
Pay-What-You-Want Pricing for Mobile Applications: The Effect of Privacy Assurances and Social Information

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Abstract

The market for mobile apps is expanding quickly. Customer adoption for these apps is determined positively by app utility and social information as well as negatively by the perceived privacy risk associated with disclosing sensitive private information such as customer identity and geographical location. Because of the social nature of many of these apps, and the characteristics of the primary user base (those ages 18-29), we examine how the pay-what-you-want pricing model—which has been successful in certain instances in the music industry—would work in the market for mobile apps which have a similar price point of one to two dollars (on average). Using a theoretical model based on social information and reference pricing and an empirical experiment involving 1079 participants, we find that privacy assurance is the largest contributing factor to a customer's willingness-to-pay for mobile apps while social information and reference pricing play much smaller roles.

Keywords: Mobile applications, social information, privacy assurance, location-based services, pay-what-you-want

1. INTRODUCTION

In 2007, the popular band 'Radiohead' challenged the established music industry methods by offering its fans a pay-what-you-

want (PWYW) model for downloading the band's latest album (with the option of free). Approximately 1.2 million people worldwide visited the website. As expected, 62% of the consumers paid nothing. However, 38% did pay

varied amounts. Globally, the average price paid was \$6; the average in the US was around \$8. In the end, while a majority choose not to pay any amount, Radiohead still managed to make about \$2 per album which is still higher than what most record companies pay their artists. In addition, this tactic attracted new fans, created tremendous buzz for the new album, and helped the band sell out concerts across the globe. Why did consumers pay a premium for a good that could be obtained for free? Such behaviors belie the underlying assumptions of neo-classical economics and conventional business models—that consumers are rational and always maximize utility by selecting the lowest priced option among equivalent substitutes.

In the recent past, popular press has highlighted various forms of PWYW strategies adopted by businesses across the US (e.g., Strom, 2010). However, few studies (except Gautier & Klaauw, 2010; Gneezy, Gneezy, Nelson, & Brown, 2010; Kim, Natter, & Spann, 2009) have directly examined consumer behavior when sellers use PWYW pricing. The questions most relevant for both theoretical and empirical analyses are: a) what motivates consumers to pay more when they have an option to free ride?, and b) Can these pricing strategies be applied to various product categories and distribution channels? Extant literature posits various factors affecting consumers' decision to pay. Certain conditions are more conducive to the success of PWYW mechanisms. The most common reason given in favor of paying, as opposed to free riding, is social-norms (akin to the reasons for tipping) The other factors that may dissuade free riding are: avoiding the appearance of looking cheap, fairness, reciprocity (e.g. paying in return for privacy assurance), and altruism. In a nutshell, PWYW strategies trigger the social components of a market exchange that are suppressed by traditional pricing mechanisms.

This study investigates the generalizations of the aforementioned discussion in the context of a popular form of digital goods: "mobile apps" (applications). Recently, the market for apps has exploded with hundreds of thousands of apps available on both the Apple iPhone and Google Android platforms (Security, 2011). The top 50 iPhone apps average price of \$1.61 (Hughes, 2011) is little more than that of a single song available through Apple iTunes. Because apps are also adopted primarily by the same consumer base (those ages 18 to 29) as that of iTunes users (Rainie, 2010), it is possible that

the PWYW model may work similarly for apps. Additionally, the context of many apps falls squarely in the domain of social norms and influences that remain relevant to the discussion on pricing. For instance, consider many of the popular "friend locator" apps. These will allow users to locate others users of the app on a map. As more individuals in a group adopt an app, there is greater pressure for others in the group to adopt the app as well. Consequently, the larger the consumer-base for an app, the greater the motivation for consumers to purchase the app.

However, there is a competing pressure in the adoption of mobile apps. In particular, the recent finding that the iPhone and Android platforms have been collecting location data without user's knowledge (Johnson, 2011) underscores the privacy risk associated with using mobile devices and applications. By combining location data with all of the other types of information stored on a single device, malware distributors can discover not only "who you are," but "where you are," "what you shop for," "what you listen to and view," and much more.

While social information may lead users to adopt apps, perceived privacy risk has the opposite effect. Therefore, an important consideration for app designers is to alleviate consumers' privacy concerns and encourage more users to purchase apps which in turn will add to the designers' revenues.

This study is based on the conjecture that app designers can creatively activate social norms to positively influence mobile users' intent to purchase an app and willingness to purchase and pay (WTPP) to a greater degree than these consumers originally intended. In particular, we investigate the effect of social information on norm formation (information about other users' adoption decisions and price-paid or a reference price). In addition, we posit that such pricing tactics are significantly influenced by the privacy assurances implemented by app providers. For example, a potential consumer may be willing to *try* a particular app if they feel it might be risky, but they may be willing to actually *pay* for the app if their concerns can be alleviated. In addition, we posit that social information can play an important role in alleviating consumers' privacy risk perceptions in the absence of privacy assurances.

The conceptual core of the paper is based on the rich stream of research pertaining to social norms and social information (e.g., Cialdini & Goldstein, 2004) merged with privacy calculus (Culnan & Armstrong, 1999; Laufer & Wolfe, 1977) which posits that consumers' intention to disclose sensitive information (e.g. by purchasing and using an app) is a calculated tradeoff between the benefits versus risks of disclosure. In addition, our research model and the hypotheses incorporate theory on reference prices (Dholakia & Simonson, 2005; Mazumdar, Raj, & Sinha, 2005).

In summary, this research contributes theoretically by examining the PWYW pricing model under conditions of potentially high social information and high privacy risk in the presence of reference pricing. The practical implications can inform the strategies app take to alleviate consumer concerns and encourage higher WTPP.

2. BACKGROUND ON PWYW PRICING

Kim et al (2009) provided the first empirical evidence on PWYW pricing. Three different sellers offered three different products for sale and consumers could choose any price they like to pay, including zero. Although there was a wide distribution of payments, surprisingly most consumers paid a positive price even though they had the option to free-ride (i.e. obtain the product or service without paying anything). The authors conclude that consumers' WTPP depends on two factors: (i) an internal reference price; and (ii) a proportion of surplus a consumer is willing to share with the seller. The authors conclude that the final prices paid were influenced by (a) fairness, (b) satisfaction, (c) market price awareness, and (d) net income. Recently, Gneezy et al (2010) conducted a large scale field experiment to study consumers' propensity to pay for souvenir photos taken at an amusement park in California. They applied fixed-price versus PWYW conditions with a charity treatment in which half of the proceeds went to a patient-support foundation. Interestingly, the PWYW * charity condition attracted the maximum revenues indicating the desire of consumers to engage in pro-social behaviors, and the effect of social norms in activating such behaviors.

Social Information and WTPP

Previous research in social norms has shown that people are influenced by perceptions of

others' behaviors. Cialdini and Goldstein (2004) describe these perceptions as descriptive norms, which specify what is typically done in a given setting (what most people do). Many studies have demonstrated the influence of descriptive norms on behaviors in varying situations and in specific subpopulations. For example, norms have been shown to influence the choice of environmental conservation (Goldstein, Cialdini, & Griskevicius, 2008), exercising during leisure time (Okun, Karoly, & Lutz, 2002), charitable giving (Croson, Handy, & Shang, 2009) and even alcohol abuse among college students (Walters & Neighbors, 2005) Factors that influence descriptive norms are said to have informational social information (Miniard & Cohen, 1983). A person believes others may be right in their judgments and there is a private acceptance of what others do, which leads this person to conform to others' behaviors. Informational social information has been shown to come from a variety of sources including the behavior of family and peer reference groups (Childers & Rao, 1992), and in a variety of settings, primarily in private consumption (Osterhus, 1997).

Social information is especially effective when the following two conditions hold: First, there is a perception of ambiguity about what should be done (Weber, Kopelman, & Messick, 2004). If no such ambiguity exists and there is an obvious thing to do, then others' behavior does not matter. Situational ambiguity is very apt for the context of digital goods pricing (Zhu & Zhang, 2010) and this effect should be compounded in the presence of privacy risk such as in the case of mobile apps employing location-based services. Various factors such as lack of social cues, information asymmetry and trust issues add to this uncertainty. For instance, for a given functionality, consumers may find numerous apps with various prices. Given that it is difficult to assess the quality and value for money, consumers usually consider popularity information, quality ratings by other consumers and more importantly size of the consumer base (number of other consumers who have purchased the app) (Keith, Babb, Furner, & Abdullat, 2010).

Second, social information must be perceived as appropriate. While a variety of variables influence this perception, the reasonableness of the norm is the most relevant to this context. The pricing of the apps are usually based on the assumption that they are affordable to the

target audience. However, when the same consumers are given social information that is relevant or appropriate, it is likely to influence their WTPP i.e., people are likely to rely on the social information to form perceptions of the descriptive norm. The social information in this case is how many other consumers have purchased the app and how much they have paid for the same app (i.e., a reference price).

H1: The WTPP for a mobile app will be higher for consumers exposed to the social information than for consumers without the social information.

Reference Groups and Reference Prices

The central question of theoretical importance following the above discussion is: which social information has greater salience for consumers? i.e., whether the effect of the social information on consumers' WTPP varies with the type of reference group tied to the information. Several factors are known to influence the extent to which individuals will adhere to the social information from a given reference group (Cialdini & Goldstein, 2004). As mentioned earlier, social information in this context is the suggested reference price or how many other consumers have paid a specific price for the mobile app.

One important variable affecting the likelihood of influence is the level of perceived similarity among others and a given individual. According to Festinger's (1954) social comparison theory, people often evaluate themselves by comparing themselves to others, especially others with whom they share similar personal characteristics. In line with this supposition, people are more likely to follow the behaviors of others with similar features, including age, gender and socio-economic background (Carli, Ganley, & Pierce-Otay, 1991), and personality attributes and attitudes (Suedfeld, Bochner, & Matas, 1971).

An underlying factor to perceived similarity is the extent to which individuals identify with a reference group. Social identity is defined as an expansion of the self-concept involving a shift from the individual self to the collective self, frequently based on perceived membership in a social category (Hogg & Reid, 2006). An individual may hold social identities at various levels of abstraction, ranging from concrete groups of people (e.g., people studying at the

same school or people living in the same town) to broader categories of people (e.g., other consumers). For instance, depending on the source of the social information, norms can be broadly defined as local and global norms (Goldstein, et al., 2008). Global norms refer to (in the context of this study) the norms of all the other consumers who have purchased the specific mobile app. Local norms refer to the norms of reference groups that are more meaningful and relatively more diagnostic to the subjects. Previous research consistently found that while different types of norms have varying effects on individuals' behaviors, norms that originate from a more socially diagnostic group tend to have the strongest influence.

Following the above discussion, we posit that the salience of the norms activates an aspirational reference price (Mezias, Chen, & Murphy, 2002) that is based on what others in the social group paid for the same or similar product. In a pricing context, aspirational reference price is therefore a function of not only the usual prior and contextual prices but also what others in a social group pay for the same or similar products. If someone pays a low price, the aspiration level of others in the social group is also adjusted downward, and vice versa. This consequently alleviates consumers' ambiguity regarding the price of the app, and positively affects their WTPP.

H2: Reference prices from a local reference group will increase WTPP more so than a global reference group.

Privacy Assurances and WTPP

In light of the tremendous surge in ecommerce and the use of digital technologies, one of the important issues that has emerged in the recent past is privacy concern (Bart, Shankar, Sultan, & Urban, 2005). Consumers' privacy concerns are especially relevant due to the "always on" nature of mobile devices and apps (Sheng, Nah, & Siau, 2008). The frontier of personal privacy had previously been crossed when consumers began to offer their personal and financial information in the pursuit of e-Commerce (Malhotra, Kim, & Agarwal, 2004). We define privacy assurance as app developers' and service providers' assurances to the consumers that steps have been taken to protect their personal information (use of privacy seals, guarantees, and promises) (Xu, Teo, Tan, & Agarwal, 2010).

Contemporary research linking privacy assurances and consumer behavior, provides evidence that online retailers' privacy assurances and trust assuring behaviors considerably attenuate consumers' risk perceptions and subsequently have a positive effect on their behaviors (Bart, et al., 2005; Bélanger, Hiller, & Smith, 2002). Privacy assurances have been demonstrated to significantly increase trust and reduce perceived risks in mobile and ecommerce contexts (Keith, et al., 2010). For instance, Mai et al (2010) analyze data collected from several online vendors and find that vendors with stronger privacy assurances garner at least 15% in price premiums as opposed to vendors with relatively weaker privacy assurances. Therefore:

H3: Strong privacy assurances will increase consumers' WTPP as opposed to weak privacy assurances.

In addition, the effect of privacy assurance on WTPP is inherently interlinked with social information. For instance, information cascades theory suggests that the decisions of prior consumers will help to convince potential consumers to adopt if there is only a limited amount of information and the decision alternatives are the same across all consumers (Duan, Gu, & Whinston, 2009).

The mobile app context fits these criteria well. For example, the decision to download and use a mobile app is often made quickly and "on-the-fly." Consider the scenario where a smart phone user is shopping around for "deals." They believe they have found the best price at a particular location, but would like to be sure. So they begin searching for one of the many mobile apps which will scan barcodes and search local stores and the Internet for the best deals. The consumer does not have time to call friends to get their opinion or perform detailed research. In addition, the cost of such an app is relatively small (\$2-\$4) so it is not worth expending significant search costs. Therefore, the only information available to them is the limited amount provided in the app description found in the app store (See Figure 1). In other words, all potential consumers have the exact same amount of limited information with the same decision alternatives—to purchase or not. As a result, information cascades theory should apply. In other words, privacy assurances included in the app description should serve to

enhance the effects of social information on WTPP.

H4: Strong privacy assurances will positively interact with social information in determining consumer's WTPP.



Figure 1: Sample App Description

Control Variables

We use several control variables in this study. System quality (and information quality) determines the overall value and benefit of an app. It is well-established in theory on IT success (DeLone & McLean, 2003) and used extensively in ecommerce research to reflect the characteristics of a website such as the presence of bugs, the ease of the user interface, and navigational structure (McKnight, Choudhury, & Kacmar, 2002). Similarly, computer self-efficacy (SE), defined as one's ability to effectively use technology is considered as an important factor that can determine consumers' technology readiness and intent to use new technologies (Parasuraman & Grewal, 2000). Age and gender were also included as control variables. A control for the context of the mobile app (explained later) was also included in the final analysis. Participants were also asked if they currently use smartphones or other mobile devices capable of downloading and installing mobile apps.

3. STUDY CONTEXT AND METHODOLOGY

The research model and the hypotheses were tested as a part of a larger study that was aimed

at understanding consumers' behaviors pertaining to location based services via mobile phones. To test the hypotheses, we adopted a 2 (Social information) X 2 (Reference Price) X 3 (Privacy assurance) full factorial between-subjects design. social norms were manipulated as global (low) versus local (high), reference pricing was either present or not present, and privacy assurance was manipulated as either (1) none, (2) seals and a written promise stating that both location and identification information would be collected, but not shared (low assurance), or (3) seals and a written promise stating that only location information would be collected, but not share (high assurance). Participants were randomly assigned to one of the 12 potential treatment groups based on these manipulations. In addition, latent measures for *social information* and *perceived privacy risk* were captured during the experiment to validate our manipulations. Both constructs exhibited strong reliabilities ($\alpha > 0.70$) and t-test of comparisons between groups indicated that our manipulations were valid. Table 1 summarizes the manipulations and their validity checks.

Table 1: Manipulations and Validity Checks

| | Levels | Check |
|--------------------|---|---|
| Social information | <u>Local</u> =information about the students from the university to which the subjects belonged. <u>Global</u> =information about all other consumers who purchased the app | Perceived social influence: • Local M=4.3 • Global M=4.1 t-test of means, p=0.02 |
| Privacy Assurance | <u>None</u> =No privacy assuring statement <u>Low</u> =Privacy assurance statement + seals; however, both location and identity are stored) <u>High</u> =Privacy statement + seals; only location is stored. (see Figure 2) | Perceived privacy risk: • None M=4.5 • Low M=4.3 • High M=3.4 t-test of means, p < 0.01 for each comparison |
| Reference Price | <u>Present</u> =53% more than the participant's originally stated price <u>Absent</u> =no reference price provided | N/A |

Four different iPhone app contexts were selected from the iPhone App Store for the experiment which reflected a variety of the salient uses of mobile apps which incorporate location data: 1)

an app which gave real-time updates on traffic congestion along commonly used roads and highways, 2) an app which allowed its user to map their fitness routes for running, biking, etc. and recorded their times, 3) an app which located friends and family members on a map, and 4) an app which mapped and located registered sex offenders in the user's area. These apps do not represent variations in the independent variables, but rather offer different contexts in order to reduce the variance attributed to the use of specific apps.

Participant Recruitment and Procedures

Since the largest demographic of mobile internet users is those ages 18-29 (Rainie, 2010), students were recruited from the business schools of three large public universities located in Virginia, Texas, and Arizona. Over 1200 undergraduate students successfully completed the experiment for extra credit as well as a chance to win one of several \$50 gift cards. After data cleaning, a total of 1079 responses were used for the analysis. Table 2 summarizes relevant participant characteristics.

Table 2. Participant Characteristics

| | |
|------------------------------|----------------------------------|
| Mobile purchases (last year) | 7.08 \bar{x} (17.63 σ) |
| Age | 20.13 \bar{x} (5.58 σ) |
| Smartphone user | 78.8% |
| Apple iPhone user | 24.8% |
| Gender (male / female) | 53.0% / 47.0% |

A simulation-based experimental design was implemented as used in similar studies (Vance, Elie-Dit-Cosaque, & Straub, 2008). Participants were informed of the study (and its website address) and its incentives during class and asked to complete it outside of regular class time. All other instructions were contained on the experimental website. Most participants spent between 15 and 25 minutes completing the experiment. The subjects completed the following steps:

- (1) Each participant navigated to the website that hosted the experimental simulation. Subjects first read the cover letter and took a short pre-test to indicate their privacy concern. Next, they were randomly assigned to one of 48 different simulations (12 group manipulations x 4 contexts) so that each participant viewed a simulation of one particular context.

(2) Next, they were given one of the four hypothetical scenarios to consider. For example:

You have recently purchased a new Apple iPhone and you would like to download an application which will give you current updates about the traffic congestion during your commute to and from work. This application would be very useful to you because there are multiple routes you could potentially take each day and traffic congestion makes a big difference in how long your commute takes. The following images are hypothetical screen shots from an iPhone which walk you through the steps required to find and download an app which will serve your purpose. Please review the screen shots in detail and take special notice of the description of the selected app and the rating it received from other customers.

(3) After confirming that they read and understood their scenario, subjects were given a series of 9-12 screen shots (depending on the context) (See Figure 2) which simulated the process of searching the Apple App Store for an app which met their needs, downloading and installing the app, opening the app, and using it once for its intended purpose. The screen shots allowed the user to use their mouse to click the actual buttons on the iPhone images. These screen shots were based on actual iPhone images, but modified using Adobe Photoshop to reflect differences in privacy assurance found in the written description portion of Figure 2d.

(4) Immediately after subjects were shown the screen shots, they were asked to state their intent to purchase the app and state their price (WTPP1). We used the stated-choice method (Cameron & James, 1987; Homburg, Koschate, & Hoyer, 2005) where the participants are simply asked, "How much would you be willing to pay for [mobile app name]?" WTPP1 was measured using an open text box control which allowed the participant to specify any value.

(5) After the manipulation check questions, students were exposed to one of the 12 different app simulations and asked to revise their previously stated price (WTPP2). For instance, in the "local norms, explicit reference price, low privacy assurance" condition, subjects were given the following information: "You previously mentioned that you would pay \$1.99 for [app name]. However, the app is very popular and many other students from [participant's stated university] have paid an average of \$3.04

(calculated as a 53% increase from their first WTPP) for this app. Would you like to reconsider the price. If so, how much are you willing to pay for this app?" Subjects were then given a blank field to state their WTPP2.

(6) Subsequently, they were given a post-test which included a series of manipulation checks for privacy assurance and social information. Results indicate that over 80% of all participants answered all questions correctly which compares well to similar studies (Hui, Teo, & Lee, 2007).

4. ANALYSIS

The primary dependent variables in this study are intent to purchase and WTPP. The WTPP variable was log transformed to account for the non-normal distribution. We tested our main hypotheses by applying MANOVA with intent to purchase and WTPP as dependent variables, and social information (global/local), reference price (present/absent) and privacy assurance (absent/weak/strong) as factors. Perceived quality, app context, age and gender were entered as covariates. The results are shown in Table 3 (in the appendix). The analysis revealed interesting results discussed next.

5. DISCUSSION OF RESULTS

The primary aim of this study was to test the effects of social norms and social information on consumers' intent to purchase and willingness-to-pay for contemporary digital goods. We specifically tested how various factors such as social information, explicit reference price suggestions and privacy assurances from online vendors affects WTPP in a PWYW condition. The experiment demonstrates the critical importance of privacy assurance as well as the power of social norms in motivating consumers to adopt and pay for mobile apps. The results reveal many interesting aspects on online consumer behavior.

For example, the results suggest that consumers' intent to purchase and WTPP are much higher in a high social information condition when compared to the low social information condition (H1). This result is consistent with previously discussed literature. However, when subjected to information from varied reference groups, consumers were more influenced by local groups (versus global groups). This is surprising given that although a comparison of social information treatments confirmed there was a significant difference

between the high and low conditions, the perceived difference in social information was actually quite small (4.8 versus 4.9 average rating).

Interestingly, the data provides weak and partial support to our conjecture that social information embedded with suggestions of explicit references price positively affect WTPP (H2). Based on previous literature (Mazumdar, et al., 2005), we hypothesized that in the conditions of ambiguity regarding quality and pricing, consumers rely on vendor suggested reference prices. Further, explicit reference prices in an online environment help consumers lower their search costs and therefore have greater effect on the final price paid. In our study, reference prices actually showed a negative although not significant effect on intent and WTPP. At the same time, the social information by reference price condition showed a significant negative effect on WTPP. The result is somewhat consistent with previous studies on online behavior (Dholakia and Simonson 2005) that find that explicit reference points make consumers much more cautious and risk-averse and sometime produce negative effects.

The results on privacy assurance are consistent with our initial propositions (H3). The data indicates that consumers are primarily increasingly concerned about privacy issues relative to social information and reference pricing, and are willing to pay an extra amount to procure digital goods that are supported by vendors with strong indicators of privacy assurance. Although, it is possible that our results are effected by positive priming of privacy concerns (Acquisti & Gross, 2006). In addition, consumers do, in fact, appear to understand the exponential risk of losing their identity along with their location data based on the results of the manipulation check in Table 1.

It is also interesting to note that while privacy assurance affects WTPP ($p < .05$), it has a much greater effect on the intent to actually adopt and use the mobile app ($p < 0.001$). In other words, while privacy assurances will have an effect on consumer's initial WTPP for an app, it has a greater likelihood of assuring the long-term usage of the app.

Surprisingly, we didn't find that social information interact with privacy assurance (H4). We would have expected subjects to believe that, "if people close to me trust it

(versus those more socially distant), then I can too." If this result is generalizable, the implication is that people don't necessarily trust the decisions of those closer to them when it comes to mobile app privacy. However, our manipulation of social information was simply "all users" versus "users in my city or at my school." Future research may reveal that a group which is "socially-closer" (i.e. those directly in the user's address book) will have a much greater effect.

6. CONCLUSIONS

Our study extends current literature in several ways. First, our study extends the concept of PWYW pricing to the ever growing world of digital goods, especially mobile phones. PWYW is turning into a very popular strategy and it is important for researchers to delineate the mental mechanisms underlying consumers' acceptance of this pricing strategy. In addition, previous studies related to this topic were conducted in the services sector that requires certain amount of human interaction. But as Kim et al (2009) note, we should be able to test PWYW's applicability to various product categories and distribution channels. The findings from this research stream enhance the welfare of millions of small technology vendors who develop digital goods.

Second, we also extend the literature on consumer susceptibility to descriptive norms and social information by investigating the underlying mechanisms that drive the behaviors in an online setting. Mainly, as opposed to previous studies, we study the differences in affect from two different diagnostic groups, local and global. Our study shows that consumers' sense of norms can be activated even without meaningful group identities that are typically seen as necessary antecedents to consumer compliance.

Third, and quite importantly for this paper, we test the interaction as well as direct effects of privacy assurances on consumers' willingness to purchase and pay for digital goods. It is quite surprising that contemporary marketing research has consistently overlooked the importance of privacy and related issues in relation to consumer behavior, especially in the context of ever evolving e- and m-commerce. Various scholars have emphasized the importance of engendering consumers' trust using privacy assurances and other institutional mechanisms (e.g., Urban, Amyx, & Lorenzon,

2009). Our study complements extant theories on social norms by combining it with modern issues such as privacy assurance. It is especially apt given the social nature of mobile commerce.

7. REFERENCES

- Acquisti, A., & Gross, R. (2006). Imagined Communities: Awareness, Information Sharing, and Privacy on the Facebook. In G. Danezis & P. Golle (Eds.), *Privacy Enhancing Technologies* (Vol. 4258, pp. 36-58): Springer Berlin / Heidelberg.
- Bart, Y., Shankar, V., Sultan, F., & Urban, G. L. (2005). Are the Drivers and Role of Online Trust the Same for All Web Sites and Consumers? A Large-Scale Exploratory Empirical Study. [Article]. *Journal of Marketing*, 69(4), 133-152. doi: 10.1509/jmkg.2005.69.4.133
- Bélanger, F., Hiller, J. S., & Smith, W. J. (2002). Trustworthiness in electronic commerce: The role of privacy, security, and site attributes. *Journal of Strategic Information Systems*, 11(3), 245-270.
- Cameron, T. A., & James, M. D. (1987). Estimating willingness to pay from survey Data: An alternative pre-test market evaluation procedure. [Article]. *Journal of Marketing Research*, 24(4), 389-395.
- Carli, L. L., Ganley, R., & Pierce-Otay, A. (1991). Similarity and Satisfaction in Roommate Relationships. *Personality and Social Psychology Bulletin*, 17(4), 419-426. doi: 10.1177/0146167291174010
- Childers, T. L., & Rao, A. R. (1992). The Influence of Familial and Peer-Based Reference Groups on Consumer Decisions. *Journal of Consumer Research*, 19(2), 198-211.
- Cialdini, R. B., & Goldstein, N. J. (2004). Social Influence: Compliance and Conformity. [Article]. *Annual Review of Psychology*, 55(1), 591-621. doi: 10.1146/annurev.psych.55.090902.142015
- Croson, R., Handy, F., & Shang, J. (2009). Keeping Up with the Joneses: The Relationship between Norms, Social Information and Subsequent Charitable Giving. *Nonprofit Management and Leadership*, 19(4), 467-489. doi: citeulike-article-id:6352972
- Culnan, M. J., & Armstrong, P. K. (1999). Information privacy concerns, procedural fairness, and impersonal trust: An empirical investigation. [Article]. *Organization Science*, 10(1), 104-115.
- DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. [Article]. *Journal of Management Information Systems*, 19(4), 9-30.
- Dholakia, U. M., & Simonson, I. (2005). The Effect of Explicit Reference Points on Consumer Choice and Online Bidding Behavior. *Marketing Science*, 24(2), 206-217.
- Duan, W., Gu, B., & Whinston, A. B. (2009). Informational cascades and software adoption on the internet: An empirical investigation. [Article]. *MIS Quarterly*, 33(1), 23-48.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7(2), 117-140.
- Gautier, P. A., & Klaauw, B. v. d. (2010). Selection in a field experiment with voluntary participation. *Journal of Applied Econometrics*, n/a-n/a. doi: 10.1002/jae.1184
- Gneezy, A., Gneezy, U., Nelson, L. D., & Brown, A. (2010). Shared Social Responsibility: A Field Experiment in Pay-What-You-Want Pricing and Charitable Giving. *Science*, 329(5989), 325-327. doi: 10.1126/science.1186744
- Goldstein, N. J., Cialdini, R. B., & Griskevicius, V. (2008). A Room with a Viewpoint: Using Social Norms to Motivate Environmental Conservation in Hotels. [Article]. *Journal of Consumer Research*, 35(3), 472-482.
- Hogg, M. A., & Reid, S. A. (2006). Social Identity, Self-Categorization, and the Communication of Group Norms. *Communication Theory*, 16(1), 7-30. doi: 10.1111/j.1468-2885.2006.00003.x

- Homburg, C., Koschate, N., & Hoyer, W. D. (2005). Do satisfied customers really pay more? A study of the relationship between customer satisfaction and willingness to pay. [Article]. *Journal of Marketing*, 69(2), 84-96.
- Hughes, N. (2011). iOS App Store downloads grow 61%, average app price up 14%. *Apple Insider*. Retrieved from iOS App Store downloads grow 61%, average app price up 14% website: http://www.appleinsider.com/articles/11/07/11/ios_app_store_downloads_grow_61_average_app_price_up_14.html
- Hui, K. L., Teo, H. H., & Lee, S. Y. T. (2007). The value of privacy assurance: An exploratory field experiment. *MIS Quarterly*, 31(1), 19-33.
- Johnson, B. (2011). Researcher: iPhone location data already used by cops. *Bloomberg Businessweek*. Retrieved from http://www.businessweek.com/technology/content/apr2011/tc20110421_195911.htm
- Keith, M. J., Babb, J. S., Furner, C. P., & Abdullat, A. (2010). *Privacy Assurance and Network Effects in the Adoption of Location-Based Services: An iPhone Experiment*. Paper presented at the Proceedings of the International Conference on Information Systems (ICIS '10), St. Louis, MI.
- Kim, J.-Y., Natter, M., & Spann, M. (2009). Pay What You Want: A New Participative Pricing Mechanism. [Article]. *Journal of Marketing*, 73(1), 44-58. doi: 10.1509/jmkg.73.1.44
- Laufer, R. S., & Wolfe, M. (1977). Privacy as a Concept and a Social Issue: Multidimensional Developmental Theory. [Article]. *Journal of Social Issues*, 33(3), 22-42.
- Mai, B., Menon, N. M., & Sarkar, S. (2010). No Free Lunch: Price Premium for Privacy Seal-Bearing Vendors. [Article]. *Journal of Management Information Systems*, 27(2), 189-212. doi: 10.2753/mis0742-1222270206
- Malhotra, N. K., Kim, S. S., & Agarwal, J. (2004). Internet users' information privacy concerns (IUIPC): The construct, the scale, and a causal model. *Information Systems Research*, 15(4), 336-355.
- Mazumdar, T., Raj, S. P., & Sinha, I. (2005). Reference Price Research: Review and Propositions. [Article]. *Journal of Marketing*, 69(4), 84-102. doi: 10.1509/jmkg.2005.69.4.84
- McKnight, D. H., Choudhury, V., & Kacmar, C. (2002). Developing and validating trust measures for e-commerce: An integrative typology. [Review]. *Information Systems Research*, 13(3), 334-359.
- Mezias, S. J., Chen, Y.-R., & Murphy, P. R. (2002). Aspiration-Level Adaptation in an American Financial Services Organization: A Field Study. *Management Science*, 48(10), 1285-1300.
- Miniard, P. W., & Cohen, J. B. (1983). Modeling Personal and Normative Influences on Behavior. *Journal of Consumer Research*, 10(2), 169-180.
- Okun, M. A., Karoly, P., & Lutz, R. (2002). Clarifying the contribution of subjective norm to predicting leisure-time exercise. *American Journal of Health Behavior*, 26(4), 296-305.
- Osterhus, T. L. (1997). Pro-Social Consumer Influence Strategies: When and How Do They Work? *The Journal of Marketing*, 61(4), 16-29.
- Parasuraman, A., & Grewal, D. (2000). The Impact of Technology on the Quality-Value-Loyalty Chain: A Research Agenda. *Journal of the Academy of Marketing Science*, 28(1), 168-174. doi: 10.1177/0092070300281015
- Rainie, L. (2010). Internet, broadband, and cell phone statistics *Pew Research Center: Pew Internet & American Life Project*.
- Security, L. M. (2011). App genome report. *App Genome Report - February 2011* Retrieved February 22, 2011, from <https://www.mylookout.com/appgenome>
- Sheng, H., Nah, F. F. H., & Siau, K. (2008). An experimental study on ubiquitous commerce adoption: Impact of personalization and privacy concerns. [Proceedings Paper].

-
- Journal of the Association for Information Systems*, 9(6), 344-377.
- Strom, S. (2010). Pay-What-You-Want Has Patrons Perplexed. *The New York Times*. Retrieved from Another Restaurant Tries Pay-What-You-Want website: <http://www.nytimes.com/2010/05/21/us/21free.html>
- Suedfeld, P., Bochner, S., & Matas, C. (1971). Petitioner's Attire and Petition Signing by Peace Demonstrators: A Field Experiment. *Journal of Applied Social Psychology*, 1(3), 278-283. doi: 10.1111/j.1559-1816.1971.tb00366.x
- Urban, G. L., Amyx, C., & Lorenzon, A. (2009). Online Trust: State of the Art, New Frontiers, and Research Potential. *Journal of Interactive Marketing*, 23(2), 179-190. doi: 10.1016/j.intmar.2009.03.001
- Vance, A., Elie-Dit-Cosaque, C., & Straub, D. W. (2008). Examining trust in information technology artifacts: The effects of system quality and culture. [Article]. *Journal of Management Information Systems*, 24(4), 73-100. doi: 10.2753/mis0742-1222240403
- Walters, S. T., & Neighbors, C. (2005). Feedback interventions for college alcohol misuse: What, why and for whom? *Addictive Behaviors*, 30(6), 1168-1182. doi: 10.1016/j.addbeh.2004.12.005
- Weber, J. M., Kopelman, S., & Messick, D. M. (2004). A Conceptual Review of Decision Making in Social Dilemmas: Applying a Logic of Appropriateness. *Personality and Social Psychology Review*, 8(3), 281-307. doi: 10.1207/s15327957pspr0803_4
- Xu, H., Teo, H. H., Tan, B. C. Y., & Agarwal, R. (2010). The role of push-pull technology in privacy calculus: The case of location-based services. [Article]. *Journal of Management Information Systems*, 26(3), 135-173. doi: 10.2753/mis0742-1222260305
- Zhu, F., & Zhang, X. (2010). Impact of Online Consumer Reviews on Sales: The Moderating Role of Product and Consumer Characteristics. [Article]. *Journal of Marketing*, 74(2), 133-148. doi: 10.1509/jmkg.74.2.133

Appendices and Annexures

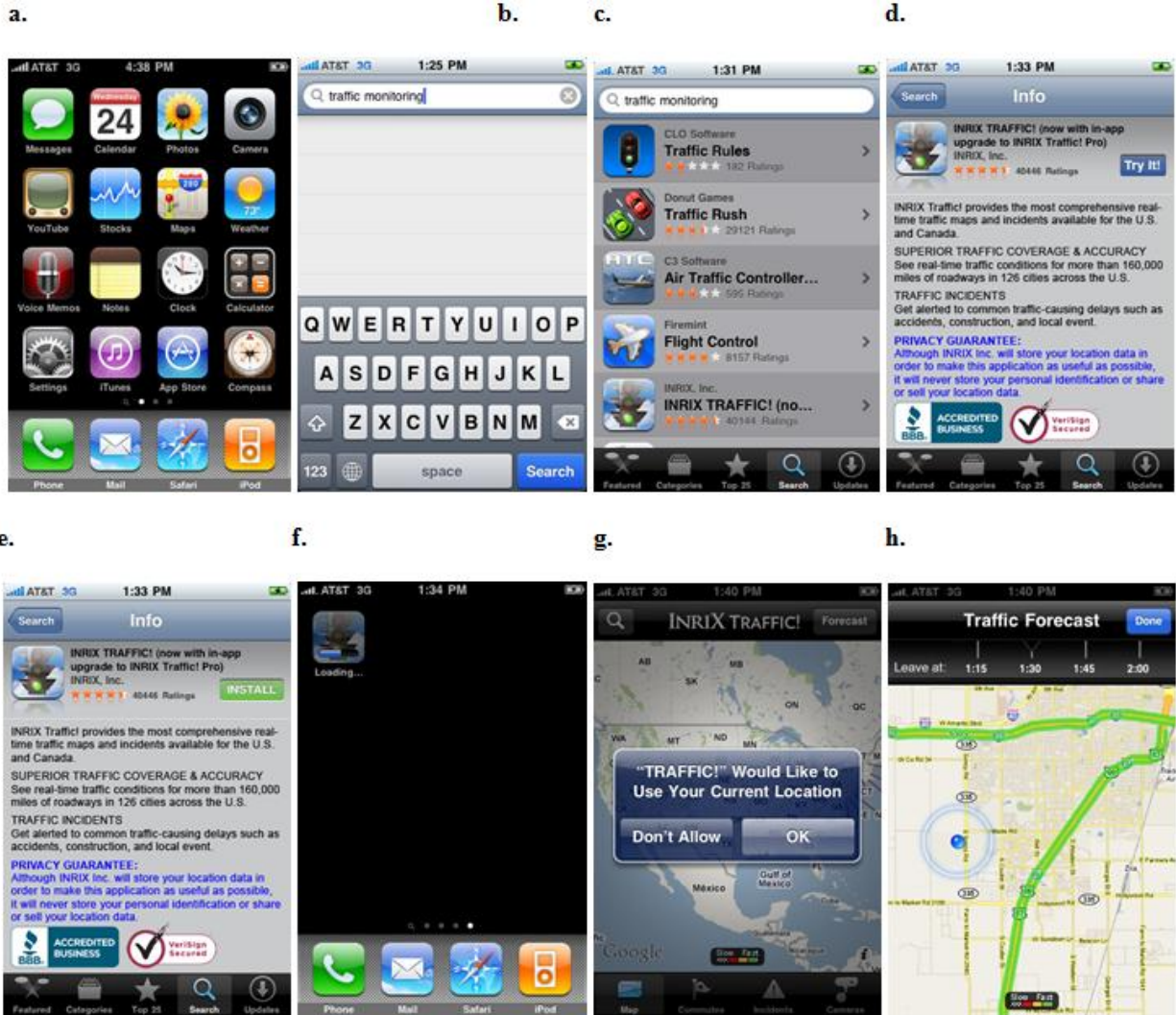


Figure 2: Simulation Example with Strong Privacy Assurance (for one of the four apps)

Table 3: Between-Subject Effects for Intent and WTPP

| Source | Dependent | Type III SS | Mean Square | F | Sig. |
|---|-----------|-------------|-------------|--------|------|
| Corrected Model | INTENT | 664.66 | 51.13 | 26.37 | .000 |
| | WTPP | 413.90 | 31.84 | 5.71 | .000 |
| Intercept | INTENT | 58.64 | 58.64 | 30.24 | .000 |
| | WTPP | 60.57 | 60.57 | 10.86 | .001 |
| Social Information | INTENT | 52.30 | 21.30 | 13.67 | .024 |
| | WTPP | 46.61 | 21.61 | 11.29 | .043 |
| Reference price | INTENT | .01 | .01 | .01 | .930 |
| | WTPP | .05 | .05 | .01 | .925 |
| Privacy Assurance | INTENT | 54.71 | 27.36 | 14.11 | .000 |
| | WTPP | 43.93 | 21.96 | 3.94 | .020 |
| Social Information * Reference price | INTENT | .46 | .46 | .24 | .625 |
| | WTPP | 23.52 | 15.52 | .09 | .042 |
| Social Information * Privacy | INTENT | .94 | .47 | .24 | .786 |
| | WTPP | 5.04 | 2.52 | .45 | .637 |
| Control Variables | | | | | |
| Self-Efficacy | INTENT | 10.10 | 10.10 | 5.21 | .023 |
| | WTPP | 65.05 | 65.05 | 11.66 | .001 |
| App Quality | INTENT | 556.34 | 556.34 | 286.91 | .000 |
| | WTPP | 240.73 | 240.73 | 43.14 | .000 |
| Context | INTENT | 13.72 | 13.72 | 7.07 | .008 |
| | WTPP | 11.88 | 11.88 | 2.13 | .145 |
| Gender | INTENT | .69 | .69 | .36 | .551 |
| | WTPP | 10.27 | 10.27 | 1.84 | .175 |
| Age | INTENT | .34 | .34 | .17 | .678 |
| | WTPP | 62.90 | 62.90 | 11.27 | .001 |
| Social Information * Gender | INTENT | .31 | .31 | .16 | .689 |
| | WTPP | .00 | .00 | .00 | .986 |

Adjusted R² for INTENT = .23

Adjusted R² for WTPP = .152