

THE MALLEABILITY OF CONSUMER BEHAVIOR – EXPERIMENTAL STUDIES OF PRESENTATION FORMATS ON CONSUMER CHOICE AND PERCEPTION

A DOCTORAL DISSERTATION

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ABSTRACT

THE MALLEABILITY OF CONSUMER BEHAVIOR – EXPERIMENTAL STUDIES OF PRESENTATION FORMATS ON CONSUMER CHOICE AND PERCEPTION

One of the significant contributions to the field of behavioral decision research stems from the notion of constructed preferences - a conception that consumer preferences are not well defined, but formulated in the process of making a choice. This constructive perspective suggests that different contexts and tasks can highlight different characteristic of an option, instigating consumers to deliberate on different considerations that lead to seemingly inconsistent decisions (Bettman, Luce and Payne, 1998). With the Internet revolution, the new epoch in which the online environment is gradually assimilated into our everyday lives has seen a spawn of novel factors that will contribute to the diversity of behavioral contexts. Specifically, we delve into how presentation formats, facilitated with the advancement of technology, are adept in stimulating various circumstances for consumer behavior.

Opting-in and Opting-out – Does it really matter?

The first paper looks into the solicitation process of consumers' consent in a web site context – should consumers be requested to explicitly disapprove the use of their personal data (opt-out), or to acknowledge and permit the use of such data (opt-in)? Although these two actions may serve the same functional purpose (i.e., grant approval to the use of the supplied information), various regulatory and industry bodies have exhibited opposing attitudes towards them. We illustrate how different permutation of frames and default preferences can affect the level of consumer participation and investigate the moderating role of privacy concern on these corollaries.

To Animate or Not to Animate: Does it depend on the Product Category?

The second paper explores the phenomenon of increasing amount of animated content on the World Wide Web. Animated content is usually invisible to search engine spiders and may be inaccessible to the less technology-savvy users who are not equipped with the necessary software such as Flash™ plug-in. Additionally, the development costs of animated Web sites are considerably greater, commanding almost twice as much the price to develop static Web sites. Do these elevated prices or the negative tradeoffs merit the benefits that animation has to offer? How does the notion of animation affect consumers' preferences and perceptions? In this paper, we delve into the above research questions by justifying the potential repercussions of animation. We examine the effects animation has on recall of product information. We further investigate if animation induces differences in perceptions and attitudes across hedonic and utilitarian product categories.

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AN INTRODUCTION: MANIPULATING CONSUMER BEHAVIOR

Consumer behavior comprises an extent of activities, from pre-purchase deliberation to post-purchase evaluation, and from continued consumption to discontinuance. It is frequently conceptualized as a cognitive process - a sequence of deliberation, evaluation and decision. The process commences with the awareness of a want or a need, through the search and evaluation of potential solutions of satisfying it before the actual purchase itself, consequently leading to the evaluation of the purchase which influences the probability of repurchase (Alba et al. 1991).

In particular, we look at the information processing and decisional activities of consumer behavior that are deemed to shape the overt characteristics of choice. The study investigates the different types of stimuli from the environment that establish inputs into these procedures, maneuvering the consumer's association of this information with existing ideas and memories, accordingly generating outputs such as beliefs and attitudes that mold decisions as well as intentions which predispose the consumer to activate them through actions of purchase and consumption.

According to the classical theory of preferences, each individual is assumed to possess a well-defined preference order or utility function. With such apparent and constant preferences, an individual is further assumed to maintain these characteristics across normatively equivalent techniques of evaluating preferences and across logically similar methods of options presentations. As the studies in the field of decision-making evolve, more contemporary analyses indicated that these preceding assumptions may not always be factual. Generally, people are inclined not to have well-articulated values and preferences. Decision-making is often a complex and tedious affair because people are usually unknowledgeable about calculating attribute tradeoffs, anticipating pleasure or pain for future consequences, or simply knowing what is best for them (Goldstein, 1990; Kahneman & Snell, 1990). Preferences are not merely revealed, but constructed at the point of elicitation. The process of preference construction has been observed to be remarkably sensitive to several facets of a decision conundrum. The basic concept underlying a constructive view of choice is that consumers may not possess perfect rules or heuristics stored in memory to make a choice. Instead, consumers may have only fragments or elements of heuristics in memory, which are put together during the actual choice process to develop a heuristic.

With the Internet revolution, the new epoch in which the online environment is gradually assimilated into our everyday lives has seen a spawn of novel factors that will contribute to the diversity of behavioral contexts. Despite the maturity of the literature that consider consumer behavior and the role of the Internet, very little research has been undertaken to amalgamate these two themes. As the Internet

becomes increasingly pervasive, directing to the escalating volume of e-commerce, it is observed that the advent of technologies and the World Wide Web has formed an essential platform for consumer activities. For this study, we delve into how presentation formats, facilitated with the advancement of technology, are adept in stimulating various circumstances for consumer behavior. Our primary purpose is to bring together key insights underline new theoretical contributions to the domains of consumer behavior and Internet, as well as highlight further research opportunities.

The first paper looks into the solicitation process of consumers' consent in a web site context – should consumers be requested to explicitly disapprove the use of their personal data (opt-out), or to acknowledge and permit the use of such data (opt-in)? Although these two actions may serve the same functional purpose (i.e., grant approval to the use of the supplied information), various regulatory and industry bodies have exhibited opposing attitudes towards them. We illustrate how different permutation of frames and default preferences can affect the level of consumer participation and investigate the moderating role of privacy concern on these corollaries.

The second paper explores the phenomenon of increasing amount of animated content on the World Wide Web. Animated content is usually invisible to search engine spiders and may be inaccessible to the less technology-savvy users who are not equipped with the necessary software such as Flash™ plug-in. Additionally, the development costs of animated Web sites are considerably greater, commanding almost twice as much the price to develop static Web sites. Do these elevated prices or the negative tradeoffs merit the benefits that animation has to offer? How does the notion of animation affect consumers' preferences and perceptions? In this paper, we delve into the above research questions by justifying the potential repercussions of animation. We examine the effects animation has on recall of product information. We further investigate if animation induces differences in perceptions and attitudes across hedonic and utilitarian product categories.

The results from our studies contribute primarily to the consumer behavior literature as well as to the domain of web design strategies. They underline the critical role of information technology and how its increasingly ubiquitous nature has yielded various impacts on consumers' choice and perceptions. In particular, the first paper demonstrates that consumer decision-making heuristics remain enduring in the online context. Even with the increased exposure to registration procedures in the light of escalating e-commerce, consumers remained susceptible to different heuristics in the decision-making process. Additionally, the study expands our understanding of how different privacy segments behave pertaining

to their personal information. It helps develop richer and more complete comprehension of the information-processing and choice heuristics of these varied demographics.

The second research integrates theories within the domain of consumer psychology with research on contemporary technologies such as animation. This serves as one of the first attempts in amalgamating the disparity between animation and the consumer aspects of hedonism and utilitarianism, amongst the traditional studies on the former which usually delves into the subject of banner advertisement.

Various practical insights can be harvested from our studies that may influence strategies for web-design to policy planning. They will be discussed in more detail within each of the paper. With the constant evolution of technologies, our work may serve as the foundation to observe how future advancements in computer resources may affect consumer behavior, e.g. Virtual Reality that enables more sensory stimuli. The ambiguity of whether consumers will remain steadfastly vulnerable to the effects posited by past theories or if they will similarly evolve their behavior with the rate of technology progression creates an interesting issue for future investigations.

OPTING-IN AND OPTING-OUT – DOES IT REALLY MATTER?

1. INTRODUCTION: PRIVACY CONCERN IN OPTING-IN AND OPTING-OUT

One controversial and persistent issue in the domain of information privacy pertains to the procedure of consumer preferences elicitation -- *should consumers be tasked to exercise a specific action to object to the use of their personal data ("opt-out"), or should they be requested to exercise a specific action to consent to the use of such data ("opt-in")*? The two actions essentially serve the same functional purpose in granting approval to the use of the supplied information, but the different manipulations of choice have been observed to impact the rate of participation in a variety of circumstances, from health care surveys (Bellman et al. 2001) to organ donation endorsement (Johnson and Goldstein 2003). Various regulatory and industry bodies have additionally exhibited opposing attitudes - the European Union Data Directive endorses the opt-in approach, whereas the Direct Marketing Association (DMA) recommends an opt-out procedure for consumers to remove their data from future uses. Some argued that opt-in would raise account acquisition cost and lower the profits of financial firms, possibly leading to more offers being made to uninterested or unqualified consumers (Johnson and Varghese 2002); others continue to demand for opt-in, alleging that the use of opt-out provide no privacy protection (Glasner 2002). This conundrum is amplified with the rapid infiltration of the Internet and escalating rate of electronic commerce. The diversities that are manifested with the various choice manipulations will have several repercussions in the online context where elicitations of preferences transpire frequently.

Opt-in and opt-out mechanisms can be operationalized via various permutations of question-frames ("*Please send me newsletters*") vis-à-vis ("*Please do not send me newsletters.*") and default statuses of whether the preferences have been pre-selected. These diverse combinations of frames, contexts and procedures of extracting preferences can emphasize different features of an option, consequently directing to different diagnostic cognitive considerations and systematically inconsistent decisions. The fragile process of preference construction has been observed to be remarkably dependent on several facets of a decision process since people have been demonstrated to be ill-equipped with sufficient cognitive resources in computing attribute tradeoffs, anticipating pleasure or pain for future consequences, or simply, knowing what is best for them (Goldstein, 1990; Kahneman and Snell, 1990; Slovic, Fischhoff and Lichtenstein, 1982).

Precipitated by the ubiquitous prospect theory (Kahneman and Tversky, 1979), subsequent framing studies have recognized human's susceptibility to changing reference points (e.g. Tversky and Kahneman, 1991) and influence of changes in perceived status quo (Schneider, 1992). Framing provides a context that may actuate differential encoding, resulting in both cognitive and motivational consequences. In the condition of uncertainty, consumer decision may be ambiguous, depending on whether the attention is

focused on the potential gains or losses. Indeed, we anticipate that framing questions in certain formats may unconsciously assist firms in attaining higher levels of consumer participation. Two principal frames that are usually employed for solicitation of online consumer participation are, for instance, “Please send me newsletters.” or “Please do not send me newsletters.” Although the differences between the two statements are rather trivial, it is plausible that these variations in question formats may subtly influence consumer decisions consequently.

Another operational issue involves whether the particular preference has been selected by default. It is evident that some firms check consumers’ selection as the status quo, while others leave them unchecked. Such marginal differences may represent distinctive vantage points in which consumers commence their decision-making, resultantly causing a significant impact on the level of consumer participation.

The concerns that have been articulated above is of utmost significance, especially in this epoch where policies regarding consumer privacy are often ad-hoc and imprecise. Established privacy seals such as Truste (<http://www.truste.org>) have instituted several requirements for their seal-holders, one of which necessitate for furnishing consumers with consent over how their information is utilized and shared. Nevertheless, such organizations do not specify explicit and definite rules regarding how consent will be educated. With the omission of such regulation, firms can thus utilize our results advantageously to help acquire a wider audience.

Further, with the recent massive surge in privacy apprehension (The Associated Press, 2008), it is interesting to delve into this issue with respect to the consumers’ privacy concern. Previous research has analyzed consumers’ concerns on information privacy (Smith et al. 1996; Stewart and Segars 2002) and whether these concerns can be alleviated by proper information policies or practices (Culnan 1993; Culnan and Armstrong 1999). However, the extant literature has not been particularly insightful on the design of operational procedures that impinge privacy protections. While it is commonly acknowledged that fair information practices are vital (Culnan and Bies 2003; Federal Trade Commission 1999), it is not apparent if *how* they are presented could influence consumer participation in online activities.

Clearly, the choice over opt-in and opt-out is a delicate policy decision that deserves extraordinary attention. Although the popular press has vehemently and controversially discussed this issue, little academic research has been conducted to examine the implications of adopting these procedures. According to prior studies on decision-making, we conjectured that opt-in and opt-out will initiate considerable differences in the rate of consumer participation of online activities based on the

operationalization via (1) frames (choice-frame: “Please send me newsletters.” vis-à-vis rejection-frame: “Please do not send me newsletters.” and (2) the presence and absence of default checks. Further, we anticipate the intensity of consumers’ privacy concern to serve as a boundary condition in constraining the differences in level of participation.

In this study, we conducted three online experiments to address these research questions. Our results provide prescriptive insights to firms and policy makers in devising and regulating data collection practices. We review the most optimal design (frame and default status) of mechanism that elicits higher levels of participation in each domain. Additionally, the finding -- consumer participations under opt-in and opt-out converge when privacy concern is high -- suggests that much of the debates on opt-in versus opt-out is secondary to raising the privacy concerns of consumers. Information-collecting factions can utilize the results and incorporate various design concepts that may subtly attain agreeable outcomes between the conflicting parties.

The paper is organized as follows: Section 2 discusses the relevant theories that motivate our research hypotheses. Sections 3, 4 and 5 outline the experimental designs, procedures and data analyses. Section 6 discusses the implications of our findings. Finally, Section 7 concludes the paper

2. THEORETICAL BACKGROUND AND CONCEPTUAL ANALYSIS

2.1 Framing: Choice vis-à-vis Rejection

Tversky and Kahneman (1981) theorized that framed information may be encoded as positive or negative, thus ascertaining the portion of a psychophysical value function that would fortify the perception of information worth. This concept of framing has been employed in an extensive line of decision and consumer choice research (eg: Levin and Gaeth, 1988), including the domain of permission marketing. Bellman et al. (2002) have posited that the differences in participation of health surveys materialized from framing effects highlighted in the prospect theory. Their question format manipulations – positive frame (“Notify me about more health surveys”) vis-à-vis negative frame (“Do not notify me about more health surveys”) -- were conjectured to correspond to gains and losses correspondingly. One frame would disproportionately emphasize on the gains while the other would disproportionately accentuate the losses. Loss aversion – a phenomenon of choice under both risk and uncertainty where losses loom larger than gains (Kahneman and Tversky 1984) - implies that the consumers will be more sensitized to the losses highlighted by the negative phrasing than the gains emphasized by the positive frame, thus contributing to any observed difference in participation.

This application of theory triggers skepticism as positive and negative phrasings of the question may not always correspond diametrically to gains and losses. Such aspect is especially imperative in the online context, where users are gradually turning wary and averse to unauthorized sharing of their information and potential unsolicited mail. The prospect of receiving newsletters or further information from a web site may be deemed practical to some, but useless to others. As such, the correspondence of the framing of questions according to gains and losses may be indistinct, with some segments viewing the positive phrasing as a gain, others as a loss.

The proliferation of more contemporary studies have revealed different types of framing effects with different underlying mechanisms that deviate from the *risky choice framing* introduced by Tversky and Kahneman (1981). One of the proposed forms of framing – *attribute framing* – describes an effect whereby some characteristic of an object or event serves as the focus of the framing manipulation and provides more relevant exposition in our research context. According to Levin (1987), attribute framing makes either the positive or negative outcome salient. The positive labeling of an attribute leads to an encoding of information that tends to evoke favorable associations in memory, while the negative identification of the same attribute is inclined to motivate an encoding that stirs up unfavorable associations (Levin and Gaeth 1988).

Informal illustrations of such attribute framing can be observed from early research. Height estimates are shaped by whether subjects are inquired how tall vis-à-vis how short a person is (Harris, 1973). The incidence of headaches reported was higher when subjects were asked whether they have headaches frequently rather than if they have them occasionally. This role of attentional processes in attribute framing effect is further demonstrated by Shafir (1993). According to the general principle of compatibility, the weighting of inputs is enhanced by their compatibility with the outputs. With the notion of this compatibility principle, he proposed that the positive and negative features of an option (inputs) are weighted differentially, depending on whether the options are chosen or rejected (outputs). Options' advantages provide persuasive reasons for choosing and hence, enable choices and their justification to be determined more easily. On the contrary, options' disadvantages supply instinctive motives for rejecting, thus making rejection easier to determine and justify. This insinuates that positive dimensions will be weighted more in choosing than in rejecting. Conversely, the negative dimensions will be accentuated during rejection than choice.

Applicable in this research context, we posit that the positive and negative phrasings of the question correspond with choice and rejection respectively. When the question is framed in a choice context –

“Notify me about more health surveys” – people will be more inclined to think of the positive features to justify choosing the option. Consumers will therefore be more predisposed towards considering the positive dimensions when choosing (rather than rejecting), such as receiving price discounts. In the “rejection” frame context - “Do not notify me about more health surveys” – people will be more inclined towards considering the negative aspects to rationalize rejecting the option, such as privacy invasions when there is unauthorized secondary data usage, unsolicited mail, etc.

As such, it is natural for us to expect a higher level of consumer participation when they are choosing to receive newsletters and other information, rather than rejecting whether to receive.

2.2 Defaults: To Check or not to Check?

Consumers frequently encounter a choice between preservation of the status quo or deviation from the status quo. Inconsistent with the conventional rational choice model which predicts that an individual's decision should be exclusively based upon his expected utility, extant research has demonstrated that individuals are predisposed towards overweighting the status quo. This affinity towards the status quo can be decomposed into two principal effects – an exaggerated preference for inaction and an exaggerated preference for maintaining existing state of affairs (Samuelson and Zeckhauser 1988).

The norm theory of Kahneman and Miller (1986) posits that individuals may exhibit escalated affective responses to an event if the cause of the event is abnormal. Norm theory thus predicts omission bias – an exaggerated preference for options that do not require action or atypical deed to deviate from the status quo (Spranca, Minsk and Baron 1991). Individuals may anticipate more regret if their actions actually result in negative outcomes (Kahneman and Tversky 1982), relative to a no-action condition. Therefore, they may refrain from performing actions to minimize regret in the case of a negative outcome.

The preference for maintaining existing state of affairs has been traditionally attributed to loss aversion (Kahneman, Knetsch and Thaler 1991). Choice alternatives are appraised relative to a status quo point, such that an option's disadvantages are framed as losses and its advantages as gains (Kahneman and Tversky, 1979; Tversky and Kahneman 1991). According to the loss-aversion principle, losses tend to be exaggerated relative to corresponding gains. Since the status quo option frequently performs as an ad-hoc reference point, individuals are inclined to exacerbate the potential losses from switching, relative to the prospective gains, insinuating a propensity for people to be attracted to default options in social interactions.

These two effects work in tandem to motivate an attraction towards defaults. As such, it is straightforward to expect a higher level of participation if the **checked-default** mechanism is selected as a consumer consent device in the **choice-frame** context, relative to the unchecked-default mechanism¹. Conversely, the **checked-default** mechanism will result in a lower level of participation if it is selected as a consumer consent device in the **rejection-frame** context, as compared to the unchecked-default mechanism.

Another plausible factor that may contribute to the attractiveness of default selection is the anchoring effect. Jacobowitz and Kahneman (1995) propose that an anchor may serve as a suggestion or candidate response that influences the target value under consideration. The presence of checked options may function as high anchors that influence a person's judgment, consequently motivating different outcomes from the unchecked-default condition. It is also probable for people to select default options due to cognitive or physical laziness. Since it incurs some cost for people to read, comprehend and then move away from the defaults (in our context, de-selecting the checked options), they may simply circumvent all these phases and accept the provided arrangements.

As a result, we have the following hypotheses:

H1a: In the context of choice-frame, checked-default mechanism will elicit a higher level of participation than unchecked-default mechanism.

H1b: In the context of rejection-frame, unchecked-default mechanism will elicit a higher level of participation than checked-default mechanism.

2.3 The Opt-in Mechanisms

For functional insights, it is constructive to compare within the configurations - (1) choice-frame, unchecked-default and (2) rejection-frame, checked-default - under the opt-in mechanism to assist firms which are bounded by this regulation, to attain higher levels of participation.

In the first "choice-frame, unchecked-default" combination, the function of the choice-frame tends to motivate subjects towards considering the positive aspects of the option, leading to subsequent increase in participation relative to the rejection-frame in the second combination. Since the attractiveness of defaults effect remains constant across the two opt-in mechanisms, the effect of the choice/rejection-

¹ Choice-frame depicts a sentence which has been structured such that the subject is deciding to select - "I want to receive..." vis-à-vis a Rejection-frame which depicts a sentence that is structured such that the subject is deciding to refuse - "I do not want to receive..." Checked-default denotes the initial selection of the option, whereas Unchecked-default leaves the initial state of the option unselected.

frame naturally initiates (1) “choice-frame, unchecked-default” combination as a strategy to elicit a higher level of participation, relative to (2) “rejection-frame, checked-default” combination. A summary of the above justifications is tabulated in Figure 1.

Figure 1: Comparisons of Configurations under the Opt-in Mechanism

Opt-in Mechanism	
<input type="checkbox"/> Please send me newsletters. ⇒ Choice frame: ↑ Participation ⇒ Attractiveness of Defaults - Default-Unchecked: ↓ Participation	<input checked="" type="checkbox"/> Please do not send me newsletters. ⇒ Rejection frame: ↓ Participation ⇒ Attractiveness of Defaults – Default-Checked: ↓ Participation

As such, we posit that

H2a: In the opt-in configuration, “**choice-frame and unchecked-default**” combination will elicit a higher level of participation than “**rejection-frame and checked-default**” combination.

2.4 The Opt-out Mechanisms

Correspondingly, to provide insights for firms regulated by the opt-out approach, we evaluate the differences between the two major combinations in this mechanism - (1) choice-frame, checked-default and (2) rejection-frame, unchecked-default.

Figure 2: Comparisons of Configurations under the Opt-out Mechanism

Opt-out Mechanism	
<input checked="" type="checkbox"/> Please send me newsletters. ⇒ Choice frame: ↑ Participation ⇒ Attractiveness of Defaults – Default-Checked: ↑ Participation	<input type="checkbox"/> Please do not send me newsletters. ⇒ Rejection frame: ↓ Participation ⇒ Attractiveness of Defaults – Default-Unchecked: ↑ Participation

In the context of the “choice-frame, checked-default” combination, the function of the choice-frame similarly tend to stimulate subjects to consider the positive aspects of the option. In contrast, the rejection-frame in the second permutation provokes subjects into deliberating upon the negative features of the options, consequently resulting in a relatively lower participation. Similarly, the attractiveness of defaults effect remains constant across both the opt-out mechanisms. Hence, the effect of choice/rejection-framing logically instigates (1) “choice-frame, checked-default” combination as a strategy to elicit a higher level of participation, as compared to (2) “rejection-frame, unchecked-default” combination. A summary of the above justifications is tabulated in Figure 2.

Accordingly, we posit that

H2b: In the opt-out configuration, “**choice-frame and checked-default**” combination will elicit higher level of participation than “**rejection-frame and unchecked-default**” combination.

2.5 *Opting-in vis-à-vis Opting-out*

We contrast the opt-in mechanisms with the opt-out mechanisms to assess if the latter configurations elicit a higher level of participation in reality. Each approach comprises a choice-frame and a rejection-frame, thus the framing effects of choice and rejection are less observable. Equipped with the aggregate positive impacts of attractiveness of defaults, the opt-out approach can be anticipated to garner a larger proportion of participation, relative to the opt-in approach. The latter approach is handicapped by the presence of the attractiveness of defaults which impels participation level in a negative direction. We recapitulate the validation in Figure 3 below.

Figure 3: Comparisons of Configurations under Opt-in and Opt-out Mechanisms

Opt-in Mechanism	Opt-out Mechanism
<input type="checkbox"/> Please send me newsletters. ⇒ Choice frame: ↑ Participation ⇒ Attractiveness of Defaults – Default-Unchecked: ↓ Participation	<input checked="" type="checkbox"/> Please send me newsletters. ⇒ Choice frame: ↑ Participation ⇒ Attractiveness of Defaults – Default-Checked: ↑ Participation
<input checked="" type="checkbox"/> Please do not send me newsletters. ⇒ Rejection frame: ↓ Participation ⇒ Attractiveness of Defaults – Default-Checked: ↓ Participation	<input type="checkbox"/> Please do not send me newsletters. ⇒ Rejection frame: ↓ Participation ⇒ Attractiveness of Defaults – Default-Unchecked: ↑ Participation

From the above, we conjecture the following hypothesis

H3: In eliciting consumers’ consent to online activities, the opt-out approach will result in a higher level of participation than the opt-in approach.

3. EXPERIMENT ONE


To enhance external validity and create a more realistic experimental setting, a real web site domain was registered and a corresponding site was constructed. The site content included information pertaining to an up-and-coming telecommunications firm and its products.

A total of 68 undergraduate students (mean age = 22.4, 44.1 percent female) were solicited to participate in a 30-minute experiment conducted at a computer laboratory in exchange for S\$10.00. In order to prevent any biases, the subjects were made to believe that the aim of the experiment was to assess their

impression of the web site. All subjects received instructions to browse through the target site, register for a trial membership and complete an evaluative survey (Refer Appendix A).

Figure 4a: A Screenshot of the Registration Web Page

welcome to vortex telecommunicati




Click to activate and use this control

get informed.

get updated.

get personal.



account registration

[home](#) [about us](#) [our products](#) [privacy policy](#) [feedback](#)

Get a Vortex login ID and password for exclusive Vortex membership!

Mobile Phone No.:

Login ID:
Examples: "Tom1982"

Password:
Must be six characters or more

Re-type Password:

Current Email:
Account notices and newsletters will be sent to this email address

Gender:

Date of Birth: e.g. DD-MM-YYYY

First Name: Last Name:

Occupation:

Marital Status:

Highest Education:

Employment Sector:

Country:

☐ Please send me Vortex Newsletters and news regarding membership discounts, promotions and contests.

Your submission of this form will constitute your consent to the collection and use of this information and the transfer of this information to the United States or other countries for processing and storage by Vortex and its affiliates. You also agree to receive required administrative and legal notices such as this electronically.

Both the independent variables were operationalized by altering elements on the web site and these situational manipulations were instituted in the registration page. Consistent with many e-commerce firms which elicit consumer's information, the registration site comprised two sections (Refer Figure 4a).. The first part was identical across the experimental conditions and encompassed several questions to collect basic demographic information of each individual. The experimental treatments were incorporated into the second section, where subjects were requested to submit their consent in receiving promotion, news and discounts. The subjects were randomly assigned to the conditions of a 2 (Frame: Choice or Rejection) x 2 (Checked-default or Unchecked-default) between-subjects factorial design (Refer Figure 4). Although they were instructed to sign up as a trial member, the subjects have complete discretion in deciding whether to receive the promotions, news and discounts.

Figure 4b: Subjects were assigned one of the following conditions in the registration page.

<input type="checkbox"/>	Please send me Vortex Newsletters and information.
<input type="checkbox"/>	Please do not send me Vortex Newsletters and information.
<input checked="" type="checkbox"/>	Please send me Vortex Newsletters and information.
<input checked="" type="checkbox"/>	Please do not send me Vortex Newsletters and information.

3.1 Data Analysis and Results

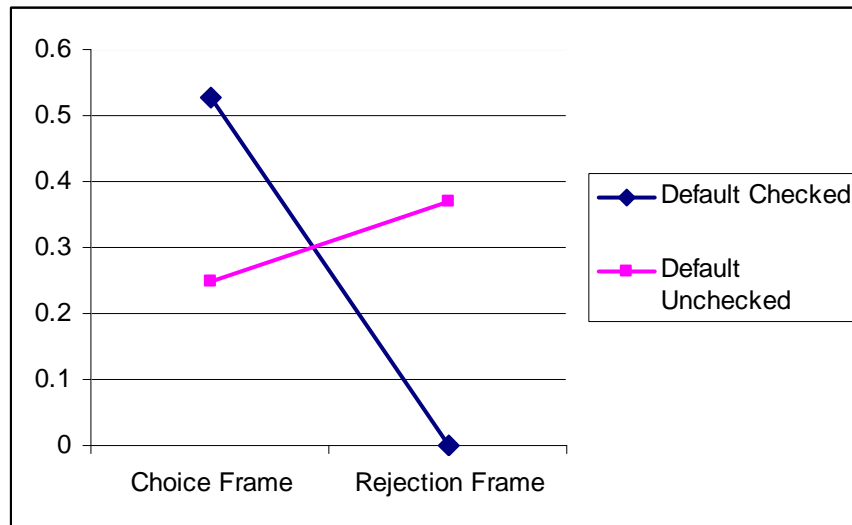
The resultant mean levels of participations of each experimental condition are reported in Table 1 below.

Table 1: Mean participation levels as a function of frames and defaults

	Choice-Frame	Rejection-frame
	(1)	(3)
Default-checked	0.526 (N=14)	0.000 (N=19)
	(2)	(4)
Default-unchecked	0.250 (N=16)	0.368 (N=19)

Analysis of variance (ANOVA) of the independent measures revealed a significant main effect of choice framing on the level of consumer participation ($F=3.662$, $p=0.060$). The analysis further illustrated a significant interaction effect between checked/unchecked-default and the question frame of choice or rejection ($F=9.148$, $p=0.004$). Figure 5 below illustrates the differences more vividly. This is coherent with Hypotheses 1a and 1b, suggesting that the interaction of choice- vis-à-vis rejection- frames and checked-default vis-à-vis unchecked-default mechanisms will contribute to the differences in consumer participation.

Figure 5: Differences in Probability of Consumer Participation under Choice vs. Rejection-Frames



Pair-wise comparisons were conducted among the four conditions (1) choice-frame, checked-default (2) choice-frame, unchecked-default (3) rejection-frame, checked-default and (4) rejection-frame, unchecked-default. Within the choice-frame context, the disparity between the two checked-default/unchecked conditions is 0.276 and marginally significant ($t=-1.702$, $p=0.098$). This indicates that on the average, checked-default mechanism in the choice-frame context elicits about 27.6% more participation proportion, relative to the unchecked-default device. Within the rejection-frame context, the difference between the two checked-default/unchecked stipulations is slightly larger at 0.368 and statistically significant ($t=3.240$, $p=0.005$). Therefore, it can be observed that the unchecked-default mechanism educes about 36.8% higher level of consumer participation, as compared to the checked-default device within the rejection-frame circumstance. The results are consistent with Hypothesis 1a and 1b.

By conducting pair-wise comparisons between (1) choice-frame, checked-default and (3) rejection-frame, checked-default as well as (2) choice-frame, unchecked-default and (4) rejection-frame, unchecked-default, we observe the grounds behind the unexpected main effect of choice-frame. In the checked-default mechanism, choice-frame garners a statistically significant 52.6% ($t=-4.472$, $p=0.000$) more participation than the rejection-frame. This is predictable because the effect of choice-frame and attractiveness of defaults jointly function in similar directions, consequently contributing and amplifying the margin between the two combinations. Figure 6a illustrates these disparate impacts more vividly.

On the contrary, in the unchecked-default context, the disparity between the two frames is less significant ($t=0.736$, $p=0.467$). The direction of effect of choice-frame is opposed by the direction of the impacts triggered by defaults attractiveness, subsequently resulting in a less observable and diminished diversity

(Refer Figure 6b). As such, we can observe the augmented disparity between the choice and rejection-frames under the checked-default mechanism, as compared to the context of the unchecked-default mechanism.

Figure 6a: Comparisons of Configurations under Checked-default Mechanism

<input checked="" type="checkbox"/> Please do not send me newsletters. \Rightarrow Rejection frame: \downarrow Participation \Rightarrow Attractiveness of Defaults – Default-Checked: \downarrow Participation	<input checked="" type="checkbox"/> Please send me newsletters. \Rightarrow Choice frame: \uparrow Participation \Rightarrow Attractiveness of Defaults – Default-Checked: \uparrow Participation
--	--

Figure 6b: Comparisons of Configurations under Unchecked-default Mechanism

<input type="checkbox"/> Please send me newsletters. \Rightarrow Choice frame: \uparrow Participation \Rightarrow Attractiveness of Defaults – Default-Unchecked: \downarrow Participation	<input type="checkbox"/> Please do not send me newsletters. \Rightarrow Rejection frame: \downarrow Participation \Rightarrow Attractiveness of Defaults – Default-Unchecked: \uparrow Participation
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We further evaluate the conditions (2) choice-frame, unchecked-default and (3) rejection-frame, checked-default. Notice the two combinations of conditions adhere to the opt-in approach advocated by the European Union Data Directive. The difference is 0.250 and statistically significant ($t=2.236$, $p=0.041$). This outcome is coherent with Hypothesis 2a. The result may facilitate firms, which are bounded by the opt-in rules, in obtaining a higher level of participation. On the other hand, evaluation of conditions (1) choice-frame, checked-default and (4) rejection-frame, unchecked-default (both adhering to the opt-out approach) yields a difference of 0.158 which is not statistically significant ($t=-0.965$, $p=0.341$). Hypothesis 2b is hence not supported.

Hypothesis 3 posits that the opt-out approach will result in a higher level of participation than the opt-in approach in eliciting consumers' consent to online activities. We conduct pair-wise comparison between the aggregate of the two mechanisms under opt-in approach and that of the two mechanisms under the opt-out approach. The difference between both opt-in and opt-out procedures is statistically significant ($t=3.041$, $p=0.003$). This indicates that, on average, the opt-out configurations garner about 31.4% higher level of participation relative to the opt-in configurations. Therefore, Hypothesis 3 is supported.

4. THE MODERATING EFFECT OF PRIVACY CONCERN

Moderator variables will affect the differential abilities of each preference elicitation option. In the age of escalating information exchange, privacy concern is an inherent candidate to investigate the malleability

of the framing and default status effects on consumer participation, especially in the online context where such elicitations are rampant and privacy persists as a critical quandary.

The tendency for people to follow default suggestions may relate to the subjective importance of, or the exposure to the associated task. Connolly et al. (2002) suggest that prior outcomes could influence the actions performed by a person. Specifically, they posit that negative prior outcomes may induce a tendency of people to act and convert an action into a “normal” state (cf. abnormal, as originally posited by the norm theory). When the prior outcome is negative, people may regret more if they do not take actions to prevent further losses should the same negative outcome reappears.² In contrast, if they did act to prevent the potential losses, even if their actions were not effective, the regret or affective feeling may be less significant.

In the online context, negative prior outcomes are often publicized by press reports that highlight the misuse of customer data and the escalation of spam. People who are generally more concerned about privacy may tend to associate negative outcomes with participation in online activities. It is more likely for privacy-concerned consumers to study the offered options carefully, and they do not necessarily regard the default option as the “norm”.

Similarly, Wilson et al. (1996) posit that the salience of anchoring may depend on the prior knowledge of the decision maker. If a person is more certain about the implications of performing an action, the anchoring effect that is induced by a default option may be weaker (Chapman and Johnson 1994). Intuitively, if a person were apprehensive about the outcomes of an action (e.g., to opt-in or opt-out of online activities), then it is more possible for her to spend the time/cost to study the options carefully. It is also less likely for her to be biased by the default suggestions. Hence we hypothesize the following moderating effect:

H4a: The higher the privacy concern, the smaller the difference between the level of participation in online activities induced by the checked-default mechanism and the unchecked-default mechanism for the context of choice-frames.

H4b: The higher the privacy concern, the smaller the difference between the level of participation in online activities induced by the checked-default mechanism and the unchecked-default mechanism for the context of rejection- frames.

² They might then ask themselves: “why didn’t I do something to prevent this?”

The intensity of privacy concern may additionally mitigate the impact of attribute framing effects. Previous studies have revealed that topics entailing issues of strongly held attitudes or personal involvement are less vulnerable to the effects of attribute framing. People who are less predisposed to engage in effortful information processing may be more ready to rely on the positivity or negativity of the framed message to evaluate products. Marteau (1989) discovered no framing effects across a wide variety of problems pertaining to decisions on abortion. Also, Levin, Schnittjer and Thee (1988) found no disparity between one's indications of the possibility of being a cheater himself/herself but detected a difference in the conditions when the subjects were requested to rate the general incidence of cheating. In a similar vein, attribute framing effects are consistently absent when subjects were estimating their own performance by employing the diverse frames of "percentage correct" vis-à-vis "percentage wrong", but significantly salient when approximating performance of others (e.g. Snizek, Paese and Switzer, 1990). Since the issue in the research question pertains to the forays of possible unwanted intrusions into one's private space, it is instinctive to classify the high privacy concerned individuals as people who have strongly-held attitudes in the subject of opting to receive marketing emails. High privacy concerned people will be relatively more apprehensive over the infringement of their privacy rights, thereby possessing the motivation to scrutinize information more meticulously and having better estimators of their own propensity for advertising information. With a more definite and robustly held attitude towards the protection of their privacy, we will anticipate that the framed information will receive little or no weight in the judgment process, consequently resulting in negligible framing effects.

Further, studies have indicated that the quantity and quality of prior personal experiences can influence the effect of attribute framing. Hoch and Ha illustrated that the effect of subsequent attribute labeling is less salient when there is a greater number of prior personal experiences with the product (1986). Levin and Gaeth (1988) posited that the quality of personal experience will moderate the effect of information product frame. For instance, if the ground beef tastes terrible, it is doubtful that a powerful positive frame will lead to any favorable evaluation. In line with our study, high privacy concerned individuals are likely to have a more considerable number and more acute prior experiences relative to the low-privacy concerned segment, thereby mitigating any attribute framing effects.

With the impact of attribute framing being the primary factor in driving the differences in participation when comparing mechanisms within opt-in and opt-out individually (Refer Figures 1 and 2), we conceive that its effect is less salient in the segment of subjects with high privacy concern.

H5a: In the opt-in configuration: the higher the privacy concern, the smaller the difference between the level of participation induced by “**choice-frame and unchecked-default**” and the “**rejection-frame and checked-default**” mechanisms.

H5b: In the opt-out configuration: the higher the privacy concern, the smaller the difference between the level of participation induced by “**choice-frame and checked-default**” and the “**rejection-frame and unchecked-default**” mechanisms.

In studying the moderating influences of privacy concern between the opt-in and opt-out mechanisms, we can observe from Figure 3 that the major factor in initiating the difference stems from the aggregate impacts of attractiveness of defaults. As explicated earlier, the latter can be regulated by the degree of privacy concern. Consequently, we posit the following:

H6: The higher the privacy concern, the smaller the difference between the level of participation induced by opt-in and opt-out mechanisms.

4.1 Experiment Two

Experiment 2 was designed to corroborate the results of Experiment 1 and to address the moderating effects of privacy concerns on the various opt-in and opt-out mechanisms. Additionally, with the relatively small sample size involved in Experiment 1, Experiment 2 was devised to engage a larger sample size to increase the statistical power of the study. It employed a 2 (frames: choice vs. rejection) x 2 (defaults: checked vs. unchecked) x 2 (privacy concern: low vs. high) between-subjects design. More importantly, measures were additionally instituted to assess the subjective affective responses pertaining to the manipulation of choice- and rejection-frames. These manipulation-check measures, absent in Experiment 1, are essential functions to ascertain that the various frames induce dissimilar train of thoughts.

As in study 1, 120 undergraduate students (mean age = 22.8, 36.67 percent female) from the same university participated in a 30-minute experimental task in exchange for a reward of S\$10.00. Similarly, the cover story for the experiment was an assessment of the web site of a new telecommunications company and participants were instructed to browse the target site content, register for trial membership (Refer Fig. 4a) and subsequently complete an evaluative survey.

The subjects' evaluations of the company's newsletters/promotional information and their thoughts in considering the consent of participation were elicited before the inception of the evaluative survey. The subjects' evaluations of the company's newsletters/promotional information were measured by three seven-point scale items anchored by very unattractive/very attractive, very dislikeable/very likeable and very uninteresting/very interesting ($\alpha = 0.973$). The subjects were further prompted to list their thoughts when considering to consent in participation of the company's newsletters services. Refer Figure 7 for the overall flow of the experiment.

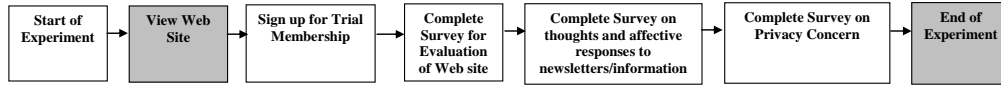


Figure 7: The flow of the experiment

The experimental procedure followed that of experiment 1 with some modifications. Firstly, as an approximate measure of one's level of privacy concern, we installed a code to track if the subjects make an effort to click on the privacy policy of the experimental web site. Additionally, after the evaluative survey of the web site, the subjects were directed to a questionnaire of 15 items, an instrument developed by Smith et al. (1996) to assess an individual's privacy concern. The questions were framed in 7-point Likert scales, ranging from "strongly disagree" to "strongly agree" (Appendix B)

4.2 Data Analysis and Results

Manipulation Checks: In appraising the subjects' evaluations of the company's newsletters and promotional information, a pair-wise analysis demonstrates that the choice-frame format is able to elicit more positive affective responses than did the rejection-frame structure ($M_{\text{rejection}}=3.150$, $M_{\text{choice}}=3.544$, $F=3.321$, $p=0.071$). These lower-than-median values insinuate that the subjects are generally somewhat etched at the lower continuum, with inclination towards negative aspects of newsletters, suggesting a general negativity bias. To provide further insight, analyses of listed thoughts were conducted, involving three independent coders who were unaware of the purpose of the research. Fundamentally, their task is to independently identify and code favorable thoughts towards the firm's newsletters and promotional information. The intercoder agreement on the individual count of positive thoughts is 91%. Predictably, the results illustrate that the choice-frame is able to elicit a higher proportion of favorable thoughts pertaining to receiving newsletters and promotional information, as compared to the rejection-frame ($M_{\text{rejection}}=0.300$, $M_{\text{choice}}=0.483$, $F=3.767$, $p=0.055$).

Opt-in vs. Opt-out – Frames and Defaults: The resultant mean levels of participations of each experimental condition are described in Table 2 below.

Table 2: Mean participation levels as a function of frames and defaults

	Choice-Frame	Rejection-frame
Default-checked	0.400 (N=30)	0.000 (N=30)
Default-unchecked	0.167 (N=30)	0.267 (N=30)

Consistent with the previous study, an ANOVA of independent variables yields a significant main effect of choice-frame ($F=4.544$, $p=0.035$) and a significant interaction effect between the presence of checked-/unchecked defaults and choice-/rejection-frames ($F=12.621$, $p=0.001$). Pair-wise comparisons between the four conditions further replicate the results in experiment 1.

In the choice-frame context, the checked-default mechanism extracts 23.3% more participation than the unchecked-default configuration ($t=-2.041$, $p=0.046$). In contrast, the unchecked-default device educes 26.7% higher level of participation than its checked-default counterpart ($t=3.247$, $p=0.003$) in the rejection-frame milieu. These results are consistent with Hypotheses 1a and 1b.

Consistent with Hypothesis 2a, the configuration of “choice-frame, unchecked-default” elicits 16.7% more participation than the configuration of “rejection-frame, checked-default” in the opt-in context ($t=-2.408$, $p=0.023$). Conversely, analyses of the opt-out mechanisms – “choice-frame, checked-default” vis-à-vis “rejection-frame, unchecked-default” – spawn a difference of 0.133 which is not statistically significant ($t=-1.088$, $p=0.281$). Again, Hypothesis 2b is not supported.

Comparing the aggregate mechanisms under the opt-in approach vis-à-vis the opt-out approach, the analyses reveal a difference of 0.250 which is statistically significant ($t=3.514$, $p=0.001$). Similarly, this result corroborates the support for Hypothesis 3 in the previous study.

The Moderating Influence of Privacy Concern: We separate the pool of subjects into segments of high and low privacy concerns via two approaches. The first method comprised of responses to the Smith’s et al privacy concern instrument ($\alpha=0.803$) which were averaged to generate an overall privacy concern score for each subject. Using the median score as a cutoff, we segregate the subjects into two groups, one with high privacy concerns and the other with low privacy concerns. It has been observed that existing privacy research lacks empirical observation of consumers’ behavioral responses in real online settings. Past privacy studies have mostly employed surveys, similar to Smith’s instrument mentioned above,

wherein consumers were asked to respond to hypothetical scenarios. By the approach of directly prompting consumers with questions about privacy, it may lead to biased responses: People may inflate their concerns and emphasize protective measures if they are asked to provide “cheap” opinions (Harper and Singleton 2001). Thus, these opinions may not reflect their true attitude toward information privacy. Therefore, our second method in measuring privacy concern attempts to eliminate this blemish by designating the segment of high privacy concerned subjects as the ones who have clicked to read the web site’s privacy policy, and the segment of low privacy concerned subjects as those who pay no heed to the existence of the site’s privacy policy.

Table 3a: Comparison of Choice-Framed Mechanisms with Privacy Measures as Moderating Variables

High Privacy Concern (Open Privacy Policy)				Low Privacy Concern (Did Not Open Privacy Policy)			
	N	Mean (Standard Error)	Mean difference between 2 groups		N	Mean (Standard Error)	Mean difference between 2 groups
Default- Unchecked	8	0.50 (0.189)	0.214 (0.266)	Default- Unchecked	22	0.05 (0.045)	-0.389 (0.115) ***
Default Checked	7	0.29 (0.184)		Default Checked	23	0.43 (0.106)	
High Privacy Concern (Higher than Median Privacy Concern)				Low Privacy Concern (Lower than Median Privacy Concern)			
	N	Mean (Standard Error)	Mean difference between 2 groups		N	Mean (Standard Error)	Mean difference between 2 groups
Default- Unchecked	20	0.10 (0.069)	-0.076 (0.115)	Default- Unchecked	10	0.30 (0.153)	-0.392 (0.203) *
Default Checked	17	0.18 (0.095)		Default Checked	13	0.69 (0.133)	

*** Significant for p < 0.01 ** Significant for p < 0.05 * Significant for p < 0.10

*** Significant for $p < 0.01$ ** Significant for $p < 0.05$ * Significant for $p < 0.10$

Table 3b: Comparison of Rejection-Framed Mechanisms with Privacy Measures as Moderating Variable

High Privacy Concern (Open Privacy Policy)				Low Privacy Concern (Did Not Open Privacy Policy)			
	N	Mean (Standard Error)	Mean difference between 2 groups		N	Mean (Standard Error)	Mean difference between 2 groups
Default- Unchecked	4	0.00 (0.000)	N.A.	Default- Unchecked	26	0.31 (0.092)	0.308 (0.092) ***
Default Checked	5	0.00 (0.000)		Default Checked	25	0.00 (0.000)	
High Privacy Concern (Higher than Median Privacy Concern)				Low Privacy Concern (Lower than Median Privacy Concern)			
	N	Mean (Standard Error)	Mean difference between 2 groups		N	Mean (Standard Error)	Mean difference between 2 groups
Default- Unchecked	13	0.15 (0.104)	0.154 (0.104)	Default- Unchecked	17	0.35 (0.119)	0.353 (0.119) ***
Default Checked	17	0.00 (0.000)		Default Checked	13	0.00 (0.000)	

*** Significant for p < 0.01 ** Significant for p < 0.05 * Significant for p < 0.10

*** Significant for $p < 0.01$ ** Significant for $p < 0.05$ * Significant for $p < 0.10$

The results of the moderating effect of privacy concerns on the mechanisms within choice- and rejection-frames are summarized in Tables 3a and 3b. In the context of choice-frames, the disparity in the level of participation between the default-checked and default-unchecked conditions is somewhat narrow and not statistically significant in the segment of people who have high privacy concerns ($\mu_{\text{openprivacypolicy}}=0.214$, $p>0.1$; $\mu_{\text{higherthanmedianprivacyconcern}}=-0.076$, $p>0.1$). In contrast, for the segment that is less concerned about privacy, the differences in responses between the two mechanisms are larger and significant. ($\mu_{\text{didnotopenprivacypolicy}}=-0.389$, $p<0.01$; $\mu_{\text{lowerthanmedianprivacyconcern}}=-0.392$, $p<0.1$). The use of the distinct default-checked and default-unchecked mechanisms in the choice-frame in obtaining consumers' consent may have a strong impact on the responses of people who are less worried about privacy. For people who are aware and concerned about privacy, the two designs may not make much of a difference. H4a is supported.

Similar results can be observed for the context of rejection-frames. The difference in the level of participation between the default-checked and default-unchecked conditions is not statistically significant ($\mu_{\text{higherthanmedianprivacyconcern}}=-0.154$, $p>0.1$). In contrast, for the segment that is less concerned about privacy, the divergence in responses between the two mechanisms is larger and significant. ($\mu_{\text{didnotopenprivacypolicy}}=0.308$, $p<0.01$; $\mu_{\text{lowerthanmedianprivacyconcern}}=0.353$, $p<0.1$). H4b is supported.

Table 4a: Comparison of Opt-in Mechanisms with Privacy Measures as Moderating Variable (Hypothesis 5a)

High Privacy Concern (Open Privacy Policy)				Low Privacy Concern (Did Not Open Privacy Policy)			
	N	Mean (Standard Error)	Mean difference between 2 groups		N	Mean (Standard Error)	Mean difference between 2 groups
Rejection-frame, Check-Default	5	0.00 (0.000)	-0.500 (0.243) *	Rejection-frame, Check-Default	25	0.00 (0.000)	-0.045 (0.045)
Choice-frame, Unchecked-Default	8	0.50 (0.189)		Choice-frame, Unchecked-Default	22	0.05 (0.045)	
High Privacy Concern (Higher than Median Privacy Concern)				Low Privacy Concern (Lower than Median Privacy Concern)			
	N	Mean (Standard Error)	Mean difference between 2 groups		N	Mean (Standard Error)	Mean difference between 2 groups
Rejection-frame, Check-Default	17	0.00 (0.000)	-0.100 (0.069)	Rejection-frame, Check-Default	13	0.00 (0.000)	0.300 (0.153)*
Choice-frame, Unchecked-Default	20	0.10 (0.069)		Choice-frame, Unchecked-Default	10	0.300 (0.153)	

*** Significant for $p < 0.01$ ** Significant for $p < 0.05$ * Significant for $p < 0.10$

*** Significant for $p < 0.01$ ** Significant for $p < 0.05$ * Significant for $p < 0.10$

Table 4b: Comparison of Opt-out Mechanisms with Privacy Measures as Moderating Variable (Hypothesis 5b)

High Privacy Concern (Open Privacy Policy)				Low Privacy Concern (Did Not Open Privacy Policy)			
	N	Mean (Standard Error)	Mean difference between 2 groups		N	Mean (Standard Error)	Mean difference between 2 groups
Rejection-frame, Check-Default	4	0.00 (0.000)	-0.286 (0.184)	Rejection-frame, Check-Default	26	0.31 (0.092)	-0.127 (0.140)
Choice-frame, Unchecked-Default	7	0.29 (0.184)		Choice-frame, Unchecked-Default	23	0.43 (0.106)	
High Privacy Concern (Higher than Median Privacy Concern)				Low Privacy Concern (Lower than Median Privacy Concern)			
	N	Mean (Standard Error)	Mean difference between 2 groups		N	Mean (Standard Error)	Mean difference between 2 groups
Rejection-frame, Check-Default	13	0.15 (0.104)	-0.023 (0.142)	Rejection-frame, Check-Default	17	0.35 (0.119)	-0.339 (0.180)*
Choice-frame, Unchecked-Default	17	0.18 (0.095)		Choice-frame, Unchecked-Default	13	0.69 (0.133)	

*** Significant for p < 0.01 ** Significant for p < 0.05 * Significant for p < 0.10

*** Significant for $p < 0.01$ ** Significant for $p < 0.05$ * Significant for $p < 0.10$

In the circumstance of rejection-frames, the results are similarly in line with our conceptualization. Among the high privacy concerned subjects, the mean differences between the default-checked and default-unchecked mechanisms are slight and less significant, relative to the low privacy concerned subjects ($\mu_{\text{openprivacypolicy}}=0$, $p>0.1$; $\mu_{\text{higherthanmedianprivacyconcern}}=0.154$, $p>0.1$; $\mu_{\text{didnotopenprivacypolicy}}=-0.308$, $p<0.01$; $\mu_{\text{lowerthanmedianprivacyconcern}}=-0.353$, $p<0.01$). Hypothesis 4 is supported.

In evaluating the moderating influences of privacy concern on the mechanisms within the distinct opt-in and opt-out domains, the results are less palpable. From the results in Tables 4a and b, one can observe that the choice-framed mechanisms in both opt-in and opt-out realms were able to consistently elicit a higher level of participation relative to their rejection-framed counterparts, irrespective of the degree of privacy concern, contrary to our predictions.

One plausible exposition for this lack of moderating stimulus by privacy concern may be extracted from past research on involvement in models of persuasion within marketing and consumer literature. Some studies have illustrated that people who possess high involvement in an issue are usually susceptible to detailed processing of relevant messages (Chaiken 1980; Petty and Cacioppo 1983). These highly involved people are believed to carefully scrutinize the message content and employ their knowledge of the merits of the issue to ascertain the validity of an advocacy. During the integration of message-relevant information, negative information often receives greater weight and influence as compared to positive information (Kanouse 1984). This over-emphasis of negative information may only transpire when the

target is sufficiently affected over the message content to bother generating and integration reactions into an overall impression (Wright 1974, 1981). Negative information has been perceived to be highly informative and of high consequences, thereby drawing considerable interest from highly involved processors. Thus, it is instinctive that the population with high privacy concerns, being more highly involved in protecting their privacy, will be provoked into deliberating upon more negative evaluations when confronted with a rejection-frame as compared to the segment with low privacy concerns. The unanticipated disparities which are noted between the frames in the high privacy concerned population may emerge from the latter's exaggerated inclination in evaluating the negative attributes in receiving marketing newsletters. Another possible explanation stems from the fact that the consumers may be more assured of their privacy protection with the perusal of the privacy policy, thus enabling them to be more comfortable in consenting to receipt of newsletters and other information.

In contrast, people under the low involvement conditions tend to form attitudes on the basis of simple inferences derived from peripheral cues in the persuasion context. Being more attracted to positive extraneous cues in the context, people who are lowly involved in the issue will be less susceptible to the overweighting of negative information. Hence, the low privacy concerned subjects may possess the tendency to appraise the positive attributes of the decision, contrary to their counterparts with high privacy concerns. This effect maintains the difference in levels of participation between frames within the low privacy concerned segment.

As reflected in our analysis in Table 5, in the conditions where subjects were more concerned about privacy, the difference in responses between opt-in and opt-out was somewhat narrow and not statistically significant ($\mu_{\text{openprivacypolicy}} = -0.126$, $p > 0.1$; $\mu_{\text{higherthanmedianprivacyconcern}} = 0.133$, $p > 0.1$). By contrast, for those who were less concerned about privacy, the difference was larger and more statistically significant ($\mu_{\text{openprivacypolicy}} = 0.346$, $p < 0.01$; $\mu_{\text{higherthanmedianprivacyconcern}} = 0.370$, $p > 0.1$). These outcomes indicate that the use of opt-in and opt-out mechanisms in obtaining consumers' consent may have a robust impact on the responses of people who are less anxious about privacy. For people who are aware and concerned about privacy, the two devices may not be that dissimilar. It is interesting to note that this effect may be less salient when segmenting the sample pool via the privacy concern instrument. This may insinuate that while reading privacy policies on the web is a good indication of high privacy concern, the correctness of the privacy concern instrument may be less perceptible. Subjects may answer the questionnaire according to what they think is demanded of them, or to be perceived as being acceptable in the domain of privacy norms.

Table 5: Comparing Mean Difference between Aggregate Opt-in and Aggregate Opt-out Mechanisms

Hypothesis 6: Comparison of Opt-in & Opt-out with Privacy Measures as Moderating Variable							
High Privacy Concern (Open Privacy Policy)				Low Privacy Concern (Did Not Open Privacy Policy)			
	N	Mean (Standard Error)	Mean difference between 2 groups		N	Mean (Standard Error)	Mean difference between 2 groups
	Opt Out	11	0.18 (0.122)		Opt Out	49	0.37 (0.070)
Opt In	13	0.31 (0.133)	-0.126 (0.183)	Opt In	47	0.02 (0.021)	
High Privacy Concern (Higher than Median Privacy Concern)				Low Privacy Concern (Lower than Median Privacy Concern)			
	N	Mean (Standard Error)	Mean difference between 2 groups		N	Mean (Standard Error)	Mean difference between 2 groups
	Opt Out	30	0.17 (0.069)		Opt Out	30	0.50 (0.093)
Opt In	37	0.05 (0.038)	0.113 (0.079)	Opt In	23	0.130 (0.072)	

† Significant for $p < 0.01$ ** Significant for $p < 0.05$ * Significant for $p < 0.1$

5. OPTING-IN VIS-À-VIS OPTING-OUT: WHAT IF THERE ARE NO DEFAULTS?

There are various methods of soliciting consumer's consent on the World Wide Web. In our prior experiments, we have manifested the elicitation of consumers' consent with the presentation of checkboxes. Another variation can be implemented by using radio buttons of 'Yes' and 'No' as input formats, permitting an option with the absence of defaults. The additional condition permits us to examine the intermediate condition in which the preference for receipt of newsletters and information is independent of defaults or anchoring effects. Unlike the first two experiments whereby the opt-in and opt-out mechanisms are jointly influenced by the aggregate effects of defaults and choice-/rejection-frames, this supplementary condition allows the defaults effect to be teased away.

In contrasting the three main mechanisms of opt-out, no-defaults and opt-in, we can observe that each approach comprises a choice-frame and a rejection-frame, thus the framing effects of choice and rejection are less observable. Equipped with the aggregate positive impacts of attractiveness of defaults and the positive influence of anchors, the opt-out approach can be anticipated to garner a larger proportion of participation, relative to the opt-in and no-default approach. The opt-in approach is handicapped by the presence of the attractiveness of defaults which impels participation level in a negative direction. Additionally, the existence of negative anchors might cause one to overestimate their propensity in rejecting the option. As such, it is instinctive to conjecture that the opt-in approach will garner a smaller

proportion of participation as compared to the no-default conditions. We recapitulate the validation in Figure 8 below.

Figure 8: Comparisons of Configurations under Opt-in, No-Default and Opt-out Mechanisms

Opt-in Mechanism	
<p>Please send me newsletters. Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> ⇒ Choice frame: ↑ Participation ⇒ Attractiveness of Defaults: ↓ Participation ⇒ Anchoring Effect: ↓ Participation</p>	<p>Please do not send me newsletters. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> ⇒ Rejection frame: ↓ Participation ⇒ Attractiveness of Defaults: ↓ Participation ⇒ Anchoring Effect: ↓ Participation</p>
No-Default Mechanism	
<p>Please send me newsletters. Yes <input type="checkbox"/> No <input type="checkbox"/> ⇒ Choice frame: ↑ Participation</p>	<p>Please do not send me newsletters. Yes <input type="checkbox"/> No <input type="checkbox"/> ⇒ Rejection frame: ↓ Participation</p>
Opt-out Mechanism	
<p>Please send me newsletters. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> ⇒ Choice frame: ↑ Participation ⇒ Attractiveness of Defaults: ↑ Participation ⇒ Anchoring Effect: ↑ Participation</p>	<p>Please do not send me newsletters. Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> ⇒ Rejection frame: ↓ Participation ⇒ Attractiveness of Defaults: ↑ Participation ⇒ Anchoring Effect: ↑ Participation</p>

From the above, we conjecture the following hypothesis

H7a: In eliciting consumers' consent to online activities, the opt-out approach will result in a higher level of participation than the no-defaults approach

H7b: In eliciting consumers' consent to online activities, the no-defaults approach will result in a higher level of participation than the opt-in approach.

5.1 Experiment Three

Experiment Three was designed to achieve several aims. The first objective was to replicate our previous results to assess their robustness. The second change in our experimental setup included further treatments to examine the marginal impacts of framing and defaults. Instead of employing checkboxes as in the first two studies, we duplicate our previous question frames with the employment of radio buttons as an input form. This input configuration facilitates the presentation of both outcomes "YES" and "NO",

hence allowing subjects to be subjugated to the conditions of default-participation (opt-out mechanism), no defaults or no-participation (opt-in mechanism). These six formats replicate and extend the question formats employed in the previous studies, utilizing a factorial design that crosses choice vis-à-vis rejection frames with three different input defaults (Figure 9).

Figure 9: Subjects will be assigned one of the following conditions in the registration page.

Please send me SIQ Newsletters and information.	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
Please do not send me SIQ Newsletters and information.	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
Please send me SIQ Newsletters and information.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
Please do not send me SIQ Newsletters and information.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
Please send me SIQ Newsletters and information.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
Please do not send me SIQ Newsletters and information.	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO

Additionally, the subjects were directed to a questionnaire of 27 items, an instrument developed by Smith et al. (1996) to assess an individual's privacy concern, updated with the recent Internet Users' Information Privacy Concern Scale (Malhotra et. al. 2004). The questions were framed in 7-point Likert scales, ranging from "strongly disagree" to "strongly agree" (Appendix B).

5.2 *Experimental Stimuli and Design*

In order to emulate a more realistic circumstance whereby consumers usually encounter web registration forms when they are purchasing or attaining a product they are genuinely interested in, we utilize a different experimental task. In this experimental setting, subjects were invited to participate in an examination to analyze their Strategic Intelligence Quotient, a contemporary measure of strategic intelligence developed by Camerer and Ho (2006). The subjects voluntarily signed up to attend various sessions of the examinations conducted within computer laboratories. Unlike the previous experimental settings where the participants were tasked to complete the web registration forms as part of the experimental procedure, this task allows them to willingly complete the web registration because they were involved and interested in ascertaining the level of their Strategic Intelligence Quotient.

A total of 114 undergraduate students (mean age = 22.3 years old, 37.2 percent female) were solicited to participate in a 1 hour 30 minute experiment conducted at a computer laboratory in exchange for S\$5. All subjects were directed to a computer console and received instructions to sign up for a user identity to commence on the Strategic Intelligence Quotient test. They are reimbursed additionally according to their performances immediately after they completed the Strategic Intelligence Quotient examination. After

they received their payment, they were requested to complete the questionnaire for assessment of their privacy concern (Refer Appendix B and Appendix C)

Similar to prior experiments, both the independent variables were operationalized by altering elements on the web site and these situational manipulations were instituted in the registration page. The registration site comprised two sections. The first part was identical across the experimental conditions and encompassed several questions to collect basic demographic information of each individual. The experimental treatments were incorporated into the second section, where subjects were requested to submit their consent in receiving further news and information about Strategic Intelligence Quotient. The subjects were randomly assigned to the conditions of a 2 (Frame: Choice or Rejection) x 3 (Default-Participation (opt-out mechanism), No-Defaults or No-Participation (opt-in mechanism)) between-subjects factorial design.

5.3 Data Analysis and Results

The resultant mean levels of participations of each aggregate default-participation (opt-out mechanism), no defaults or no-participation (opt-in mechanism) experimental condition are reported in the table below.

Table 6: Mean Participation Level of Each Experimental Condition

	Choice-Frame	Rejection-Frame	Total
Opt-Out	0.44 (N=18)	0.70 (N=20)	0.58 (N=38)
No-Defaults	0.19 (N=21)	0.48 (N=21)	0.33 (N=42)
Opt-In	0.16 (N=19)	0.33 (N=15)	0.24 (N=34)

Analysis of variance (ANOVA) of the independent measures revealed a significant main effect of choice framing ($F=7.542$, $p=0.0070$) and a significant main effect of defaults ($F=4.914$, $p=0.009$) on the level of consumer participation. The interaction effect of the two independent measures is not significant ($F=0.138$, $p=0.871$). Further analyses revealed that the opt-out configurations are able to elicit 0.246 ($p=0.027$) more participation than no-defaults configurations and 0.344 ($p=0.03$) more participation than opt-in configurations. H7a is supported. No-defaults configurations elicited 0.098 more participation than opt-in configurations but the difference is not statistically significant ($p=0.350$). H7b is hence, not supported.

Table 6 also illustrates the mean levels of participation for each of the experimental condition. Contrary to previous experiments in which the opt-out approach framed in the *choice* context elicited the highest level of participation, the opt-out approach that is framed in the context of *rejection* was able to garner the highest level of participation. Also, the opt-in approach that is framed in the rejection-context is able to stimulate a higher level of participation as compared to its choice-frame complement. Indeed, in general, the rejection-frames were able to elicit a 25.9% higher level of participation relative to their corresponding choice-frames ($t=2.923$, $p=0.004$).

In looking into the disparate mechanisms, the differences between the each pair of framed conditions are less palpable. Within the opt-out approach, the rejection-framed configuration is able to elicit 0.256 more participation than the choice-framed configuration but the difference is not statistically significant ($t=1.605$, $p>0.1$). Within the opt-in approach, the rejection-framed configuration is able to elicit 0.175 more participation than the choice-framed configuration but the difference is not statistically significant ($t=1.187$, $p>0.1$). Similarly, for the no-defaults mechanism, the difference between the choice- and rejection-frames is 0.286 and not statistically significant ($t=2.011$, $p>0.1$).

To delve into this anomaly, it necessitates for investigating the principal experimental manipulation alteration – from elicitation of preferences via checkboxes to presentation of both outcomes “YES” and “NO” in radio button formats - by studying the literature of negations. It is highly possible that the change in input format might have stimulated an effect that outweighs or diminishes the impact of our initial conjecture.

The past research on the psychology of negative sentences has emphasized a central finding that negation is more difficult to comprehend than affirmation (e.g. Lea and Mulligan 2002). All things being equal, a negative sentence takes longer to process and is less accurately recalled and evaluated relative to a fixed state of affairs than the corresponding positive sentence (Clark and Chase 1972). The standard assumption by psycholinguists in the immediate post-syntactic structures era was that negatives – like interrogatives, passives and other non-kernel sentence types – are relatively difficult to produce and to comprehend because of their relative transformational complexity. The extra rules of negative placement would presumably require additional processing time. Several studies have espoused the notion that the processing of a negation is more resource demanding than processing of an affirmation. Lea and Mulligan illustrated that respondents were slower in generating deductions when a negation is present than when it is absent (2002). When requested to verify whether a given statement described a picture accurately, subjects took a longer period to affirm a negation than an affirmation (Clark and Chase 1972).

Further, it has also been demonstrated in previous studies that resources for processing these statements are usually allocated in a specific sequence. Initial resources are allocated to the processing of an affirmation. Additional available resources are used to process the negator subsequently. For instance, subjects initially concentrated their vision on the north position when they were instructed that the target was “not north” (Just and Carpenter 1976). In this context, not only are the subjects required to process the negated statements, they must allocate more resources to process the subsequent affirmation (“Yes”) or negation (“No”) to the negative statement, resulting in a resource-intensive elaboration schema. When the cognitive resources are insufficient for such resource-demanding task, it is possible that a judgment opposite to the one intended might be prompted.

“In denying a statement negatives are easier than affirmatives... It is easy to grasp that a negative denies an affirmative; but exceedingly difficult to grasp that an affirmative denies a negative” (Johnson Laird and Tridgell 1972: 90)

Accordingly, the natural function of negation as a means to signal a change in value is exercised when a statement is being contradicted, a request refused, a misconception corrected or a difference pointed out (Greene 1970). Greene’s conclusion that subjects have little difficulty with negation when it performs its natural function of denial is supported in a study by Johnson-Laird and Tridgell (1972), who illustrates that, unlike in tasks of interpretation where affirmatives prove consistently easier than negatives, negatives triumph in tasks involving the establishment of opposition. The standard and primary use of “No” is specifically to contradict or correct (Strawson 1952).

As we can observe from Figure 5, the opt-out mechanism which is framed in a rejection-context (**Please do not send me SIQ Newsletters and information.** ☐ YES ☒ NO) entails the employment of negation in establishing an affirmative towards the receipt of newsletters or information, instead of its innate role of denial. This possibly insinuates that the subjects experienced difficulty in correctly grasping the actual preference elicitation, owing to the inappropriateness of the situation (affirmation cf. denial), causing the latency for understanding the negative sentence to be correspondingly reduced. Consequently, the level of participation will be grossly inflated relative to the opt-out mechanism framed in a choice-context, as subjects are more likely to misconstrue this particular mechanism in soliciting their actual preferences.

Likewise, the opt-in mechanism framed in rejection-context (**Please do not send me SIQ Newsletters and information.** ☒ YES ☐ NO) involves the application of an affirmative in the denial of receiving newsletters or information. This might contradict the instinctive function of an affirmative in agreement, indicating that the level of participation is correspondingly exaggerated, relative to the opt-in mechanism framed in a choice-context.

The purported stimulation in the employment of “YES” and “NO” input configuration may be so salient that it is able to dominate the proposed effect of choice and rejection framing in influencing the subject’s affective and cognitive evaluation towards the receipt of newsletters and information. Even in the circumstance of No-Defaults, where the attractiveness of defaults and anchoring effects are teased away, the rejection-frame is still able to elicit a higher level of participation relative to the choice-frame, contrary to our initial predictions. We suspect the contradictory results of this experiment might be due largely to the difficulty in comprehending the ‘double negative’ questions.

A Look at the Issue of Double Negatives: To investigate this suspicion, we further conduct a final small-scaled experiment as a manipulation check for ascertaining the subjects have correctly understood their decision. Similarly, within this experimental setting, we employed the web site examination for analysis of Strategic Intelligence Quotient, as developed by Camerer and Ho (2006). The URL of the site is planted in a local forum, where members who are curious about the measure can voluntarily sign up to complete the SIQ examination. A total of 45 members (mean age = 26.4 years old, 53.3 percent female) participated in this SIQ experiment.

Figure 10a: Screenshot of registration page

MAIN	ABOUT S.I.Q	LOG OUT	CONTACT US
------	-------------	---------	------------

Registration

Important: Please read our [privacy policy](#) and our [terms and conditions](#) before signing up.

Last Name	<input type="text"/>
First Name	<input type="text"/>
Gender	Female <input type="button" value="v"/>
Age	<input type="text"/>
Highest Educational Qualification	Below High-School <input type="button" value="v"/>
Country of Residence	Australia <input type="button" value="v"/>
Occupation	Accounting/Finance <input type="button" value="v"/>
Year in Current Position	Less than 1 year <input type="button" value="v"/>
Main Responsibility in Job	Mostly Operational <input type="button" value="v"/>
Email	<input type="text"/> Account notices and newsletters will be sent to this email address.
Mobile Phone No.	<input type="text"/>

Please **DO NOT** send me newsletters and communications regarding products and services provided by SIQ™ and its affiliates. ☐ Yes ☒ No

Your submission of this form will constitute your consent to the collection and use of this information and the transfer of this information to the United States or other countries for processing and storage by the corporation and its affiliates. You also agree to receive required administrative and legal notices such as this electronically.

CONTINUE

Akin to the previous experiment, the first part of the registration site was identical across the experimental conditions and encompassed several questions to collect basic demographic information of each individual. The experimental treatments were integrated into the second segment, where participants were inquired if they wished to receive further news and information about SIQ (Refer Figure 10a). After registration, each participant was assigned a userid and password to log on to their examinations. Appending the previous experimental procedure, we included a verification query, i.e., “Have you signed up for our newsletters during registration?”, to corroborate each participant’s awareness of their communicated consent (Refer Figure 10b).

Figure 10b: Verification of participants' understanding of the solicited consent

The screenshot shows a Windows Internet Explorer browser window. The address bar displays the URL `http://128.32.75.8/signus/YourID.asp`. The browser's tab bar shows three tabs: 'Introduction', 'Gmail - Inbox (223)', and 'crunchyroll.com - Claymore'. The webpage has a blue header with a wireframe head icon and the text 'STRATEGIC INTELLIGENCE QUOTIENT'. Below the header is a navigation bar with links: 'ABOUT S.I.Q.', 'LOG OUT', and 'CONTACT US'. The main content area has a blue sidebar on the left labeled 'Assigned IDs'. The central text area displays: 'Your assigned id: lab_95', 'Your assigned password: lab_95', and a question 'Have you signed up for our newsletters during registration?' with radio buttons for 'Yes' and 'No'. A 'CONTINUE' button is located below the question.

The primary objective of this supplementary study is to delve into the purported complexity of double negatives in affecting participants' misconception of their solicited consent. We compared the responses the participants submitted during the initial registration (Refer Figure 10a) against their subsequent responses after they have been assigned their login information (Refer Figure 10b). The resultant mean levels of response mismatches of each aggregate frame contexts (choice vs. rejection) are reported in the table below.

Table 7: Mean Number of Response Mismatches of each Frame

Choice-Frame	0.00 (N=24)
Rejection-Frame	0.48 (N=21)

Further analysis illustrated that there is 0.476 ($p=0.000$) more response mismatches in the rejection-frame context than in the choice-frame. As conjectured earlier, the rejection-frame context is presumably a more

resource-intensive elaboration schema that triggers more response mismatches than the choice-frame context.

Table 8: Mean Level of Response Mismatches in Each Experimental Condition

	Choice-Frame	Rejection-Frame
Opt-Out	0.00 (N=9)	0.80 (N=10)
No-Defaults	0.00 (N=7)	0.11 (N=9)
Opt-In	0.00 (N=8)	0.50 (N=2)

From Table 8, it is interesting to note that the highest level of response mismatches stems from the opt-out mechanism which is framed in a rejection-context, a circumstance that involves the employment of negation in establishing an affirmative towards the receipt of newsletters or information. Consequently, this serves as a worthy justification to the unanticipated inflation of participation in the rejection-context relative to the choice-context in the opt-out mechanism during Experiment 3, since subjects are more likely to misconstrue this particular mechanism in soliciting their actual preferences.

Similarly, the level of response mismatches is relatively high within the opt-in mechanism framed in rejection-context. The participants may have difficulty contradicting the instinctive function of an affirmative in agreement within the rejection-context, indicating that the level of participation is correspondingly overstated, relative to the opt-in mechanism framed in a choice-context.

In addition, it might be insightful to note that with the absence of defaults, the likelihood of consumers to misconstrue the particular mechanism in soliciting their actual preference is reduced, insinuating that the elaboration of the option may be increased. For all rejection-frames, the level of response mismatches in the opt-out mechanism exceeds the no-defaults mechanism by 0.689 ($p=0.001$); the level of response mismatches in the opt-in mechanism surpasses the no-defaults mechanism by 0.389 ($p=0.237$). It will be functional for future research to delve into the domain of whether the lack of defaults may instigate participants to elaborate more upon the double negative schema.

The Moderating Influence of Privacy Concern: Similar to Experiment Two, we separate the pool of subjects into segments of high and low privacy concerns by averaging the responses to the privacy concern instrument ($\alpha=0.6$) to generate an overall privacy concern score for each subject. Using the median score as a cutoff, we segregate the subjects into two groups, one with high privacy concerns and

the other with low privacy concerns. We additionally institute a second method in measuring privacy concern by designating the segment of high privacy concerned subjects as the ones who have clicked to read the web site's privacy policy, and the segment of low privacy concerned subjects as those who pay no heed to the existence of the site's privacy policy. However, it seems that many of the subjects were too eager to start the examination and neglected to read or notice the site's privacy policy (Only 3.5% of the subjects bothered to click on the site's privacy policy). Consequently, although this might mirror the reality on the World Wide Web, this method is not conducive for our analysis purpose.

Table 9: Comparing Mean Difference between Aggregate Opt-in and Aggregate Opt-out Mechanisms Between Different Privacy Segments

High Privacy Concern (Higher than Median Privacy Concern)				Low Privacy Concern (Lower than Median Privacy Concern)			
	N	Mean (Standard Error)	Mean difference between 2 groups		N	Mean (Standard Error)	Mean difference between 2 groups
Opt Out	17	0.59 (0.507)	0.167 (0.169)	Opt Out	21	0.57(0.507)	0.571 (0.131)***
Opt In	19	0.42 (0.502)		Opt In	15	0.00 (0.000)	

*** Significant for $p < 0.01$ ** Significant for $p < 0.05$ * Significant for $p < 0.10$

Corroborating the results of Experiment Two, Table 9 illustrates that in the conditions where subjects were more concerned about privacy, the difference in responses between opt-in and opt-out was somewhat narrow and not statistically significant ($\mu=0.167$, $p>0.1$). Conversely, for those who were less concerned about privacy, the difference was larger and more statistically significant ($\mu=0.571$, $p<0.01$).

Table 10 illustrates the results in evaluating the moderating influences of privacy concern on the mechanisms within the distinct opt-in, opt-out and no-default domains. One can observe that the rejection-framed mechanisms in both opt-out ($\mu=0.436$, $p<0.1$) and no-default ($\mu=0.364$, $p<0.1$) realms were able to elicit a higher level of participation relative to their choice-framed counterparts for the low privacy-concerned segment. Specifically, we note that within the opt-out approach, the low privacy-concerned segment was able to elicit a statistically significant higher level of participation in the rejection-frame context. The high-privacy segment was unable to display any significant difference within the opt-out approach, but it is interesting to note that they might be less susceptible to the 'double-negative' errors highlighted earlier.

Table 10: Comparing Mean Difference between Individual Opt-in, Opt-out and No-Default Mechanisms Between Different Privacy Segments

Opt-In Mechanisms							
High Privacy Concern (Higher than Median Privacy Concern)				Low Privacy Concern (Lower than Median Privacy Concern)			
	N	Mean (Standard Error)	Mean difference between 2 groups		N	Mean (Standard Error)	Mean difference between 2 groups
Rejection-frame, Default-Yes	11	0.27 (0.467)	-0.352 (0.227)	Rejection-frame, Default-Yes	8	0.00 (0.000)	0.000 (0.000)
Choice-frame, Default-No	8	0.63 (0.518)		Choice-frame, Default-No	7	0.00 (0.000)	
Opt-Out Mechanisms							
High Privacy Concern (Higher than Median Privacy Concern)				Low Privacy Concern (Lower than Median Privacy Concern)			
	N	Mean (Standard Error)	Mean difference between 2 groups		N	Mean (Standard Error)	Mean difference between 2 groups
Rejection-frame, Default-No	9	0.56 (0.527)	-0.069 (0.254)	Rejection-frame, Default-No	10	0.80 (0.422)	0.436 (0.204)**
Choice-frame, Default-Yes	8	0.63 (0.518)		Choice-frame, Default-Yes	11	0.36 (0.505)	
No-Default Mechanisms							
High Privacy Concern (Higher than Median Privacy Concern)				Low Privacy Concern (Lower than Median Privacy Concern)			
	N	Mean (Standard Error)	Mean difference between 2 groups		N	Mean (Standard Error)	Mean difference between 2 groups
Rejection-frame, No Default	10	0.40 (0.516)	0.200 (0.211)	Rejection-frame, No Default	11	0.55 (0.522)	0.364 (0.199)*
Choice-frame, No Default	10	0.20 (0.422)		Choice-frame, No Default	11	0.18 (0.405)	
*** Significant for p < 0.01 ** Significant for p < 0.05 * Significant for p < 0.10							

*** Significant for $p < 0.01$ ** Significant for $p < 0.05$ * Significant for $p < 0.10$

6. DISCUSSION AND IMPLICATIONS

This paper contributes to an expansion of research domain pertaining to the capabilities of technologies in revolutionizing the commercial world, as well as the cumulative literature in relation to the constructive and erratic behavior of consumers. Particularly, we look into the fundamental principles underlying the opt-in and opt-out approaches - the different configurations of frames and preferences defaults - and their significant effects on the capture of online consumer participation. The results in both experiments yield interesting and useful implications for policy-makers concerned in facilitating the growth of electronic commerce, in addition to firms and site designers who desire to enhance their browser-to-participant conversion rate. By inducing a mere site browser to participate in its activities – such as consenting to receipt of product information and newsletters – the firm is one step closer to generating a transaction. With the absence of such parameters and guidelines pertaining to how consent can be elicited, firms can thus employ our results advantageously to help acquire a wider audience.

As discussed earlier, much controversy has been generated regarding differing government regulation in these opt-in and opt-out approaches – such as the European Union Data Directive (1995) vis-à-vis Direct Marketing Association (DMA). Directives and regulatory bodies may want to consider the insinuations gathered from our results before determining a suitable regime to adhere to. These may additionally provide insights to the choice of approval pertaining to two recent pending privacy bills introduced in the United States. The Online Personal Privacy Act (OPPA) favors consumer interests by requiring companies to obtain affirmative customer consent before sharing data. On the contrary, the Consumer Privacy Protection Act (CPPA) advocates the opt-out configuration, a scheme that will subsequently facilitate the progression of online retailing and commerce.

Even in the circumstance when one particular approach (such as the opt-in) is advocated, online firms bounded to this regulation can seek to maximize the level of participation by employing the results from this study. The “choice-frame, unchecked-default” combination may escalate the level of participation as compared to the “rejection-frame, checked-default” combination in the opt-in context. This stimulus of the choice-frame in evoking positive and favorable attitudes towards participation in online activities is even demonstrated to be resilient in the segment with high privacy concerns.

We further empirically demonstrated the malleability of the attractiveness of default status to the stimulus of privacy concern. Support for Hypothesis 4 suggests that people who are equipped with high privacy concerns are less susceptible to being appealed to the status quo, relative to the low privacy concerned segment. Additionally, this moderating effect is powerful sufficiently in initiating a diminished disparity between the aggregate opt-in and opt-out mechanisms within the high privacy concerned segment, relative to the low privacy concerned segment, as evidenced by the support of Hypothesis 6.

These results may yield interesting and useful implications for policy makers in facilitating the growth of electronic commerce. According to the Harris Equifax Interactive survey (2003), an increasing number of U.S. adults are becoming more sensitive to privacy and abuses of personal information. Given that the popular press and consumer associations regularly report incidents of privacy invasions, and that web users are gradually educated about the importance of protecting their information³, it is reasonable to expect the number of privacy fundamentalists or pragmatists to increase further in the near future. Therefore, whether a firm uses opt-in or opt-out mechanisms may not create much difference. It appears that much of the opt-in/opt-out debates between online firms or trade associations (e.g., DMA) and

³ For example, the U.S. Senate Judiciary Committee publishes a booklet entitled “*Know the Rules, Use the Tools*,” to educate the public about various computer technologies that could be used to infringe or protect online privacy.

privacy advocates may not be that important after all. Instead, government agencies may aspire to educate online users to be more aware about their consequences of their online activities or promote information about online practices and complaints.

Nevertheless, from the firm's perspective, opt-out does carry a slight advantage over opt-in because it could lead to more positive responses from unconcerned people. What should online firms do to solicit participation from consumers? Although opt-out is preferable, a uniform implementation of opt-out to all people may possibly invoke resentment from privacy advocates and damage the reputation of the firms.⁴ Hence an online firm may seek to identify the types of consumers before using any opt-in or opt-out configurations. Some means of identifying the privacy typology of consumers include the detection of the peruse of privacy statements or seals (as illustrated in our study), classification based on demographics⁵, or inspection of the browser cookies setting⁶.

The experiments display evidence that the consumer choice is susceptible to manipulations in options descriptions as well as methods for preference elicitation. Our research also generates useful implications for researchers. First, the support of the hypotheses shows that consumers do endorse recommended options. They further evaluate the dimensions of an option, established upon the particular frame at hand. This indicates that the predictions made by the contemporary decision theories continue to apply to the online context, even though it is widely acknowledged that the processing cost in the online environment is much lower (e.g., to opt-out from a web site requires only a few mouse clicks, whereas to opt-out from a physical store may require making a few phone calls or writing and posting a letter). Similar decision theories could potentially be applied to study other online settings. The underlying principles in the constructive nature of consumer behavior may further be more effortlessly maneuvered with the advent of technologies.

⁴ Another minor drawback of a uniform opt-out policy is that it increases the processing cost of privacy concerned consumers who need to spend time to clear all the default selections.

⁵ Sheehan (2002) determined the distinct demographic differences with levels of privacy concerns and ascertained that persons with higher levels of education are more apprehensive pertaining to their online privacy. Specifically, she classified the older and educated as a segment of privacy fundamentalists, the younger ones as a segment of privacy pragmatics and finally, the older and less educated as ones who are unconcerned with respect to their online privacy.

⁶ According to a report published by the Consumer WebWatch (2002), among those who are open to the use of cookie, 90% had previously provided personal information to web sites. Among those who reject cookies, only 65% had done the same. These indicate that cookie setting (which is easily detectable by a web site) may serve as an indicator of the privacy concern of consumers.

Second, our study reiterates the importance of identifying the correct category of framing effects in prediction of consumer behavior. The typology of framing effects has been efficiently elucidated by Levin et al. (1998) and the recognition of distinguishing features of various types of framing effects is crucial in preventing unnecessary digressions to explain “contradictory” outcomes as observed in prior studies regarding our sphere of research.

The finding that privacy concerns moderates individuals’ preference for status quo has crucial implications for understanding the role of loss aversion in choice. Individual-specific factors, such as the level of privacy concern, could potentially over-ride loss-aversion effects. The empirical investigation of this proposition contributes in the assessment of boundaries regarding the domain of loss aversion. If privacy concerns could influence the way people interact with different sign-up procedures, then one could also speculate that it might affect how people interpret or consider other commonly deployed “privacy solutions”, such as publishing detailed policy statements or displaying trusted third-party seals. It is important for researchers to explore the psychological state of consumers related to information privacy, and understand how consumers allocate their effort, time or attention to interact with various facilities that are post on web sites.

7. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

In interpreting the results of this study, it is important to recognize that we employed various groups of primarily undergraduate or postgraduate students whose demographics may not be representative of the general population. Another critical factor to recognize is the cultural differences and attitudes towards privacy among the countries. For instance, the notion of privacy may not be as strong enforced in China as it is in Europe. It would be useful for future research to extend our study to working adults or other segments of Internet users, as well as observe if the results are constant across the global demographics. Additionally, it will be practical to increase the current pool of subjects for future studies to reinforce the credibility of the corresponding results.

It would also be instructive for future works to consider consumer satisfaction as another dependent measure. Although opt-out (cf. opt-in) may help a firm collect more consumer data, it might arouse dissatisfactions and in the long run, hurt the reputation of the firm. It would be interesting to assess the real impacts of consent mechanisms on satisfaction.

Future works can investigate the impact of temporal factors on frames and defaults. Time constraints often serve as a critical aspect in the online context where individuals frequently complete their

registration swiftly in order to accomplish their other intentions (e.g. to participate in online games). Prior elaboration studies have illustrated that processing opportunity can influence the effectiveness of negative and positive frames, especially when the level of processing motivation is low (Shiv et al. 2004). The authors also demonstrated that when the processing motivation is high, negative framing tends to be more effective than positive framing, irrespective of the level of processing opportunity. Investigating the aspect of processing opportunity as a manifestation of time can shed some light and extend the literature in accessibility and diagnosticity of frame-related heuristics.

Loss aversion may contribute to the success of trial offers because when consumers are endowed with a particular good, their value of that good increases. Along the same line, within this research theme, individuals can be initially supplied with promotional newsletters to their electronic mailboxes before they are requested to make a decision whether to continue the receipt of such information, a ruse that is palpable on the World Wide Web today in the guise of an opt-out scheme. This is slightly altered from our experimental setups where the subjects determined their decision at the point of registration. By further examination of such presentation category, we can draw inferences on whether and how loss aversion can be evoked differentially.

8. CONCLUSION

The primary objective of this study is to tackle the contentious debate on the use of opt-in and opt-out mechanisms in collecting consumer information. In essence, we investigated the roles that opt-in and opt-out mechanisms play in affecting consumer participation through the various permutations of frames and defaults. Additionally, we corroborated the moderating role of privacy concerns in specific combinations of option description and preference elicitation method under both schemes. The controversy regarding opt-in and opt-out measures has been discussed extensively in recent years. However, research in this area is still at its infancy. This study represents one of the pioneering efforts to examine this issue.

The results reported in this paper provide an informative perspective regarding the configuration and design of web sites. Hopefully, with the aid of these results and future research findings, firms and consumers could soon agree on the best practices in obtaining consumer consent.

**TO ANIMATE OR NOT TO ANIMATE:
DOES IT DEPEND ON THE PRODUCT
CATEGORY?**

1. INTRODUCTION: THE INFILTRATION OF ANIMATION

“Animation offers a medium of story telling and visual entertainment which can bring pleasure and information to people of all ages everywhere in the world.”

---Walt Disney

Internet firms are increasingly using animations on their Web sites. Compared with static HTML pages, the cost of developing animated Web pages is often higher. For instance, in the U.S.A., the cost of developing a 60-second animated FlashTM clip is estimated to be around \$1,200-1,500, and an enhanced page with basic FlashTM accents may cost around \$150 per page. By contrast, the cost of creating a simple HTML page is merely \$60.⁷ Animated Web sites may take longer to develop - a 2-minute animation may take up to 3-4 weeks' time. More importantly, because the animated contents are often embedded as binary objects rather than HTML texts, they are often “invisible” to automated search engines or spiders, and could be inaccessible to less technology-savvy users who have not installed the necessary “viewers” or browser plug-ins (Schaller et al. 2004). Hence, the fanciful effects of animation do come with both tangible and intangible costs.

Given these potential costs, it is interesting to see animation being widely deployed in many Web sites ranging from daily necessities (e.g., tissue – <http://www.puffs.com/>) to luxury items (e.g., fashion closing – <http://www.gucci.com>). Does animation really attract consumer attention? Would it affect how consumers perceive a product, or change their attitude toward the product? Would these effects vary across products of different nature? Additionally, some companies offer a choice of two versions (basic HTML vs. animated FlashTM) of Web sites for consumers to elect from (e.g. Pizza Hut Singapore⁸). Is the investment in creation and maintenance of two separate editions of Web sites necessary? In their study of the employment of the different variations of sensory stimuli in the electronic store atmosphere, Parsons and Conroy (2006) presented a sample of online shoppers with a set of stimuli and requested their identification of preferences based on four different shopping scenarios. The results illustrated a diverse range of preferences for the visual stimuli of animation – little animation for online grocery stores, electronics store and bookstores but a great deal of animation for entertainment stores – insinuating an essential connection between the product nature and the use of animation.

In this research, we study the effects of animation from three perspectives: *recall of product information*, *perception of a product utilitarian and hedonic values*, and *attitude towards the product*. Specifically,

⁷ Please refer to <http://www.pepfx.com/web/prices.php> for the cost estimates.

⁸ <http://www.pizzahut.com.sg/index1.html>

past research on Internet marketing has suggested that animated banner advertisements may generate better recall of brand names and the embedded messages within the advertisements (Li and Bukovac 1999). One of our objectives is to examine if animation could also generate better recall of a Web site *per se*. Unlike banner advertisement which competes with the hosting site's contents for viewers' attention, the Web sites that we employed in this study were the *only* stimuli that were presented to viewers. That is, contrasting with the banner advertisements which are often not the core focus of a typical web user, the Web sites form the key platform that contains the information that is of interest to the latter. We seek to understand if animation could still enhance the contents of the Web sites to consumers when such a "competition" for attention was lacking.

We further study the interaction of animation with product nature and its effects on consumers' perception towards the product. According to the contemporary study by Parsons & Conroy (2006), sensory stimuli are found to be pertinent to the online shopping environment. In particular, their empirical study of self-reported preferences for stimuli levels and likely responses illustrated that – not only do customers display a desire for the use of sensory stimuli in online shopping, these preferences are reflective of the products offered for sale. According to Batra and Ahtola (1990), consumers often distinguish products based on the products' *hedonic* or *utilitarian* nature. Recent research has suggested that hedonic and utilitarian nature could affect the way products are acquired and consumed (Werthenbroch 1998), suggesting that the promotional strategies for particular brand or product genre should vary according to their nature (Vaughn 1986). Therefore, it is useful to study the impact of animation on consumer perceptions of and attitude toward both hedonic and utilitarian products.

The remainder of this paper is organized as follows: Section 2 reviews previous works on animation, and utilitarian and hedonic products. Section 3 develops our theory. Section 4 presents the research methodology used in this study. Section 5 presents the data analysis and findings. Section 6 discusses the implications and finally, Section 7 concludes the paper.

2. LITERATURE REVIEW

2.1. The Significance of Visual Stimuli: Animation

Animation has been defined as a dynamic visual statement, form, or structure that evolves through movement over time (Baecker and Small 1990), or, simply, simulated motion picture that depicts movement of some objects. Typical animations exhibit a few key components: pictures, movements, or simulations (i.e., objects that are created through drawing or other artificial methods) (Mayer and Moreno 2002). Generally, animation is used mainly for three functions: (i) look and feel for the purpose of

novelty or entertainment (Dholakia and Rego 1998; Thomas and Calder 2001); (ii) information visualization to increase comprehension (Mackinlay et al. 1994); or (iii) attracting viewers' attention to specific focal information on the screen (Chimera and Shneiderman 1994; Nielsen 2000).

Several theories have explicated the psychological effects of animation. First, the *motion effect theory* posits that human being has an inherent preference for moving objects (Sundar and Kalyanaraman 2004). People may undergo physiological changes (decrease in heart rate, increase in skin conductance, etc.; see, e.g., Reeves and Nass 1996) and are often more aroused when responding to motion pictures (Detenber et al. 1998). Such physiological provocation due to motion is often translated into emotional evaluations (Detenber 1996).

Similarly, the *distinctiveness theory* suggests that animation or moving objects could attract attention to a certain part of the screen during the early stage of information processing because of their visual distinctiveness from the rest of the stimuli (Cropper and Evans 1968; Smith and Goodwin 1971). Once viewers' attention is captured, the distinctive objects may enhance the viewers' memory of the emphasized contents (Li and Bukovac 1999).

Finally, a variant of the distinctiveness theory is the *vividness effect*. A stimulus is "vivid" if it is emotionally interesting, concrete and imagery provoking, and proximate in a sensory, temporal, or spatial way (Nisbett and Ross 1980). Vivid information is appealing and more likely to be stored and retrieved relative to non-vivid information (Sundar and Kalyanaraman 2004), hence leading to better recalls.

Prior marketing research has mostly addressed animation in the context of banner advertisements ("ads") on Web sites. Specifically, animation may differentiate banners from other elements on a Web page; evidence has suggested that viewers are repelled by blinking banner ads (Hamilton 1998). Yet, Hong et al (2004) have illustrated that an animated flashing item is able to attract users' attention and facilitate quicker location of it in certain contexts. Animated banner ads may raise brand awareness, brand preference, and purchase intention as compared with static ones (Briggs and Hollis 1997). They could also affect viewer cognitions, resulting in quicker responses and better recalls (Li and Bukovac 1999). Further, the speed of animation may matter too (Zhang 2000; Bayles 2002) – the alacrity of animation may influence physiological arousal, recall, and impression pertaining to the advertised contents (Sundar and Kalyanaraman 2004).

Although the prior literature has mostly focused on banner ads, the effect of animation may apply to animated Web sites too. Specifically, because attention is a scarce resource (Lachman et al. 1979; Davenport and Beck 2001), animation may help enhance a Web site and attract viewers' attentions. Further, animated Web sites may be seen as more emotionally interesting, imagery provoking, and inherently more appealing than static Web sites because of the dynamism conveyed by the constant change in contents. Hence, it would be useful to find out if previous results on banner ads continue to hold for Web sites. Further, we extend the analysis to consider the differential impact of animation on recall and consumer perception on different types of products.

2.2. Product Nature: Hedonic and Utilitarian

Consumer attitude toward products are inherently bi-dimensional (Holbrook and Hirschman 1982; Batra and Ahtola 1991). The *hedonic* component is related to sensory attributes and focuses on consummatory gratifications, whereas the *utilitarian* component is related to functional and non-sensory attributes, concentrating on instrumental expectations (Batra and Ahtola 1991). The consumption of products often involves both hedonic and utilitarian dimensions, but it is often observed that consumers are inclined to characterize the products as either hedonic or utilitarian.

Generally, hedonic goods provide more experiential consumption, fun, pleasure, and excitement (e.g., designer clothes, sports cars, luxury watches) (Hirschman and Holbrook 1982; Strahilevitz and Myers 1998). Their consumption is usually motivated by the one's desire for fantasy, fun, and sensory pleasure, and typically involves product or services that might be considered frivolous or even decadent (e.g., chocolate fudge) (O'Curry and Strahilevitz 2001). In contrast, utilitarian goods are largely instrumental and functional (e.g., microwaves, mini-van, personal computer); their consumption is usually motivated by functional needs, and typically involves products or services that are considered practical or necessary (e.g., laundry detergent).

Prior research has shown that the difference of hedonic and utilitarian perception can affect the way a product is perceived, acquired, and consumed (Wertenbroch 1998; Dhar and Wertenbroch 2000). It is interesting to examine if this difference could moderate the effect of animation in the Internet context

3. HYPOTHESES

3.1. Recall

It is essential for Web sites to ensure that product information is delivered and remains salient in consumer memory. The limited capacity theory posits that the processing of information by human being

involves continuous and simultaneous operation of several sub-processes, including encoding, storage, and retrieval (Lang 2000). Since human's mental resource is limited, not all information can be encoded and stored in memory for retrieval. However, studies have shown that objects which elicit *orienting responses* - the reflex that causes an organism to respond immediately to a change in its environment - in consumers may entail greater (perhaps involuntary) allocation of cognitive resources in encoding and storing the contents inside the objects. Since animation encompasses moving and orienting objects which may draw more attention from consumers, they may allocate more cognitive resources to encode and store animated components on a Web site in their memory (relative to non-animated components). Additionally, text and static pictures elicit nonvivid mental images, or mental images that are faint and cannot be easily expanded into an associated context (Bower 1972). Hence, we posit that:

H1a: the recall of animated components is better in an animated Web site relative to the corresponding components in a static Web site.

Since human being has limited capacity to process information, more allocation of cognitive resources toward animated components would imply a decrease in resources allocated to non-animated components on the same Web site. Hence, encoding and storage of non-animated components would be reduced, leading to lower recall.

H1b: the recall of non-animated components is lower in an animated Web site relative to the corresponding components in a static Web site.

3.2. Perception toward a Product

Previous research has shown that a shopping environment could offer hedonic or utilitarian values (see, e.g., Babin et al. 1994). In fact, these values can also be extracted in the electronic environment, affecting consumer responses towards electronic shopping (see, e.g. Jaarvenpaa & Todd, 1996/1997). The consumption can be intrinsically satisfying when the *experience* itself provides pleasure, fun, and fantasy (Holbrook and Hirschman 1982). Hence, the experience per se can be considered hedonic. Similarly, an experience that encompasses shopping efficiency or making right product choices based on logical assessment of product attributes per se could be considered utilitarian.

Since people often exhibit correlated assessment of Web sites and the products that the Web sites carry (Dussart 2001), the hedonic or utilitarian values that a person derive from a Web experience may spill over to the products that the Web site carries (Koufaris et al. 2001; Fiore and Jin 2003). Because animation is vivid, exciting, and more sensory, an animated Web site is often perceived as more hedonic

and playful compared with a static one. Hence, a Web site that creates a hedonic electronic environment for consumers may cause them to increase the hedonic value of the product relative to one that creates a utilitarian electronic environment. Therefore, we posit:

H2a: An animated Web site would increase consumers' perceived hedonic value of a product relatively more than a static Web site.

Similarly, a Web site that creates an environment with utilitarian value for consumers may cause them to consider its products as relatively more utilitarian as compared to an environment which offers hedonic value. A static Web site may enhance its functionality or means to accomplish tasks, and hence lead consumers to view its products as more utilitarian. Therefore, we posit:

H2b: A static Web site would increase consumers' perceived utilitarian value of a product relatively more than a static Web site.

The fundamental law of psychophysics (also known as the Weber-Fechner law, named after two German psychologists, Ernst Weber and Gustav Fechner) posits that any change in a person's level of sense perception is closely and proportionally related to the intensity of the stimulus that is acting on the senses. The relationship generally follows a logarithmic curve. For instance, the extent to which our eyes detect marginal increase in light intensity is dependent and proportional to the previous level of brilliance.

It is clear that a utilitarian product is relatively weaker along the hedonic dimension than the utilitarian dimension. According to H2a, an animated Web site may increase the perceived hedonic value of the product. By applying the law of psychophysics, the extent of increase would depend on the previous level of hedonic value that is perceived by consumers. The lower the hedonic value that the product is perceived to possess, the more its hedonic perception would be increased by an animated Web site. Therefore, we posit:

H3a: An animated Web site would increase the hedonic value of utilitarian products more than that of hedonic products.

Similarly, H2b posits that a static Web site may increase the perceived utilitarian value of a product. Following the similar reasoning as leading to H3a, we posit:

H3b: A static Web site would increase the utilitarian value of hedonic products more than that of utilitarian products.

3.3. *Attitude*

Animated advertisement has been found to generate more positive attitude toward a product than static advertisements (Sundar and Kim 2005). However, this effect may be moderated by the *fit* with the product. Specifically, previous research has found fit to be important in shaping consumer attitude in the case of Web site-product image fit (Muller and Chandon 2004), or brand image-product function fit (Park et al. 1991). Hence, whether a product is perceived to be hedonic or utilitarian may interact with its host Web site to affect consumers' overall attitude toward the product. A Web site is often perceived to be an "extension" of the product that it carries.

As discussed above, an animated Web site is usually perceived by consumers as more hedonic and playful. On the same note, the consumption of hedonic products is primarily characterized by an affective and sensory experience of aesthetic or sensual pleasure, fantasy, and fun (Hirschman and Holbrook 1982). Prior studies have suggested that consumers react more favorably when there is a presence of identifiable relationship between the product and its extensions (e.g. Park et al. 1991). A Web site may be perceived as an extension of a product. With a good fit between an animated Web site and a hedonic product, this will generate a more positive consumer attitude toward the product. Further, previous research has revealed that trading functional attributes for hedonic ones (e.g. choosing a more aesthetically pleasing cell phone over a more functional one) evokes guilt (Kivetz and Simonson 2002). As such, in circumstances whereby a simple and functional web site will suffice for utilitarian products, consumers may experience guilt if they feel the web site has expended unnecessary resources for enriching the sensory experience, consequently motivating a less-than-favorable attitude.

A static Web site may facilitate consumers' seeking of useful information and allow them to explore its functionality. This fits the image of utilitarian products, the consumption of which is more cognitively driven, instrumental, goal oriented, and often accomplishes functional or practical tasks (Strahilevitz and Myers 1998). Similarly, hedonic products are usually characterized by desires of "looking cool" or being "sophisticated". Compromising on the playful and hedonic representation of the product for functional attributes may evoke sadness and disappointment (Chitturi et. al. 2007), hence leading to a less-than-favorable attitude.

Following this line of reasoning, we posit:

H4: An animated Web site generates a positive change in consumer attitude toward hedonic products, but not for utilitarian products; for utilitarian products, a static Web site would generate a positive change in consumer attitude.

4. RESEARCH METHODOLOGY

We conducted a laboratory experiment with 80 undergraduate students as subjects to test the hypotheses. The experiment took around 30 minutes, and monetary incentive was awarded to the subjects. The average age of the subjects was 21 years, and 60% of them are male.

	Blue Scheme	Grey Scheme
Hedonic Product		
Utilitarian Product		

Figure 1. Design schemes of Web pages

We varied two factors in the 2 (product type: utilitarian vis-à-vis hedonic) x 2 (website type: animated vis-à-vis static) x 2 (color scheme: blue vis-à-vis. grey) experiment. First, two types of products were selected – utilitarian vis-à-vis hedonic. For hedonic, we chose *portable game console* and *robotic dog*. For utilitarian, we chose *printer* and *calculator*. For each product, two pages were created – animated vis-à-vis static. We designed the pages in such a way that when the animated Web pages came to a standstill, they appeared exactly identical to the corresponding static versions (hence, the same amount of information was presented in the animated and static versions). All animations were created using Macromedia FlashTM. For convenience, we further labeled the pages with portable game console and printer as the “blue scheme”, and the ones with robotic dog and calculator as the “grey scheme”. Figure 1 shows the static versions of the Web pages that we used (the animated versions were identical, except some parts of the pages would “animate” when loaded).

As shown in Figure 1, the layout of the pages was standardized. Each Web page consisted of several parts – a brand name and logo, slogan, and a picture and brief description of the exhibited product. For the animations, effects including blinking, motion, and gradual fade-in were incorporated. The animations were designed in such a way that the logos and slogans would continuously animate

throughout the experimental session, whereas the brand name and description would animate only initially when they first appeared. In the static treatment, all the pages appeared as shown in Figure 1, and no animation was involved. Fictitious brand names were used for all products to avoid a priori brand influence.

Before the experiment, we conducted a pretest to ensure that the products that we selected were appropriate. Twenty university students (who did not participate in the main experiment) were asked to read a short description with a picture of a product in each product category (i.e., hedonic vis-à-vis utilitarian). They were then requested to rate their perception along the hedonic (fun, exciting, delightful, thrilling, and enjoyable) and utilitarian (necessary, effective, helpful, functional, and practical) dimensions on a 7-point scale. The items for hedonic/utilitarian perception were adapted from Voss et al. (2003). Table 1 presents the mean hedonic and utilitarian scores for each of the included products.

Table 1. Average Hedonic and Utilitarian Scores

	Game Console	Robotic Dog	Calculator	Printer
Hedonic Score	4.843 (0.919)	4.907 (1.116)	2.929 (1.037)	3.571 (0.972)
Utilitarian Score	3.792 (0.957)	3.050 (1.003)	5.967 (0.687)	5.375 (0.813)

Post hoc t-tests showed that there were significant differences in hedonic and utilitarian scores across the portable game console-calculator, portable game console-printer, robotic dog-calculator and robotic dog-printer pairs, and all p-values were less than 0.05. Hence, we concluded that portable game console and robotic dog were good representatives of hedonic product, and calculator and printer were good representatives of utilitarian product.

To increase the cost-effectiveness of the experiment, each subject was asked to view the Web pages of two products, and the two products differed in terms of color scheme (blue vis-à-vis grey) and nature (hedonic vis-à-vis utilitarian).⁹ To avoid demand bias, however, we constrained the subjects to view either static or animated versions. Hence, animation was a between-subject factor, whereas product type was both a between- and within-subject factor. The sequence of the Web pages was randomized to eliminate any ordering effect. Each subject was given two minutes to view the page of a product. After the subjects viewed a product, they were asked to answer several questions pertaining to their recall of the product and perceptions.

⁹ In other words, each subject would always view one hedonic and one utilitarian product, and one blue-scheme and one grey-scheme product.

To further avoid the subjects from memorizing the task and the recall and perception questions, we added a filler task (with several questions that were completely different from the other two tasks) after they viewed the first product to distract their attention. Pursuant to completing the filler task, the subjects were tasked to view the second product. Figure 2 shows the sequence of events in the experiment.

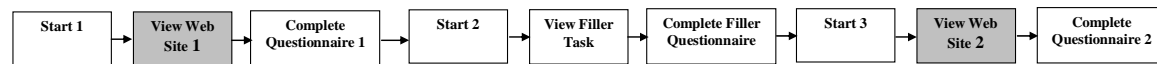


Figure 2: The flow of the experiment

4.1. Dependent Measures

There were three dependent variables in this study: recall, perceived hedonic and utilitarian values, and overall attitude toward a product. All responses were collected through a self-reported paper-and-pencil questionnaire (Refer Appendix D). As two data points are gathered from each individual, we employed each of the data point collected from each subject for analysis independently.

Recall: After the subjects finished viewing a product, we closed the Web site and asked them to write down the product category, brand name, color of the logo, and slogan of the product. Further, they were asked to record any details that they could recall, such as technology used, or any other features that were mentioned in the description. These questions were aggregated to derive two measures – recall-A (for the animated components on the page) and recall-S (for the static components on the page). Responses were coded for product category recall, brand recall, color recall, slogan recall, and recall for information other than the designated four. Recall-A was computed by summing the first four values, and Recall-S was the value of last one

We adopted the principles in Hong and Wyer (1990) to judge the correctness of the recalls. Two independent coders inspected the answers to see if they conveyed the same idea as presented by the Web pages. The average inter-coder reliability was 83.5%.

Hedonic / utilitarian perceptions: We adapted the scales from Voss et al. (2003) to evaluate the subjects' hedonic and utilitarian perceptions. The items used for hedonic value were fun, exciting, delightful, thrilling, and enjoyable. The items used for utilitarian value were necessary, effective, helpful, functional, and practical. The Cronbach's alphas for the hedonic and utilitarian scale were 0.872 and 0.896 respectively.

Attitude: We adapted the scale from Grossbart et al. (1984) to measure the overall attitude of the subjects toward a product. The items were: good / bad, favorable / unfavorable, pleasant / unpleasant, agreeable / disagreeable, valuable / worthless, and positive / negative. The Cronbach's alpha was 0.903.

5. DATA ANALYSIS

Table 2 presents the descriptive statistics of the dependent measures. 7-point scales were used for hedonic / utilitarian perceptions and overall attitude. The score for recall-A ranged from 0 to 4, and the score for recall-S ranged from 0 to 5.

Table 2: Descriptive Statistics for the Dependent Measures

	Mean	S.D.	Max	Min
Recall-A	3.064	.7855	4.000	1.000
Recall-S	2.350	1.132	5.000	0
Hedonic Score	4.676	1.172	7.000	1.400
Utilitarian Score	4.831	1.143	7.000	1.600
Overall Attitude	5.234	.9027	7.000	2.167

To test the first hypothesis, we conducted a series of independent sample t-tests. As predicted, the score for recall-A was higher for the animated Web pages than the static pages ($t = 3.714$, $p < 0.05$), while the score for recall-S was higher for static Web pages than the animated pages ($t = -5.223$, $p < 0.05$). Hence, both H1a and H1b were supported.

Similarly, we conducted independent sample t-tests to compare the utilitarian and hedonic values of the products under different presentations. The results are shown in Table 3. Animated Web pages raised the subjects' hedonic perception of the products relative to static Web pages ($t = 2.767$, $p < 0.01$). Hence, H2a was supported. However, contrary to H2b, animated Web pages also raised the subjects' utilitarian perceptions of the products ($t = 2.054$, $p < 0.05$). Hence, H2b was not supported.

Table 3. The Subjects' Hedonic and Utilitarian Perceptions of the Products

		Mean	Standard Deviation	Mean Difference	Sig
Hedonic Score	Animated	4.928	1.0965	0.503	0.006
	Static	4.425	1.1980		
Utilitarian Score	Animated	5.015	1.0995	0.368	0.042
	Static	4.648	1.1633		

We conducted a two-way ANOVA to test H3a and H3b, which concerned about the interaction between product nature (hedonic vis-à-vis utilitarian) and presentation type (animated vis-à-vis static) on consumers' hedonic and utilitarian perceptions of the products. The result showed that there were no significant difference in hedonic ($F = 0.002$, $p = 0.96$) and utilitarian ($F = 0.717$, $p = 0.40$) score across

the product nature \times presentation type interaction. Hence, both H3a and H3b were not supported. Figure 3 plots the responses of the subjects.

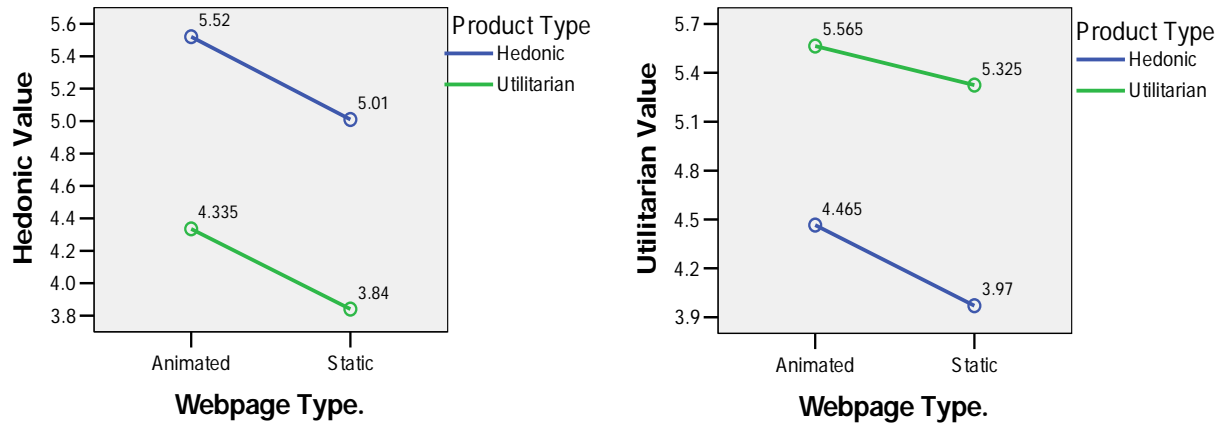


Figure 3: Two-way ANOVA result for hedonic/utilitarian perceptions

Finally, we performed a two-way ANOVA to test H4a and H4b, which concern about the fit of product nature to Web site presentation. The results indicated that there was a significant product nature \times presentation type interaction effect on overall attitude ($F = 9.07$, $p < 0.01$). Figure 4 shows the responses of the subjects.

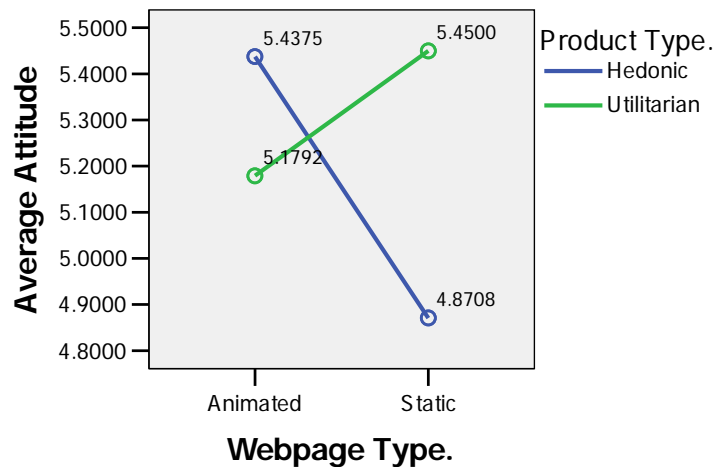


Figure 4: Result of Two-way ANOVA for Overall Attitude

Static Web sites generated more favorable attitude toward utilitarian products ($t = -3.070$, $p < 0.05$). Animated Web sites generated more favorable attitude toward hedonic products, but this difference was not statistically significant ($t = 1.264$, $p = 0.21$). Hence, there is partial support for H4. Table 4 shows the subjects' mean responses.

Table 4: Result of Independent Sample T-test for Attitude

	Product Type	Mean Attitude	Std. Deviation	Mean Difference	Sig
Animated Web page	Hedonic Product	5.438	.7995	0.258	0.210
	Utilitarian Product	5.179	1.015		
Static Web page	Hedonic Product	4.870	.1002	-0.579	0.003
	Utilitarian Product	5.450	.6480		

6. DISCUSSION AND IMPLICATIONS

Our study theoretically developed and empirically validated some potential impacts of animation in the Web environment. The support of H1a and H1b suggests that recall was enhanced for the animated elements relative to the static objects. These results propose that firms and web designers should exercise caution and business acumen when implementing animation within their Web site. They need to determine the marketable features and important information of the product in order to animate correspondingly, such that they can be easily recollected by the consumers. Conversely, inconsequential attributes should be distinguished as static components within a Web site.

Our results further demonstrated that an animated Web site is able to motivate consumers to perceive the product introduced in the Web site in a more hedonic light. However, the analyses of the static Web site did not support the hypothesized positive effect on the utilitarian value of the product. One possible reason could stem from the mediating role of consumers' involvement. Pleasure is believed to be an antecedent of involvement (Laurent and Kapferer 1985). The higher the level of pleasure a consumer feels, the more highly involved one will be in the Web site. Since an animated Web site forms a more pleasant electronic environment for consumers, it facilitates a higher level of involvement in the Web site. Higher Web site involvement leads to more time and intensity of effort expended in pursuing the objective (Stone 1984). Since each Web page consists of a description regarding the functionality of product, more information would be attended by the highly-involved consumers and more functionality aspects would be processed and recollected. As such, it is plausible that consumers' perceived utilitarian value of the product would increase.

Given the lack of support for Hypothesis 2b, it is not surprising that both Hypotheses 3a and 3b are not corroborated since their justification follows the former.

The outcomes from the analyses of hypotheses 4a and 4b demonstrate the importance of a fit between the Web site impression and product image. From a practical perspective, our findings indicate that companies need to be cautious when developing Web sites to exhibit their products. Firms should consider the category of product and the premeditated position of the product when contemplating on the creation of an animated and/or static Web site. The determination of whether a utilitarian product deserves the high implementation cost of an animated Web site requires detailed justification. Firstly, a static Web site is sufficient to generate a more favorable attitude toward the utilitarian product. Secondly, an animated Web site is not able to emphasize only the utilitarian dimension of the product.

Our study has reinforced the importance of animation as a visual stimulus within the electronic store atmosphere. However, the top 15 e-tailers were discerned to have limited visual stimuli, suffering from the total absence of animation (Parsons and Conroy, 2006). With insights gathered from our results, efficient utilization of such sensory stimulus can be enforced, generating positive consumer responses that may translate to a higher level of product sales.

From a theoretical perspective, this study looks beyond the traditional animation landscape on banner advertisements, and focuses on the how the animation techniques would operate simultaneously as a whole Web site to present a product. Further, it also functions as a pioneer attempt to fill the disparity between animation research and hedonism/utilitarianism research, an amalgamation which may have significant influence on customizing the adoption of animation.

7. CONCLUDING REMARKS

Some limitations of this study should be highlighted. Firstly, limited by technological capabilities and resources, the stimulus material comprises of only one Web page, which might be insufficient in initiating the effect motivated by a real Web site. Secondly, the subjects were instructed to browse the Web pages in a forced exposure situations. It may be more insightful if the study is replicated employing a study that is not constrained by the conditions of the laboratory, exposing subjects to the authentic environment of the World Wide Web. In addition, a validated measure of fit between Web site and product category would be valuable for a more in-depth analysis. Further research should also explore the potential mediating role of involvement in this Web site- attitude relationship. Zaichowsky's (1994) Scale II, consisting of a set of ten semantic differential items scored on a seven-point scale, can be employed to measure product involvement.

Future work can also look into the different animated components of a web site. The present research looked at several straightforward components of a webpage for their animation, such as the title/logo of the firm. The completeness of sensory information created by different animated components may influence the effect of animation on the consumer responses.

The results of this study may provide further research opportunities to an extent of areas, such as within the emerging research domain of narcissistic consumption. According to Sedikides et. al. (2007), narcissists who are individuals who want to be seen as superior and are prone to exhibitionism and vanity place lesser importance on utilitarian value of a product than its symbolic value. It may be interesting to look into how animated web representation of both hedonic and utilitarian products may intertwine in the research intricacies of narcissistic consumption. By projecting utilitarian products in a more hedonic light, can animation increase the appeal of utilitarian products to the segment of narcissists?

In summary, an animated site implemented by Flash™ has many drawbacks. It incurs higher development cost, requires users' installation of a browser plug-in, longer downloading time and offers limited accessibility for disabled users. As such, firms and web developers should habitually rationalize the use of animation against these tradeoffs. If the firms' objectives in institution of animation in a Web site are fortuitous, then the relative simplicity, accessibility and familiarity of a HTML static version might be the wiser choice. It is difficult to pinpoint a particular formula for deciding between animated and/or static versions of Web sites. However, our results offer several insights for a thoughtful consideration that would hopefully result in a more successful and worthwhile marketing investment.

OVERALL CONCLUSION

There is a sizeable body of experimental work in economics and psychology relating to the nature of consumer decision making models and rules that one utilizes in a variety of situations. Similarly, there has been considerable amount of studies that illustrate the influence of variables present in the environment that affects consumer behavior. Our studies seek to augment these domains by delving into how information technologies and the emergence of the World Wide Web have intervened with the process of consumers' choice and perceptions. With the escalating rate of businesses and corporate services becoming web-based, allowing customers and employees to access data as well as administer applications via the Internet, the World Wide Web has become an imperative channel for an organization to interact with its consumers. Much of the academic and applied marketing research has focused on methods to achieve the goal of inducing consumers to purchase their products and services. As users interact with the organizations via the Web, the interface design has become a critical aspect that exerts extensive influence on the cognition and behavior of the customers. Our current research highlights the potential promise of information technologies as a new class of tactics designed to personalize and customize an environment that is the most fertile in facilitating consumer participation and subsequently, a purchase.

The process of consumer choice operates within the context of several phenomena that include framing, status quo bias and compatibility principle. Since all of these phenomena are interrelated, it is evident that significant interactions exist between them. Specifically, the first study looks into the relationship between these phenomena and demonstrates how various preference elicitation conditions can affect consumers' participation on the World Wide Web. Our findings indicate certain conditions that will promote consumers' participation while others may impede - a result that is particularly essential with the prevalence of e-commerce in the world today. With the malleability of consumer behavior, marketers should proactively craft conditions that are conducive for the formation of consumers' preferences. The results in our first paper have highlighted the importance of creating an environment that is as easy as possible for the consumer to comprehend and form a preference. Marketers can assist in preempting any consumer dissatisfaction that may arise with the difficulty experienced in understanding of options and manipulate the methods of preference elicitation to best encourage the participation of consumers. For instance, the employment of a 'choice-frame' has been observed to be effective in stimulating positive thoughts. Also, the 'choice-frame' is perceived to be more effortlessly understood, as compared to the 'rejection-frame'.

The experiments in our first paper display evidence that the consumer choice is susceptible to manipulations in options descriptions as well as methods for preference elicitation, extending the pioneering work of Tversky and Kahneman (1981). The support of the hypotheses illustrates that consumers do endorse default options which they may perceive as 'recommended'. They further evaluate the dimensions of an option, established upon the particular frame at hand. This indicates that the predictions made by the contemporary decision theories continue to apply to the online context, even though it is widely acknowledged that the processing cost in the online environment is much lower (e.g., to opt-out from a web site requires only a mouse click, whereas to opt-out from a physical store may require making a few phone calls or writing and posting a letter). Similar decision theories could potentially be applied to study other online settings. The underlying principles in the constructive nature of consumer behavior may further be more effortlessly maneuvered with the advent of technologies.

The insights extracted may be beneficial in assisting consumers achieve a "defensible" expression of their preferences or help them develop preferences by considering the implications of those preferences and how to manage them (e.g., to reduce regret). With the prior studies done in constructive consumer processes (Bettman et. al, 1998), a crucial theme for research is in construction of guidelines for a good preference construction process and our study functions as one empirical research to document that such guidelines are indeed effective. Such guidelines may comprise of ensuring consideration of multiple viewpoints and options, using multiple response modes and requiring explicit trade-offs.

Further, the consequences of the first paper may assist in the process of context-matching, a recommended approach for prediction purposes in market analysis studies. An analyst attempts to determine the relevant factors that might affect preferences in consumer's environment and then match the values of those factors in the measurement conditions accordingly. The environment in which preferences are elicited should try to approximate the consumer's environment on all of these factors, especially if the consumer has little familiarity or knowledge with the decision. Therefore, context-matching thus demands a thorough knowledge of the properties of consumer choice environments and may be improved with the applications of our results.

The study further provides theoretical contribution to the domain of information privacy in achieving a more luxuriant understanding of individual behavior within each privacy segment. The finding that privacy concerns moderates individuals' preference for status quo has crucial implications for understanding the role of loss aversion in choice. Individual-specific factors, such as the level of privacy concern, could potentially over-ride loss-aversion effects. The empirical investigation of this proposition

contributes in the assessment of boundaries regarding the domain of loss aversion. Researchers may wish to explore the psychological state of consumers related to information privacy, and understand how consumers allocate their effort, time or attention to interact with various facilities that are post on web sites as a future direction.

Our results from the second paper shed lights on how web design can affect consumer behavior. With the increasing employment of innovative and attractive multimedia technologies, there is a necessity for the latter to be handled cautiously to reduce any potential negative impacts. This study theoretically developed and empirically validated that recall of product information, perceptions of product nature and attitude towards the products were shaped with the employment of animation. With implications gathered from the results, efficient utilization of such sensory stimulus can be enforced, generating positive consumer responses that may translate to a higher level of product sales. However, the top 15 e-tailers were discerned to have limited visual stimuli, suffering from the total absence of animation (Parsons and Conroy, 2006). With insights gathered from our results, we hope to offer a channel for thoughtful consideration in devising web presentation strategies that would hopefully result in a more successful and worthwhile marketing investment.

Conclusively, our findings add richness to the understanding of consumer behavior, particularly in the landscape of the World Wide Web context. In addition to extending the understanding of how consumers behave in the online environment, this research contributes to the pioneering choice work of Tversky and Kahneman (1979) as well as hedonic and utilitarian consumption studies of Holbrook and Hirschman (1982) respectively. More broadly, the consequences of our research may impact a wide range of fields from business strategy to public policy. Insights may be gathered from our studies to devise effective strategies for maximizing consumer participation and facilitating consumers' favorable responses, consequently leading to amplified sales returns. An interface with the correct fusion of technology use and strategies can function as a leverage point to enhance the performance of an organization in reaching out to the consumer world.

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Appendix A: Evaluative Survey as a Experimental Task for Subjects

Vortex Communications is a new telecommunications organization that strives to attain high-level of innovativeness and dedication to its customers. As part of an effort to be an efficient and consumer-focused corporation, Vortex would like to seek your assistance in assessing the usability, design and performance of its Web site. (<http://www.vortex-communications.com/index.htm>)

Please indicate your response using a 1-7 scale (1 = poor on the dimension, 7 = excellent on the dimension) that best reflects your opinion of the Vortex Communications Web site you have just visited.

1. I find it easy to get this Web site to do what I want to do.	1 2 3 4 5 6 7
2. The amount of information displayed by the Web site is adequate.	1 2 3 4 5 6 7
3. The sequence of obtaining information is clear.	1 2 3 4 5 6 7
4. The information on succeeding links from the initial page is predictable.	1 2 3 4 5 6 7
5. The layout of the Web pages made tasks easier.	1 2 3 4 5 6 7
6. The rate at which information is displayed on the computer is fast enough.	1 2 3 4 5 6 7
7. I am satisfied with organization of the Web site.	1 2 3 4 5 6 7
8. I am satisfied with the privacy measures adopted by the Web site.	1 2 3 4 5 6 7
9. If I had a future need for telecommunications equipment presented in this Web site, I am likely to consider returning to this site.	1 2 3 4 5 6 7
10. I have registered as a member of the Vortex Community.	Yes No
10a. If 'Yes': I am satisfied with respect to how my information is collected by the Web site.	1 2 3 4 5 6 7
10a. If 'No', please state a reason for not registering with Vortex: _____	

Matriculation Number: _____ **Age:** _____ **Gender:** Male / Female

Time-span of Internet Experience: _____ Years

Appendix B
Privacy Concern Instrument (Smith et al. 1996)

- A. It usually bothers me when companies ask me for personal information.
- B. All the personal information in computer databases should be double checked for accuracy – no matter how much this costs.
- C. Companies should not use personal information for any purpose unless it has been authorized by the individuals who provided the information.
- D. Companies should devote more time and effort in preventing unauthorized access to personal information.
- E. When companies ask me for personal information, I sometimes think twice before providing it.
- F. Companies should take more steps to make sure that the personal information in their files is accurate.
- G. When people give personal information to a company for some reason, the company should never use the information for any other reason.
- H. Companies should have better procedures to correct errors in personal information.
- I. Computer databases that contain personal information should be protected from unauthorized access – no matter how much it costs.
- J. It bothers me to give personal information to so many companies.
- K. Companies should never sell the personal information in their computer databases to other companies.
- L. Companies should devote more time and effort to verifying the accuracy of the personal information in their databases.
- M. Companies should never share personal information with other companies unless it has been authorized by the individuals who provided the information.
- N. Companies should take more steps to make sure that unauthorized people cannot access personal information in their computers.
- O. I'm concerned that companies are collecting too much personal information about me.

Appendix C (Updated items)

- P. All things considered, the Internet would cause serious privacy problems
- Q. Compared to others, I am more sensitive about the way online companies handle my personal information.
- R. To me, it is the most important thing to keep my privacy intact from online companies.
- S. I believe other people are too much concerned with online privacy issues.
- T. Compared with other subjects on my mind, personal privacy is very important.
- U. I am concerned about threats to my personal privacy today.
- V. Consumer online privacy is really a matter of consumers right to exercise control and autonomy over decisions about how their information is collected, used, and shared.
- W. Consumer control of personal information lies at the heart of consumer privacy.
- X. I believe that online privacy is invaded when control is lost or unwillingly reduced as a result of a marketing transaction.
- Y. Companies seeking information online should disclose the way the data are collected, processed, and used.
- Z. A good consumer online privacy policy should have a clear and conspicuous disclosure.
- AA. It is very important to me that I am aware and knowledgeable about how my personal information will be used.

Appendix D

Measurement items used in this study (all items were measured by 7-point scales).

Utilitarian Value

- I rely on this produce to fulfill my basic needs
- This product is functional.
- This product is helpful.
- This product is necessity for me.
- This product is practical.
- This product is effective.

Hedonic Value

- This product is fun.
- This product is thrilling.
- This product is enjoyable.
- Using this product makes me look good.
- This product is exciting.
- Using this product makes me feel good.
- This product is delightful.

Attitude towards a product

- Bad/Good
- Unfavorable/Favorable
- Unpleasant/Pleasant
- Disagreeable/Agreeable
- Worthless/Valuable
- Negative/Positive