirical study via experiment	Fortune 500 companies' websites	Fair Information Practices	Companies are not in full compliance with the Fair Information Practices. Companies are more concerned about the existence rather than the content.

Table 2

Summary of Privacy Policy and the Fair Information Practices Literature (continued)

Study	Methodology	Sample	Instrument or Construct	Main Finding or Contribution
Sheehan, 2005	Empirical study via experiment	94 DTC branded-drug Websites	Fair Information Practices	Websites have more adherences to notice and choice than access and security of the Fair Information Practices. In addition, readability of privacy policies is difficult to understand
Storey et al., 2009	Empirical study via experiment	Fortune 500 companies' Websites	Fair Information Practices	A company's dependence upon consumer information may influence the strength of their privacy policy.

Information Sharing

One of the top concerns of consumers is information disclosure to third parties without consent (Anton et al., 2010; Lanier & Saini, 2008; Pollach, 2007). Jaisingh et al. (2008) noted that this type of information sharing represented a "collection and release of consumer information" (p. 858) that would be considered a PIPV. As a result of unauthorized information sharing, research has shown that consumers continue to be concerned about information management (Pratt & Conger, 2009; Roberts, 2009; Zimmer et al., 2010). This concern is supported by constant evidence of companies sharing

information without consumer knowledge, which contributes to PIPV. Pratt and Conger (2009) contended that once companies integrate and aggregate information, it would be shared or sold.

Wu, Lau, Atkin, and Lin (2011) argued that, while companies benefit from the sale of personal information, it could be more detrimental to consumers than illegal information collection. For example, Wu et al. (2011) noted a 1999 incident of a murdered female resulting from the purchase of her Social Security Number (SSN) from the Internet for only $45. While this is an extreme case, it clearly demonstrated that secondary use can be life-threatening and that consumers have reason for heightened concerns. Pratt and Conger (2009) noted that once information disclosure occurs, consumers should expect their information will be sold or shared and their privacy cannot be restored. With technology, the ability for companies to easily integrate information has had both a positive and negative impact on consumers' personal information privacy. While consumers also benefit from information disclosure, the negative impact on their personal information privacy could outweigh the benefits (Pratt & Conger, 2009). For example, consumers may receive information, free drug samples, or coupons in exchange for spam from other companies with whom they did not engage, which leads to increased risks such as identity theft, secondary use, and an increase in spam because their information was shared or sold. Therefore, the perception of personal information privacy violations may not be worth the exchange for information, free drug sample, or coupon. Furthermore, Pratt and Conger (2009) noted that it is important to understand the information sharing practices of companies.

Identity theft continued to be the primary concern for 11 consecutive years (Lane & Sui, 2010; Racolta-Paina & Luca, 2010; Wu et al., 2011). In 2009, there were 11.1 million cases of reported identify theft (Moore, 2010). Consumers will attempt to mitigate this threat by falsifying information to avoid providing legitimate personal information (O'Connor, 2007). In addition, consumers also provide a secondary email address to mitigate receipt of spam to their primary email address. Consumers receive 2,500 spam emails annually (Bhuleskar, Sherlekar, & Pandit, 2009). Given the continued growth of information sharing by companies, there seems to be no relief in sight. While consumers benefit from falsifying information, there is a negative impact on the accuracy of company information, which also has financial impacts (O'Connor, 2007; Poddar et al., 2009). Data inaccuracy is a $600 billion annual cost due to unnecessary postage, printing, and staff overhead (Poddar et al., 2009). Therefore, companies must find a balance between information disclosure benefits and personal information privacy (Christiansen, 2011).

Table 3

Summary of Information Sharing Literature

Study	**Methodology**	**Sample**	**Instrument or Construct**	**Main Finding or Contribution**
Anton et al., 2010	Empirical study via survey	2094 Internet users in and outside of the US	Privacy concerns of personalization, notice/awareness, information transfer, information collection, information storage, and access/participation	The top concern for both U.S. and non-U.S. respondents was information transfer.

Table 3

Summary of Information Sharing Literature (continued)

Study	Methodology	Sample	Instrument or Construct	Main Finding or Contribution
Bhuleskar et al., 2009	Literature review and proposal		Spam filtering techniques	Summarized spam filtering techniques and proposed a hybrid filtering technique.
Christiansen, 2011	Standard		Personal privacy and Internet marketing	Provides an overview of technology and personal privacy in marketing along with recommendations for the marketing and government industries.
Lanier & Saini, 2008	Literature review and analysis	Consumer privacy articles published from 1989 to 2007 in academic journals	Conceptualization of consumer privacy, consumer related privacy issues, firm related privacy issues	There is an opportunity for more theoretically driven research to develop a model that identifies the domain of consumer privacy including the relationships, antecedents and consequences.
Lane & Sui, 2010	Literature review and synthesis		Identify theft patterns	Identify theft crimes are higher in the southwestern states and lower in the New England and northern plain states.
Jaisingh et al., (2008)	Literature review and synthesis		Privacy	When the benefits of personalized products or services are less than the privacy loss, companies should consider not collecting consumer information.

Table 3

Summary of Information Sharing Literature (continued)

Study	Methodology	Sample	Instrument or Construct	Main Finding or Contribution
Moore, 2010	Standard		Cybercrime	Summarizes cybercrime issues and risks to organizations and the use of the COSO framework to identify risks.
O'Connor, 2007	Empirical study via experiment	97 hotel Websites	Fair Information Practices	No website fully complies with the Fair Information Practices.
Poddar et al., 2009	Empirical study via interviews	21 Internet users	Information exchange	Consumers are challenged with maintaining control of their online identities and lacked trust of how their information is being managed online.
Pollach, 2007	Empirical study via experiment	50 commer-cial Websites	Privacy concerns, data collection, data storage, data sharing, unsolicited, marketing communications	The privacy policy content is more focused on mitigating lawsuits rather than addressing consumer's privacy concerns.
Pratt & Conger, 2009	Literature review and synthesis		Personal information privacy	Privacy violations are still occurring despite legal and self-protection policies.

Table 3

Summary of Information Sharing Literature (continued)

Study	Methodology	Sample	Instrument or Construct	Main Finding or Contribution
Racolta-Paina & Luca, 2010	Literature review and synthesis		Online consumer characteristics and behaviors	Describes the importance of the online consumer in the 21st century along with their characteristics and behaviors.
Roberts, 2009	Empirical study via telephone survey	1167 adults nation-wide	Privacy concerns: right to privacy, data collection, threat to privacy, federal government regulation	Consumers are concerned about data collection practices, identify theft and feel that more regulation is necessary from the federal government.
Wu, Lau et al., 2011	Literature review and analysis	Legal documents along with blogs and black board systems	Government, institution, citizens	China consumers are less aware than U.S. consumers that technology can be used to protect against online privacy violations.
Zimmer et al., 2010	Empirical study via experiment	264 business manage-ment students	Intent to disclose, dyadic relationship	There is a relationship between intent to disclose and disclosure behavior.

Consumer Control

Another top concern of consumers is loss of control (Cromer, 2010; Hough, 2009; Poddar et al., 2009). Zuo and O'Keefe (2007) contended that "to honor individuals'

rights over their personal information, privacy protection should ensure that individuals could exercise control over the accuracy, completeness, timeliness, use, distribution, and disposition of their personal information" (p. 452). Culnan and Armstrong (1999) noted that consumers perceived they had lost the ability to control the use and distribution of their personal information. Once consumers disclose their information, they have ceded their rights to the company (Zuo & O'Keefe, 2007). However, consumers still expect to maintain control of how their information will be used and distributed with the intention of mitigating threats such as secondary use, identity theft, and spam. Belanger and Crossler (2011, p. 1017) indicated that 85% of those surveyed expressed the need to control information access. Culnan and Armstrong (1999) noted that consumers are less likely to perceive their personal information privacy has been violated if they are able to control the use of their information. Companies address this concern by providing the ability to opt-in or opt-out of originating or third party communications. Consumer choice is also one of the principles of the FIPs that stated that consumers should be given the opportunity to control their information. To opt-out of communications or information distribution "consumers can remove their names from a list by checking a box on a form provided by the marketer or by calling or writing the marketer" (Milne & Rohm, 2000, p. 238). The DMA prefers the opt-out approach because the consumer consent is implicit until a request for removal is received (Clarke et al., 2005). To the contrary, opt-in is the recommended approach by the European Union Data Directive (Lai & Hui, 2006). This approach requires that "consumers must give permission before marketer can use their personal information" (Milne & Rohm, 2000, p. 238). With this approach, information cannot be sent or disclosed unless the consumer provides consent.

This approach would be detrimental to companies who specialize in selling consumer information because they would be relying on voluntary consent (Hough, 2009). Even though some companies provide the ability to opt-out or opt-in, Milne and Rohm (2000) noted that these options are often intentionally invisible on Websites. O'Connor's (2007) examination of hotel Websites indicated hotels lacked principles of choice, access, and the security of information transferred to third parties. In addition, 38% of the Websites did not provide consumers with a choice to opt-in or opt-out of third party disclosure (O'Connor, 2007, p. 195). Furthermore, consumers' ability to control third party communications was 62%, compared to 49% for the originating company communications (O'Connor, 2007, p. 195). This implied that the originating company provided less control over consumer communications (O'Connor, 2007). In this situation, consumers could be more at risk for personal information violations by the originating company than by third parties. Even though consumers are concerned about secondary use, their concern is not only applicable to external use but internal use as well.

Ford (2005) noted that it has been estimated that "more than 13 billion spam messages are sent per day" (p. 355), which cost U.S. companies approximately 10 billion dollars a year. Spam can be very frustrating and trigger consumer reactions such as distrust and ceasing further interaction with that company. Because spam was recognized as a significant problem and efforts to control it have been ineffective, in 2003, Congress passed the CAN-SPAM Act, which provides legislation for email regulations. It is important to note that this law does not prohibit spam, but provides content specifications and supports the opt-out approach (Clarke et al., 2005).

Table 4

Summary of Consumer Control Literature

Study	Methodology	Sample	Instrument or Construct	Main Finding or Contribution
Belanger & Crossler, 2011	Literature review and analysis	142 journal articles, 102 conference proceedings	Information privacy	Summarizes the current state of information privacy research and provides recommendations for future research.
Clarke et al., 2005	Literature review and synthesis		CAN-SPAM Act	Summarizes the CAN-SPAM Act law and the sales implications.
Cromer, 2010	Empirical study via secondary data and survey	2,126 online consumers, 482 online consumers	Adaptive behavior, Internet experience, risk concern	Consumers use self-efficacy to regulate Internet use and adaptive behaviors to mitigate online risk concerns.
Culnan & Armstrong, 1999	Empirical study via secondary data analysis	1,000 U.S. adults 18 years or older	Information privacy concerns, procedural fairness, impersonal trust	Companies can increase customer retention by recognizing procedural fairness.
Ford, 2005	Literature review and analysis		CAN-SPAM Act	Summarizes the preemption of the state spam laws by the CAN-SPAM Act.
Hough, 2009	Literature review and analysis		Loss of control	Summarizes the facets of privacy, control preservation, and how technology contributes to a loss of consumer control.

Table 4

Summary of Consumer Control Literature (continued)

Study	Methodology	Sample	Instrument or Construct	Main Finding or Contribution
Lai & Hui, 2006	Empirical study via experiment	68 under-graduate students 120 under-graduate student	Frames, defaults, privacy concern	Different phrasing of consumer choice and default preferences for opt-in or opt-out influences consumer participation.
Milne & Rohm, 2000	Empirical study via survey	1508 adults	Awareness of information capture, knowledge of name removal mechanisms	Consumers are unaware of data collection practices and name removal mechanisms.
O'Connor, 2007	Empirical study via experiment	97 hotel Websites	Fair Information Practices	No website fully complies with the Fair Information Practices.
Poddar et al., 2009	Empirical study via interviews	21 Internet users	Information exchange	Consumers are challenged with maintaining control of their online identities and lacked trust of how their information is being managed online.
Zuo & O'Keefe, 2007	Literature review and analysis		Information Privacy Protection	Introduced a set of information privacy protection models to reduce the information flow to provide consumers with greater control of information disclosure.

Social Exchange Theory

The theoretical foundation for this research draws on the social exchange theory (SET). The context of the SET is that there is a voluntary exchange between multiple parties. Homans (1958) noted that "persons that give much to others try to get much from them, and persons that get much from others are under pressure to give much to them" (p. 606). This theory posits that consumers engage in a "privacy calculus" where they assess information disclosure against the expected benefits (Emerson, 1976). During the assessment, consumers evaluate if their information will be used ethically and if they will not suffer negative consequences from information disclosure (Culnan & Armstrong, 1999; Xu, 2009). Yang and Wang (2009) used the SET to examine cost-benefit effects on privacy concern and behavioral intention. Yang and Wang (2009) found that privacy concern has a negative effect on information disclosure but a positive effect on privacy intention. In order to make an informed decision, the consumer should have prior knowledge of companies' information practices (Milne & Rohm, 2000; Xu, 2009).

Table 5

Summary of Social Exchange Theory Literature

Study	**Methodology**	**Sample**	**Instrument or Construct**	**Main Finding or Contribution**
Homans, 1958	Theoretical		Social Behavior	Describes the concept of social behavior as an exchange of goods.
Emerson, 1976	Theoretical		Social Exchange Theory	Provides an overview of the Social Exchange Theory.

Table 5

Summary of Social Exchange Theory Literature (continued)

Study	Methodology	Sample	Instrument or Construct	Main Finding or Contribution
Culnan & Armstrong, 1999	Empirical study via secondary data analysis	1000 U.S. adults 18 years or older	Information privacy concerns, procedural fairness, impersonal trust	Companies can increase customer retention by recognizing procedural fairness.
Milne & Rohm, 2000	Empirical study via survey	1508 adults	Awareness of information capture, knowledge of name removal mechanisms	Consumers are unaware of data collection practices and name removal mechanisms.
Xu, 2009	Theoretical		Information exchange, social contract, information control	Privacy concerns influence information disclosure behavior.
Yang &Wang, 2009	Empirical study via experiment	238 Taiwan undergraduate and graduate students	Shopping Website ethical performance, perceived ethical performance of the site, trusting belief, trusting intention	Consumers can distinguish between good and bad ethical websites. Perceived ethical performance may increase consumer trust in the website.

Composite Indices

There are certain phenomena that are too multifarious to express with an individual indicator. According to Latuszynka (2012), the reputation of composite indices has increased over the years, and researchers have begun to use composite indices

to measure complex phenomena with multiple dimensions. Srebotnjak (2007) wrote, "composite indicators are designed to measure a state, trend, or process that is the scope of policy decisions" (p. 14). Latuszynka (2012) noted that "the most common application of composite indices are currently classifications (primarily rankings of countries performance) and forecasting (estimating market trends)" (p. 68). Saisana, Saltelli, and Tarantola (2005) noted that the pros of composite indices are as follows;

- Composite indicators can be used to summarize complex or multi-dimensional issues, in view of supporting decision-makers.
- Composite indicators provide the big picture. They can be easier to interpret than trying to find a trend in many separate indicators. They facilitate the task of ranking countries on complex issues.
- Composite indicators can help attracting public interest by providing a summary figure with which to compare the performance across countries and their progress over time.
- Composite indicators could help to reduce the size of a list of indicators or to include more information within the existing size limit. (p. 307)

Saisana et al. (2005) further noted that the cons of composite indices are as follows:

- Composite indicators may send misleading, non-robust policy messages if they are poorly constructed or misinterpreted. Sensitivity analysis can be used to test composite indicators for robustness.
- The simple "big picture" results which composite indicators show may invite politicians to draw simplistic policy conclusions. Composite indicators should

be used in combination with the sub-indicators to draw sophisticated policy conclusions.

- The construction of composite indicators involves stages where judgment has to be made: the selection of sub-indicators, choice of model, weighting indicators, and treatment of missing scores, etc. These judgments should be transparent and based on sound statistical principles.
- There could be more scope for Member States about composite indicators than on individual indicators. The selection of sub-indicators and weights could be the target of political challenge.
- The composite indicators increase the quantity of data needed because data are required for all the sub-indicators and for a statistically significant analysis. (p. 308)

In order to derive a composite index, the following four steps are required: (a) variables that are correlated with the phenomenon must be selected, (b) variables must be normalized and standardized, (c) weights must be assigned to each variable, and (d) aggregation of information (Latuszynka, 2012; Muro, Mazziotta, & Paretto, 2011). "Indicators should be aggregated and weighted according to the underlying theoretical framework" (OECD/JRC, 2008, p. 15). Muro et al. (2011) noted that there are three ways to aggregate the information: arithmetic mean, factorial analysis, and power mean or adjusted mean. The arithmetic mean approach is "that the weights of the components are completely arbitrary" (Muro et al., 2011, p. 5). Arithmetic mean has two approaches: simple (non-weighted) mean and weighted mean. The simple mean approach "implies that all the weights are equal and that all components (dimensions) are perfectly suitable"

(Muro et al., 2011, p. 5). OECD/JRC (2008) noted that this approach could "disguise the absence of a statistical or an empirical basis, e.g. when there is insufficient knowledge of casual relationships or a lack of consensus on the alternative" (p. 31). In addition, OECD/JRC (2008) contended that caution should be taken when variables are grouped in dimensions, because some groupings "could result in an unbalanced structure in the composite index" (p. 31). Moreover, OECD/JRC (2008) argued that an element of double counting could be introduced when highly correlated variables are combined. With the weighted mean, "the weights are not equal, this implies that the substitutability between components is not perfect" (Muro et al., 2011, p. 5). Next, the factorial analysis uses a statistical technique to assign the weights, rather than the researcher (Muro et al., 2011). OECD/JRC (2008) noted that that this approach can be used to group indicators based upon the extent of their correlation. Muro et al. (2011) stated that the factorial analysis has two limitations. The first limitation is that because the weights are acquired based upon the data, they are not stable over time and space, which can make it difficult to compare results (Muro et al., 2011). Likewise, OECD/JRC (2008) stated that with correlated based indicators, the estimation of the weights cannot occur if there is no correlation. The second limitation is that weights are assigned "to the original variables on the basis of their variance and covariance" (Muro et al., 2011, p. 5). The last approach to aggregate information is the power mean, which assigns greater weight on the lower developed dimensions (Muro et al., 2011). Likewise, the adjusted mean "adjusts the arithmetic mean by using a penalty coefficient or function" (Muro et al., 2011, p. 5).

This research study will create the PIPVI composite index based upon indicators identified from a review of literature that will also be validated by an expert panel. Next,

the weight assignment approach was used and based upon the mean response from the expert panel. Finally, the aggregation was also conducted using the weighted mean approach.

Table 6

Summary of Composite Indices Literature

Study	**Methodology**	**Sample**	**Instrument or Construct**	**Main Finding or Contribution**
Latuszynka, 2012	Literature review and analysis		Composite indices	Provides an overview of incorporating dynamic rankings of measured items and using composite indices to measure the complex phenomena.
Muro et al., 2011	Literature review and proposal		Composite indices	Provides a proposal for a new composite index.
OECD/JRC, 2008	standard		Composite indicators construction guide	Provides an overview of constructing and using composite indicators.
Saisana et al., 2005			Composite indicators	Provides an overview of composite indicators advantages and disadvantages along with using uncertainty and sensitivity analysis to assess composite indicators.
Srebotnjak, 2007	Literature review and synthesis		Composite indicators	Composite indicators provide a useful tool to aggregate data for policy considerations.

Delphi Expert Methodology

The Delphi expert methodology was "devised in order to obtain the most reliable opinion consensus of a group of experts by subjecting them to a series of questionnaires in depth interspersed with controlled opinion feedback" (Dalkey & Helmer, 1963, p. 458). Because the expert panel feedback is not elicited face to face, this eliminates direct disagreement among the expert panel (Dalkey & Helmer, 1963; Jain, 1985). Dalkey and Helmer (1963) noted that the Delphi expert methodology's objective is "to obtain the most reliable consensus of opinion of a group of experts" (p. 458). Ramim and Lichvar (2014) indicated that "the Delphi methodology is mainly used in the situation where accurate information is unavailable and human judgment input is crucial" (p. 127). Sarlak and Aliahmadi (2008) further stated that "the notion is that well informed individuals, calling on their insights and experience, are better equipped to predict the future than theoretical approaches or extrapolation of trends" (p. 1468). McCubbrey and Taylor (2005) contended that the Delphi expert methodology includes the following nine steps:

1. Define the problem – what is to be forecast and how will the results be used when available.
2. Select knowledgeable and willing participants as a panel to respond to a questionnaire. The participants do not know one another and never meet face to face.
3. Structure the questionnaire.
4. Select the medium to be used to contact participants.
5. Send the questionnaire (Round 1).

6. Compute the simple average of the results.
7. Send a 2nd questionnaire (Round 2).
8. Compute the average from the 2nd round results.

   Send a 3rd round questionnaire (Round 3). (p. 476)

McFadzean, Ezingeard, and Birchall (2011) stated that the Delphi expert methodology "ensures that the data collection process is both reliable and valid because it exposes the investigation to differing, and often divergent, opinions and seeks convergence through structured feedback" (p. 108).

Table 7

Summary of Delphi Expert Methodology Literature

Study	**Methodology**	**Sample**	**Instruments or Constructs**	**Main Finding or Contribution**
Dalkey & Helmer, 1963	Empirical study via survey using the Delphi Expert methodology	7 panel experts	Factors that influence judgment	The Delphi export methodology is beneficial in providing preliminary. Insights even though predictions derived by opinion consensus may lack reliability.
Jain, 1985	Standard		Forecasting methods	Provides a summary of the Delphi expert methodology process.

Table 7

Summary of Delphi Expert Methodology Literature (continued)

Study	Methodology	Sample	Instruments or Constructs	Main Finding or Contribution
McCubbrey & Taylor, 2005	Empirical study via survey using the Delphi expert methodology	17 panel experts	Effects of electronic commerce technology	Delphi expert methodology was successful in predicting the effects that EC-enabled disintermediation and reintermediation would have on traditional travel agents in the US.
McFadzean et al., 2011	Empirical study via interviews and the Delphi expert methodology	43 senior managers, 36 academics	Information assurance, information systems, corporate strategy	Information assurance, information systems, and corporate strategy alignment is essential to organizational success.
Sarlak & Aliahmadi, (2008)	Empirical study via survey using the Delphi expert methodology	25 panel experts	Trust factors	Online and virtual universities must recognize factors effecting student trust.

Summary of What is Known and Unknown

A review of various aspects of personal information privacy was conducted to provide the foundation for this research study. Through this review of the literature, the constructs of privacy policy, information sharing, and consumer control were identified

as they relate to personal information privacy violations. The literature review provides a description of what is known and unknown about the constructs in this research study. Research regarding personal information privacy extended across fields including IS, marketing, and business.

Companies have benefited tremendously from the progression of technology by being able to easily integrate and aggregate information to create consumer profiles for targeting marketing (Jaisingh et al., 2008; Lanier & Saini, 2008; Rapp et al., 2009; Xu, 2009). However, this capability has also facilitated the growth of PIPV. Belanger and Crossler (2011), as well as Vlasic (2006), stated that consumers are not aware of the various information collection practices of companies. Due to continued media attention regarding personal information privacy violations and consumers' perceptions of identity theft and spam, consumers are concerned about information management and use by companies (Roberts, 2009; Zimmer et al., 2010).

Based upon studies by the FTC (1998, 2000) and the lack of privacy policies on Websites, the FTC recommended that companies adhere to the FIPs. However, research continued to illustrate that companies were still not adhering to this recommendation (O'Connor, 2007; Sheehan, 2005; Storey et al., 2009). It is important to note that the self-regulation instead of the legislative approach could be seen as a contributor since the adherence and monitoring is voluntary. Storey et al. (2009) noted companies are aware that they cannot be held accountable for privacy practices that have not been stated. Furthermore, even though some companies have implemented privacy policies and adhere to the FIPs, this does not guarantee the actual practices will align with the stated

practices (Schwaig et al., 2005; Sheehan, 2005). In this respect, there is limited empirical research that has examined the stated practices against the actual practices.

Two of the top consumer concerns are loss of information control (Cromer, 2010; Hough, 2009; Poddar et al., 2009) and the information sharing practices of companies (Anton et al., 2010; Lanier & Saini, 2008; Pollach, 2007). Consumers have continued to express that they have lost control when interacting with Websites. Even though companies have attempted to address this concern by providing opt-out and opt-in capabilities, these options are not always easily accessible (Milne &Rohm, 2000). Most companies implement the opt-out approach because the consumer will remain on the email list and information can be shared until a request for removal is initiated. Otherwise, with the opt-in approach, the company cannot send communications or share information until the consumer provides consent. Spam statistics continued to demonstrate that companies' participation in information sharing remained persistent (Bhuleskar et al., 2009; Ford, 2005). However, there are limited empirical studies that have examined the magnitude of information sharing practices. Pratt and Conger (2009) noted that it is essential to understand the information sharing practices of companies.

The constructs of privacy policy (O'Conner, 2007), information sharing (Jafarr & Abdullat, 2009), and consumer control (Pollach, 2007) have been found to be contributors of PIPV. Very limited empirical studies have been located with a comprehensive view of these constructs in a single study. Therefore, more research is warranted to examine privacy policies, information sharing, and consumer control to determine their contribution to PIPV.

To assess the constructs above, this research study will focus on pharmaceutical companies' Websites. Consumers have begun to take a more active role in their healthcare and have increased their use of the Internet to obtain information. In particular, the use of pharmaceutical websites has significantly increased over the years (Hoy & Park, 2014; W. J. Kim & King, 2009). Because of this phenomenon, consumers are exposed to potential personal information violations when interacting with these Websites. These Websites offer registration for newsletters, rebates, discount cards, and drug samples, which are all beneficial to consumers. In order to obtain these benefits, consumers must disclose information. However, consumers concerns are heightened when interacting with health related Websites due to the sensitivity of the information. In addition, it is believed that potential inferences could be made based upon information disclosed and possibly used against the consumer for other purposes, such as employment or health care coverage decisions (Bansal et al., 2010). Therefore, assessing the privacy policy, information sharing, and consumer control of pharmaceutical companies may provide a better understanding of their contribution to PIPV.

Contributions of Research Study

This research study made several contributions to the information privacy domain and body of knowledge. The main contribution of this research study was to advance the awareness of PIPV. First, empirical evidence was provided regarding the magnitude of voluntary adherence to the Fair Information Practices by pharmaceutical companies. This evidence is important to regulators and associations to assist with understanding the effectiveness of self-regulation. Second, this research study provided insight into the

documented and actual online practices of pharmaceutical companies that contribute to personal information privacy violations. Assessment of the documented and online practices in one study validated whether companies are actually adhering to their documented practices. Differences based upon condition type, registration type, headquarters country/region, company size, annual revenue, years in service, and PII collection was also examined. Third, companies can use the PIPVI benchmarking instrument to perform a self-assessment of their Website documented and online practices. Last, given the heightened concerns of consumers regarding personal information privacy, the results of this research study provided consumers with empirical evidence of how their information is managed and used by pharmaceutical companies. A high magnitude of personal information privacy violations could negatively impact consumers' trust, concerns, and interactions with the Websites, which could continue to constrain the growth of e-commerce.

Chapter 3

Methodology

Overview

Research Design

This research study was conducted in three phases, as shown in Figure 2. The first phase developed the PIPVI benchmarking instrument that was used to assess the documented and online practices of Websites. Ellis and Levy (2009) noted that "developmental research attempts to answer the question: How can researchers build a 'thing' to address the problem?" (p. 326). Developmental research should include three critical components (Ellis & Levy, 2009). First, "establishing and validating criteria the product must meet" (Ellis & Levy, 2009, p. 326). Reviewing and establishing the criteria of DPPP, OPIS, and OPCC from literature on this topic met this critical component. Second, "follow a formalized, accepted process for developing the product" (Ellis & Levy, 2009, p. 326). This second component was met by creating a set of questions from literature that was used to develop the PIPVI benchmarking instrument. In phase one, an expert panel using the Delphi expert methodology evaluated the draft of the PIPVI benchmarking instrument. For this expert panel, at least 35 individuals from academia and practitioners in the field of information security and privacy, as well as corporate social responsibility, were solicited to participate from professional contacts with those associated to this project and membership in professional societies. In addition, a message was posted to LinkedIn contacts and Information Security Groups. After consensus was achieved through several iterations with the expert panel, the feedback

was incorporated to create the final PIPVI benchmarking instrument. The last component is "subjecting the product to a formalized, accepted process to determine if it satisfies the criteria" (Ellis & Levy, 2009, p. 326). To satisfy this component, the expert panel was requested to evaluate the documented and online practices criteria, as well as assess the relative importance of each criterion in DPPP, OPIS, and OPCC. The relative importance of each criterion within each measure (DPPPM, OPISM, & OPCCM), along with the relative importance of the measures, was aggregated to develop the PIPVI.

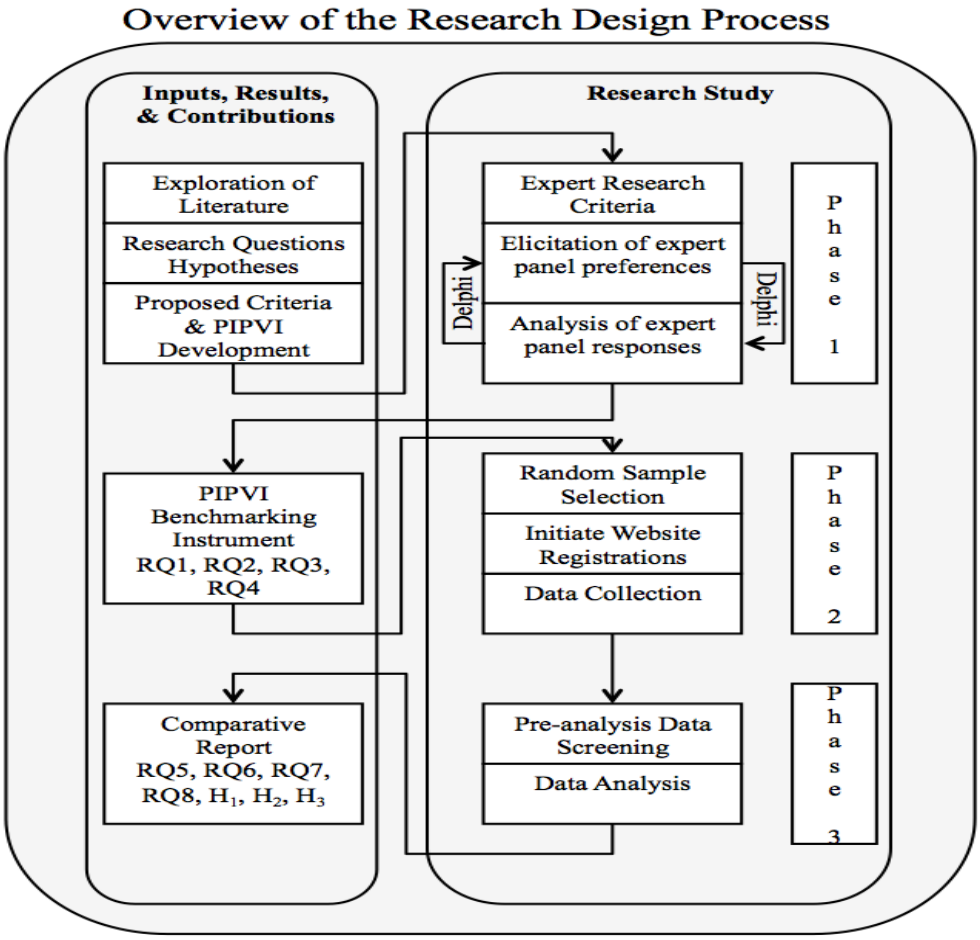


Figure 2: Research Methodology

In phase two of this research study, the final PIPVI benchmarking instrument was used to collect data from pharmaceutical Websites that market chronic and non-chronic prescription medications directly to consumers. This research study occurred over a five-month time period with no interventions. The time delay is necessary to observe and collect data from the companies' practices over a period of five months to enable the assessment of spam, secondary use, and information sharing. O'Connor (2007) and White (2010) used a time delay. For example, O'Connor (2007) collected data for one year to assess secondary use of information by registering for newsletters, competitions, and loyalty programs on 97 hotel Websites.

To assess the pharmaceutical company's DPPP, a copy of the privacy policy was downloaded and analyzed against the FIPs using assessments by Culnan (2000), FTC (2000), O'Connor (2007), Schwaig et al. (2005, 2006), Sheehan (2005), and Storey et al. (2009) as the foundation for development of the PIPVI benchmarking instrument. The aforementioned studies used a survey instrument with a binary coding scheme that was used in this research study to represent the presence or absence of each criterion with levels: no (0) and yes (1). It is important to note that the questions for this research study for these criteria were structured such that a response of yes indicated a violation.

Registration for a newsletter, update, discount, or support program was initiated with a unique name and email address for each Website to assess the types of PII collected, OPIS, and OPCC. It is important to note that where applicable, multiple registrations per Website were initiated with a unique name and email address if the Website allowed registration for different activities. For example, some Websites allowed registrations for both updates and discounts. In addition, multiple Website registrations

occurred with different selections for opt-in/opt-out selections for secondary use and third party sharing, as well as the patient or caregiver. The use of a unique name and email address for each registration maintained data integrity to facilitate accurate descriptive metrics for each pharmaceutical company Website. Otherwise, it would have been a potential challenge to determine accurate metrics for the origination of emails to assess OPIS for each pharmaceutical company Website. To assess OPIS, the number of emails received from the originating company, third parties, phone calls, and text messages were aggregated. The Website registrations provided empirical evidence of the actual OPIS.

The assessment criteria by O'Connor (2007) assessed the consumer's ability to access, modify, and delete his or her information. For example, an attempt was made to view, modify, and delete the information provided during the Website registration process. This validation provided evidence of the actual OPCC that was used to validate against the DPPP. Because pharmaceutical companies required a request by email, phone, or mail to delete personal information, this validation was beyond the scope of this research study. Similar to the assessment of the DPPP, a binary response will be recorded for each criterion with levels: no (0) and yes (1). It is important to note that the questions for this research study for these criteria were structured such that a response of yes indicated a violation.

To validate the documented practices against the actual online practices, the choice and access criteria from the DPPP and OPCC were assessed. These criterions were evaluated to determine if pharmaceutical companies are actually adhering to their documented practices. Given the nature of security and the inability to assess, the actual

practices for security are beyond the scope of this research study. Therefore, security will only be assessed within the DPPP and not the actual online practices.

Phase three of this research study included both the pre-analysis data screening and data analysis from the data collected using the PIPVI benchmarking instrument. The results of the data analysis were used to develop the comparison reports to address the eight research questions and three null hypotheses. The comparison report also included a graphical representation where appropriate.

This research study required approval from the Institutional Review Board (IRB) because human subjects were involved for the expert panel. The PIPVI benchmarking instrument elicited general demographics from the respondents. However, the responses were anonymous to ensure that no PII was collected.

Instruments and Measures

Instrument Development

Two instruments were developed for this research study. The first instrument was developed to elicit responses from the expert panel. This instrument elicited responses to assess the validity of the content for the criteria and measures identified, provide weight allocations of the relative importance for the criteria within DPPP, OPIS, OPCC, and the weight allocation of the relative importance for the DPPP, OPIS, and OPCC measures themselves that were used to develop the PIPVI. The second instrument developed was the PIPVI benchmarking instrument that was used to collect data about the documented and online practices of the pharmaceutical companies' Websites. This instrument was

developed based upon the feedback from the expert panel using the Delphi expert methodology.

The Personal Information Privacy Violations Index Expert Panel Instrument in Appendix B was administered using SurveyMonkey®, which is a web-based tool that collects anonymous responses from the expert panel. The respondents of the expert panel received a message with the details of the research study and an invitation to participate. In an effort to elicit additional respondents, a message was also posted to LinkedIn contacts and Information Security groups.

The PIPVI benchmarking instrument, as depicted in Appendix A, was developed to collect data from pharmaceutical companies' Websites to measure the contribution of DPPP, OPIS, and OPCC on personal information privacy violations. This instrument was also created using Microsoft Word® to facilitate data collection from the pharmaceutical companies' Websites. The items for measurement in the PIPVI benchmarking instrument were a minimally modified version derived from prior pertinent studies (Culnan, 2000; FTC, 2000; O'Connor, 2007; Schwaig et al., 2005, 2006; Sheehan, 2005; Storey et al., 2009) along with feedback from the expert panel using the Delphi expert methodology. The instruments used in those studies included as many as 31 items with a nominal scale, which was the approach that was adopted for this research study. Inter-rater reliability was used by the aforementioned studies to evaluate the reliability and validity of the instruments with estimates between .89 and 1, which is considered to be reliable. According to Creswell (2002), inter-rater reliability means that "two or more individuals observe an individual's behavior and record scores, and then the scores of the observers are compared to determine whether they are similar" (p. 182).

Documented Practices of the Privacy Policy Measure

The DPPP construct was measured using items to assess the pharmaceutical company's privacy policy adherence to the FIPs. Notice, choice, security, and access are the four principles by which the privacy policy was assessed using a nominal scale with levels: no (0) and yes (1). The questions were structured such that a yes response indicated a violation. The items used to measure DPPP were derived from FTC (2000), O'Connor (2007), Schwaig et al. (2006), Sheehan (2005), and Storey et al. (2009), whose items were structured such that a yes response indicated the presence of the item. First, notice was measured using five items to assess the communication of the pharmaceutical company's Website information collection practices. Second, choice was measured using four items to assess the pharmaceutical company's Website practice for consumer's ability to control future communications and information disclosure to third parties. Third, access was measured using three items to assess the pharmaceutical company's Website ability to enable consumers to retrieve and modify their information. Last, security was measured using two items to assess the pharmaceutical company's information protection practices.

Online Practices of Information Sharing Measure

The OPIS construct was measured using items to assess the pharmaceutical company's Website actual practices for information sharing using a ratio scale to capture the actual volume of emails and postal mail received. According to Sekaran (2003), ratio scale is "a scale that has an absolute zero origin, and hence indicates not only magnitude, but also the proportion of the differences" (p. 422). The items used to measure OPIS were derived from O'Connor (2007), whose items to measure the actual online practices

were structured such that a yes response indicated the presence of the item. To the contrary, instead of assessing the presence of information sharing, this research study will assess the actual volume of data received online, through postal mail, phone calls, and text messages from the pharmaceutical company, as well as third parties. The volume of additional communications from the pharmaceutical company unrelated to the original request to represent internal information sharing or secondary use of information was measured with two items. Similarly, two additional items were used to measure the volume for actual receipt of communications from third parties.

Online Practices of Consumer Control Measure

The OPCC construct was measured using items to assess the pharmaceutical company's actual practices for allowing the consumer to control receipt of future communications from the original company and third parties. Choice and access were assessed using a nominal scale with levels: no (0) and yes (1). The questions were structured such that a yes response indicated a violation. FTC (2000), O'Connor (2007), Schwaig et al. (2006), Sheehan (2005), and Storey et al. (2009) included items in the DPPP construct to measure the pharmaceutical company's stated policies for choice and access, which represents the consumer's ability to control distribution and access to their information. For this research study, the items were slightly modified to capture responses for the actual consumer control practices of choice and access. O'Connor (2007) measured the actual practices of choice and access of hotel Websites such that a yes response indicated the presence of the item. This research study followed the same approach for consumer control that was measured using four items to assess the pharmaceutical company's actual practice for allowing consumers to control receipt of

future communications from original company and third parties. In addition, three items were used to measure the consumer's ability to access their personal information.

Documented Practices versus Actual Online Practices

The documented versus the actual OPCC was measured using items from the DPPP to assess the pharmaceutical company's adherence to their stated practices. Choice and access were assessed using a nominal scale with levels: no (0) and yes (1). The questions were structured such that a yes response indicated a violation. Choice was measured using four items to assess the pharmaceutical company's Website practice for the consumer's ability to control future communications and information disclosure to third parties. Last, access was measured using three items to assess the pharmaceutical company's Website ability to enable consumers to view, modify, or delete their information.

Pharmaceutical Company Demographics

This research study collected demographics about each pharmaceutical company's Website. Consistent with Sheehan (2005) and Macias and Lewis (2003), the pharmaceutical company demographics included the pharmaceutical company name, headquarters country/region, company size, annual revenue, years in existence. The demographics were used for descriptive statistics, such as frequencies and measures of central tendencies. The pharmaceutical company demographic information was used to demonstrate that the sample is representative of the population. Furthermore, the demographics were used as control variables for the comparison reports.

Reliability and Validity

Creswell (2002) stated that the reliability and validity of an instrument should provide "an accurate assessment of the variable and enable the researcher to draw inferences to a sample or population" (p. 180). The reliability and validity of a measurement instrument is vital and is the first line of defense against inaccurate conclusions (Salkind, 2006). Salkind (2006) further contended that "if the instrument fails, then everything else down the lines fails, as well" (p. 106). McFadzean et al. (2011) noted that the Delphi expert methodology "ensures that the data collection process is both reliable and valid because it exposes the investigation to differing, and often divergent, opinions and seeks convergence through structured feedback" (p. 108). Therefore, to ensure validity and reliability, this research study elicited feedback from the expert panel to verify that the criteria used to generate the measures were appropriate to assess the documented and online practices.

Instrument Reliability

Creswell (2002) defined reliability as, "individual scores from and instrument should be nearly the same or stable on repeated administrations of the instrument, they should be free from sources of measurement error, and they should be consistent" (p. 180). Sekaran (2003) contended that reliability is important because it indicates the extent of un-bias and is an indication of stability and consistency.

Validity

Validity is described as the ability to draw significant and valuable generalizations from the survey scores (Creswell, 2002). Similarly, Salkind (2006) asserted that validity indicated that the test or instrument measures correspond to the

research intentions. Creswell (2002) defined validity as the researcher's ability to "draw meaningful and justifiable inferences from scores about a sample or population" (p. 185). Sekaran (2003) also noted that "validity ensures the ability of a scale to measure the intended concept" (p. 206). Creswell (2002) further contended that five factors can hinder validity and the ability to draw valid conclusions: "(a) poorly designed studies; (b) participant fatigue, stress, and misunderstanding of question on the instrument; (c) inability to make useful predictions from scores; (d) poorly designed questions or measures of variables; and (e) information that has little use and application" (p. 185). Using previously validated instruments with minimal changes diminished the threat to validity for this research study. According to Creswell (2002), there are three types of threats to validity: internal, external, and construct.

Internal Validity

According to Straub (1989), "internal validity raises the question of whether the observed effects could have been caused by or correlated with a set of unhypothesized and/or unmeasured variables" (p. 151). In other words, Sekaran (2003) referred to internal validity as "the confidence we place in the cause-and-effect relationship" (p. 149). Creswell (2002) and Sekaran (2003) noted that history, maturation, regression, selection, mortality, testing, and instrumentation are seven major threats to internal validity. History, maturation, regression, selection, and mortality are related to participants in the study, while testing and instrumentation are related to the procedures of the study (Creswell, 2002).

Both the history and maturation threats involve uncontrollable changes during the length of the study that could influence the outcome (Creswell, 2002; Sekaran, 2003).

The limited duration of five months for this research study will alleviate history and maturation threats that could occur during a more elongated study. Regression and selection entail researcher bias for participant selection that could influence the outcome (Creswell, 2002; Sekaran, 2003). Creswell (2002) and Salkind (2006) agreed that random selection of participants would increase internal validity. Therefore, regression and selection were prevented by randomly selecting pharmaceutical companies' Websites that meet specific criteria. Mortality is the attrition of participants during the research study (Creswell, 2002; Salkind, 2006; Sekaran, 2003). Because this research study involves an expert panel using the Delphi expert methodology, mortality is a threat. While it was not expected that 100% participation would be maintained through the entire process, at least 25 respondents were expected.

As previously mentioned, testing and instrumentation are threats to internal validity related to procedures of the research study. Testing poses a threat to internal validity when participants are exposed to a pretest that could later influence the outcome of the posttest (Creswell, 2002; Salkind, 2006; Sekaran, 2003). Testing was not a threat for this research study because a pretest was not administered. Next, Salkind (2006) stated that instrumentation is a threat because "when the scoring of an instrument itself is affected, any change in the scores might be caused by the scoring procedure, rather than the effects of the treatment" (p. 224). Therefore, this research study used the expert panel survey for all iterations of the Delphi expert methodology to ensure consistency in responses and standardization. This approach is supported by Creswell (2002), who noted that "procedures should be standardized so that the same observational scales or instrument is used throughout the experiment" (p. 327).

External Validity

"Threats to external validity are problems that threaten drawing correct inferences from the sample data to other persons, settings, and past and future situations" (Creswell, 2002, p. 327). Sekaran (2003) noted that eternal validity can be maximized by ensuring experiment conditions are compatible to the situations targeted for generalizations. The generalization of this research study was expected to increase because the study took place in a non-contrived setting. For instance, registrations were initiated on the actual pharmaceutical companies' Websites to evaluate their documented and actual online practices, thereby reducing the threat to external validity.

Instrument Validity

Straub (1989) contended that it is important to show evidence that the instrument is measuring what it intends to measure. Straub (1989) added that an unrepresentative instrument would yield uncertain results. There are two types of validation used to establish credibility of results: content and construct (Creswell, 2002; Salkind, 2006; Sekaran, 2003; Straub, 1989). According to Creswell (2002), "content validity is the extent to which the questions on the instrument and the scores from the questions are representative of all the possible questions that could be asked about the content or skills" (p. 184). Creswell (2002), Sekaran (2003), and Straub (1989) indicated that a panel of judges or experts could be used to validate the instrument content. Hence, this research study solicited feedback from an expert panel using the Delphi expert methodology to validate the instrument content.

Construct validity is considered by Creswell (2002) as "a determination of the significance, meaning, purpose, and use of scores from an instrument" (p. 184). Straub

(1989) contended that construct validity "asks whether the measures chosen are true constructs describing the event or merely artifacts of the methodology itself (p. 150). Straub (1989) recommended that "researchers should use previously validated instruments wherever possible, being careful not to make significant alterations in the validated instrument without revalidating the instrument content, constructs, and reliability" (p. 161). Therefore, where appropriate, this research study used previously validated constructs from prior research (Culnan, 2000; FTC, 2000; O'Connor, 2007; Schwaig et al., 2005, 2006; Sheehan, 2005; Storey et al., 2009).

Population and Sample

The unit of analysis for this research study was the assessment results from the pharmaceutical companies' Website registrations. The sample population included pharmaceutical companies Websites headquartered in and outside of the US that provide information about prescription drugs. The sample included Websites for prescription medications to treat the following chronic and non-chronic conditions: allergies, birth control, blood pressure, cholesterol, diabetes, erectile dysfunction, estrogen, frequent urination, infertility, menopause, peyronie's disease, prostate, and testosterone. A total of 100 Website registrations across 53 Websites of 25 pharmaceutical companies were used for this research study using a convenience sampling. Creswell (2002) noted that "in convenience sampling the researcher selects participants because they are willing and available to be studied" (p. 167). In this research study, the 100 Website registrations of pharmaceutical companies were selected based upon an extensive Internet search of available Websites. Sekaran (2003) indicated that "ample sizes larger than 30 and less

than 500 are appropriate for most research" (p. 295). Sekaran (2003) further noted that "in multivariate research (including multiple regression analyses), the sample size should be several times (preferably 10 times or more) as large as the number of variables in the study" (p. 295). Based upon Sekaran's (2003) recommendation, a minimum sample size of 30 may be sufficient for a study with three independent variables.

The pharmaceutical companies Websites sample was derived from Marcias and Lewis (2003) and Sheehan (2005) samples, supplemented with randomly selected Websites. To be selected, the pharmaceutical company's Website must have met the following criteria: (a) advertise pharmaceutical drugs in the US; (b) present information for a prescription drug; (c) have the capability to register for a newsletter, rebate, discount card, drug sample or support program; and (d) not provide the ability to purchase the prescription drug such as an online pharmacy. Table 8 represents the pharmaceutical companies Website registration demographics by headquarters country/region.

Table 8

Pharmaceutical Companies Website Registrations by Headquarters Country/Region

	Company		**Website**		**Registration**	
Headquarters Country/Region	**n**	**%**	**N**	**%**	**n**	**%**
Asia	2	8%	5	9%	8	8%
Europe	6	24%	17	32%	37	37%
United Kingdom	1	4%	4	8%	5	5%
United States	16	64%	27	51%	50	59%
Totals	25	100%	53	100%	100	100%

Pharmaceutical Company Demographics

Twenty-five pharmaceutical companies were examined. The pharmaceutical companies were headquartered in Asia, Europe, UK, and the US. The revenue for the companies ranged from less than $1 million (2, 8%) all the way to $51 - $100 billion (4, 16%), and ranged in employees from less than 100 (2, 8%) to over 100,000 (4, 16%). The most common headquarters country/region was the US (16, 64%). Table 9 presents frequencies and percentages for demographics for the pharmaceutical companies.

Table 9

Pharmaceutical Companies Demographics

Demographic	**n**	**%**
Annual Revenue		
Less than 1 million	2	8%
1 - 50 million	6	24%
51 - 100 million	3	12%
101 - 500 million	2	8%
501 - 999 million	2	8%
1 - 50 billion	6	24%
51 - 100 billion	4	16%

Note. n=25.

Table 9

Pharmaceutical Companies Demographics (continued)

Demographic	**n**	**%**
Company Size		
Less than 100	2	8%
100 – 1000	8	32%
1001 - 25,000	7	28%
25,001 - 50,000	2	8%
75,001 - 100,000	2	8%
Over 100,000	4	16%

Note. n=25.

Pre-Analysis Data Screening

Mertler and Vannatta (2010) contended that pre-analysis data screening is necessary and must be addressed prior to the statistical analysis. Levy (2006) noted that "pre-analysis data preparation deals with the process of detecting irregularities or problems with the collected data" (p. 150). Levy (2006) asserted that there are four primary purposes for pre-analysis data screening: data collection accuracy, response set, missing data, and outliers. After these issues have been addressed, "the researcher can be confident that the main analysis will be an honest one, which will ultimately result in valid conclusions being drawn from the data" (Mertler & Vannatta, 2010, p. 25). This research study used SurveyMonkey®, a Web-based tool, to facilitate data collection accuracy for the expert panel survey and Microsoft Word® for the PIPVI data collection

form. The expert panel survey and the PIPVI data collection form elicited binary and minimal continuous responses to prevent inconsistent responses.

Because this empirical developmental study examined several aspects of documented and online practices, it is imperative that the data collection is accurate. Inaccurate data collection can result from date entry or script errors (Levy, 2006). Mertler and Vannatta (2010) noted that "the results of any statistical analysis are only as good as the data analyzed" (p. 25). If the data collection is inaccurate, the results will be misrepresented because it is difficult to discern if the results are invalid since results will appear to be legitimate (Mertler & Vannatta, 2010). Therefore, the results collected were reviewed several times to validate data collection and accuracy. In addition, to determine the data accuracy, the data collected was examined using data frequency distributions, and descriptive statistics using Statistical Package for the Social Sciences (SPSS®), as recommended by Mertler and Vannatta (2010).

Another issue that may have arisen during data collection was response set. Levy (2006) defined response set as, "cases where respondents submitted the same score for all items" (p. 151). Because this research study involved an expert panel, response set is valid for this research study. If response set was detected, the data was examined to validate the responses and take the appropriate action, which may include excluding the response set from the sample.

Missing data is another issue that must be addressed during data collection. The data collected from the expert panel survey and PIPVI data collection form was examined for missing responses to ensure that each question had been completed. Levy (2006) noted that "the amount of missing data can significantly affect the validity of the data

collected and the results drawn from it" (p. 151). Because a Web-based tool was used to capture responses from the expert panel survey and PIPVI data collection form, missing scores are not expected.

Identifying outliers during data collection was another issue that was addressed during pre-analysis data screening to prevent cases that would potentially distort results (Levy, 2006; Mertler & Vanata, 2010). Mertler and Vannatta (2010) defined outliers as "cases with unusual or extreme values at one or both ends of a sample distribution" (p. 27). Because the responses were binary and open-ended, outliers for both the expert panel survey and PIPVI data collection form are not expected.

Data Analysis

Data analysis was conducted on two data sets. The first data set represents data collection from the phase one expert panel survey responses. The second data set from the PIPVI data collection form represents scores collected from 100 Website registrations that market chronic and non-chronic companies prescription medications. As previously mentioned, the expert panel survey was completed using the Web-based tool SurveyMonkey® and Microsoft Word® for the PIPVI data collection form.

Six types of analyses were conducted to assess the eight research questions and three hypotheses: frequencies and percentages, factorial analysis of variance (ANOVA), factorial analysis of covariance (ANCOVA), chi-square tests of independence, Pearson correlation, and Spearman correlation. Mertler and Vannatta (2010) noted that the purpose of factorial ANOVA is "to determine group differences when two or more factors create these groups" (p. 90). In order to conduct a factorial ANOVA, there must

be one dependent variable and more than one independent variable (Mertler & Vanatta, 2010; Pallant, 2010; Terrell, 2012). Terrell (2012) noted that there are four major assumptions for using the ANOVA. First, the sample for the dependent variable should be random. Second, "the scores must be independent of one another" (Terrell, 2012, p. 245). Third, the sample or population should be normally distributed (Terrell, 2012). Last, there must be homogeneity of variance; Terrell (2012) qualified that "the degree of variance within each of the samples should be about the same" (p. 245). Mertler and Vannatta (2010) noted that ANCOVA is an extension of ANOVA in that it "adjusts the effects of variables that are related to the dependent variables" (p. 93). With the ANCOVA, the effects of concomitant variables can be controlled for or partialed out of the results (Mertler & Vanatta, 2010). Mertler and Vanatta (2010) stated that concomitant variables are variables considered to have an effect on the dependent variable; the variable that is partialed out is called the covariate. Terrell (2012) noted that chi-square test of independence is similar to ANOVA except that this method involves counts of values. Pallant (2010) further noted that this test involves categorical data. The Spearman Correlation is valid for ordinal data or ranked data (Mertler & Vanatta, 2010; Pallant, 2010; Terrell, 2012). This method is used to "explore the strength of the relationship between two continuous variables" (Pallant, 2010, p. 103). Moreover, the Pearson correlation is appropriate for quantitative data, such as interval or ratio data (Mertler & Vanatta, 2010; Terrell, 2012).

The first data set from the expert panel instrument was tabulated in the data screening process. Those scores were placed into a table with responses from each expert panelist that represented their opinion regarding the criteria to measure personal

information privacy violations, as well as their weight recommendations for the criteria and measures for DPPP, OPIS, and OPCC. Afterwards, the mean was computed for each criteria and measure. It is important to note that the combined weights must total 100%, as the focus of the index is to evaluate the distribution of importance across all criteria measured.

The second data set from the PIPVI benchmarking instrument was collected from 100 Website registrations that market chronic and non-chronic prescription medications. Those scores were placed into a table with responses for each pharmaceutical company Website registration. Once observed scores were tabulated and divided by the total criterion and multiplied by the Delphi expert panel mean weight for each criterion to compute the measures DPPPM, OPISM, and OPCCM. These calculated measures were multiplied by the mean scores for the expert panel weights and combined to derive the PIPVI for the sample of pharmaceutical company Websites. Figure 3 depicts how the index score was derived from the three measures and the germane criteria for each measure. The calculated PIPVI was used to sort the data and compute the standard deviation (SD), which was used to develop the comparison report to address the research goals (See Eq. 1, 2, 3, & 4). In addition, the table included responses that were translated into binary responses to represent the documented and the actual online practices of consumer control for choice and access. Similarly, the table included responses that were translated to a binary response to represent the pharmaceutical company's demographics, such as condition type (chronic or non-chronic), registration type (update or discount), headquarters country/region (Asia, Europe, United Kingdom, & United States), PII, size, annual revenue, and years in existence. Mertler and Vannatta (2010) noted that data

analysis should include a more advanced technique if appropriate. Upon completion of this data set, it was appropriate to conduct a factorial ANOVA, factorial ANCOVA, chi-square test of independence, and Spearman correlations for further comparisons of the data based upon the pharmaceutical company's condition type, registration type, headquarters country/region, PII collection, size, annual revenue, and years in existence to assess any significant differences in the DPPPM, OPISM, OPCCM, PIPVI, and the documented OPCC versus actual OPCC practices.

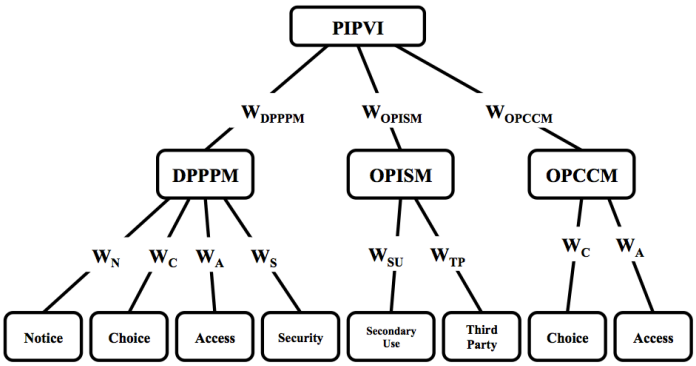


Figure 3: Hierarchical View of the Index, Measures, and Criteria of PIPVI

Eq. 1: $DPPPM = \left(w_N \cdot \frac{Notice}{Total\ Criteria}\right) + \left(w_C \cdot \frac{Choice}{Total\ Criteria}\right) + \left(w_A \cdot \frac{Access}{Total\ Criteria}\right) + \left(w_S \cdot \frac{Security}{Total\ Criteria}\right)$

Eq. 2: $OPISM = \left(w_{SU} \cdot \frac{Secondary\ Use}{Max\ SU\ Emails}\right) + \left(w_{TP} \cdot \frac{Third\ Party}{Max\ TP\ Emails}\right)$

Eq. 3: $OPCCM = \left(w_C \cdot \frac{Choice}{Total\ Criteria}\right) + \left(w_A \cdot \frac{Access}{Total\ Criteria}\right)$

Eq. 4: $PIPVI = W_{DPPPM} \cdot DPPPM + W_{OPISM} \cdot OPISM + W_{OPCCM} \cdot OPCCM$

First, to assess the fifth, sixth, and seventh research question, frequencies and percentages were calculated for the DPPPM, OPISM, OPCCM, and PIPVI between pharmaceutical companies that market chronic and those that market non-chronic prescription medications. In addition, a factorial ANOVA and chi-square tests of

independence were conducted to assess the statistical significance mean differences for DPPPM, OPISM, OPCCM, and PIPVI between pharmaceutical companies that market chronic and those that market non-chronic prescription medications.

RQ5: Are there any statistical significance mean differences for DPPM between pharmaceutical companies that headquarters are based in United States versus Asia, Europe, or United Kingdom?

RQ6: Are there any statistical significance mean differences for OPISM, OPCCM, and PIPVI between pharmaceutical companies that: (a) market chronic versus non-chronic prescription medications; (b) market registrations for prescription medication discounts versus updates; (c) their headquarters are based in United States, versus Asia, Europe, or United Kingdom?

RQ7: Are there any significant differences between the documented and the actual online practices for choice, and access of pharmaceutical companies that: (a) market chronic versus non-chronic prescription medications; (b) market registrations for prescription medication discounts versus updates; (c) their headquarters are based in United States, versus Asia, Europe, or United Kingdom?

To assess the eighth research question, frequencies and percentages were conducted on the types of PII that are collected by pharmaceutical companies' Websites over a five-month period. As previously noted, PII is represented by information such as name, postal address, email address, phone or fax number, SSN, or credit card number (FTC, 2000). In particular, for this research study, the capturing of name, postal address, email address, phone number, and SSN were assessed. Frequencies and percentage were

calculated to assess which PII are the most common among the pharmaceutical companies. In addition, a factorial ANOVA and chi-square tests of independence were conducted to assess the statistical significance mean differences for OPISM, OPCCM, and PIPVI between pharmaceutical companies that collect a limited amount of PII and those that collect a high amount of PII.

RQ8: Are there any statistical significance mean differences for OPISM, OPCCM, and PIPVI between pharmaceutical companies that collect a limited amount of PII and those that collect a high amount of PII?

To assess the following three null hypotheses, a factorial ANCOVA, and Spearman correlations were conducted to assess the statistical significant difference for DPPPM, OPISM, OPCCM, and PIPVI when controlling for companies' size, annual revenue, and years in existence.

H_1: The pharmaceutical company's DPPPM, OPISM, OPCCM, and PIPVI will not be significantly different when controlling for company size.

H_2: The pharmaceutical company's DPPPM, OPISM, OPCCM, and PIPVI will not be significantly different when controlling for annual revenue.

H_3: The pharmaceutical company's DPPPM, OPISM, OPCCM, and PIPVI will not be significantly different when controlling for years in existence.

Resources

The following resources were required for this research study: computer, Internet access, Microsoft Word®, Microsoft Excel®, SPSS®, post office box, and email accounts. Access to a computer, Internet, Microsoft Word®, Microsoft Excel®, and post office box

are currently available. Statistical services were contracted prior to data analysis. Email accounts were set up on a new domain that was purchased to accommodate the volume of emails and to maintain separation from personal email accounts. Because this research study involved an expert panel, access to human subjects was required. As a result, this research study required approval from the Institutional Review Board (IRB).

Summary

Chapter three provided the methodology overview that was used in this research study. This research study was considered developmental in nature and used qualitative methods to develop and validate the reliability of the PIPVI benchmarking instrument. A discussion of methods that were used to answer the eight research questions and three hypotheses was presented. The PIPVI benchmarking instrument was developed to assess the documented and online practices criteria using a literature review, in addition to feedback by an expert panel. This process was initiated by identifying the assessment criteria from literature. Next, an expert panel evaluated the questions used in the instrument and the feedback was used to revise the PIPVI benchmarking instrument until consensus was reached using the Delphi expert Methodology. According to McFadzean et al. (2011), this methodology is acceptable to assess the reliability and validity of the PIPVI benchmarking instrument. Issues pertaining to reliability and validity were discussed along with how they were mitigated.

Next, the population and sample for this research study were presented, which included the selection criteria for the Websites. Furthermore, the pre-screening data analysis, along with the data analysis that was used to address the research questions and

hypothesis, were discussed. Pre-screening data analysis is used to "detect irregularities or problems with the collected data" (Levy, 2006, p. 150). Frequencies and percentages, factorial analysis of variance (ANOVA), and factorial analysis of covariance (ANCOVA), chi-square tests of independence, and Spearman correlations were used to assess the statistical significance mean differences for DPPPM, OPISM, OPCCM, and PIPVI. Last, the chapter concluded with the resources that were used to conduct this research study.

Chapter 4

Results

Overview

The results of this research study are presented in this chapter. The analysis of the processes used for data collection, in addition to the method of statistical analysis used to initiate the data analysis, is included. In phase one, the data collection for the expert panel using the Delphi Method and results will be presented. This will be followed by phase two – a data collection process used to attain the PIPVI data along with the pre-analysis data screening of that data. The conclusion of the chapter will include phase three, the results summary using the PIPVI benchmarking instrument, and the data analysis processes used.

Expert Panel

The data initially collected for this research study was derived from an expert panel survey in the area of information privacy, information security, and corporate social responsibility. For this phase of the research study, round I was conducted using the Delphi Method in early June 2014 and concluded late July 2014. The following sections document the evolution of the PIPVI.

Round I - Data Collection and Analysis

During this phase of the study, the goal of the first round for the expert panel was to corroborate the proposed measures and criteria, in addition to eliciting their

recommendation for the weight assignments. The expert panel was comprised of 35 individuals known to the researcher, including individuals in academia and individuals from professional society mailing lists. The individuals were selected as described in Chapter 3. An email that contained a link to a Web-based survey tool was used to record the opinions of the expert panel using the survey instrument shown in Appendix B and as explained in Chapter 3. Twenty-five participants completed the survey. It is important to note that because the survey was anonymous, it is not known how many respondents were from the email or professional society mailing group lists. After tabulation of the survey responses, no responses were omitted. Based upon the 35 individuals explicitly solicited, the survey response rate was 70% and a survey completion rate of 100%. The survey results were examined in three segments. The first segment of analysis included the expert panel's level of agreement regarding the proposed measures and criteria. The second segment of analysis included the expert panel's recommendations for the weight allocations to support the PIPVI measures and criteria. Finally, an analysis of the respondent's background and opinion of future Personal Information Privacy practices implemented on Websites are presented.

Round I - Pre-Analysis Data Screening

Prior to data analysis for the data collected from the expert panel, pre-analysis data screening was conducted. As previously noted, the four primary purposes for pre-analysis data screening are to assess the data collected for accuracy, response set, missing data, and outliers (Levy, 2006). After the expert panel completed the first round of the survey, pre-analysis data screening was conducted on the responses. Because the survey was conducted using SurveyMonkey®, a Web-based tool, the responses were recorded,

tabulated, and assessed to ensure their completeness. The survey design mitigated the submission of incomplete responses by ensuring that all questions required a response. Because the survey design used a Likert Scale to indicate level of agreement, there was opportunity for response set, but none was identified for exclusion. If there were incomplete responses, they would have been excluded for the particular measure or criteria, instead of excluding the entire survey. Again, none were identified for exclusion. Last, no outliers were identified or excluded. Therefore, after the four-step assessment, all 25 responses were complete and included in the data analysis.

Expert Panel Characteristics

The expert panel was solicited by email and professional society mailing lists. The invitation included a link to the survey. Twenty-five respondents completed all aspects of the survey. The survey included questions about the respondents' opinions regarding the future of Website practices to address personal information privacy as presented in Table 10.

Table 10

Opinion of Future Personal Information Privacy Practices Implemented on Websites

Opinion	**n**	**%**
Personal Information Privacy practices implemented on Websites are adequate and companies will continue to adequately self-regulate over the next 10 years	0	0%
Personal Information Privacy practices implemented on Websites are adequate but companies need additional enforcement over the next 10 years	6	24%

Table 10

Opinion of Future Personal Information Privacy Practices Implemented on Websites (continued)

Opinion	**n**	**%**
Personal Information Privacy practices implemented on Websites are inadequate and companies need additional enforcement over the next 10 years	15	60%
None of the choices adequately capture my opinion.	4	16%

Next, to obtain additional information about the expert panel, they were requested to provide information to describe additional characteristics about their background. They were requested to classify themselves as an academic, practitioner, or both. Table 11 represents their responses.

Table 11

Expert's Self-Perception of Background

Self-Perception	**n**	**%**
I consider myself to be an academic	6	24%
I am both an academic and a practitioner but am mostly focused on academics	0	0%
I consider myself to be an practitioner	12	48%
I am both a practitioner and academic, but am mostly focused on the practitioner	4	16%
I consider myself to be evenly balanced as both a practitioner and academic	3	12%

Based upon their responses of their perceived roles of academic or practitioner, the respondents were questioned to acquire information regarding their experience. The

subject matter experts who responded to the survey have taught for an average of five years and have published an average of two peer-reviewed journal articles in the area of information security/information privacy. The expert panel had experience supervising students with a thesis or dissertation related to information security/information privacy. In addition, some experts have published non-peer-reviewed journal articles, books, or book chapters in the area of information security/information privacy. They also have an average of six or more years of experience in multiple subject areas regarding information security/information privacy. The mean responses are presented in Tables 12 and 13.

Table 12

Academic Information Security/Information Privacy Experience

Academic Experience	**Mean Years**
How many years have you taught undergraduate or Masters level students in courses that have included topics in Information Security/Information Privacy?	5.36
How may Doctoral students have you supervised with Information Security/Information Privacy-related theses or dissertations?	0.18
How many peer-reviewed journal articles have you published in the area of Information Security/Information Privacy?	1.55
How many other periodical articles (not PRJ) have you published in the area of Information Security/Information Privacy?	0.64
How many books or invited book chapters have you published in the area of Information Security/Information Privacy?	0.45

Table 13

Practitioner Information Security/Information Privacy Experience

Practitioner Experience	**Mean Years**
Systems design which have involved at least some aspects of Information Security/Information Privacy	8.47
Systems development which has involved at least some aspects of Information Security/Information Privacy	8.42
Systems implementation which has involved at least some aspects of Information Security/Information Privacy	10.74
Project management or supervisory management which have involved at least some aspects of Information Security/Information Privacy	9.63
Employment or consulting engagement assignments have focused on building or improving Information Security/Information Privacy	6.00
Employment or consulting engagement have focused on evaluating Information Security/Information Privacy	6.17
Management assignments which have involved governance and/or policy creation related to Information Security/Information Privacy	6.11

Round I - PIPVI Measures and Criteria Validation

The first round of the survey was for the expert panel to validate that the proposed measures and criteria were sufficient to measure personal information privacy violations. The expert panel was requested to specify their level of agreement for the questions regarding each of the measures and criteria. Participants rated each question on a Likert scale from 1 = strongly disagree to 7 = strongly agree. The highest level of agreement was for "access is an accurate component of Consumer Control to assess" with 96% of the respondents specifying at least somewhat agree (5) or above. Between 17 (68%) and 22 (88%) of the respondents at least somewhat agreed (5) or above to the remaining

criteria. Hsu and Sanford (2007) recommended that the level agreement should be at least 70%. Table 14 represents the percentage of the responses for those that specified "somewhat agree (5)" or above.

Table 14

Round I - Level of Agreement with Criteria

Question	***n***	**%**
DPPP-Notice		
Notice is an accurate component of the Privacy Policy to assess	21	84%
The Privacy Policy components regarding personal information, collected along with secondary and third party use described above, provide an accurate assessment of notice violations	19	76%
DPPP-Choice		
Choice is an accurate component of the Privacy Policy to assess	19	76%
The Privacy Policy components regarding opt-in/opt-out for secondary use and third party communications described above provide an accurate assessment of choice violations	17	68%
DPPP-Access		
Access is an accurate component of the Privacy Policy to assess	19	76%
The Privacy Policy components to review, modify, and delete personal information collected described above provide an accurate assessment of Access violations	18	72%
DPPP-Security		
Security is an accurate component of the Privacy Policy to assess	22	88%
The Privacy Policy components regarding the steps taken to provide security for information collected described above provide an accurate assessment of Security violations	17	68%

Note. *n* and % refer to those that specified "somewhat agree (5)" or above.

Table 14

Round I - Level of Agreement with Criteria (continued)

Question	***n***	**%**
OPIS-Secondary Use		
Secondary Use is an accurate component of Information Sharing to assess	21	84%
The number of emails and regular mail received described above provide an accurate assessment of Secondary Use for Information Sharing	18	72%
OPIS-Third Party for the Choice		
Third Party is an accurate component of Information Sharing to assess	17	68%
The number of emails and regular mail received described above provide an accurate assessment of Third Party Use for Information Sharing	17	68%
OPCC-Secondary Use for the Choice		
Secondary Use is an accurate component of Consumer Control to assess	22	88%
The components to opt-in/opt-out of Secondary Use described above provide an accurate assessment of Secondary Use for Consumer Control violations	20	80%
OPCC-Third Party		
Third Party component is an accurate component of Consumer Control to assess	21	84%
The components to opt-in/opt-out of Third Party described above provide an accurate assessment of Third Party for Consumer Control violations	20	80%
OPCC-Access		
Access is an accurate component of Consumer Control to assess	24	96%
The components to review, modify, and delete personal information collected described above provide an accurate assessment of Access for consumer control violations	20	80%

Note. *n* and % refer to those that specified “somewhat agree (5)” or above.

Table 14

Round I - Level of Agreement with Criteria (continued)

Question	***n***	**%**
Personal Identifiable Information		
Name	20	80%
Postal address	18	72%
Telephone number	20	80%
Social Security Number	20	80%

Note. *n* and % refer to those that specified "somewhat agree (5)" or above.

Round I - PIPVI Comments

All 25 respondents completed the survey with no exclusions identified. After assessment of the data, including the comments from the expert panel, capturing the volume of phone calls/text messages was added to the criteria for OPIS to assess secondary and third party use. Overall, the comments were general in nature, pertaining to the measures, criteria, and practices and did not warrant any further additions.

Round I - PIPVI Weight Elicitation for Measures and Criteria

In addition to requesting the experts to corroborate on the measures and criteria, they were requested to allocate the relative weights for the three measures DPPP, OPIS, and OPCC that will contribute to the PIPVI. For DPPP, the experts were requested to allocate 100 points across the criteria of notice, choice, access, and security. For OPIS, the experts were requested to allocate 100 points across the criteria of secondary and third party use. For OPCC, the experts were requested to allocate 100 points across the criteria

of choice and access. Table 15 represents the expert panel's recommendation for the criteria mean weight allocations.

Table 15

Round I - PIPVI Criteria and Mean Weight Allocations

Criteria	**Mean Weight**
Documented Practices of the Privacy Policy Criteria - DPPP	
Notice	25%
Choice	22%
Access	20%
Security	33%
Online Practices of Information Sharing criteria – OPIS	
Choice: Secondary Use	55%
Choice: Third Party	45%
Online Practices of Consumer Control Criteria – OPCC	
Choice	58%
Access	42%

Note. The mean weight allocations must total 100 for each criteria group.

After the expert panel was requested to assign relative weights to the criteria, they were requested to provide relative weights to the overall measures (DPPPM, OPISM, OPCCM) that would contribute to personal information privacy violations. Likewise, the experts were requested to allocate 100 points across the DPPPM, OPISM, and OPCCM measures within the PIPVI. Table 16 represents the mean weight allocations suggested by the expert panel for the measures.

Table 16

Round I - PIPVI Measures and Mean Weight Allocations

Measure	**Mean Weight**
Personal Information Privacy Violations Index - PIPVI	
Documented Practices of the Privacy Policy Measure - DPPPM	35%
Online Practices of Information Sharing Measure - OPISM	33%
Online Practices of Consumer Control Measure - OPCCM	32%

Note. The mean weight allocations must total 100.

Round II - PIPVI Measures and Criteria Weight Validation

During this phase of the study, the goal of the second round of questioning was to obtain consensus from the expert panel regarding the mean weight assignments attained from the first round. Twenty-three participants completed the survey. It is assumed that these participants also participated in the first survey. After tabulation of the survey responses, two responses regarding the weights for DPPPM were omitted because the recommended weight distribution did not total 100. Based upon the 35 individuals explicitly solicited, the survey response rate was 66% and a survey completion rate between 91% and 100%. Similar to round I, all respondents cannot be assumed from the email solicitation. Because the survey was anonymous, it is not known how many respondents were from the professional group's mailing lists. The data analysis for this round was conducted on the expert panel's opinions regarding the weight allocations for the measures and criteria.

The data initially collected for this research study was derived from same expert panel as round I survey. This phase of the research study was conducted using the Delphi

Method in early August 2014 and concluded late September 2014. The following sections presented further documents the evolution of the PIPVI.

Round II - Data Analysis and Collection

During this phase of the study, the goal of the second round of questioning was to obtain consensus from the expert panel regarding the mean weight assignments attained from the first round. Twenty-three participants completed the survey. This represents 92% of the respondents from the first survey. After tabulation of the survey responses, two responses regarding the weights for DPPPM were omitted. Based upon the 35 individuals explicitly solicited, the survey response rate was 66%, but also represents a response rate of 92% of the first respondents from the first survey. The completion rate was between 91% and 100%. The survey results were examined to analyze the expert panel's opinion regarding the weight allocations for the measures and criteria. Table 17 presents the level of agreement with the criteria and measures weight allocations.

Table 17

Round II - Level of Agreement with Measure and Criteria Weight Allocations

Measures and Criteria	**n**	**%**
Documented Practices of the Privacy Policy Criteria - DPPP		
Notice	16	70%
Choice	11	48%
Access	15	65%
Security	12	52%

Note. *n* and % refer to those that specified "somewhat agree (5)" or above.

Table 17

Round II - Level of Agreement with Measure and Criteria Weight Allocations (continued)

Measures and Criteria	**n**	**%**
Online Practices of Information Sharing criteria - OPIS		
Choice: Secondary Use	17	74%
Choice: Third Party Use	17	74%
Online Practices of Consumer Control criteria - OPCC		
Choice	14	61%
Access	14	61%
Personal Information Privacy Violations Index - PIPVI		
Documented Practices of the Privacy Policy Measure - DPPPM	17	74%
Online Practices of Information Sharing Measure - OPISM	17	78%
Online Practices of Consumer Control Measure - OPCCM	17	78%

Note. *n* and % refer to those that specified "somewhat agree (5)" or above.

Round II - Pre-Analysis Data Screening

A second survey was distributed to the subject matter experts and professional mailing group lists to corroborate the percentage weights for each of the criteria and measures. A total of 23 participants responded to the survey. However, it is important to note that due to the anonymous survey, it is assumed that the respondents participated in the first survey. For this survey, the level of agreement ranged from 48% to 78%. For the level of agreement between 48% and 65%, the mean weights for those who did not agree were within 5% of the proposed weight. Therefore, the proposed weight was determined to be sufficient as indicated in the aforementioned Table 15 and Table 16. As a result, no additional rounds with the expert panel were required.

PIPVI

Phase two of the study encompassed data collection from the Website registrations using the final PIPVI benchmarking instrument. The Website registrations occurred over a two-week period. The first group of registrations who did not require a phone number occurred May 18 through May 23. The next group of Website registrations occurred from June 8 through June 9 because a mobile phone was purchased to establish a unique phone number for this research study. The data collection occurred over a period of late June 2014 to late October 2014. The following sections will describe the process.

Data Collection and Analysis

In phase two, the Website the PIPVI data collection was derived from several sources to examine the documented and online practices. First, to examine the DPPP, data was collected from the downloaded privacy policy of each pharmaceutical company Website to provide response to the specified criteria as denoted in the final PIPVI benchmarking instrument. The main DPPP data collection was conducted over four weeks from mid June to mid July. Second, to examine the OPIS, the volume of emails, postal mail, phone calls, and text messages were calculated from each Website registration. The main OPIS data collection was conducted over one week in late October. Third, to examine the OPCC, data from the Website registrations were collected based upon the availability of selections to opt-in/opt-out of secondary and third party use for both initial and after Website registration. The main OPCC data collection was conducted over six weeks in early August 2014 to mid September 2014. In addition, data were collected based upon the ability to review, modify, and delete personal

information disclosed during the Website registration. Based upon the availability of selections for opt-in/opt-out and the ability to review, modify, and delete personal information the response was recorded. Fourth, to examine the PII required for disclosure, data were collected from the Website registrations based upon registration type and the response was recorded.

Pre-Analysis Data Screening

Although the data collection from phase three involved a manual effort instead of survey respondents, pre-analysis data screening was still required. The pre-analysis data screening was performed on the data collected from the Website registrations. First, the recorded responses were converted to binary responses, reviewed, tabulated in a spreadsheet, and assessed for accuracy. Afterwards, the data was evaluated for a response set – none was identified. Then, data was evaluated for omitted responses. If responses were omitted, they were completed using the documented sources for the specific criteria. Last, because the data was binary, no outliers were identified or expected. If there were outliers, the response would have been completed using the documented sources for the specific criteria.

Data Analysis

After the pre-data analysis screening was performed, the descriptive analysis was prepared. Descriptive statistics were calculated for the DPPPM, OPISM, OPCCM, and PIPVI to describe any significant differences as stated in the research questions and hypotheses. Table 18 presents the summary of Website registrations by condition type, registration type, and headquarters country/region. The findings are presented in the subsequent sections.

Table 18

Pharmaceutical Company Website Registrations by Condition Type, Registration Type, and Headquarters Country/Region

Headquarters Country/Region	Pharmaceutical Company	Website Registrations	Condition Type		Registration Type	
			Chronic	Non-Chronic	Discount	Update
Asia	2	8	6	2	6	2
Europe	6	37	24	13	15	22
United Kingdom	1	5	0	5	3	2
United States	16	50	19	31	24	26
Totals	25	100	49	51	48	52

Documented Practices of the Privacy Policy (DPPP)

Twenty-five different pharmaceutical companies were examined for their documented practices of the privacy policy (DPPP). These were the same 25 pharmaceutical companies from above. The valid range for DPPPM scores were 0.00 to 1.00, with 0.00 representing no violations and 1.00 representing violations. The higher the score, the more DPPP violations occurred. Based upon the assessment of DPPP, the DPPM scores ranged from 0.00 to 0.85, with a mean of 0.39 (SD = 0.24). Both the lowest and highest score for DPPPM was for pharmaceutical companies that headquarters country/region are in the US. A Pearson correlation conducted between the last time their privacy policy was updated and the measure for DPPP was not significant (r = -0.13, p = 0.687). These scores suggest that there was no difference between how long it's been since the privacy policy has been updated and the DPPPM.

Next, ANOVAs were conducted to assess if there were differences between the DPPPM by condition type, registration type, and headquarters country/region. Results of the ANOVA by condition type (chronic and non-chronic) were not significant, $F(1, 98) = 3.11$, $p = 0.081$, partial $\eta^2 = 0.03$, suggesting there were no differences in the DPPPM by condition type. Results were similar for registration type (update and discount), $F(1, 98) = 2.54$, $p = 0.114$, partial $\eta^2 = 0.03$, suggesting there were no differences in the DPPPM by registration type. The ANOVA conducted for headquarters country/region was also not significant, $F(3, 21) = 1.86$, $p = 0.168$, partial $\eta^2 = 0.21$, suggesting there were no differences in the DPPPM by headquarters country/region. Table 19 presents the ANOVA results by condition type, registration type, and headquarters country/region.

Table 19

ANOVA Results for DPPPM by Condition Type, Registration Type, and Headquarters Country/Region

Control Variable	***SS***	***df***	***MS***	***F***	***p***	**Partial η^2**
Condition Type	0.02	1	0.02	3.11	0.081	0.03
Error	0.63	98	0.01			
Registration Type	0.02	1	0.02	2.54	0.114	0.03
Error	0.63	98	0.01			
Headquarters Country/Region	0.28	3	0.09	1.86	0.168	0.21
Error	1.06	21	0.05			

Spearman correlations were conducted to assess the difference between company size, annual revenue, and years in existence with DPPPM. Results of the correlations were all not significant. Results of the correlations are presented in Table 20.

Table 20

Spearman Correlations between Company Size, Annual Revenue, Years in Existence, and DPPPM

Control Variable	**DPPPM**
Company Size	-0.28
Annual Revenue	0.03
Years in Existence	0.14

Note. All $p > .050$.

Because adherence with the FIPs is self-regulated, it is important to have insight into pharmaceutical companies' compliance. Both Europe and UK demonstrated higher overall adherence to the FIPs than Asia or US. Table 21 presents the percentage compliant with all aspects of the FIPs criteria by headquarters country/region.

Table 21

Pharmaceutical Company Adherence to FIPs

Headquarters Country/Region	**Notice**	**Choice**	**Access**	**Security**
Asia	100%	0%	0%	0%
Europe	83%	17%	67%	67%
United Kingdom	100%	0%	100%	100%
United States	75%	13%	25%	38%

Online Practices of Information Sharing (OPIS)

The data collected from the 100 Website registrations examined for online practices of information sharing (OPIS). The Website registration data was comprised of

49 chronic and 51 non-chronic conditions and registration types of 48 as discounts and 52 as updates. The headquarters country/region for the Websites were primarily from the US. The number of emails received from the Website registrations ranged from 0 to 36. Surprisingly, no emails were received from 34 Website registrations across 21 unique Websites. Pharmaceutical companies with headquarters country/region in the US and Europe were respectively the top two that received no emails from Website registrations. The summary of emails received from the Website registrations are presented in Table 22.

Table 22

Summary of OPIS Emails Received from Website Registrations

Emails Received	**n**	**%**
0	34	34%
1	18	18%
2 – 5	24	24%
6 – 10	14	14%
11 - 36	10	10%

ANOVAs were conducted to assess if there were differences in OPISM scores by condition type, registration type, and headquarters country/region. The valid OPISM scores range from 0.00 to 1.00, with 0.00 representing no violations and 1.00 representing violations. The higher the score, the more OPIS violations occurred. Based upon the assessment of OPIS, the OPISM scores ranged from 0.00 to 0.55, with a mean of 0.03 (SD = 0.12). The highest score was from a pharmaceutical company that headquarters

country/region is the US. Results of all the ANOVAs were not significant, $p > .050$ for all, suggesting that there were no differences found. Table 23 presents the results of the ANOVAs.

Table 23

ANOVA Results for OPISM by Condition Type, Registration Type, and Headquarters Country/Region

Control Variable	***SS***	***Df***	***MS***	***F***	***P***	**Partial η^2**
Condition Type	0.00	1	0.00	0.16	0.691	0.00
Error	1.32	98	0.01			
Registration Type	0.00	1	0.00	0.16	0.689	0.00
Error	1.32	98	0.01			
Headquarters Country/Region	0.10	3	0.03	2.55	0.600	0.07
Error	1.22	96	0.01			

Note. p > 0.050.

Spearman correlations were also conducted to assess the differences between emails, company size, annual revenue, and years in existence with OPISM scores. Results of the correlations showed that emails, $r = 0.37$, $p < .001$, annual revenue, $r = -0.27$, $p = 0.006$, and years in existence were all correlated to OPISM scores. As the volume of emails and years in existence increased, OPISM scores also tended to increase. These scores suggest that the longer the company is in existence and the more emails are distributed, the risk is greater for companies to share information. Additionally, as the annual revenue of the company increased, OPISM scores tended to decrease. To the contrary, these scores suggest that as the company's annual revenue increases, the risk is less for sharing information. Results of the correlations are presented in Table 24.

Table 24

Spearman Correlations between Emails Received, Company Size, Annual Revenue, and Years in Existence, and OPISM

Control Variable	**OPISM**
Emails Received	0.37**
Annual Revenue	-0.27**
Company Size	0.09
Years in Existence	0.35**

Note. * $p \leq .050$. ** $p \leq .010$. Otherwise $p > .050$.

Online Practices of Consumer Control (OPCC)

The online practices of consumer control (OPCC) scores were examined next. A total of 60 registration types were examined. This measure was based upon the registration types of discount and update. While there were 100 Website registrations, each registration was initiated for a discount or update even though multiple Website registrations occurred for a particular registration type for each Website. For example, two Website registrations could have been initiated for a discount for the same Website, but the difference was the selections for opt-in/opt-out. Because the criteria for consumer control would be the same for both registrations, this was considered one registration type for the particular Website instead of two when measuring consumer control. Details were similar to the previous OPISM registrations. Table 25 presents the descriptive statistics for the details for OPPCM Website registration types.

Table 25

Summary of OPCCM by Condition Type, Registration Type, and Headquarters Country/Region

Control Variable	**n**	**%**
Condition Type		
Chronic	30	50%
Non-Chronic	30	50%
Registration Type		
Discount	27	45%
Update	33	55%
Headquarters Country/Region		
Asia	5	8%
Europe	16	27%
United Kingdom	4	7%
United States	35	58%

Note. n=60 for each control variable.

ANOVAs were conducted to assess if there were differences in OPCCM scores by condition type, registration type, and headquarters country/region. The valid OPCCM scores range from 0.00 to 1.00, with 0.00 representing no violations and 1.00 representing violations. The higher the score, the more OPCC violations occurred. Based upon the assessment of OPCC, the OPCCM scores ranged from 0.15 to 1.00, with a mean of 0.73 (SD = 0.25). The lowest score was from a pharmaceutical company that headquarters country/region is Europe. Results of the ANOVAs showed significant differences in OPCCM scores by condition type, $F(1, 58) = 5.25$, $p = 0.026$, partial $\eta^2 = 0.08$. OPCCM scores for chronic conditions tended to be significantly lower than scores for non-chronic conditions. These scores suggest that consumers appear to have more control over their

data for chronic conditions than for non-chronic conditions. The ANOVAs by registration type and headquarters country/region were not significant, $p > .050$ for both. Table 26 presents the results of the ANOVAs.

Table 26

ANOVA Results for OPCCM by Condition Type, Registration Type, and Headquarters Country/Region

Control Variable	***SS***	***df***	***MS***	***F***	***P***	**Partial η^2**
Condition Type	0.31	1	0.31	5.25	0.026	0.08
Error	3.37	58	0.06			
Registration Type	0.21	1	0.21	3.45	0.068	0.06
Error	3.47	58	0.06			
Headquarters Country/Region	0.44	3	0.15	2.54	0.066	0.12
Error	3.24	56	0.06			

Spearman correlations were also conducted to assess the differences between company size, annual revenue, and years in existence with OPCCM scores. Results of the Spearman correlations were not significant for all correlations, $p > .050$ for all. Results of the correlations are presented in Table 27.

Table 27

Spearman Correlations between Company Size, Annual Revenue, Years in Existence, and OPCCM

Control Variable	**OPCCM**
Company Size	-0.22
Annual Revenue	-0.04
Years in Existence	-0.01

Note. All $p > .050$.

Personal Information Privacy Violations Index (PIPVI)

The personal information privacy index (PIPVI) scores were examined next. A total of 100 Website registrations were examined. See Table 18 above for summary by condition type, registration type, and headquarters country/region. ANOVAs were conducted to assess if there were differences in PIPVI scores by condition type, registration type, and headquarters country/region. The valid PIPVI scores range from 0.00 to 1.00, with 0.00 representing no violations and 1.00 representing violations. The higher the score, the more PIPVI violations occurred. PIPVI scores ranged from 0.06 to 0.62, with a mean of 0.34 ($SD = 0.12$). The lowest score was for a pharmaceutical company that headquarters country/region is in Europe and the highest score was in the US. Results of the ANOVAs showed significant differences in PIPVI scores by condition type, $F(1, 98) = 11.76$, $p = 0.001$, partial $\eta^2 = 0.11$. PIPVI scores for chronic conditions tended to be significantly lower than scores for non-chronic conditions. These scores appear to suggest that fewer personal information privacy violations occur for chronic conditions than for non-chronic conditions. The ANOVA for PIPVI scores by registration type was also significant, $F(1, 98) = 5.12$, $p = 0.026$, partial $\eta^2 = 0.05$. PIPVI scores for discount registration types tended to be significantly higher than update PIPVI scores. These scores appear to suggest that more violations occur with Website registrations for discounts than for updates. Finally, PIPVI scores were significantly different by headquarters country/region, $F(3, 96) = 6.48$, $p < .001$, partial $\eta^2 = 0.17$. Post hoc pairwise comparisons showed that European PIPVI scores tended to be significantly lower compared to US PIPVI scores. These results appear to suggest that European countries might be more responsible with management and use of consumer personal

information. Table 28 presents the results of the ANOVAs, and Table 29 represents the mean and standard deviations. Figure 4 represents the measures contributions to PIPVI by headquarters country/region.

Table 28

ANOVA Results for PIPVI by Condition Type, Registration Type, and Headquarters Country/Region

Control Variable	***SS***	***df***	***MS***	***F***	***p***	**Partial η^2**
Condition Type	0.16	1	0.16	11.76	0.001	0.11
Error	1.34	98	0.01			
Registration Type	0.07	1	0.07	5.12	0.026	0.05
Error	1.42	98	0.02			
Headquarters Country/Region	0.25	3	0.10	6.48	0.001	0.21
Error	1.24	96	0.01			

Table 29

Means and Standard Deviations for PIPVI Scores by Condition Type, Registration Type, and Headquarters Country/Region

Control Variable	***M***	***SD***
Condition Type		
Chronic	0.30	0.13
Non-Chronic	0.38	0.10
Registration Type		
Discount	0.37	0.12
Update	0.32	0.12

Table 29

Means and Standard Deviations for PIPVI Scores by Condition Type, Registration Type, and Headquarters Country/Region (continued)

Control Variable	*M*	*SD*
Headquarters Country/Region		
Asia	0.40	0.07
Europe	0.28	0.14
United Kingdom	0.29	0.07
United States	0.38	0.10
Total	0.34	0.12

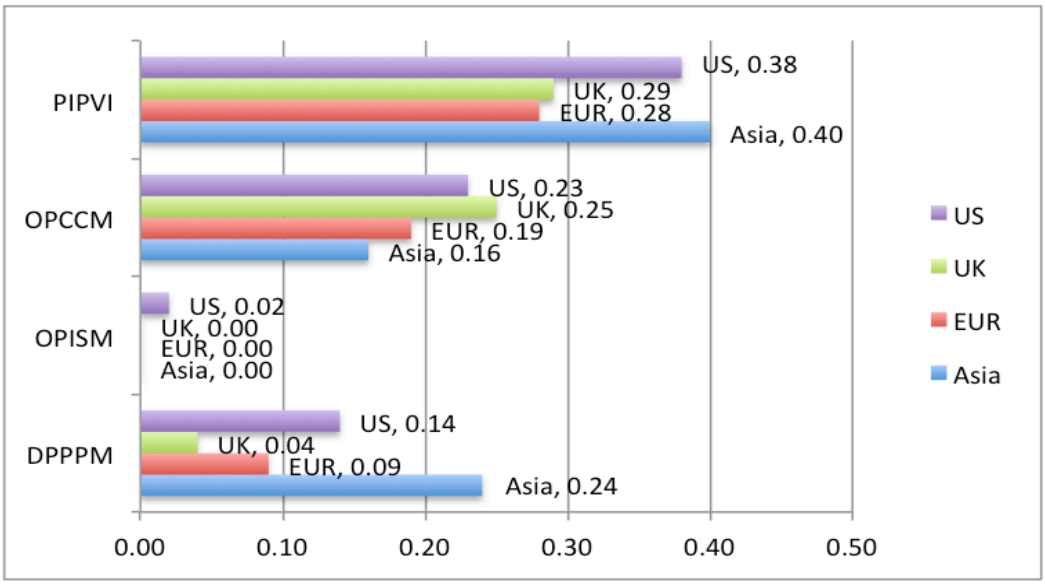


Figure 4: Measures Contributions to PIPVI by Headquarters Country/Region

Spearman correlations were also conducted to assess the differences between company size, annual revenue, and years in existence with PIPVI scores. Results showed significance for annual revenue, $r = -0.21$, $p = 0.036$, and for company size, $r = -0.29$, $p < .001$. These scores suggest that as the pharmaceutical company size and annual revenue increased, PIPVI scores tended to decrease. This implies that as companies' revenue and

employees increase, they are more responsible with managing consumer information. Table 30 presents the results of the Spearman correlations.

Table 30

Spearman Correlations between Company Size, Annual Revenue, Years in Existence, and PIPVI

Control Variable	**PIPVI**
Company Size	-0.29**
Annual Revenue	-0.21*
Years in Existence	0.02

Note. * $p \leq .050$. ** $p \leq .010$. Otherwise $p > .050$.

Documented and Actual OPCC Practices for Choice and Access

To determine if companies are adhering to their documented practices, the OPCC of choice and access criteria were selected for assessment. A series of chi-square tests of independence were conducted to examine the differences in documented versus actual opt-in/opt-out practices for Website registrations by condition type, registration type, and headquarters country or region. The differences were examined for the consumer's ability to opt-in/opt-out of secondary and third party use during and after initial registration and the ability to review, modify or delete personal information. Differences in the ability to opt-in/opt-out of secondary use during initial Website registration were examined first. Results of the chi-squares showed no difference between the documented and actual practices by condition type, registration type, or headquarters country/region ($p > .050$ for all). Table 31 presents the chi-squares for differences in the documented and actual practices to opt-in/opt-out of secondary use during initial Website registration.

Table 31

Chi-squares for Documented versus Actual Practices for Opt-in/Opt-out of Secondary Use During Initial Website Registration

	Difference					
Control Variable	**DV/ANV**	**D/A**	**DNV/AV**	χ^2	***df***	***p***
Condition Type				1.04	2	0.595
Chronic	10	13	7			
Non-Chronic	12	14	4			
Registration Type				0.56	2	0.757
Discount	9	12	6			
Update	13	15	5			
Headquarters Country/Region				11.56	6	0.073
Asia	4	0	1			
Europe	5	11	5			
United Kingdom	0	2	2			
United States	13	14	3			

Note. DV/ANV = Documented Violation/Actual No Violation; D/A = Documented and Actual in agreement for Violation or No Violation; DNV/AV = Documented No Violation/Actual Violation.

Second, differences in the ability to opt-in/opt-out of secondary user after initial Website registration were examined. Results of the chi-squares showed a significant difference between documented versus actual practices to opt-in/opt-out of secondary use and headquarters country/region, $\chi^2(6) = 20.20$, $p = 0.003$. Further examination showed that Europe had a higher level of agreement between the documented and actual practices, with the US close behind. This confirms that the documented/undocumented practices (violations) and actual practices are in agreement. No other large differences between the actual and documented practices were found in the chi-square. The chi-squares for condition type and registration type were both not significant ($p > .050$ for

both). Table 32 presents the chi-squares for the differences in the documented versus actual practices for the consumer to opt-in/opt-out of secondary use after initial Website registration.

Table 32

Chi-squares for Documented versus Actual Opt-in/Opt-Out of Secondary Use after Initial Website Registration

	Difference					
Control Variable	**DV/ANV**	**D/A**	**DNV/AV**	χ^2	*df*	*p*
Condition Type				1.93	2	0.381
Chronic	7	17	6			
Non-Chronic	8	12	10			
Registration Type				5.89	2	0.053
Discount	3	14	10			
Update	12	15	6			
Headquarters Country/Region				20.20	6	0.003
Asia	3	2	0			
Europe	3	15	3			
United Kingdom	0	0	4			
United States	9	12	9			

Note. DV/ANV = Documented Violation/Actual No Violation; D/A = Documented and Actual in agreement for Violation or No Violation; DNV/AV = Documented No Violation/Actual Violation.

Third, differences in the ability to opt-in/opt-out of third party use during initial Website registration were examined. Results of the chi-squares showed a significant difference between documented versus actual practices to opt-in/opt-out of third party use during initial Website registration and headquarters country/region, $\chi^2(6) = 14.19$, $p = 0.028$. However, the documented values were found to be below 1.00, and thus caution

should be taken in the interpretation and generalization of the chi-square results. Although significance was found, no large differences between the actual and documented practices were found in the chi-square. This suggests that there were slight differences between documented and actual practices for all headquarters countries/regions, but no major differences. Thus, no definite interpretation could be made for the chi-square. The chi-squares for condition type and registration type were both not significant ($p > .050$ for both). Table 33 presents the chi-squares for documented versus actual practices for the consumer to opt-in/opt-out of third party use after initial Website registration.

Table 33

Chi-squares for Documented versus Actual Practices for Opt-in/Opt-out of Third Party Use During Initial Website Registration

	Difference					
Control Variable	**DV/ANV**	**D/A**	**DNV/AV**	χ^2	***df***	***P***
Condition Type				1.78	2	0.411
Chronic	5	21	4			
Non-chronic	2	25	3			
Registration Type				3.15	2	0.207
Discount	1	23	3			
Update	6	23	4			
Headquarters Country/region				14.19	6	0.028
Asia	3	2	0			
Europe	2	17	2			
United Kingdom	0	4	0			
United States	2	23	5			

Note. DV/ANV = Documented Violation/Actual No Violation; D/A = Documented and Actual in agreement for Violation or No Violation; DNV/AV = Documented No Violation/Actual Violation.

Fourth, differences in the ability to opt-in/opt-out of third party use after initial Website registration were examined. Results of the chi-squares showed no difference between the documented and actual practices to opt-in/opt-out of third party use after initial Website registration by condition type, registration type, or headquarters country/region ($p > .050$ for all). Table 34 presents the chi-squares for differences in the documented versus actual practices to opt-in/opt-out of third party use after initial Website registration.

Table 34

Chi-squares for Documented versus Actual Practices for Opt-in/Opt-out of Third Party Use After Initial Website Registration

	Difference					
Control Variable	**DV/ANV**	**D/A**	**DNV/AV**	χ^2	***Df***	***p***
Condition Type				1.02	2	0.601
Chronic	1	26	3			
Non-chronic	0	27	3			
Registration Type				1.25	2	0.536
Discount	0	25	2			
Update	1	28	4			
Headquarters Country/Region				4.30	6	0.636
Asia	0	5	0			
Europe	0	20	1			
United Kingdom	0	4	0			
United States	1	24	5			

Note. DV/ANV = Documented Violation/Actual No Violation; D/A = Documented and Actual in agreement for Violation or No Violation; DNV/AV = Documented No Violation/Actual Violation.

Fifth, differences in the ability to review personal information disclosed during the Website registrations were examined. Results of the chi-squares showed a significant difference between the documented versus actual practices to review personal information and headquarters country/region, $\chi^2(6) = 17.84$, $p = 0.007$. However, the documented practices were found to be below 1.00, and thus caution should be taken in the interpretation and generalization of the chi-square results. Although significance was found, no large differences between actual and documented practices were found in the chi-square. This suggests that there were slight differences between documented and actual practices for all headquarters countries/regions, but no major differences. Thus, no definite interpretation could be made for the chi-square. The chi-squares for condition type and registration type were both not significant ($p > .050$ for both). Table 35 presents the chi-squares for the differences in the documented versus actual practices for the ability to review personal information.

Table 35

Chi-squares for Documented versus Actual Practices for the Ability to Review Personal Information

	Difference					
Control Variable	**DV/ANV**	**D/A**	**DNV/AV**	χ^2	***df***	***p***
Condition Type				0.67	2	0.715
Chronic	3	13	14			
Non-Chronic	3	16	11			
Registration Type				2.16	2	0.339
Discount	1	14	12			
Update	5	15	13			

Table 35

Chi-squares for Documented versus Actual Practices for the Ability to Review Personal Information (continued)

Control Variable	Difference			χ^2	*df*	*p*
	DV/ANV	D/A	DNV/AV			
Headquarters Country/Region				17.84	6	0.007
Asia	3	2	0			
Europe	1	10	10			
United Kingdom	0	1	3			
United States	2	16	12			

Note. DV/ANV = Documented Violation/Actual No Violation; D/A = Documented and Actual in agreement for Violation or No Violation; DNV/AV = Documented No Violation/Actual Violation.

Sixth, differences in the ability to modify personal information disclosed during the Website registration were examined. Results of the chi-squares showed a significant difference between the documented versus actual practices for the ability to modify personal information disclosed during the Website registration and headquarters country/region, $\chi^2(6) = 20.46$, $p = 0.002$. However, documented practices were found to be below 1.00, and thus caution should be taken in the interpretation and generalization of the chi-square results. There were more European companies with agreement between the documented and actual practices for the ability to modify personal information disclosed during the Website registration. Finally, there were more US pharmaceutical companies with differences between the documented and actual practices, particularly for the actual practices not in accordance with the documented practices for the ability to modify personal information disclosed during the Website registration. The chi-squares

for condition type and registration type were both not significant ($p > .050$ for both). Table 36 presents the chi-squares for the differences in the documented versus actual practices for the ability to modify personal information disclosed during the Website registration.

Table 36

Chi-squares for Documented versus Actual Practices for the Ability to Modify Personal Information

	Difference					
Control Variable	**DV/ANV**	**D/A**	**DNV/AV**	χ^2	***df***	***p***
Condition Type				0.32	2	0.853
Chronic	3	11	16			
Non-Chronic	3	9	18			
Registration Type				2.29	2	0.318
Discount	1	9	17			
Update	5	11	17			
Headquarters Country/Region				20.46	6	0.002
Asia	3	2	0			
Europe	1	10	10			
United Kingdom	0	1	3			
United States	2	7	21			

Note. DV/ANV = Documented Violation/Actual No Violation; D/A = Documented and Actual in agreement for Violation or No Violation; DNV/AV = Documented No Violation/Actual Violation.

Last, differences in the ability to delete personal information disclosed during the Website registration were examined. Results of the chi-squares analysis showed a significant difference between the documented versus actual practices for the ability to

delete personal information disclosed during the Website registration and headquarters country/region, $\chi^2(3) = 9.35$, $p = 0.025$. The Asian pharmaceutical companies in this research study did not have documented practices to delete nor did they provide the ability to delete personal information. Therefore, there were more Asian pharmaceutical companies with agreement between documented and actual PIPV to delete, while there were fewer undocumented violations for the ability to delete personal information disclosed during the Website registration. The chi-squares analysis for condition type and registration type were both not significant ($p > .050$ for both). Table 37 presents the chi-squares for the differences in the documented versus actual practices for the ability to delete personal information disclosed during the Website registration.

Table 37

Chi-squares for Documented versus Actual Practices for the Ability to Delete Personal Information

	Difference					
Control Variable	**DV/ANV**	**D/A**	**DNV/AV**	χ^2	***df***	***p***
Condition Type				0.27	1	0.602
Chronic	-	18	12			
Non-Chronic	-	16	14			
Registration Type				0.46	1	0.496
Discount	-	14	13			
Update	-	20	13			
Headquarters Country/Region				9.35	3	0.025
Asia	-	5	0			
Europe	-	11	10			
United Kingdom	-	0	4			
United States	-	18	12			

Note. DV/ANV = Documented Violation/Actual No Violation; D/A = Documented and Actual in agreement for Violation or No Violation; DNV/AV = Documented No Violation/Actual Violation.

Personal Identifiable Information (PII)

The data to support the transactions for the 60 Website registration types previously mentioned to measure the online practices of consumer control were also used to examine the personal identifiable information (PII) scores. For instance, the data collection for an update or discount are the same regardless of other selections used to differentiate the particular Website registration. Table 38 presents the PII characteristics of the Website registrations.

Table 38

Summary of PII Data Collection

PII Level	**n**	**%**
Low (1 – 2)	11	18%
Medium (3)	19	32%
High (4 -6)	30	50%

Note. n=60.

Chi-square tests of independence were conducted to assess if there was a difference between company size, annual revenue, condition type, registration type, and headquarters country/region with total PII level. The results of the chi-squares showed significance for annual revenue, $\chi^2(4) = 15.95$, $p = 0.003$, employees, $\chi^2(4) = 11.09$, $p = 0.026$, and for headquarters country/region, $\chi^2(6) = 12.65$, $p = 0.049$. However, the expected values for headquarters country/region were below 1.00 in some cases, and thus

caution should be taken in the interpretation and generalization of the results. There were a larger number of high PII level Website registrations from pharmaceutical companies with greater than $1 billion in revenue. Next, there were a larger number of high PII level Website registrations from companies with 1,001 to 50,000 employees. Last, there were fewer high PII level Website registrations from US pharmaceutical companies. Table 39 presents the results for the chi-squares.

Table 39

Chi-squares between Company Size, Annual Revenue, Condition Type, Registration Type, Headquarters Country/Region, and Total PII Level

	Total PII Level					
Control Variable	**Low**	**Medium**	**High**	χ^2	***df***	***P***
Company Size				11.09	4	0.026
Less than 1,000	3	8	6			
1,001 to 50,000	6	1	13			
Greater than 50,000	2	10	11			
Annual Revenue				15.95	4	0.003
Less than 50 million	2	10	5			
51 – 999 million	5	3	3			
Greater than 1 billion	4	6	22			
Condition Type				5.47	2	0.065
Chronic	4	6	19			
Non-Chronic	7	13	11			
Registration Type				5.74	2	0.057
Discount	4	5	18			
Update	7	14	12			

Table 39

Chi-squares between Company Size, Annual Revenue, Condition Type, Registration Type, Headquarters Country/Region, and Total PII Level (continued)

Control Variable	Total PII Level			χ^2	*df*	*P*
	Low	**Medium**	**High**			
Headquarters Country/Region				12.65	6	0.049
Asia	1	0	4			
Europe	1	6	14			
United Kingdom	2	0	2			
United States	7	13	10			

Additional ANOVAs were conducted to assess if there were differences in OPISM, OPCCM, and PIPVI by PII (low versus high). Results of the ANOVA for OPISM by PII were not significant, $F(1, 58) = 0.42$, $p = 0.517$, partial $\eta^2 = 0.01$. Results of the ANOVA for OPCCM by PII were also not significant, $F(1, 58) = 0.68$, $p = 0.412$, partial $\eta^2 = 0.01$. Finally, results of the ANOVA for PIPVI by PII were not significant, $F(1, 58) = 0.05$, $p = 0.819$, partial $\eta^2 = 0.00$. This suggests that no significant differences were found in OPISM, OPCCM, and PIPVI by PII. Results of the ANOVAs are presented in Table 40.

Table 40

ANOVAs for OPISM, OPCCM, and PIPVI by PII

Measure	***SS***	***df***	***MS***	***F***	***p***	**Partial η^2**
OPISM	0.00	1	0.00	0.42	0.517	0.01
Error	0.02	58	0.00			
OCCM	0.01	1	0.01	0.68	0.412	0.01
Error	0.43	58	0.01			
PIPVI	0.00	1	0.00	0.05	0.819	0.00
Error	0.74	58	0.01			

Controlling for Company Size, Annual Revenue, and Years in Existence

The Spearman correlations and non-parametric measures were used to examine the differences between DPPM, OPISM, OPCCM, and PIPVI with company size, annual revenue, and years in existence. OPISM scores were significantly negatively related to annual revenue and positively related to years in existence (see Table 24). PIPVI scores were significantly negatively related to company size and annual revenue (see Table 30). No other significant differences were found. Based upon the results, hypothesis one can be accepted, because no significance was found with company size. However, because of the significant differences with annual revenue and years in existence, the ANOVAs for OPISM and PIPVI were re-conducted as ANCOVAs to assess if controlling for annual revenue and years in existence affects the outcome of the comparisons.

The results of the ANCOVA for OPISM scores by condition type after controlling for annual revenue and years in existence were significant, $F(1, 96) = 5.74$, $p = 0.019$, partial $\eta^2 = 0.06$. This is a change from the original ANOVA conducted. Based upon

the results, hypotheses two and three were rejected, because significance was found with annual revenue and years in existence. In addition, the mean for chronic conditions was significantly higher than the mean for non-chronic conditions. The results of the ANCOVA for OPISM scores by registration type were not significant, $F(1, 96) = 0.26$, $p = 0.611$, partial $\eta^2 = 0.00$, which is similar to the previous results. The results for the ANCOVA for OPISM scores by headquarters country/region were not significant, $F(3, 94) = 0.24$, $p = 0.865$, partial $\eta^2 = 0.01$, mirroring what was previously found. Results of the new ANCOVAs for OPISM scores are presented in Table 41.

Table 41

ANCOVA Results for OPISM Scores by Condition Type, Registration Type, and Headquarters Country/Region Controlling for Annual Revenue and Years in Existence

Source	***SS***	***df***	***MS***	***F***	***p***	**Partial η^2**
Condition Type	0.01	1	0.01	5.74	0.019	0.06
Annual Revenue	0.02	1	0.02	17.37	0.001	0.15
Years in Existence	0.03	1	0.03	25.11	0.001	0.21
Error	0.10	96	0.00			
Registration Type	0.00	1	0.00	0.26	0.611	0.00
Annual Revenue	0.01	1	0.01	11.47	0.001	0.11
Years in Existence	0.02	1	0.02	21.32	0.001	0.18
Error	0.11	96	0.00			
Headquarters Country/Region	0.00	3	0.00	0.24	0.865	0.01
Annual Revenue	0.01	1	0.01	10.77	0.001	0.10
Years in Existence	0.02	1	0.02	18.86	0.001	0.17
Error	0.11	94	0.00			

The results of the ANCOVA for PIPVI scores by condition type while controlling for annual revenue showed significance, $F(1, 97) = 7.79$, $p = 0.006$, partial $\eta^2 = 0.07$, suggesting that the PIPVI scores for chronic conditions were significantly lower than the PIPVI scores for non-chronic conditions. The results suggest that fewer violations occur with chronic conditions than for non-chronic. This is similar to the results found in the original ANOVA. Significance was also found by registration type, $F(1, 97) = 4.64$, $p = 0.034$, partial $\eta^2 = 0.05$, also mirroring the results found in the previous ANOVA. Finally, the results for differences by headquarters country/region were also similar to the previous ANOVA, $F(3, 95) = 6.87$, $p < .001$, partial $\eta^2 = 0.18$. Results of the new ANCOVAs for PIPVI scores are presented in Table 42.

Table 42

ANCOVA Results for PIPVI Scores by Condition Type, Registration Type, and Headquarters Country/Region Controlling for Annual Revenue

Control Variable	***SS***	***df***	***MS***	***F***	***p***	**Partial η^2**
Condition Type	0.11	1	0.11	7.79	0.006	0.07
Annual Revenue	0.02	1	0.02	1.21	0.275	0.01
Error	1.32	97	0.01			
Registration Type	0.07	1	0.07	4.64	0.034	0.05
Annual Revenue	0.06	1	0.06	4.39	0.039	0.04
Error	1.36	97	0.01			
Headquarters Country/Region	0.25	3	0.09	6.87	0.000	0.18
Annual Revenue	0.01	1	0.01	1.12	0.293	0.01
Error	1.17	95	0.01			

Thus, from the results of the ANCOVAs, the only change that was made by controlling for the relevant covariates was the ANCOVA for OPISM scores by condition type. Previously, the ANOVA results were not significant, but after controlling for registration type and annual revenue, significant differences in OPISM scores were found by condition type.

Validity Analysis

According to Pallant (2010), "the validity of a scale refers to the degree to which it measures what it is suppose to measure" (p. 7). She further noted that because there is no clear indicator of a scale's validity, the validation encompasses a "collection of empirical evidence concerning its use" (p. 7). The two main threats to validity in this research were construct and content. To ensure constructs of this research were valid, this research study used previously validated constructs from prior research. Another main threat to validity was the content validity. Once the constructs were gleaned from the literature review and the draft instrument was developed, an anonymous expert panel was solicited to elicit feedback on the proposed criteria and measures. The expert panel was solicited based upon their experience and knowledge of information privacy or information security from both the academic and corporate sectors to establish a qualified group of subject matter experts. The expert panel was requested to review the proposed criteria and indicate their level of agreement and provide additional comments if they disagreed. Once the first round of the Delphi Method was completed, responses were reviewed for applicable revisions to the benchmarking instrument.

Reliability Analysis

Pallant (2010) noted that "the reliability of a scale indicates how free it is from random error" (p. 6). To ensure reliability, this research used the aforementioned expert panel to validate the proposed criteria and measures. In addition, another researcher reviewed the data to ensure accuracy. Special attentiveness and concentration was taken during the data collection phases to ensure responses were complete and correct to achieve an accurate assessment of the practices for the Website registrations. The Cronbach alpha values are noted in Table 43. While it is recommended that the alpha values be above .7 (Pallant, 2010; Sekaran, 2003), Pallant (2010) noted that the alpha value could be fairly low if there are fewer than 10 scales. Therefore, because the PIPVI instrument meets this criterion, the alpha values were expected to be low.

Table 43

Reliability of Scales

Scale	**Item**	α
DPPP	Notice, Choice, Access, Security	.59
OPIS	Secondary Use, Third Party Use*	-.04
OPCC	Choice, Access	.46
PIPVI	DPPPM, OPISM, OPCCM	.00

Note. * Measurement was constant except for one company.

Summary of the Results

This chapter presented the results of the study. First, the chapter began with phase one of the research study, which involved engaging the expert panel. The

demographics of the expert panel and the results of both surveys using the Delphi Method were discussed. The discussion encompassed the elicitation of an expert panel to confirm the criteria and measures that contribute to personal information privacy violations, along with the weight allocations that were used to calculate the PIPVI. Next, phase two of the study was discussed that described the data collection for the 100 Website registrations. The chapter concluded with phase three that presented the data analysis and results of the PIPVI.

The nine goals of this research study were achieved using a three-phased approach: the first specific goal of this research study was to develop and assess the experts' approved components and weights for the DPPP implemented by pharmaceutical companies using the Delphi expert methodology. The second specific goal of this research study was to develop and assess the experts' approved components and weights for the OPIS implemented by pharmaceutical companies using the Delphi expert methodology. The third specific goal of this research study was to develop and assess the experts' approved components and weights for the OPCC implemented by pharmaceutical companies using the Delphi expert methodology. The fourth specific goal of this research study was to develop the components of the single, integrated measure of PIPVI and assess the DPPP, OPIS, and the OPCC implemented by pharmaceutical companies using the Delphi expert methodology. The first four goals were met with the development of the DPPPM, OPISM, OPCCM, PIPVI, which included the criteria and weight allocations. The fifth specific goal was to assess and compare the DPPPM of pharmaceutical companies that headquarters are based in United States versus Europe, Asia, or United Kingdom. This goal was met as presented in Table 19. The

sixth specific goal was to assess and compare the OPISM, OPCCM, and PIPVI for 100 Website registrations of pharmaceutical companies that a) market chronic versus non-chronic prescription medications, b) market registrations for prescription medication discounts versus updates, c) their headquarters are based in United States versus Europe, Asia, or United Kingdom. This goal was met as presented in Table 22, Table 25, and Table 27. The seventh specific goal was to assess and compare the differences for 100 Website registrations between the documented and actual online practices of consumer control for choice and access of pharmaceutical companies that a) market chronic versus non-chronic prescription medications, b) market registrations for prescription medication discounts versus updates, c) their headquarters are based in United States, versus Europe, Asia, or United Kingdom. This goal was met as presented in Table 33, Table 34, Table 35, Table 36, Table 37 and Table 38. The eighth specific goal of this research study was to assess and compare the OPISM, OPCCM, and PIPVI between pharmaceutical companies that collect a limited amount of PII and those that collect a high amount of PII. This goal was met as presented in Table 31. The last and ninth goal was to measure if there were any significant differences in the pharmaceutical companies' DPPPM, OPISM, OPCCM, and PIPVI based on their size, reported annual revenues, and years in existence. This goal was met as presented in Table 32.

Chapter 5

Conclusions, Implications, Recommendations, and Summary

Conclusions

Because incidents continue to rise due to companies' misuse of consumer information (Anton et al., 2010; Lanier & Saini, 2008; Pollach, 2007), this research study attempted to address the proliferation of online privacy violations by companies. This was conducted by developing a PIPVI benchmarking instrument, including its essential hierarchical components, to assess documented and online practices implemented on Websites. This research study achieved the nine goals with a three-phased approach. First, an expert panel using the Delphi expert methodology was used to develop relative weights for the criteria, documented practices of the privacy policy measure (DPPPM), online practices of information sharing measure (OPISM), online practices of consumer control measure (OPCCM), and the Personal Information Privacy Violations Index (PIPVI). Second, the PIPVI benchmarking instrument was used to assess the documented and online practices implemented for 100 pharmaceutical companies' Website registrations. Last, a comparison report was developed for 100 Website registrations of pharmaceutical companies.

Discussion

Overall, the results indicated that pharmaceutical companies with headquarters in Europe had fewer personal information privacy violations than the US. In addition, the

results suggested that as the annual revenue of the pharmaceutical company increased, fewer OPIS violations occurred. Second, as years in existence increased, the more OPIS personal information privacy violations occurred. Third, the results suggested pharmaceutical companies were more responsible with managing personal information for chronic conditions than for non-chronic conditions. Fourth, fewer violations occurred with Website registrations for updates than for discounts. Fifth, as company size and annual revenue increased, the PIPVI scores tended to decrease, which insinuates companies are more responsible when they have higher revenue and a larger volume of employees. Finally, both Europe and UK demonstrated more overall adherence to FIPs than the US and Asia. This suggests that self-regulation may not be sufficient, while more enforcement may be necessary to decrease personal information privacy violations.

Implications

This research study has some implications for the existing body of knowledge in the area of information privacy and information security. Companies are continuing to use the Internet as a source for engaging customers. This research study demonstrated that the PIPVI benchmarking instrument could be used to assess the documented and actual practices implemented on Websites. Because companies can revise their privacy policies or Website registrations at any time, there is risk of revisions that can alter the results. Therefore, it is important to ensure that when assessing documented Website practices, the researcher must be very meticulous and organized to capture data at that point in time for comparison to validate any changes. During this research study, there were no updates to any of the documented practices of the privacy policy. In addition to

revisions to the documented practices of the privacy policy, there is also risk to revisions for registration types. For example, the information required for disclosure to register for updates or discounts could be revised or no longer available. During this research study, this was also not experienced.

In this research study, the expert panel phase occurred over approximately16 weeks. This time period was required to allow for sufficient participation. Hsu and Sanford (2007) recommended a minimum of 45 days for administering a Delphi study. It is important to note that the survey method is one of the drawbacks of using the Delphi method because it could delay other processes. They further noted that it is crucial for the researcher to encourage the expert panel to respond to ensure a sufficient response rate. Because phase two for the Website registrations could be initiated simultaneously with phase one, the expert panel phase did not cause a delay in the other proceeding phases.

This research study provides a PIPVI benchmarking instrument that can be used to assess the documented and actual Website practices of companies. This benchmarking instrument could assist companies with assessing their practices to provide insight into what the company can do to further encourage adherence with the FIPs.

Study Limitations

As with any research study, this one also had some limitations. One of the main significant limitations of our study is the generalizable of the specific index values (not the weights) due to the sample used. It is expected that the Delphi compositions of the hierarchical weights will indeed be generalized in the future, but as time progresses, the

use of the benchmarking index on different companies may yield different values. While the sample size of 100 Website registrations is valid, further studies can use a larger sample size to increase validation of the results and generalizability. Next, there was not an equal distribution of pharmaceutical company Website registrations across each headquarters country/region. Furthermore, because some of the Website registrations did not receive any emails, OPIS could not be truly assessed for all pharmaceutical companies Website registrations. Finally, because most pharmaceutical companies documented practices specified to submit request to delete personal information through email, phone, or mail, the delete practices could not be assessed.

Recommendations and Future Research

This research study outlined the research plan to develop a set of measures and a single composite index based upon hierarchical criteria identified by current US laws and regulations recommended for ethical business practices for online transactions. The weights of the hierarchical criteria and composite index were developed using a Delphi approach. Followed by the development of the PIPVI, along with the data collection and analysis using the research outline plan discussed here. The findings and the results of the statistical analyses were reported.

Future studies are warranted to increase the validity of the instrument. In addition, more research will be needed to expand the sample size and the use of other industries to increase the generalizability. While our work concentrated on the pharmaceutical market, future research could include assessing other industries. Moreover, future work can assess the opt-out practices against the Controlling the

Assault of Non-Solicited Pornography and Marketing Act (CAN-SPAM Act). An extension of assessing the opt-out practices could include examining the differences based upon the type of request such as Website or email. Another area of future research includes selection of a population with criteria specifically for males and females or age to determine if the documented and online practices of companies differ by gender or age. Another area of future research includes having an equal distribution of Website registrations across each headquarters country/region. Finally, because the privacy policies stated that requests to delete information must be submitted by phone, email, or mail, future research could include assessing the delete practices of pharmaceutical companies or other industries.

Summary

This research study addressed the proliferation of online privacy violations by companies (Anton, Earp, & Young, 2010; Kim & Byramjee, 2014; Li, Sarathy, & Xu, 2011; Nam et al., 2006; Nhan, Kinkade, & Burns, 2009; Peltier et al., 2009). Personal information privacy violations using the Internet continue to receive media attention and continue to be a growing concern for consumers (K. Kim & Kim, 2011; Koorzaan & Boswell, 2008; Li et al., 2011). Because of the consistent occurrence of personal information violations, the growth of e-commerce is at risk (Kim & Byramjee, 2014; K. Kim & Kim, 2011; Li et al., 2011). The information privacy and information security literature present substantial evidence that consumers continue to be concerned about how their information is managed, used, and distributed by companies, especially if accessed via the Web. While the advancement of technology has provided significant

benefits to companies and consumers, the proliferation of personal information privacy violations demonstrates that it has also had an adverse effect. Because of technological advancements of the Internet, companies are able to collect, store, transfer, sell, and analyze consumer information (Kim & Byramjee, 2014). Companies leverage the Internet as a source of communication to engage and establish relationships with customers. However, in order to establish the relationship, the consumer voluntarily and involuntarily discloses information. Through both voluntary and involuntary methods, companies are able to collect and aggregate consumer information. As a result of the continued proliferation of personal information privacy violations, consumers continue to be concerned how companies manage their information. As previously noted, consumers expect companies to have an ethical responsibility to engage in practices that maintain information integrity and protect consumer information from unauthorized disclosure, access, use, or loss (Kelly & Rowland, 2000; Peltier, Milne, & Phelps, 2009). Consumers have an even greater expectation for financial, medical, and health information (Gupta, Iyer, & Weisskirch, 2010; Yang & Wang 2009). Literature presented significant evidence that the documented practices of the privacy policy (DPPP), online practices of information sharing (OPIS), and online practices of consumer control (OPCC) are three practices that contribute to personal information privacy violations by companies. The literature further noted that there is little research in studies that assesses both the documented and online practices contributing to the proliferation of personal information privacy violations. Given the significant rise in the use of healthcare Websites (Davis, 2012; Kim & King, 2009) and the sensitivity of consumers to information privacy, pharmaceutical companies' Websites are the focus of this

research study. Therefore, the main goal of this research study was to develop the Personal PIPVI benchmarking instrument that can be used to assess the DPPP, OPIS, OPCC, and compute PIPVI while using it to compare 100 registrations initiated through 53 Websites of 25 pharmaceutical companies that market chronic and non-chronic prescription medications. This was achieved using three phases to answer eight research questions and three hypotheses.

In phase one, an expert panel from academia and practitioners in the field of information security and privacy, as well as corporate social responsibility were engaged to answer the first four research questions. The expert panel survey was conducted using the Delphi Method. The survey requested the expert panel to indicate their level of agreement with the criteria, measures, along with their recommendation for the relative weight allocations. The outcome of the two survey rounds was the development of and the relative weight allocations for the documented practice of the privacy policy measure (DPPPM), online practices of information sharing (OPISM), online practices of consumer control (OPCCM), and the personal information privacy violations index (PIPVI).

RQ1a: What are the experts' approved components of the DPPP implemented by pharmaceutical companies using a Delphi expert methodology?

RQ1b: What are the experts' approved weights of the DPPP's components implemented by pharmaceutical companies using a Delphi expert methodology?

RQ2a: What are the experts' approved components of the OPIS implemented by pharmaceutical companies using a Delphi expert methodology?

RQ2b: What are the experts' approved weights of the OPIS's components implemented by pharmaceutical companies using a Delphi expert methodology?

RQ3a: What are the experts' approved components of the OPCC implemented by pharmaceutical companies using a Delphi expert methodology?

RQ3b: What are the experts' approved weights of the OPCC's components implemented by pharmaceutical companies using a Delphi expert methodology?

RQ4: What are the experts' approved weights of the single, integrated measure of PIPVI's components of DPPP, OPIS, and the OPCC implemented by pharmaceutical companies using a Delphi expert methodology?

In phase two, the privacy policy of the pharmaceutical companies was downloaded to assess the documented practices of the privacy policy (DPPP). In addition, 100 Website registrations were initiated across 53 Websites of 25 pharmaceutical companies. The pharmaceutical companies were headquartered in Asia, Europe, UK, and the US. The Website registrations were initiated for prescription medications that marketed chronic and non-chronic conditions with registration types of update and discount. It is important to note that Websites that sold prescription medications were excluded from the sample. Data was collected, analyzed, and calculated to derive the values for the DPPPM, OPISM, OPCCM, and PIPVI.

The remaining research questions and hypotheses were achieved in phase three. First, there were no significant differences for DPPM, OPISM, and OPCCM between pharmaceutical companies that a) market chronic versus non-chronic prescription

medications, b) market registrations for prescription medication discounts versus updates, c) their headquarters are based in United States, versus Europe, Asia, or United Kingdom. Second, there were no significant differences for OPCCM between pharmaceutical companies that a) market registrations for prescription medication discounts versus updates and b) their headquarters country/region are based in US, Europe, Asia, or UK. Differing from DPPPM and OPISM, there was a significant difference for OPCCM between pharmaceutical companies that market chronic versus non-chronic prescription medications. The results suggest that consumers had more control over their data for chronic conditions than for non-chronic conditions. Third, there was a significant difference for PIPVI between pharmaceutical companies that a) market chronic versus non-chronic prescription medications, b) market registrations for prescription medication discounts versus updates, c) their headquarters are based in United States, versus Europe, Asia, or United Kingdom. The results suggest that fewer personal information privacy violations occur for chronic conditions, update registrations, and for pharmaceutical companies that are headquartered in Europe. Overall, Europe was more responsible with managing consumer information compared to the US, Asia, or UK. Finally, both Europe and UK demonstrated a higher adherence to the FIPs than the US and Asia.

RQ5: Are there any statistical significance mean differences for DPPM between pharmaceutical companies that headquarters are based in United States versus Europe, Asia, or United Kingdom?

RQ6: Are there any statistical significance mean differences for OPISM, OPCCM, and PIPVI between pharmaceutical companies that a) market chronic versus non-chronic prescription medications, b) market registrations for

prescription medication discounts versus updates, c) their headquarters are based in United States, versus Europe, Asia, or United Kingdom?

Fourth, there were no significant differences in the documented versus actual practices for choice (opt-in/opt-out) between pharmaceutical companies that a) market chronic versus non-chronic prescription medications, b) market registrations for prescription medication discounts versus updates. However, for pharmaceutical companies headquarters country/region, there was a significant difference for opt-in/opt-out of secondary use after initial Website registration and opt-in/opt-out of third party use during initial Website registration. Once again Europe had a higher level of agreement for the ability to opt-in/opt-out of secondary use after initial Website registration. Fifth, there were no significant differences in the documented versus actual practices for access (review, modify, delete) between pharmaceutical companies that a) market chronic versus non-chronic prescription medications or b) market registrations for prescription medication discounts versus updates. On the other hand, there was a significant difference for access between pharmaceutical companies that their headquarters are based in United States, versus Europe, Asia, or United Kingdom. The results suggest that the US pharmaceutical companies had a higher disagreement between the documented and actual practices for the ability to modify personal information.

RQ7: Are there any significant differences between the documented and the actual online practices for choice, and access of pharmaceutical companies that a) market chronic versus non-chronic prescription medications, b) market registrations for prescription medication discounts versus updates, c)

their headquarters are based in United States, versus Europe, Asia, or United Kingdom?

Sixth, there were no significant mean differences for OPISM, OPCCM, and PIPVI between pharmaceutical companies that collect a limited amount of PII and those that collect a high amount of PII. Pharmaceutical companies with annual revenue greater than 1 billion dollars and pharmaceutical companies with a company size of 1,001 to 50,000 employees had a higher volume of Website registrations that collected a high level of PII. However, the US had fewer Website registrations that collected a high level of PII.

RQ8: Are there any statistical significance mean differences for OPISM, OPCCM and PIPVI between pharmaceutical companies that collect a limited amount of PII and those that collect a high amount of PII?

Last, unlike OPISM and PIPVI, there were no significant mean differences for the pharmaceutical company's DPPPM and OPCCM when controlling for company size, annual revenue, and years in existence. Because there was no significant difference found for DPPPM, IPOSM, OPCC, or PIPVI, hypothesis one was accepted. A significant difference was found for OPISM and PIPVI when controlling for annual revenue and years in existence. Therefore, both hypotheses two and three were rejected.

H_1: The pharmaceutical company's DPPPM, OPISM, OPCCM, and PIPVI will not be significantly different when controlling for company size.

H_2: The pharmaceutical company's DPPPM, OPISM, OPCCM, and PIPVI will not be significantly different when controlling for annual revenue.

$H_{3:}$ The pharmaceutical company's DPPPM, OPISM, OPCCM, and PIPVI will not be significantly different when controlling for years in existence.

Like any study, this research study had four main limitations. The first limitation was the set of measures combined to form the PIPVI. The second limitation was that the reliability and validation of the instrument relied on an expert panel. The expert panel, the relative weights, criteria, and measures may not be representative of the broader population. For these reasons, generalization of the results from this research study was cautioned. Future studies are required with other populations to increase generalizability of the results and improve the validity of the instrument. The third limitation was the inability to assess certain practices, such as security and the ability to delete personal information disclosed during the Website registration. In addition, because some of the Website registrations did not produce any emails, the OPIS measure could not be fully assessed for all Website registrations. The last limitation is that the results represent data at a point in time.

This research study made several contributions to the information privacy domain and body of knowledge. The study provided empirical evidence regarding the magnitude of voluntary adherence to the Fair Information Practices by pharmaceutical companies. This evidence is important to regulators and associations to assist with understanding the effectiveness of self-regulation. This research study provided insight into the documented and actual online practices of pharmaceutical companies that contribute to personal information privacy violations. Given the heightened concerns of consumers regarding personal information privacy, the results of this research study provided consumers with empirical evidence of how their information is managed and used by

pharmaceutical companies. A high magnitude of personal information privacy violations could negatively impact consumers' trust, concerns, and interactions with the Websites, which could continue to constrain the growth of e-commerce.

In conclusion, other researchers can use the PIPVI benchmarking instrument to assess Websites for new populations. The PIPVI benchmarking instrument can be used as a tool by researchers and corporations to assess and provide awareness regarding the documented and actual online practices of Websites. In addition, regulators and advocacy groups can use this type of evidence to assess and aide in determining if companies can be trusted with self-regulation and if more stringent laws and regulations or enforcement are necessary.

Appendices

Appendix A

PIPVI Data Collection Form

PHARMACEUTICAL COMPANY DEMOGRAPHICS

Pharmaceutical Company _____
Website URL _____
Headquarters Country/Region _____
Company Size _____
Annual Revenue _____
Years in Existence _____
Condition Type _____
Registration Type _____
Name _____
Email Address _____

The questions below are represented such that a response of YES will be an indication of a violation. An "X" will be placed in the space to indicate a response of YES or NO for each question. A response will be indicated for all questions.

PART 1 – DOCUMENTED PRACTICES OF THE PRIVACY POLICY

NOTICE

		YES	NO
DPPP-N1	The Privacy Policy contains a declaration that the Website does **NOT** collect any personal information from consumers	☐	☐
DPPP-N2	The Privacy Policy does **NOT** contain a declaration about the specific personal information the Website collects from consumers	☐	☐
DPPP-N3	The Privacy Policy does **NOT** contain a declaration that the Website may use personal information it collects for internal purposes	☐	☐
DPPP-N4	The Privacy Policy does **NOT** contain a declaration about whether the Website uses personal information it collects to send communications to the consumer	☐	☐
DPPP-N5	The Privacy Policy does **NOT** contain a declaration about whether the Website discloses personal information it collects to third parties	☐	☐

CHOICE

		YES	NO
DPPP-C1	The Privacy Policy does **NOT** contain a declaration that the Website provides the choice to opt-in/opt-out of future communications from the company other than those directly related to a transaction originated by the consumer	☐	☐
DPPP-C2	The Privacy Policy does **NOT** contain a declaration that the Website provides the choice to opt-out of future communications at a later date after receipt of communications	☐	☐
DPPP-C3	The Privacy Policy does **NOT** contain a declaration that the Website provides the choice to opt-in/opt-out of information disclosure to third parties	☐	☐
DPPP-C4	The Privacy Policy does **NOT** contain a declaration that the Website provides the choice to opt-out of future communications from third parties at a later date after receipt of communications	☐	☐

ACCESS

		YES	NO
DPPP-A1	The Privacy Policy does **NOT** contain a declaration that the Website allows consumers to review personal information previously collected	☐	☐
DPPP-A2	The Privacy Policy does **NOT** contain a declaration that the Website allows consumers to modify personal information previously collected	☐	☐
DPPP-A3	The Privacy Policy does **NOT** contain a declaration that the Website allows consumers to delete personal information previously collected	☐	☐

SECURITY

		YES	NO
DPPP-S1	The Privacy Policy does **NOT** contain a declaration that the Website takes any steps to provide security of the personal information collected	☐	☐
DPPP-S2	The Privacy Policy does **NOT** contain a declaration that the Website takes steps to provide security for personal	☐	☐

information the Website collects, during transmission of the information from the consumer to the Website

PART 2 – ONLINE PRACTICES OF INFORMATION SHARING

SECONDARY USE

		YES	NO
OPIS-SU1	Received emails or regular mail, text, or phone calls for other purposes from the pharmaceutical company	☐	☐

		Total
OPIS-SU2	How many emails, text, or phone calls were received for other purposes from the pharmaceutical company	☐
OPIS-SU3	How many pieces of regular mail, text, or phone calls were received for other purposes from the pharmaceutical company	☐

THIRD PARTY

		YES	NO
OPIS-TP1	Received emails or regular mail, text, or phone calls for other purposes from the third parties	☐	☐

		Total
OPIS-TP2	How many emails were received from third parties	☐
OPIS-TP3	How many pieces of regular mail, text, or phone calls were received for other purposes from third parties	☐

PART 3 – ONLINE PRACTICES OF CONSUMER CONTROL

CHOICE: SECONDARY USE

		YES	NO
OPCC-SU1	Consumers do **NOT** have the option to opt-in/opt-out to receive future communications from the Website (other than those directly related to processing an order or responding to a consumer's question)	☐	☐
OPCC-SU2	Consumers do **NOT** have the option to opt-out of receiving future communications from the Website at a later date after receipt of communications (other than those directly related to processing an order or responding to a consumer's question)	☐	☐

CHOICE: THIRD PARTY

		YES	NO
OPCC-TP3	Consumers do **NOT** have the option to opt-in/opt-out of disclosure of personal identifying information to third parties	☐	☐
OPCC-TP4	Consumers do **NOT** have the option to opt-out of disclosure of personal identifying information to third parties at a later date after receipt of communications	☐	☐

ACCESS

		YES	NO
OPCC-A1	The Website does **NOT** allow consumers to **review** personal information previously collected about them	☐	☐
OPCC-A2	The Website does **NOT** allow consumers to **modify** personal information previously collected about them	☐	☐
OPCC-A3	The Website does **NOT** allow consumers to **delete** personal information previously collected about them	☐	☐

PART 4 – DOCUMENTED VERSUS ACTUAL PRACTICES

Compare the documented practices against the actual online practices of consumer control for choice and access.

CHOICE: SECONDARY USE

		Documented	Actual
OPCC-SU1	Consumers do **NOT** have the option to opt-in/opt-out to receive future communications from the Website (other than those directly related to processing an order or responding to a consumer's question)	☐	☐
OPCC-SU2	Consumers do **NOT** have the option to opt-out of receiving future communications from the Website at a later date after receipt of communications (other than those directly related to processing an order or responding to a consumer's question)	☐	☐

CHOICE: THIRD PARTY

		Documented	Actual
OPCC-TP3	Consumers do **NOT** have the option to opt-in/opt-out of disclosure of personal identifying information to third parties	☐	☐
OPCC-TP4	Consumers do **NOT** have the option to opt-out of disclosure of personal identifying information to third parties at a later date after receipt of communications	☐	☐

ACCESS

		Documented	Actual
OPCC-A1	The Website does **NOT** allow consumers to **review** personal information previously collected about them	☐	☐
OPCC-A2	The Website does **NOT** allow consumers to **modify** personal information previously collected about them	☐	☐
OPCC-A3	The Website does **NOT** allow consumers to **delete** personal information previously collected about them	☐	☐

PART 5 – PERSONAL IDENTIFYING INFORMATION

The Website collects the following personal identifying information

		YES	NO
PII1	Name	☐	☐
PII2	Postal Address	☐	☐
PII3	Telephone Number	☐	☐
PII4	Social Security Number	☐	☐

Appendix B
Round I Expert Panel Survey

Thank you for taking the time to participate in this expert panel survey on the documented and online practices of Websites. I need your help to review the proposed measurement criteria and provide your expert opinion regarding their relative importance. Finally, you will be asked a few questions about your background and experience.

This expert panel survey is part of a PhD doctoral dissertation research study, which seeks to develop the Personal Information Privacy Violation Index (PIPVI) benchmarking instrument that can be used to assess the documented and actual online practices of Websites. Your assistance and expertise as an expert is being solicited to review the initial instrument and perform a qualitative evaluation of the instrument's validity by answering questions pertaining to the criteria being measured, which are as follows:

1. Document Practices of the Privacy Policy (Notice, Choice, Access, Security)
2. Online Practices of Information Sharing (Choice, Access)
3. Online Practices of Consumer Control (Choice, Access)

PART 1 – DOCUMENTED PRACTICES OF THE PRIVACY POLICY

Personal Information Privacy Violations will be assessed by the Documented Practices of the Privacy Policy (DPPP) of Websites. The criteria are written such that a yes response will indicate a violation. Please read the criteria for assessment and provide response to the questions below.

NOTICE

DPPP-N1 The Privacy Policy contains a declaration that the Website does NOT collect any personal information from consumers

DPPP-N2 The Privacy Policy does NOT contain a declaration about the specific personal information the Website collects from consumers

DPPP-N3 The Privacy Policy does NOT contain a declaration that the Website may use personal information it collects for secondary purposes

DPPP-N4 The Privacy Policy does NOT contain a declaration about whether the Website uses personal information it collects to send communications to the consumer

DPPP-N5 The Privacy Policy does NOT contain a declaration about whether the Website discloses personal information it collects to third parties

1. Violation of the Notice component of the Documented Practices of the Privacy Policy will be assessed using the data collected from the questions above. Please evaluate the following statements.

	Strongly Disagree (1)	Somewhat Disagree (2)	Disagree (3)	Neither Agree or Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
Notice is an accurate component of the Privacy Policy to assess	O	O	O	O	O	O	O
The Privacy Policy components regarding personal information collected along with secondary and third party use described above provide an accurate assessment of Notice violations	O	O	O	O	O	O	O

Additional Comments

CHOICE

DPPP-C1 The Privacy Policy does NOT contain a declaration that the Website provides the choice to opt-in/opt-out of future communications from the company other than those directly related to a transaction originated by the consumer
DPPP-C2 The Privacy Policy does NOT contain a declaration that the Website provides the choice to opt-out of future communications at a later date after receipt of communications
DPPP-C3 The Privacy Policy does NOT contain a declaration that the Website provides the choice to opt-in/opt-out of information disclosure to third parties
DPPP-C4 The Privacy Policy does NOT contain a declaration that the Website provides the choice to opt-out of future communications from third parties at a later date after receipt of communications

2. Violation of the Choice component of the Documented Practices of the Privacy Policy will be assessed using the data collected from the questions above. Please evaluate the following statements.

	Strongly Disagree (1)	Somewhat Disagree (2)	Disagree (3)	Neither Agree or Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
Choice is an accurate component of the Privacy Policy to assess	O	O	O	O	O	O	O
The Privacy Policy components regarding personal information collected along with secondary and third party use described above provide an accurate assessment of Choice violations	O	O	O	O	O	O	O

Additional Comments

ACCESS

DPPP-A1 The Privacy Policy does NOT contain a declaration that the Website allows consumers to **review** personal information previously collected

DPPP-A2 The Privacy Policy does NOT contain a declaration that the Website allows consumers to **modify** personal information previously collected

DPPP-A3 The Privacy Policy does NOT contain a declaration that the Website allows consumers to **delete** personal information previously collected

3. Violation of the Access component of the Documented Practices of the Privacy Policy will be assessed using the data collected from the questions above. Please evaluate the following statements.

	Strongly Disagree (1)	Somewhat Disagree (2)	Disagree (3)	Neither Agree or Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
Access is an accurate component of the Privacy Policy to assess	O	O	O	O	O	O	O
The Privacy Policy components to review, modify, and delete personal information collected described	O	O	O	O	O	O	O

above provide an accurate assessment of Access violations

Additional Comments

SECURITY

DPPP-S1 The Privacy Policy does NOT contain a declaration that the Website takes any steps to provide security of the personal information collected

DPPP-S2 The Privacy Policy does NOT contain a declaration that the Website takes steps to provide security for personal information the Website collects during transmission of the information from the consumer to the Website

4. Violation of the Security component of the Documented Practices of the Privacy Policy will be assessed using the data collected from the questions above. Please evaluate the following statements.

	Strongly Disagree (1)	Somewhat Disagree (2)	Disagree (3)	Neither Agree or Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
Security is an accurate component of the Privacy Policy to assess	O	O	O	O	O	O	O
The Privacy Policy components regarding the steps taken to provide security for information collected described above provide an accurate assessment of Security violations	O	O	O	O	O	O	O

Additional Comments

PART 2 – ONLINE PRACTICES OF INFORMATION SHARING

Personal Information Privacy Violations will be assessed by the Online Practices of the Information Sharing (OPIS) of Websites. Please read the criteria for assessment and provide response to the questions below.

SECONDARY USE

OPIS-SU1 How many emails were received for other purposes from the company

OPIS-SU2 How many pieces of regular mail were received for other purposes from the company

	Strongly Disagree (1)	Somewhat Disagree (2)	Disagree (3)	Neither Agree or Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
Secondary Use is an accurate component of the Information Sharing to assess	O	O	O	O	O	O	O
The number of emails and regular mail received described above provide an accurate assessment of Secondary Use for Information Sharing violations	O	O	O	O	O	O	O

Additional Comments

THIRD PARTY

OPIS-TP1 How many emails were received from third parties

OPIS-TP2 How many pieces of regular mail were received for other purposes from third parties

	Strongly Disagree (1)	Somewhat Disagree (2)	Disagree (3)	Neither Agree or Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
Third Party Use is an accurate component of the Information Sharing to assess	O	O	O	O	O	O	O
The number of emails and regular mail received described above provide an accurate assessment of Third Party Use for Information	O	O	O	O	O	O	O

Sharing violations

Additional Comments

PART 3 - ONLINE PRACTICES OF CONSUMER CONTROL

Personal Information Privacy Violations will be assessed by the Online Practices of Consumer Control (OPCC) by Websites. The criteria are written such that a yes response will indicate a violation. Please read the criteria to allow consumers to opt-in/out of Secondary Use and information disclosure to Third Parties along with the ability to Access their information and provide response to the questions below.

CHOICE: SECONDARY USE

OPCC-SU1 Consumers do NOT have the option to opt-in/opt-out to receive future communications from the Website (other than those directly related to processing an order or responding to a consumer's question)

OPCC-SU2 Consumers do NOT have the option to opt-out of receiving future communications from the Website at a later date after receipt of communications (other than those directly related to processing an order or responding to a consumer's question)

7. Violation of Secondary Use for the Choice component of Online Practices of Consumer Control will be assessed using the data collected from the questions above. Please evaluate the following statements.

	Strongly Disagree (1)	Somewhat Disagree (2)	Disagree (3)	Neither Agree or Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
Secondary Use is an accurate component of Consumer Control to assess	O	O	O	O	O	O	O
The number of emails and regular mail received described above provide an accurate assessment of Secondary Use for Consumer Control violations	O	O	O	O	O	O	O

Additional Comments

CHOICE: THIRD PARTY

OPCC-TP1 Consumers do NOT have the option to opt-in/opt-out of disclosure of personal identifying information to third parties

OPCC-TP2 Consumers do NOT have the option to opt-out of disclosure of personal identifying information to third parties at a later date after receipt of communications

8. Violation of the Third Party component of Online Practices of Consumer Control will be assessed using the data collected from the questions above. Please evaluate the following statements.

	Strongly Disagree (1)	Somewhat Disagree (2)	Disagree (3)	Neither Agree or Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
Third Party Use is an accurate component of Consumer Control to assess	O	O	O	O	O	O	O
The number of emails and regular mail received described above provide an accurate assessment of Third Party Use for Consumer Control violations	O	O	O	O	O	O	O

Additional Comments

ACCESS

OPCC-A1 The Website does NOT allow consumers to **review** personal information previously collected about them

OPCC-A2 The Website does NOT allow consumers to **modify** personal information previously collected about them

OPCC-A3 The Website does NOT allow consumers to **delete** personal information previously collected about them

9. Violation of the Access component of Online Practices of Consumer Control will be assessed using the data collected from the questions above. Please evaluate the following statements.

	Strongly Disagree (1)	Somewhat Disagree (2)	Disagree (3)	Neither Agree or Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
Access is an accurate component of Consumer Control to assess	O	O	O	O	O	O	O
The Privacy Policy components to review, modify, and delete personal information collected described above provide an accurate assessment of Access for Consumer Control violations	O	O	O	O	O	O	O

Additional Comments

PART 4 - PERSONAL INDENTIFYING INFORMATION

10. Some Websites collect Personal Identifying Information (PII). Please review the suggested PII information for assessment and provide response if they represent PII.

	Strongly Disagree (1)	Somewhat Disagree (2)	Disagree (3)	Neither Agree or Disagree (4)	Somewhat Agree (5)	Agree (6)	Strongly Agree (7)
Name	O	O	O	O	O	O	O
Postal Address	O	O	O	O	O	O	O
Telephone Number	O	O	O	O	O	O	O
Social Security Number	O	O	O	O	O	O	O

Additional Comments

PART 5 - WEIGHT ASSSIGNMENT

11. Each of these criteria will be assessed against a consensus of documented industry practices. If each measured criteria is assumed to meet industry practice guidance, what should the relative importance of each of the Documented Practices of the Privacy Policy (DPPP) criteria be relative to one another?

Please allocate 100 points among the Documented Practices of the Privacy Policy

criteria listed.

[DPPP-N] Notice

[DPPP-C] Choice

DPPP-A] Access

[DPPP-S] Security

12. Each of these criteria will be assessed against a consensus of documented industry practices. If each measured criteria is assumed to meet industry practice guidance, what should the relative importance of each of the Online Practices of Information Sharing (OPIS) criteria be relative to one another?

Please allocate 100 points among the Online Practices of Information Sharing criteria listed

[OPIS-SU] Secondary Use

[OPIS-TP] Third Party

13. Each of these criteria will be assessed against a consensus of documented industry practices. If each measured criteria is assumed to meet industry practice guidance, what should the relative importance of each of the Online Practices of Consumer Control (OPCC) criteria be relative to one another?

[OPCC-C] Choice

[OPCC-A] Access

14. The three proposed measures described above will be assessed based on the clusters of criteria described above. These are to be combined into a single index. Please indicate the relative importance of each of the Personal Information Privacy Violations Index (PIPVI) criteria by assigning weights.

Please allocate 100 points among the Personal Information Privacy Violations Index (PIPVI) criteria listed.

DPPP - Documented Practices of the Privacy Policy

OPIS - Online Practices of Information Sharing

OPCC - Online Practices of Consumer Control

PART 6 - DEMOGRAPHICS

15. Which of the following statements best describes your opinion about the future of Personal Information Privacy practices implemented on Websites?

- Personal Information Privacy practices implemented on Websites are adequate and companies will continue to adequately self regulate over the next 10 years
- Personal Information Privacy practices implemented on Websites are adequate but companies need additional enforcement over the next 10 years
- Personal Information Privacy practices implemented on Websites are inadequate and companies need additional enforcement over the next 10 years
- None of the choices adequately capture my opinion. My opinion is:

16. Please provide a general estimate of your background to the following questions:

Would you classify yourself as an 'academic' or 'practitioner' in regards to your involvement with Information Security/Information Privacy?

- I consider myself to be an academic
- I am both an academic and a practitioner but am mostly focused on academics n
- I consider myself to be a practitioner
- I am both a practitioner and academic, but am mostly focused on the practitioner
- I consider myself to be evenly balanced as both a practitioner and academic

17. If you consider yourself an academic, what is your experience with the subject area of Information Security/Information Privacy?

How many years have you taught undergraduate or Masters level students in courses that have included topics in Information Security/Information Privacy?

How may Doctoral students have you supervised with Information Security/Information Privacy related thesis or dissertations?

How many peer-reviewed journal articles have you published in the area of Information Security/Information Privacy?

How many other periodical articles (not PRJ) have you published in the area of Information Security/Information Privacy?

How many books or invited book chapters have you published in the area of Information Security/Information Privacy?

18. If you consider yourself to be a practitioner, what is your experience with the subject area of Information Security/Information Privacy (years in each answer need not be mutually exclusive)?

How many years of systems design which have involved at least some aspects of Information Security/Information Privacy?

How many years of systems development which have involved at least some aspects of Information Security/Information Privacy?

How many years of systems implementation which has involved at least some aspects of Information Security/Information Privacy?

How many years of project management or supervisory management which have involved at least some aspects of Information Security/Information Privacy?

How many years of employment or consulting engagement assignments have focused on building or improving Information Security/Information Privacy?

Appendix C
Round I Email to Expert Panel

Dear Privacy, Security, HR, Medical, and Pharmaceutical Experts,

We need your help in providing expert feedback on a framework for an upcoming doctoral research study. I am a PhD Candidate in Information Systems with a concentration in Information Security at the Graduate School of Computer and Information Sciences, Nova Southeastern University. My research is seeking to develop an index to measure if there are (or to what extent the magnitude exists) personal information privacy violations by companies' Websites. To develop the index, I need assistance from those that have knowledge in Information Security/Information Privacy/Human Resources/Medical/Pharmaceutical to review the proposed measurement criteria for the documented and online practices of Websites and provide your expert opinion regarding their relative importance by assigning weights to help me develop the novel benchmarking instrument of the Personal Information Privacy Violations Index (PIPVI).

This survey response will be used to develop the Personal Information Privacy Violation Index (PIPVI) benchmarking instrument that will help organizations as well as industry entities to assess the documented and actual online practices of Websites, especially in the medical and/or pharmaceutical field. Your assistance and expertise is being solicited to review the initial instrument and perform an evaluation of the criteria's validity by answering questions pertaining to the criteria being measured, which are as follows;

1. Document Practices of the Privacy Policy (Notice, Choice, Access, Security)
2. Online Practices of Information Sharing (Choice, Access)
3. Online Practices of Consumer Control (Choice, Access)

The information provided will be used only for this research study and in aggregated form. No personal identifiable information (PII) will be collected. If you are willing to participate, please click on the link below for access and completion by Friday, June 13.

https://www.surveymonkey.com/s/PIPVI_ExpertPanelSurvey

Thank you in advance for your consideration. I appreciate your assistance and contribution to this research study.

Should you wish to receive the findings of the study, please send me an email and I will be happy to provide you with information about the academic research publication(s) resulting from this study.

Regards,
Shonda Brown, PhD Candidate
E-mail: bshonda@nova.edu
Information Systems with a concentration in Information Security

Graduate School of Computer and Information Sciences
Nova Southeastern University

Appendix D
Round II Expert Panel Survey

Thank you for taking the time to participate in this final phase of the expert panel survey on the documented and online practices of Websites. I need your help to review the aggregated results from the first phase that represent the percentages for the proposed measurement criteria and provide your expert opinion regarding their relative importance. The survey has **four** questions that should take approximately less than 10 minutes to complete. Finally, you will be asked a few questions about your background and experience if you did not participate in the first phase of the survey.

This expert panel survey is part of a PhD doctoral dissertation research study which seeks to develop the Personal Information Privacy Violation Index (PIPVI) benchmarking instrument that can be used to assess the documented and actual online practices of Websites. Your assistance and expertise is being solicited as an expert to review the aggregated results by answering questions pertaining to the percentages assigned to the criteria being measured, which are as follows;

1. Document Practices of the Privacy Policy (Notice, Choice, Access, and Security)
2. Online Practices of Information Sharing (Choice and Access)
3. Online Practices of Consumer Control (Choice and Access)

PART 1 – CONCEPTUAL MODEL

The conceptual model is displayed to provide insight into the research study and the criteria that will contribute to the development of the Personal Information Privacy Violation Index.

PART 2 - WEIGHT ASSIGNMENT

1. DOCUMENTED PRACTICES OF THE PRIVACY POLICY

Each of these criteria will be assessed against a consensus of documented industry practices. The aggregated responses from the first phase of the survey are indicated below as percentages in red that represents the relative importance of each of the Documented Practices of the Privacy Policy (DPPP) criteria. Please indicate your opinion regarding the validity of the aggregated results. If new weights are provided, the allocation must equal 100 points.

DOCUMENTED PRACTICES OF THE PRIVACY POLICY are the documented practices of the company that is represented in the Privacy Policy. The criteria for the Privacy Policy represent the following.

Notice provides consumers clear and conspicuous notice of the company's information practices, including what information they collect, how they collect it, how it is used,

how they provide Choice, Access, and Security to consumers, and whether they disclose the information collected to other entities
Choice - documented practices on whether the company allows customers to opt-in/opt-out of information sharing within and outside of the company

Access - documented practices on whether the company allows customers to access and modify information provided during the transaction

Security - documented practices about the company's security of the information they collect from consumers

	YES the % appears valid as the relative weight	**NO** the % does not appear valid as the relative weight
[DPPP-N] Notice 25%	O	O
[DPPP-C] Choice 22%	O	O
DPPP-A] Access 20%	O	O
[DPPP-S] Security 33%	O	O

Other Percentage (please specify)

2. ONLINE PRACTICES OF INFORMATION SHARING

Each of these criteria will be assessed against a consensus of documented industry practices. The aggregated responses from the first phase of the survey are indicated below as percentages in red that represent the relative importance of each of the Online Practices of Information Sharing (OPIS) criteria. Please indicate your opinion regarding the validity of the aggregated results. If new weights are provided, the allocation must equal 100 points.

ONLINE PRACTICES OF INFORMATION SHARING are the actual practices of the company regarding sharing information within or outside of the company
Secondary Use is information shared within the company and used for purposes other than original transaction

Third Party Use is information shared outside of the company

	YES the % appears valid as the relative weight	**NO** the % does not appear valid as the relative weight
[OPIS-SU] SECONDARY USE 55%	O	O
[OPIS-TP] THIRD PARTY 45%	O	O

Other Percentage (please specify

3. ONLINE PRACTICES OF CONSUMER CONTROL

Each of these criteria will be assessed against a consensus of documented industry practices. The aggregated responses from the first phase of the survey are indicated below as percentages in red that represent the relative importance of each of Consumer Control (OPCC) criteria. Please indicate your opinion regarding the validity of the aggregated results. If new weights are provided, the allocation must equal 100 points.

ONLINE PRACTICES OF CONSUMER CONTROL are the actual practices of the company regarding the consumer's ability to control their information

Choice is the ability to opt-in/opt-out of information sharing within and outside of the company

Access is the ability to access and modify information provided during the transaction

	YES the % appears valid as the relative weight	**NO** the % does not appears valid as the relative weight
[OPCC] CHOICE 58%	O	O
[OPCC] ACCESS 42%	O	O

Other Percentage (please specify

4. PERSONAL INFORMATION PRIVACY VIOATIONS INDEX

The three proposed measures described below will be combined to create the Personal Information Privacy Violations Index (PIPVI). The aggregated responses from the first phase of the survey are indicated below as percentages in red that represent the relative importance of each of measure. Please indicate your opinion regarding the validity of the aggregated results. If new weights are provided, the allocation must equal 100 points.

DOCUMENTED PRACTICES OF THE PRIVACY POLICY are the documented practices of the company that are represented in the Privacy Policy

ONLINE PRACTICES OF INFORMATION SHARING are the actual practices of the company for sharing information within or outside of the company

ONLINE PRACTICES OF CONSUMER CONTROL are the actual practices of the company regarding the consumers' ability to control their information

	YES the % appears valid as the relative weight	**NO** the % does not appear valid as the relative weight
[DPPP] DOCUMENTED PRACTICES OF THE PRIVACY POLICY 35%	o	o
[OPIS] ONLINE PRACTICES OF INFORMATION SHARING 33%	o	o
[OPCC] PRACTICES OF CONSUMER CONTROL 32%	o	o

Other Percentage (please specify)

Other Percentage (please specify)

Other Percentage (please specify)

PART 3 - DEMOGRAPHICS

Please complete if you didn't participate in the first phase of the survey

15. Which of the following statements best describes your opinion about the future of Personal Information Privacy practices implemented on Websites?

- Personal Information Privacy practices implemented on Websites are adequate and companies will continue to adequately self regulate over the next 10 years
- Personal Information Privacy practices implemented on Websites are adequate but companies need additional enforcement over the next 10 years
- Personal Information Privacy practices implemented on Websites are inadequate and companies need additional enforcement over the next 10 years
- None of the choices adequately capture my opinion. My opinion is:

16. Please provide a general estimate of your background to the following questions:

Would you classify yourself as an 'academic' or 'practitioner' in regards to your involvement with Information Security/Information Privacy?

- I consider myself to be an academic
- I am both an academic and a practitioner but am mostly focused on academics
- I consider myself to be a practitioner
- I am both a practitioner and academic, but am mostly focused on the practitioner
- I consider myself to be evenly balanced as both a practitioner and academic

17. If you consider yourself an academic, what is your experience with the subject area of Information Security/Information Privacy?

How many years have you taught undergraduate or Masters level students in courses that have included topics in Information Security/Information Privacy?

How may Doctoral students have you supervised with Information Security/Information Privacy related thesis or dissertations?

How many peer-reviewed journal articles have you published in the area of Information Security/Information Privacy?

How many other periodical articles (not PRJ) have you published in the area of Information Security/Information Privacy?

How many books or invited book chapters have you published in the area of Information Security/Information Privacy?

18. If you consider yourself a practitioner, what is your experience with the subject area of Information Security/Information Privacy (years in each answer need not be mutually exclusive)?

How many years of systems design which have involved at least some aspects of Information Security/Information Privacy?

How many years of systems development which have involved at least some aspects of Information Security/Information Privacy?

How many years of systems implementation which has involved at least some aspects of Information Security/Information Privacy?

How many years of project management or supervisory management which have involved at least some aspects of Information Security/Information Privacy?

How many years of employment or consulting engagement assignments have focused on building or improving Information Security/Information Privacy?

Appendix E

Round II Email to Expert Panel

Dear Privacy, Security, HR, Medical, and Pharmaceutical Experts,

Thank you again for the previous feedback. The responses from the first phase of the survey have been aggregated and we need your help for the **last time** to validate the weight assignments for the criteria that will be used to develop the Personal Information Privacy Violations Index (PIPVI). The survey contains **four questions** soliciting your expert opinion regarding the relative importance of the criteria and four questions regarding your background if you did not participate in the first phase of the survey. Please help me by providing your expert opinion in this **final** phase by clicking on the link below to access the survey.

https://www.surveymonkey.com/s/PIPVI_ExpertPanelSurvey2

I need your help in providing expert feedback on a framework for an upcoming doctoral research study. I am a PhD Candidate in Information Systems with a concentration in Information Security at the Graduate School of Computer and Information Sciences, Nova Southeastern University. My research is seeking to develop an index to measure if there are (or to what extent the magnitude exist) personal information privacy violations by companies' Websites. To develop the index, I need assistance from those that have knowledge in Information Security/Information Privacy/Human Resources/Medical/Pharmaceutical industries.

That's where I need your help!

The survey responses will be used to develop the Personal Information Privacy Violation Index (PIPVI) to assess the magnitude of personal information privacy violations of Websites, especially in the medical and/or pharmaceutical field. Your assistance and expertise is being solicited for the last time to perform an evaluation of the aggregated weight assignments based upon the responses from the first phase of the survey to the following criteria;

1. Document Practices of the Privacy Policy (Notice, Choice, Access, and Security)
2. Online Practices of Information Sharing (Choice and Access)
3. Online Practices of Consumer Control (Choice and Access)

The information provided will be used only for this research study and in aggregated form. No personal identifiable information (PII) will be collected.

Thank you in advance for your consideration. I appreciate your assistance and contribution to this research study.

Should you wish to receive the findings of the study, please send me an email and I will be happy to provide you with information about the academic research publication(s) resulting from this study.

Regards,
Shonda Brown, PhD Candidate
E-mail: bshonda@nova.edu
Information Systems with a concentration in Information Security
Graduate School of Computer and Information Sciences
Nova Southeastern University

Appendix F

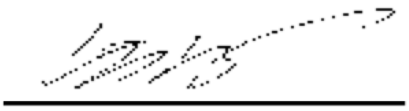
Institutional Review Board Approval Letter

NOVA SOUTHEASTERN UNIVERSITY
Office of Grants and Contracts
Institutional Review Board

MEMORANDUM

To: Shonda Brown

From: Ling Wang, Ph.D.
Institutional Review Board



Date: Jan. 6, 2014

Re: *An Information Privacy Examination of the Practices of Pharmaceutical Companies Regarding Use of Information Collected through Their Websites*

IRB Approval Number: wang12151302

I have reviewed the above-referenced research protocol at the center level. Based on the information provided, I have determined that this study is exempt from further IRB review. You may proceed with your study as described to the IRB. As principal investigator, you must adhere to the following requirements:

1) CONSENT: If recruitment procedures include consent forms these must be obtained in such a manner that they are clearly understood by the subjects and the process affords subjects the opportunity to ask questions, obtain detailed answers from those directly involved in the research, and have sufficient time to consider their participation after they have been provided this information. The subjects must be given a copy of the signed consent document, and a copy must be placed in a secure file separate from de-identified participant information. Record of informed consent must be retained for a minimum of three years from the conclusion of the study.

2) ADVERSE REACTIONS: The principal investigator is required to notify the IRB chair and me (954-262-5369 and 954-262-2020 respectively) of any adverse reactions or unanticipated events that may develop as a result of this study. Reactions or events may include, but are not limited to, injury, depression as a result of participation in the study, life-threatening situation, death, or loss of confidentiality/anonymity of subject. Approval may be withdrawn if the problem is serious.

3) AMENDMENTS: Any changes in the study (e.g., procedures, number or types of subjects, consent forms, investigators, etc.) must be approved by the IRB prior to implementation. Please be advised that changes in a study may require further review depending on the nature of the change. Please contact me with any questions regarding amendments or changes to your study.

The NSU IRB is in compliance with the requirements for the protection of human subjects prescribed in Part 46 of Title 45 of the Code of Federal Regulations (45 CFR 46) revised June 18, 1991.

Cc: Protocol File

3301 College Avenue • Fort Lauderdale, FL 33314-7796 • (954) 262-5369
Fax: (954) 262-3977 • Email: *inga@nsu.nova.edu* • Web site: www.nova.edu/cwis/ogc

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