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Charles E. Downing
Northern Illinois University

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Privacy and The Information Age: A Longitudinal View

Charles E. Downing
Operations Management and Information Systems Department,
College of Business
Northern Illinois University
USA

ABSTRACT

As information systems and data storage capacity become increasingly sophisticated, an important ethical question for organizations is “What can/will/should be done with the personal information that has been and can be collected?” Individuals’ privacy is certainly important, but so is less costly and more targeted business processes. As this conflict intensifies, consumers, managers and policy makers are left wondering: What privacy principles are important to guide organizations in self-regulation? For example, do consumers view the five rights originally stated in the European Data Protection Directive as important? Comprehensive? Is there a product discount point where consumers would forsake these principles? This project explored these questions using a survey of student consumers, first in 2006 and again in 2014. Results show that the consumers believe that not only are the five rights enumerated in the European Data Protection Directive appropriate, but they are also comprehensive. Consumers also would require a steep product discount to forsake these rights. These views have not changed significantly over time.

Keywords: Privacy, Information Age, consumer, longitudinal

INTRODUCTION

The growth of Big Data, E-Business and online operations of organizations continues. With this growth comes the increasing ability of corporations to obtain personal data on consumers, track behavior during Web site visits, etc. (Anthony et al., 2015; Beardsley et al., 2014; Bélanger & Crossler, 2011; Berinato, 2002; Dalton & Gallagher, 1999; Murphy, 2003). The potential value of this information is enormous, as organizations can cater their offerings to certain types of consumers, market to only consumers likely to purchase their products, etc. (Beardsley et al., 2014; Bélanger & Crossler, 2011; Berinato, 2002; Murphy, 2003). However, this phenomenon has also intensified the concerns of consumers regarding their privacy (Abbasi et al., 2016; Anthony et al., 2015; Bélanger & Crossler, 2011; Berinato, 2002; Bolton, 2015; Chen et al., 2012; Dalton & Gallagher, 1999; Murphy, 2003; Wu et al., 2014). This paper will explore the inevitable conflict these two forces present, and offer recommendations for organizational leaders and policy makers.

BACKGROUND

Only a short time ago, students needing to do a report on Abe Lincoln (or anything else) had one primary source: The print sources that could be found in the nearest library. Current students find themselves awash in data and information. Google “Abe Lincoln” and you are greeted with over 16 million results. We have moved from too little information to far too much. As we click around the Internet, transact with our credit cards, and carry out day-to-day activities, information is being captured constantly (Abbasi et al., 2016; Chen et al., 2012; Wu et al., 2014). The question for business organizations is “What to do with all of this data?” How can organizations use the massive amounts of available data to increase their strategic position, make better decisions, target customers more precisely, etc.?

Most organizations propose to use personal data which has been collected in aggregate or for efficiency-based (e.g., Auto-fill) purposes only (Berinato, 2002; Bolton, 2015; Dalton & Gallagher, 1999; Smith & Dinev, 2011; Tsai et al., 2011). In this context, an important question surrounds the perspective and concerns of many consumers: Why is privacy so important? What about the potential good of providing information to allow for "database marketing", "micro marketing", etc. (more relevant messages, more efficient markets, etc.)? Former US Federal Trade Commission (FTC) Chairman Robert Pitofsky has said that the FTC so far has favored self-regulation on privacy issues (Bolton, 2015). That could change, however, if little progress is shown by commercial Web sites in establishing meaningful privacy policies on their sites (Bolton, 2015; Thibodeau, 1999; Smith & Dinev, 2011; Tsai et al., 2011). Is it reasonable to assume that self-regulation will be successful? If not, how will consumers guide this process? What is important to them?

Actions and policies to date

As indicated on the FTC Web site (<http://business.ftc.gov/privacy-and-security>), “The Federal Trade Commission is educating consumers and businesses about the importance of personal information privacy, including the security of personal information. Under the FTC Act, the Commission guards against unfairness and deception by enforcing companies' privacy promises about how they collect, use and secure consumers' personal information. Under the Gramm-Leach-Bliley Act, the Commission has implemented rules concerning financial privacy notices and the administrative, technical and physical safeguarding of personal information, and it aggressively enforces against pretexting. The Commission also protects consumer privacy under the Fair Credit Reporting Act and the Children's Online Privacy Protection Act.”

While the FTC stance is important, policy makers are left with no guidelines about what might be important to include in their “privacy promises” (Bolton, 2015). The European Union has implemented a "no privacy, no trade" stand with potential trading partners. Under the European Data Protection Directive and 2016 General Data Protection Regulation, European citizens are guaranteed a bundle of rights, including the right of access to their data, the right to know where the data originated, the right to have inaccurate data rectified, the right of recourse in the event of unlawful processing, and the right to withhold permission to use their data for direct marketing (Davies, 1998). Does this stand make sense? Is it comprehensive? Will similar positions be

taken? Do consumers believe these five rights are important and comprehensive? The answers to these questions could provide the very guidelines that policy makers are seeking.

RESEARCH QUESTIONS AND HYPOTHESES

These facts and observations lead to two fundamental research questions, which this project will address, longitudinally, from the consumer's perspective:

- Do consumers view the five rights stated in the European Data Protection Directive as important? Comprehensive?
- Is there a product discount point where consumers would forsake these principles?

These question lead to the following seven research hypotheses:

H1₀, H6₀: The mean response to the question:

- “Having the right of access (to see it, verify it, etc.) to my personal information which is stored by a Web site is important to be included in the privacy policy of that Web site” (**H1₀**)
- “Having the right of recourse in the event of unlawful processing using my personal information which is stored by a Web site is important to be included in the privacy policy of that Web site” (**H2₀**)
- “Having the right to know where and how they obtained my personal information is important to be included in the privacy policy of a Web site” (**H3₀**)
- “Having the right to have inaccurate personal information about me corrected is important to be included in the privacy policy of a Web site” (**H4₀**)
- “Having the right to withhold my personal information from being used for direct marketing purposes is important to be included in the privacy policy of a Web site” (**H5₀**)
- “The previous five questions comprehensively cover all the rights I believe should be included in the privacy policy of a Web site” (**H6₀**)

is less than or equal to 5 on a 7 point scale with 7 indicating strong agreement (consumers do not believe this right to be important). In each case the corresponding alternate hypothesis (**H1_a-H6_a**) is that the mean is greater than 5.

- **H7₀**: The mean product discount point is 25% or lower (greater than or equal to 4 on a 7 point scale) for consumers to surrender their personal information regardless of privacy policy (E-Businesses need not pay a high price for personal information).
- **H7_a**: The mean product discount point is higher than 25% (less than 4 on a 7 point scale) for consumers to surrender their personal information regardless of privacy policy (E-Businesses must pay a high price for personal information).

METHODOLOGY

To explore these questions and hypotheses, surveys were made available electronically, on a voluntary basis, to two hundred (210) student consumers in 2006 and two hundred twenty-two (222) in 2014, in a large introduction to information systems course at a public university. The survey was created based on the rights enumerated in the European Data Protection Directive, and was constructed based on the seven research hypotheses. A pilot study was given to 33 information systems students prior to the first full survey distribution. The survey instrument appears in the Appendix.

Data collection and analysis

As mentioned, a survey was employed to attempt to draw conclusions about the future of privacy in the online world. The survey was created based on the rights enumerated in the European Data Protection Directive, and refined based on the results of the pilot distribution. Validity of the instrument was established by soliciting feedback from the respondents of the pilot survey, and internal reliability of the instrument was established using questions 4 and 12 (see Appendix) as outlined in a prior study (Downing, 2006). A seven-point Likert-scale was used for each question.

RESULTS

One hundred and twelve (112) student consumers responded to the survey in 2006 for a 53.3% response rate, and two hundred and ten (210) student consumers responded to the survey in 2014 for a 94.6% response rate. Table 1 shows demographic results for the two survey distributions. For example, the average response to the question “Estimate your total online (Internet) retail spending over the last year” in 2006 was 4.35 and in 2014 was 4.06. Each question is coded beginning with “1” going from left to right, so in the case of Question #1 both survey distributions had respondents with average total online spending ranging between Choice 4 “\$201-\$500” and Choice 5 “\$501-\$1,000” (response averages just over 4.0). In the case of Income (Question #15), both survey distributions had respondents with average incomes ranging between Choice 3 “\$1,001-\$10,000” and Choice 4 “\$10,001-\$25,000” (response averages between 3 and 4). The groups were very similar demographically, especially given the eight year difference between survey distributions.

Question	Statistic	2006	2014
#1: Estimate your total online (Internet) retail spending over the last year	Average	4.35	4.06
	Standard Deviation	1.72	1.31
#2: Estimate the percentage of your total retail spending that was done online	Average	3.26	3.83
	Standard Deviation	1.51	1.50
#13: What is your age?	Average	2.50	2.40
	Standard Deviation	0.57	0.68
#14: What is your sex?	Count	Female = 74 Male = 136	Female = 42 Male = 70
#15: What is your annual income?	Average	3.79	3.49
	Standard Deviation	1.58	1.59

Table 1: Demographics for the 2006 and 2014 Survey Distributions.

For each question in the survey, t-tests were conducted on the mean response of the consumers versus a mean of 5 (“Slightly Agree”), with the null hypothesis being that the mean is less than or equal to 5 on a 7 point scale with 7 indicating strong agreement (consumers do not believe this right to be important). Table 2 shows the survey response means, hypotheses results and conclusions for 2006, and Table 3 shows similar metrics for 2014.

Hypothesis	Mean (7 point scale, 7 is important)	t-Statistic	Result	Probability of Type I or Type II Error	Conclusion
H1 - ACCESS	5.5625	3.6605	Reject	0.0002	2006 Consumers believe access is important.
H2 - RECOURSE	6.1071	8.9389	Reject	0.0000	2006 Consumers believe recourse is important.
H3 - ORIGINATION	5.8214	5.9818	Reject	0.0000	2006 Consumers believe knowing origination is important.
H4 - ACCURACY	5.6786	5.2157	Reject	0.0000	2006 Consumers believe accuracy is important.
H5 - WITHHOLD	6.0893	9.0249	Reject	0.0000	2006 Consumers believe the right to withhold information is important.
H6 - COMPREHENSIVE	5.4643	3.7374	Reject	0.0001	2006 Consumers believe the five right of the European Data Protection Directive are comprehensive
H7 - DISCOUNT	2.5000	-7.8150	Reject	0.0000	2006 Consumers need a discount substantially higher than 25% to surrender personal information regardless of privacy policy.

Table 2: 2006 Survey response means, hypotheses results and meaning.

So for example, Table 2 shows that for the hypothesis “H1 – ACCESS”, relating to the question “Having the right of access (to see it, verify it, etc.) to my personal information which is stored

by a Web site is important to be included in the privacy policy of that Web site”, the mean consumer response in 2006 was 5.5625, and with a t-statistic of 3.6605 the null hypothesis (Mean ≤ 5) is rejected, meaning it is more likely the mean consumer response would be something more than 5. Since 5 is “Slightly Agree”, 6 is “Agree”, and 7 is “Strongly Agree”, this result indicates that consumers find “Access” important in the privacy arena. The “Probability of Type I or Type II Error”, meaning the chances that this conclusion is the result of random chance and has been reached in error, is less than 0.0002 ($p < 0.0002$). As shown in Table 2, all five privacy dimensions, as well as the comprehensiveness of these dimensions, received similar support. Finally, the seventh hypothesis, “H7 – DISCOUNT” (with the full hypothesis being “The mean product discount point is 25% or lower (greater than or equal to 4 on a 7 point scale) for consumers to surrender their personal information regardless of privacy policy”), relating to the question “What is your SMALLEST product discount trade off point for giving your name, address, phone number and/or email address to an online Web site, regardless of the privacy policy?”, the consumer mean was 2.5330, and with a t-statistic of -9.9890 the null hypothesis was rejected, indicating that consumers look for a discount of higher than 25% to surrender their personal information.

Hypothesis	Mean (7 point scale, 7 is important)	t-Statistic	Result	Probability of Type I or Type II Error	Conclusion
H1 - ACCESS	5.7403	5.8317	Reject	0.0000	2014 Consumers believe access is important.
H2 - RECOURSE	5.7607	7.0933	Reject	0.0000	2014 Consumers believe recourse is important.
H3 - ORIGINATION	5.9190	8.7916	Reject	0.0000	2014 Consumers believe knowing origination is important.
H4 - ACCURACY	6.0193	10.8562	Reject	0.0000	2014 Consumers believe accuracy is important.
H5 - WITHHOLD	5.8798	8.2982	Reject	0.0000	2014 Consumers believe the right to withhold information is important.
H6 - COMPREHENSIVE	5.2285	1.9969	Reject	0.0235	2014 Consumers believe the five right of the European Data Protection Directive are comprehensive
H7 - DISCOUNT	2.5330	-9.9890	Reject	0.0000	2014 Consumers need a discount substantially higher than 25% to surrender personal information regardless of privacy policy.

Table 3: 2014 Survey Response Means, Hypotheses Results and Meaning.

Table 3 also shows support in 2014 for all five privacy dimensions, their comprehensiveness, and the high consumer discount required to surrender personal information. For example, Table 3 shows that for the hypothesis “H1 – ACCESS”, relating to the question “Having the right of access (to see it, verify it, etc.) to my personal information which is stored by a Web site is important to be included in the privacy policy of that Web site”, the mean consumer response was 5.7403, and with a t-statistic of 5.8317 the null hypothesis (Mean \leq 5) is again rejected, meaning it is more likely the mean consumer response would be something more than 5. The “Probability of Type I or Type II Error” for the 2014 “Access” case shown in Table 3 is less than 0.0000 ($p < 0.0000$).

CONCLUSIONS

Based on the results of this study, consumers are concerned about their privacy when navigating the online world, and these concerns have not changed dramatically over an eight year period (from 2006 to 2014). In this study, consumers were asked about the importance of each of the five rights enumerated in the European Data Protection Directive, and they responded with statistical significance that all five rights were important, both in 2006 and 2014. Additionally, a somewhat surprising result was that consumers believed the five rights of the European Data Protection Directive were comprehensive as far as what should be included in a web site’s privacy policy. Both of these results should be extremely useful to policy makers in the privacy arena. The overview message is that the European Data Protection Directive seems to have resonated with consumers as appropriate and complete. Organizational policy makers and leaders need to be very careful to create, articulate, and adhere to digital privacy policies which incorporate the five dimensions enumerated in the European Data Protection Directive. Additionally, should a web site want to circumvent or reduce the importance of these principles, a steep product discount would be required.

DISCUSSION AND LIMITATIONS

While these findings are useful, further validation is desirable. Big Data research is growing at an extraordinary rate, and new privacy dimensions may emerge to gain a more robust measurement of consumer concerns. As these studies expand, additional constructs may be added to produce a modified or new instrument. This study used the rights enumerated in the European Data Protection Directive, the most current constructs at the time of data collection, to conduct the research. If constructs change, new privacy data will need to be collected to validate the results of this study. Additionally, the adoption of the General Data Protection Regulation in April 2016 changes some of the dimensions of the original European Data Protection Directive (Hallinan & Friedewald, 2015), and the subtleties will need to be examined and studied.

Additionally, there are two sample concerns. First, the sample studied was solely business students, and future research should include a more diverse sample. It is possible that business students are more or less sophisticated than the average consumer, and a larger, smoothed-out sample would be useful. Second, the 2006 study had a response rate of 53.3%, and the 2014 study had a response rate of 94.6%. One possible hypothesis for this difference is that in 2006 students were directed to a web site to complete the survey, and in 2014 they used an in-class

response system (clickers) to complete the survey. We are confident that this did not distort the results, but to be certain future studies should have students complete the survey using the exact same process.

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ABOUT THE AUTHOR

Charles E. Downing, Ph.D.

Operations Management and Information Systems Department, College of Business, Northern Illinois University, DeKalb, IL 60115
(815) 753-6381 , Fax: (815) 753-7460, e-mail: cdowning@niu.edu

Charles E. Downing, Ph.D., is the Presidential Teaching Professor in the Operations Management and Information Systems Department of the College of Business at Northern Illinois University. Dr. Downing researches, teaches and consults in Technology Strategy, Big Data Analytics, Business Intelligence, and Information Systems Analysis, Design and Development. His articles have appeared in top business journals, including Communications of the ACM, Decision Sciences, Decision Support Systems, Information & Management, Journal of Global Information Management, The Journal of Information Technology Management, Journal of International Technology and Information Management, Information Systems Management, and others. Dr. Downing has provided consulting services to all varieties of organizations, including Chicago Title, Ernst & Young, Northern Trust Corporation, Walmart and others in the planning, deployment and usage of technology. Professor Downing received his Ph.D. from Northwestern University, and prior to his current position was a tenured Associate Professor at Boston College.

APPENDIX

SURVEY INSTRUMENT

1. Estimate your total online (Internet) retail spending over the last year:

- \$0 \$1-\$50 \$51-\$200 \$201-\$500 \$501-\$1,000
 Over \$1,000

2. Estimate the percentage of your total retail spending that was done online:

- 0% 1-5% 6-10% 11-25% 26-50% 51-75%
 76-100%

3. Estimate the percentage of online Web sites on which you shopped which had a privacy policy in place regarding how that site would use or not use your personal information (e.g., name, address, etc.):

- 0% 1-10% 11-25% 26-50% 51-75% 76-100%
 Don't Know

4. What is your SMALLEST product discount trade off point for giving your name, address, phone number and/or email address to an online Web site, regardless of the privacy policy?

- At 100% off. If they give me their product for free, they can have my personal information.
- At 75% off. If they give me their product at 75% off (a \$100 product for \$25), they can have my personal information.
- At 50% off. If they give me their product at 50% off (a \$100 product for \$50), they can have my personal information.
- At 25% off. If they give me their product at 25% off (a \$100 product for \$75), they can have my personal information.
- At 10% off. If they give me their product at 10% off (a \$100 product for \$90), they can have my personal information.
- At 0% off. I don't need a discount. I'm happy shopping online, and they can have my personal information.
- NEVER. No product discount will entice me to give my personal information away.

Rate your agreement/disagreement with the following statements using the following scale:

- Strongly Disagree Disagree Slightly Disagree Indifferent Slightly Agree Agree Strongly Agree

5. Having the right of access (to see it, verify it, etc.) to my personal information which is stored by a Web site is important to be included in the privacy policy of that Web site.
6. Having the right of recourse in the event of unlawful processing using my personal information which is stored by a Web site is important to be included in the privacy policy of that Web site.
7. Having the right to know where and how they obtained my personal information is important to be included in the privacy policy of a Web site.
8. Having the right to have inaccurate personal information about me corrected is important to be included in the privacy policy of a Web site.
9. Having the right to withhold my personal information from being used for direct marketing purposes is important to be included in the privacy policy of a Web site.
10. The previous five questions comprehensively cover all the rights I believe should be included in the privacy policy of a Web site.
11. I would be more inclined to purchase a product on a Web site that had a privacy policy.
12. As long as I get a good price and good service, I am not concerned about a Web site's privacy policy regarding its use or non-use of my personal information.

13. What is your age?

- Under 15 16-21 22-30 31-40 41-60 Over 60

14. What is your sex?

- Female Male

15. What is your annual income?

- \$0 \$1-\$1,000 \$1,001-\$10,000 \$10,001-\$25,000 \$25,001-\$50,000 \$50,000-\$100,000
- Over \$100,000 I refuse to say.

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