Exhibit A

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN JOSE DIVISION

APPLE INC.,	Case No. 11-cv-01846-LHK
Plaintiff,	**EXPERT REPORT OF JOHN R. HAUSER**
v.	
SAMSUNG ELECTRONICS CO., LTD., A Korean business entity; SAMSUNG ELECTRONICS AMERICA, INC., a New York corporation; SAMSUNG TELECOMMUNICATIONS AMERICA, LLC, a Delaware limited liability company,	
Defendants.	

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I. Introduction and Qualifications

1. My name is John R. Hauser. I am the Kirin Professor of Marketing at the MIT Sloan School of Management at the Massachusetts Institute of Technology ("MIT"). I have served MIT in a number of capacities, including Group Head of Marketing, Research Director of the Center for Innovation in Product Development, Co-Director of the International Center for Research on the Management of Technology, and Area Head for Management Science at MIT. The Management Science Area at the MIT Sloan School of Management includes, among other groups, the Marketing Group, the Information Technologies Group, and the Statistics Group. The principal focus of my research and teaching at MIT has been in the areas of marketing management, new product and service development, customer satisfaction, marketing research, and competitive marketing strategy. Specifically, my research includes the evaluation of consumer decision-making, product and service development, websites and advertising designed around customers' cognitive styles, and determination of relative feature preferences and implicit product valuations, and demand forecasts.

2. I am the co-author of two textbooks, *Design and Marketing of New Products* and *Essentials of New Product Management*, as well as over eighty articles and papers, including articles on various methods used to determine the importance of product features in consumer decision-making. I have developed market research techniques that enable marketing researchers, experts, and managers to predict the value of individual features in both existing and hypothetical products. These methods have been employed numerous times by academic researchers, as well as practitioners from

major international corporations.[1]

3.   I have served as editor-in-chief of *Marketing Science* and have held senior editorial positions with *Management Science*, the *Journal of Marketing Research*, and the *Journal of Product Innovation Management*. I have received numerous awards for excellence in research and teaching in Marketing and was recognized by the American Marketing Association with the Paul D. Converse Award for "outstanding contributions to marketing scholarship."[2] In 2001, I received the Parlin Award, which is "the oldest and most distinguished award in the [marketing research] field," according to the American Marketing Association.[3] In 2011 I received the Churchill Lifetime Achievement Award of the American Marketing Association for contributions to marketing research.[4] I am a Fellow of the Institute for Operations Research and Management Science ("INFORMS") and an Inaugural Fellow of the INFORMS

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[1]   See, among others, Toubia, Olivier, John Hauser and Rosanna Garcia (2007), "Probabilistic Polyhedral Methods for Adaptive Choice-Based Conjoint Analysis: Theory and Application," *Marketing Science*, 26, 5, (September-October), pp. 596–610; Urban, Glen L., and John R. Hauser (2004), "'Listening-In' to Find and Explore New Combinations of Customer Needs," *Journal of Marketing*, 68, 2, (April), pp. 72–87; Griffin, Abbie and John R. Hauser (1993), "The Voice of the Customer," *Marketing Science*, 12, 1, (Winter), pp. 1–27; and Hauser, John R., Olivier Toubia, Theodoros Evgeniou, Rene Befurt, and Daria Dzyabura (2010), "Disjunctions of Conjunctions, Cognitive Simplicity and Consideration Sets," *Journal of Marketing Research*, 47, (June), pp. 485–496.

[2]   "The Paul D. Converse Awards," American Marketing Association,http://www.marketingpower.com/Community/ARC/Pages/Career/Awards/Converse.aspx, visited on March 22, 2012; "Previous Recipients," 18th Paul D. Converse Marketing Symposium, http://business.illinois.edu/converse/previous.html, (visited on March 22, 2012).

[3]   "2009 Charles Coolidge Parlin Marketing Research Award," American Marketing Association, January 14, 2009, http://www.marketingpower.com/ResourceLibrary/Pages/MarketingThoughtLeaders/MarketingThoughtLeaders 11409/Parlin_Marketing_Research_Award.aspx, visited on March 22, 2012; "Charles Coolidge Parlin - Marketing Research Award," American Marketing Association, http://www.marketingpower.com/Calendar/Pages/CharlesCoolidgeParlinAward.aspx, (visited on March 22, 2012).

[4]   http://www.marketingpower.com/Community/ARC/Pages/Connections/SIGs/MarketingResearch/Churchill.aspx, (visited on March 22, 2012).

Society of Marketing Science. I am the President-elect of the INFORMS Society of Marketing Science (a board-level position). I have also served as a Trustee of the Marketing Science Institute.

4. I have served as an expert witness or offered consulting services in numerous litigations, including, but not limited to, cases on trademark and patent infringement, copyright infringement, intellectual property, market research, survey design, consumer confusion and false advertisement, product confusion, claims substantiation, and Lanham Act cases. Most of this expert testimony has involved surveys and other market research to measure consumers' attitudes, beliefs, and intentions. In these prior matters, I have been called upon to project what consumer behavior would have been under different market scenarios, to measure the importance and value of product features, to measure the impact of rumors, to evaluate marketing research with respect to advertising claims, and to investigate the potential for customer confusion.

5. I have provided survey evidence that has been used to estimate the relative value of product features, for example, in both anti-trust cases and in patent infringement cases. I have advised major corporations, including American Airlines, Fidelity Investments, Ford, General Motors, IBM, Proctor & Gamble, and Xerox. My professional qualifications are described in my curriculum vita, which is attached as Exhibit A. A list of cases in which I have testified within the last four years at deposition or trial is attached as Exhibit B.

6. The subject area headings in this report are intended to assist the reader and no inference should be drawn from the use or omission of any wording or description in these headings.

II. Assignment

7. I was asked by counsel for Plaintiff to design and conduct two surveys—one for smartphones and one for tablets—to determine the price premium, if any, that Samsung consumers are willing to pay for the features associated with the patents at issue. For smartphones, the relevant patents are US 7,812,828 ("'828 Patent"), US 7,844,915 ("'915 Patent"), US 7,469,381 ("'381 Patent"), and US 7,864,163 ("'163 Patent"). For tablets, the relevant patents are the US 7,663,607 ("'607 Patent"), US 7,844,915 ("'915 Patent"), US 7,469,381 ("'381 Patent"), and US 7,864,163 ("'163 Patent").

8. In undertaking this assignment, I relied on my extensive expertise in developing, testing, and analyzing surveys and in interpreting qualitative and quantitative research about consumer attitudes, intentions, preferences, and behavior.

9. Part of the survey work for this investigation was performed under my direction by Applied Marketing Science, Inc. ("AMS"). Since 1989, AMS has conducted market research and surveys designed to gauge consumers' wants and needs for new products in dozens of industries. Since 1994, AMS has been conducting surveys to support expert testimony in litigation. I am a Senior Consultant, Board Member, and Co-Founder of AMS. I am a minority stockholder in AMS, but I do not receive any compensation from AMS that is directly tied to this case. Part of the empirical analysis supporting my opinions in this report was performed by Cornerstone Research working under my direction.

10. My rate of compensation for this task is $800 per hour. My compensation is not contingent upon the outcome of this dispute.

11. My work is ongoing; I may update and revise my results and conclusions as I review additional data and information. A complete list of materials I have considered to date in connection with this particular assignment is included as Exhibit C. To the extent that I review additional information, I will supplement this list.

III. Summary of Conclusions

12. I designed and conducted two separate surveys—one for smartphones and one for tablets— to determine the price premium, if any, that Samsung consumers are willing to pay for the features associated with the patents at issue. For smartphones, I tested the '828 Patent, the '915 Patent, and a combination of the '381 Patent, '163 Patent, and '915 Patent.[5] For tablets, I tested the '607 Patent, the '915 Patent, and a combination of the '381 Patent, '163 Patent, and '915 Patent.

13. My analysis shows that, for both smartphones and tablets, Samsung consumers are willing to pay a significant price premium for the tested features that are covered by the patents at issue. For smartphones with a base price of $199, the estimated price premium is $39 for the '915 Patent alone. In other words, if a Samsung smartphone without the features associated with the '915 Patent is priced at $199, I find that consumers would be willing to pay an additional $39 for an otherwise-identical Samsung smartphone that has the features associated with the '915 Patent. With the same base price of $199, the estimated price premium is $100 for the '915, '163 and

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[5] I have been informed by counsel that the '828 Patent is no longer relevant for the purposes of my report. Because I received this information after the survey was conducted, my survey includes functionality associated with the '828 Patent. However, I am not offering any opinions relating to the '828 patent.

'381 Patents taken together.

14.   For tablets with a base price of $499, the estimated price premium is $58 for the '607

Patent alone, $45 for the '915 Patent alone, and $90 for the '915, '163 and '381 Patents

taken together.

IV. Overview of Methodology

15.   The basic survey methodology that I selected is known as web-based conjoint analysis.

Conjoint analysis is a tool that enjoys wide use in the field of marketing research. It was

introduced to the field of marketing research in 1971 and is generally recognized by

marketing science academics and industry practitioners to be the most widely studied

and applied form of quantitative consumer preference measurement. It has been shown

to provide valid and reliable measures of consumer preferences, and these preferences

have been shown to provide valid and reliable forecasts of what consumers will do (or

would have done) under scenarios related to those measured.[6]

16.   For example, under the auspices of MIT's Virtual Consumer Initiative, my colleagues

and I undertook large-scale tests of the validity of web-based conjoint analysis.

Predictions were highly accurate, predicting future choices consumers would make in a

subsequent test with real money at stake and predicting what would happen in the

marketplace. One of the scientific papers discussing the validity test received two

highly prestigious awards as the best paper in the marketing sciences literature for 2003

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[6]   Hauser, John R. and Vithala Rao (2004), "Conjoint Analysis, Related Modeling, and Applications," *Advances in Marketing Research: Progress and Prospects*, Jerry Wind and Paul Green, Eds., (Boston, MA: Kluwer Academic Publishers), pp. 141–168.

(awarded in 2004) and for the best paper based on a dissertation (awarded in June 2005).[7] Another scientific paper was a finalist for the best paper in 2002 in the *Journal of Product Innovation Management* and still a third paper was a finalist for the best contribution to the practice of marketing research in 2003.[8] Many successful products, including automobiles, hotel chains, the EZ Pass system, HMOs, and cameras, have been developed using conjoint analysis.[9]

17. The general idea behind conjoint analysis is that consumers' preferences for a particular product are driven by features or descriptions of features embodied in that product. For example, in the smartphone survey I conducted here, I included the following features: (i) capabilities of its touchscreen; (ii) size and weight; (iii) camera; (iv) storage; (v) connectivity; (vi) number of apps; and (vii) price. A feature (sometimes called an attribute), such as storage or capacity, can have different levels of values. In the smartphone survey, for example, the different levels of memory that were included were: (1) 8 gigabytes ("GB"), (2) 16 GB, (3) 32 GB, or (4) 64 GB.

18. There are many forms of conjoint analysis. For this assignment, I selected a form of conjoint analysis known as Choice-Based Conjoint ("CBC") analysis. In CBC, consumers are shown products generated as different combinations of features.

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[7] Toubia, Olivier, Duncan I. Simester, John R. Hauser, and Ely Dahan (2003), "Fast Polyhedral Adaptive Conjoint Estimation," *Marketing Science*, 22, 3, (Summer), pp. 273–303.

[8] Dahan, Ely and John R. Hauser (2002), "The Virtual Customer," *Journal of Product Innovation Management*, 19, 5, (September), pp. 332–354; Toubia, Olivier, John R. Hauser, and Duncan Simester (2004), "Polyhedral Methods for Adaptive Choice-based Conjoint Analysis," *Journal of Marketing Research*, 41, 1, (February), pp. 116–131.

[9] Green, Paul E., Abba M. Krieger, and Yoram Wind (2001), "Thirty Years of Conjoint Analysis: Reflections and Prospects," *Interfaces*, 31, 3, (May-June), pp. S53–S76. Hauser, John R. and Vithala Rao (2004), "Conjoint Analysis, Related Modeling, and Applications," *Market Research and Modeling: Progress and Prospects,* Jerry Wind and Paul Green, Eds., (Boston, MA: Kluwer Academic Publishers), pp. 141–168.

Respondents are shown these products in sets (called the "choice sets" or "choice tasks") and are asked to choose the product that they most prefer, that is, the profile that they would choose if the choice set described the only products that were available to them. I chose to show respondents four products in each choice set. I have used four-product choice sets in other applications, including award-winning academic articles and in litigation. I have found the data to be both reliable and valid.[10]

19. Conjoint analysis provides respondents with realistic choices among hypothetical products that vary simultaneously on multiple features. This realism enhances the predictive ability and hence reliability and validity of the conjoint analysis task. Furthermore, because multiple features are varying simultaneously, the task does not cause the respondent to focus artificially on a single feature. By avoiding such a focus conjoint analysis minimizes any demand artifacts that might be induced. A demand artifact is akin to a leading question.[11] A multi-feature task discourages respondents from guessing that the researcher is interested in a particular feature, which would, in turn, cause the respondent to believe that the researcher is "demanding" a particular response. A multi-feature conjoint analysis task is likely to be more reliable and valid than a task in which the consumer trades off only a single feature and price as would be

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[10] See, for example, Toubia, Olivier, John R. Hauser, and Duncan Simester (2004), "Polyhedral Methods for Adaptive Choice-based Conjoint Analysis," *Journal of Marketing Research*, 41, 1, (February), pp. 116–131; Toubia, Olivier, John Hauser and Rosanna Garcia (2007), "Probabilistic Polyhedral Methods for Adaptive Choice-Based Conjoint Analysis: Theory and Application," *Marketing Science*, 26, 5, (September-October), pp. 596–610. TiVo Inc. v. Echostar Communications Corp. et al., Case No. 2:04-CV-1-DF, United States District Court for the Eastern District of Texas, Marshall Division.

[11] Demand artifacts are aspects of the study that influence research results based on the chosen procedure rather than based on the phenomenon under study. For a discussion of demand artifacts, see, e.g., Sawyer, Alan G. (1975), "Demand Artifacts in Laboratory Experiments in Consumer Research," *Journal of Consumer Research*, 1, 4, (March), pp. 20–30. Shimp, Terence A., Eva M. Hyatt, and David J. Snyder (1991), "A Critical Appraisal of Demand Artifacts in Consumer Research," *Journal of Consumer Research*, 18, 3, (December), pp. 273–283.

the case in contingent valuation.

20. CBC analysis is consistent with economic and consumer-behavior theories of approximate utility maximization. That is, if a researcher could measure each and every feature of the product and represent consumer utility as a function of those features, then consumer-behavior theory says that consumers would choose the product that maximizes their utility. In conjoint analysis, utility is modeled as having an observed component that is due to the features being varied and an unobserved component that is due to the impact of unobserved features and factors. The observed utility is the sum of the partial contributions of each feature and price (the effect of price is negative). The partial contribution of a level of a feature is known as a "partworth." These partworths are estimated from the respondents' natural choices by established statistical methods.

21. Partworths measure, in units of utility, the <u>relative</u> partial contribution of a feature. For example, if the partworth for 64 GB on memory is 2.9 units of utility and the partworth of 32 GB of memory is 2.1 units of utility, then we can say that the respondent gets 0.8 more units of utility from a smartphone with 64 GB of memory than he/she would have gotten from a smartphone with 32 GB of memory. ($0.8 = 2.9 - 2.1$). Because we also measure the partial contribution of price decreases in the units of utility, we can compare the utility of a relative change in a feature (say memory) to the relative decrease in price.

22. We estimate the partworths from consumers' choices. I first provide a conceptual example of how partworths may be estimated from consumers' choices. Imagine that we were trying to measure the incremental value of a digital video recorder (DVR) as part of a satellite television service. We would create profiles, each of which described

a possible service. For ease of exposition, the example below has only five features – DVR or not, price, network, number of channels, and number of premium packages. In a real conjoint task these five features would all vary and the consumer would choose among different profiles. Again, for ease of exposition, the illustrative example does not vary features other than the DVR and price. Now imagine we ask the consumer to make a choice among only these two services. In Table 1A below the respondent prefers a service with a DVR even though its price per month is $8 higher ($8 = $20 – $12). Thus, from this choice alone we know that the consumer is willing to pay a price premium of <u>at least</u> $8 for the DVR. In other words, with all other features held constant, the consumer prefers to have a DVR for an additional $8. He or she may be willing to pay more, but we know from this choice exercise that she is willing to pay at least an $8 premium for the DVR. We call this an inequality constraint because the difference in the partworths of DVR minus no-DVR is larger than the difference in partworths between $12 and $20. (Recall that the partworth of $12 is larger than the partworth of $20, consistent with consumer-behavior theory.)

Table 1A: Conjoint Analysis – Basic Concept
Price Premium for DVR is at least $8

	Product 1	Product 2
Includes DVR	Yes	No
Network	Dish	Dish
Number of Channels	120	120
Premium Packages	3	3
Price	$20	$12
	Chosen	Not Chosen

23.   Now consider another consumer given the same choice but that consumer chooses the

service without the DVR at $12. This situation is depicted in Table 1B below. That

consumer is willing to pay a price premium of <u>at most</u> $8 for the DVR. This is because

he or she chooses not to buy a DVR for an additional $8, so the premium the consumer

is willing to pay is at most $8, since the other features are not varied in the choice

exercise. This is a second type of inequality constraint.

Table 1B: Conjoint Analysis – Basic Concept
Price Premium for DVR is at most $8

	Product 1	Product 2
Includes DVR	Yes	No
Network	Dish	Dish
Number of Channels	120	120
Premium Packages	3	3
Price	$20	$12
	Not Chosen	Chosen

24. Now imagine we give a respondent sixteen such choice tasks—similar to the methodology in the surveys described in my report—where, in each choice task, he or she is asked to choose among four profiles of satellite television service. From every choice task, we obtain three inequality constraints (an inequality constraint may be thought of as a data point) because the chosen product is preferred to each of the other three products. Therefore, a single respondent's choices give 48 data points. When aggregated over a large number of respondents, the CBC exercise gives a rich set of data from which to estimate the partworths. For example, when aggregated over 500 respondents, this gives 48 x 500 = 24,000 data points.

25. Suppose that the five features in the above example each had four levels (for example, the levels for Number of Channels were 80, 120, 160, and 200 channels). Because partworths are relative, there are three (rather than four) relative partworths that we need to estimate. Thus, with five features and four levels we need 3 x 5 = 15

partworths. The large number of data points (24,000) is more than adequate to estimate statistics (medians, means, covariances, etc.) for the 15 partworths. Market-level estimates of median (or mean) values and the market-level variation are statistically quite precise.

26.   We can make these estimates even more precise when we use information from consumer-behavior theory. For example we know that the partworth of $8 has to be at least as large as the partworth of $20 and we know that the partworth of "with DVR" has to be at least as large as the partworth of "no DVR." This consumer-behavior-theory information also takes the form of inequality constraints and can be thought of as "prior data" in the academic literature.[12]

27.   The illustrative DVR example also shows why we focus on market-level information. Although we allow partworths to vary by consumer because some consumers value DVRs highly and some do not, we want to summarize this variation with a relatively small number of statistics. That is, we would rather base our interpretations on the 24,000 data points along with information from consumer-behavior theory. The following example illustrates this market-level versus individual-consumer level issue.

28.   Suppose that I want to estimate the probability that a coin flips to heads by observing two independent flips per consumer. If the coin is really a fair coin, the probability of heads is 0.50. If I observe 500 consumers I observe 1,000 flips. The estimated

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[12]   See, for example, Allenby, Greg, Neeraj Arora, and James Ginter (1995), "Incorporating Prior Knowledge into the Analysis of Conjoint Studies," *Journal of Marketing Research*, 32, 2, pp. 152–162. ("Researchers often possess prior information about the partworths, such as the order and range restrictions of product attribute levels. It is known, for example, that consumers would rather pay less for a specific product given that all other product attribute levels are unchanged.")

probability of heads is very likely very close to 0.50, based on the mean or median of the outcomes of 1,000 coin flips. In fact, the expected mean (and median) is 0.50 and the 95% confidence interval is 0.50 ± 0.04. This result is at the market level. However, at the level of the individual respondent, because there are only a small number of observations possible for an individual respondent, the estimated probability of heads for an individual respondent is not as precise. Specifically, the only possible outcomes are HH, HT, TH, and TT – each equally likely with a fair coin.[13] Thus, for approximately 25% of the consumers we would observe a 1.00 probability of heads and for 25% of the consumers we would observe a 0.00 probability of heads. We would only observe 0.50 for approximately half of the consumers. In comparison with respondent-level estimates, we get a precise result (0.50 ± 0.04) if our estimate is based on the full sample of all 500 consumers. As this example shows, while estimates based on a small number of observations for each individual may be less precise, the individual-respondent estimates aggregate to a highly precise estimate of the market-level probability that one can rely upon. The same logic applies to conjoint analysis. Using 24,000 inequality constraints gives precise estimates at the market level even if the estimates and predictions for a particular consumer may not be as statistically precise.

29. Before I address the estimation of partworths, I provide one more example to show the power of the market-based approach. Suppose that there are two types of coins, neither fair. (A fair coin is equally likely to come up head or tail.) Coin A returns a head with

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[13]   Head = H, Tail = T.

probability 0.60 and Coin B returns a head with probability 0.40. (If the coins are distributed equally among consumers, and I choose a consumer randomly, then, a priori, a head is returned with probability 0.50). Now suppose I observe a consumer flip two heads and I want to estimate what type of coin the consumer has. If the coin types are equally likely among consumers, and consumer had Coin A, he/she would have gotten two heads 36% of the time because 0.36 = 0.60 x 0.60. If the consumer had Coin B, he/she would have gotten two heads only 16% of the time because 0.16 = 0.40 x 0.40. Thus if I observe HH, it is more likely the consumer has Coin A than Coin B. The likelihood is about 70%.[14] In other words, I gain information about the type of coin, which I do not observe directly, by observing the outcomes of the flips. This is analogous to how partworths are estimated. We observe choices and the choices enable us to infer the partworths that led to those choices. However, once again, I could infer precisely the distribution of Coin A vs. Coin B in the market, even though I have less precise estimates for each individual consumer.

30. I use a well-known Bayesian method in which I estimate the distribution of partworths that best describe the choices that I observe among the 455 consumers in the smartphone survey and the 415 consumers in the tablet survey. The statistical method is known as Hierarchical Bayes for Choice-Based Conjoint analysis ("HB CBC"). HB CBC is commonly used in both academic and industry conjoint analyses. I and other researchers have used the approach both in academic research and in offering expert

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[14]   According to Bayes' Theorem: 0.692 (or about 70%) = 0.36 / (0.36 + 0.16).

opinion in litigation proceedings.[15]

31. As in the Coin A vs. Coin B example, HB CBC analysis uses survey data on respondents' choices to update prior beliefs (for example, that the partworth of $8 has to be at least as large as the partworth of $20) such that the estimated distribution of partworth for the respondents is improved based on the choices observed in the data.[16] The "hierarchy" part of HB CBC means that the statistical model of the estimation allows variation (or heterogeneity) and correlation across partworths of different respondents when deriving the distribution of partworths across all respondents. Because of the variation and correlation, the distribution of partworths for a subset of respondents is informed by the data of choices by all respondents. I use HB CBC estimation to derive the distribution of partworths across all respondents (as a sample from the consumer population). That distribution and statistics such as the median partworths, median willingness to pay, or fit and validation measures are statistically precise. I report statistical confidence bounds when appropriate.

32. Analogous to the coin-flipping example, HB CBC estimation enables me to obtain more precise estimates of market-level distributions from less-precise individual-

[15] For surveys of academic research on HB CBC, see, for example, Allenby, Greg M., and Peter E. Rossi (2003), "Perspectives Based on 10 Years of HB in Marketing Research," Sawtooth Software Research Paper Series. Rossi, Peter E. and Greg M. Allenby (2003), "Bayesian Statistics and Marketing," *Marketing Science*, 22, 3, (Summer), pp. 304–328. Hauser, John R. and Vithala Rao (2004), "Conjoint Analysis, Related Modeling, and Applications," Advances in Market Research and Modeling: Progress and Prospects, Jerry Wind and Paul Green, Eds., (Boston, MA: Kluwer Academic Publishers), pp. 141–168.

[16] In the Coin A vs. Coin B example, the prior belief was that the coins were equally likely. I could have used other prior beliefs. For example, if I knew that 80% of the coins in the population were of the A-type, then I would have been more confident that the HH came from an A-type than a B-type. I would have estimated that there was a 90% chance that the coin was on an A-type. In HB CBC, weakly-informative priors are used such that the priors have little impact on the final estimates. The consumer-behavior-theory constraints play an analogous role to prior information.

respondent-level estimates. HB CBC partworth estimates are best suited for calculating statistics at the market level, such as the median value of certain variables of interest, and for simulating the overall, aggregate behavior of the market. This is how I use the HB CBC estimates for in this report.

33. The HB CBC method has proven to provide reliable and valid conjoint analysis estimates of partworths.[17] It is an appropriate method to use to obtain the distribution of partworths across consumers when there are a moderate number of choice sets in the choice task. In the study described in this report I chose to use 16 choice tasks – a number that I have used in both academic studies and studies that I have used in litigation. Using sixteen choice tasks enables me to appropriately balance the number of questions in the survey with the number of partworths for which I need to estimate market-level statistics. In my experience, using sixteen choice tasks limits respondent wear-out.[18]

34. Because HB CBC estimation is based directly on consumer choices and accounts for heterogeneity in consumers' preferences, it is, in my opinion, an ideal method to summarize the price premiums that consumers in the market are willing to pay for various features of consumer electronic devices such as smartphones and tablets. When price is one of the measured features in the survey and estimation, we can estimate the

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[17] For surveys of academic research on HB CBC, see, for example, Allenby, Greg M., and Peter E. Rossi (2003), "Perspectives Based on 10 Years of HB in Marketing Research," Sawtooth Software Research Paper Series. Rossi, Peter E. and Greg M. Allenby (2003), "Bayesian Statistics and Marketing," *Marketing Science*, 22, 3, (Summer), pp. 304–328. Hauser, John R. and Vithala Rao (2004), "Conjoint Analysis, Related Modeling, and Applications," Advances in Market Research and Modeling: Progress and Prospects, Jerry Wind and Paul Green, Eds., (Boston, MA: Kluwer Academic Publishers), pp. 141–168.

[18] If too many questions were asked of a respondent, then the respondent might "wear out," that is, response errors might increase as the respondent tires. In addition to limiting the number of questions in the choice task to minimize wear out, I pretested the questionnaire to assure that respondents did not experience wear out.

additional price consumers would pay for having a higher level of a feature. As explained in Section X below, I have estimated the price changes needed to make the market or a median consumer "indifferent" between having and not having a product feature associated with the patents at issue.

V. Questionnaire Development

35. I began by identifying usage features that consumers' desire in Samsung smartphones and tablets. I instructed AMS to conduct in-depth interviews with current Samsung smartphone and tablet owners. A total of 20 interviews were conducted in the month of February, 2012. The interviews were approximately 30 – 45 minutes in length and included a mix of males and females of different ages. Conversations with consumers were open-ended, seeking consumers' opinions about Samsung smartphones and tablets and details of their experiences with their devices. The interviewers probed the respondents to better understand their use of smartphones and tablets. I have worked with these interviewers before and participated in their training. I am confident that the interviewers probed deeply to uncover consumers' needs.

36. There were two purposes of these interviews. The first purpose was to identify a reasonable set of features for the conjoint analysis so that respondents would feel they were making realistic choices among smartphone profiles. Because consumers are told to make choices among profiles assuming "all else equal," as is the standard in conjoint analysis, the set of features does not need to be exhaustive. However, a reasonable set of features makes the choices more realistic and minimizes demand artifacts. (Technically, the additive nature of the utility specification combined with the error

term makes it possible to estimate partworths by holding "all else equal." Indeed, there are forms of conjoint analysis, called partial-profile conjoint analysis, that also predict well and that are based on varying only a few features at a time.) The second purpose was to hear the words and phrases that the consumers use in describing smartphones so that the questionnaire uses language commonly used by consumers. For both of these purposes, I was briefed by AMS. As per my standard procedures all interviews were verbal in nature and were not recorded or transcribed. This was sufficient for my purpose in designing the survey. None of these respondents were included in the final analysis because they were not asked to complete the conjoint-analysis survey.

37. Under my direction, AMS identified typical smartphone usage by owners of Samsung smartphones and tablets. AMS briefed me so that I could select the features and levels to be used in the conjoint analysis. The interviews informed my selection of the appropriate features to include in CBC and to develop the survey questionnaires (one for smartphones and another one for tablets). These interviews were also informative about what consumers perceive as a reasonable range for the various smartphone and tablet features. This understanding of ranges helped me to identify the appropriate levels of the features to include in the survey.

38. After having been informed about the comments in the qualitative interviews, I selected the following seven features to be included in CBC for both smartphones and tablets: (i) capabilities of the touchscreen; (ii) size and weight; (iii) camera; (iv) storage; (v) connectivity; (vi) number of apps; and (vii) price. Informed by the qualitative interviews the chosen features were sufficiently independent among themselves and sufficiently independent from "held constant" features that an additive utility model

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was appropriate.[19] Brand (say Samsung or Apple) is not a feature that varies in the conjoint analysis because all smartphone profiles presented to the consumer were hypothetical Samsung smartphone profiles. Respondents were instructed: "Now imagine that you are in the market to buy another Samsung smartphone. The following questions will involve a series of exercises in which you will be shown four different Samsung smartphones at one time."

39. My choice of the seven features also has external validity. The seven features I selected are also among the features that are highlighted by Samsung on its website for smartphones and tablets.[20] They are also among the features that are used to compare smartphones and tablets by technology websites.[21]

40. Qualitative interviews are also useful in determining appropriate words and phrases to be used in the survey questionnaires to describe the features of smartphones and tablets. The interviews conducted by AMS helped to assure that the words used to describe the levels of the features would be understood by consumers.

41. The questionnaires were programmed into a PC-based software system designed for administering and analyzing such questionnaires.[22] The final questionnaires that respondents were asked to complete are shown in Exhibit D (smartphones) and Exhibit E (tablets). Respondents answered these questions in the web survey via their

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[19] I review tests of independence in later paragraphs.

[20] See, for example, www.samsung.com.

[21] See, for example, http://cell-phones.toptenreviews.com/smartphones/ and http://tablets-review.toptenreviews.com/ (accessed on March 21, 2012)

[22] I used Sawtooth Software's SSI Web Version 70.0.26 package, which is a well-known and widely used software system for these types of applications.

computers. Exhibit F (smartphones) and Exhibit G (tablets) show reproductions of the computer screens. These are examples of the types of screens that respondents viewed. Some questions, such as the choice task, were chosen based on algorithms that included appropriate randomization to avoid order effects. In each choice task for each respondent, the levels of the features were generated randomly subject to order and level balancing using standard methods.

VI. Pretesting the Surveys

42. Questionnaires should use language that respondents find easy to understand and relevant to the questions that are being asked. If the questions of interest are ambiguous or otherwise unclear, the results of the survey may be impacted due to guessing or misunderstanding on the part of the respondent. To maximize the clarity of the questionnaire, it is useful to gain insight into, for example, how potential respondents think about issues relevant to the target of the study, the extent to which potential respondents are aware of those issues, and the vocabulary used by potential respondents regarding the study target. Therefore, in addition to the in-depth interviews and prior to administering the final survey, it is important to evaluate (or "pretest") the proposed series of questions with a small sample of "the same type of respondents who would be eligible to participate in the full-scale survey."[23] Such pretests help to assess the potential for, and remove or minimize, demand artifacts and to ensure that all survey

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[23]   Diamond, Shari S. (2011), "Reference Guide on Survey Research," in Reference Manual on Scientific Evidence, Third Edition, Federal Judicial Center, pp. 359–423, at pp. 388–389.

questions were understood as intended.[24]

43. In February, 2012, at my direction, experienced interviewers from AMS pretested the survey questionnaire with 20 people in the United States. To qualify for a pretest interview, the interviewee was required to currently own a Samsung smartphone or tablet. The goal of this evaluation was to ensure that respondents could understand and answer questions as the questions were intended to be asked. These responses were used solely for pretesting and are not included in the final survey results.

44. The pretest interviews themselves are open-ended verbal debriefs of pretest respondents after the respondents have answered the survey questions.[25] These results were reported to me orally by experienced interviewers who debrief respondents under my direction. I have worked with these interviewers before, participated in their training, and provided instructions on how to carry out these pretests.

45. Pretesting continues until respondents answer the survey questions easily, do not find the questions difficult or ambiguous, and feel that their answers represent their opinions. In this instance, 20 pretest respondents were sufficient for the purpose of ensuring that the questions were understood.

46. Pretesting also ensured that appropriate vocabulary was used in the questionnaire. Based on the findings from the pretests, AMS fine-tuned the phrasing and words used in the questionnaire to reflect the way in which consumers think about and understand

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[24] Diamond, Shari S. (2011), "Reference Guide on Survey Research," in Reference Manual on Scientific Evidence, Third Edition, Federal Judicial Center, pp. 359–423, at pp. 387–389.

[25] Urban, Glen L., and John R. Hauser (1980), *Design and Marketing of New Products*, (Englewood Cliffs, NJ; Prentice-Hall, Inc.), p. 179.

Samsung smartphone and tablets. I am confident that the phrasing of the questionnaire was comprehensible and minimized the potential for guessing. Further, information from pretesting helped with the design of instructions and in resolving any technical issues with the animations and audio. These changes ensured that the data were reliable. A summary list of changes to the questionnaires based on the pretests is presented in Exhibit H.

47.   During the pretest debriefs, at my direction, experienced interviewers from AMS tested explicitly for demand artifacts. No demand artifacts were detected in the final phrasing and layout of the questions. Respondents did not find the questions to be leading and respondents were not able to guess that any particular result was desired by the survey designer.

VII. Identifying the Sample

48.   For this survey, potential respondents were identified through Research Now, a company that has pre-recruited potential respondents who have indicated their willingness to participate in market research surveys. Research Now is a well-established international market research service firm that maintains an invitation-only panel of over 3.6 million consumers in the United States and over 6 million panelists worldwide.[26] Research Now manages about 2,000 projects per month for a variety of clients.[27]

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[26]   Research Now ARF QEP Panel Profile Snapshots. Research Now Panel Quality: Our Values.

[27]   Research Now Panel Quality: Our Values.

49.   Both AMS and I have worked with Research Now on a number of other projects. We
        have each found them to be consistently reliable and a high quality supplier of qualified
        survey respondents. Research Now automatically checks new panelists for duplicate
        email addresses at the time for registration. Following initial registration, there are
        additional checks to identify fraudulent panelists and there is a regular review of
        member data to validate identities of panel members.[28] As part of the panel recruitment
        process, all panel members complete a questionnaire that includes basic demographic
        information (age, gender, etc.). In addition, panel members have the option to answer
        questions about their personal habits and behaviors (e.g., drinking habits, cell phone
        usage).

50.   Using this information, Research Now was able to target survey invitations to people
        who had indicated that they own smartphones and tablets. Respondents received an
        initial e-mail invitation and one e-mail reminder.[29] The invitation included a link to the
        actual survey which was hosted on a website maintained by AMS.[30] This link contained
        an embedded identification number that assured that only invited respondents could
        answer the survey and that each respondent could only complete the survey once.[31]
        Respondents who qualified and completed the survey were awarded $11 in e-Rewards
        (Research Now) currency. In my experience, such honoraria are common in conjoint

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[28]   Research Now Panel Quality: Our Values.

[29]   The email invitation is provided in Exhibit I.

[30]   AMS programmed and hosted the survey.

[31]   If a respondent was taking the survey on a tablet, smartphone, or any electronic device other than a desktop or
        laptop computer, he or she was screened and terminated, but was encouraged to start the survey again on a
        laptop or desktop computer. This restriction was added because tablets, smartphones, and other handheld
        devices generally have insufficient screen size to view this survey's content without extensive scrolling.

survey research and do not influence the accuracy of the responses. After clicking on the link from the email invitation, respondents were prompted to a browser window with a CAPTCHA challenge to ensure that responses were not computer-generated.[32] After completing the CAPTCHA challenge, respondents moved to the survey.

51. The security steps described above ensure that only panel members receive invitations, that the survey is not answered by a "bot," and that the survey taker cannot take the survey more than once. In addition, Research Now is a reputable panel provider which itself employs security procedures.[33] To provide further validation, each respondent's age and gender were compared to values for those respondents in the panel provider's database. Any respondents whose stated age and gender did not match the values in the database were terminated from the survey.

VIII. Survey Design and Administration

52. In designing and implementing the survey, I followed standard scientific methods to maximize the reliability of the survey instrument. My survey design adopted the scientific guidelines for surveys conducted for academic, commercial, and litigation

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[32] A CAPTCHA challenge refers to a program that protects websites against bots (i.e., computer-generated responses) by generating and grading tests that humans can pass, but current computer programs cannot. The acronym CAPTCHA stands for Completely Automated Public Turing Test To Tell Computers and Humans Apart. See, e.g., "CAPTCHA: Telling Humans and Computers Apart Automatically," CAPTCHA, http://www.captcha.net/, visited on March 21, 2012.

[33] Research Now uses several techniques to identify legitimate respondents. They have an extensive panel member verification process, and use "Digital Fingerprinting" to ensure that multiple responses are not obtained from the same computer. They also use "Geo-IP Validation" to identify the geographic location of the respondent. If there is a discrepancy between the targeted location of the survey and the location of the respondent's computer, the respondent is blocked from taking the survey. See, http://www.researchnow.com/engb/Panels/PanelQuality/ResearchIntegrity.aspx (accessed on March 21, 2012).

purposes.[34] I describe my methodology in greater detail below. For the full sequence of survey questions, see Exhibit D and Exhibit E.

53. **Double-blind design.** It is standard survey practice to avoid indicating the sponsor and/or purpose of the survey to ensure respondents' objectivity. According to the *Reference Manual on Scientific Evidence*, "the survey instrument should provide no explicit clues (e.g., a sponsor's letterhead appearing on the survey) and no implicit clues (e.g., reversing the usual order of the yes and no response boxes on the interviewer's form next to a crucial question, thereby potentially increasing the likelihood that *no* will be checked) about the sponsorship of the survey or the expected responses" (emphasis in original; footnote omitted). The goal of the survey design is to make the respondent "blind" to the sponsor and purpose of the survey.[35]

54. The design and administration of my survey can be characterized as blind. Because the survey was administered via the Internet, respondents were not exposed to human interviewers, thereby eliminating the possibility of an interviewer communicating the sponsor or purpose of the survey and influencing the outcome (intentionally or not). An Internet-based survey avoids demand artifacts that might be induced by means of intonation or facial expressions during the delivery of particular questions or answers. An Internet-based survey removes, or at least greatly diminishes, any "interviewer bias" which may arise from the desire of the respondents to please, displease, or impress the interviewer.

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[34] See, e.g., many of the recommendations in Diamond, Shari S. (2011), "Reference Guide on Survey Research," in Reference Manual on Scientific Evidence, Third Edition, Federal Judicial Center, pp. 359–423.

[35] See, e.g., Diamond, Shari S. (2011), "Reference Guide on Survey Research," in Reference Manual on Scientific Evidence, Third Edition, Federal Judicial Center, pp. 359–423, at pp. 410–411.

55. **Introductory/screener questions.** Introductory or "screener" questions help to identify

members of the target population and determine whether respondents meet the criteria

(qualify) for inclusion. In drafting introductory questions, I was careful not to convey

information that would influence responses to the main survey or otherwise provide

respondents with information that otherwise would not occur to them.[36]

56.   The inclusion of unrelated answer options in closed-ended respondent qualification

questions serves to distract respondents from an item of interest.[37] Such questions and

answer options help to conceal from the respondents the intention of the survey and to

minimize the potential for demand artifacts. For example, if a survey is conducted to

determine whether respondents might be interested in a particular movie, the survey can

ask the respondent to select the movies in which he or she is interested, providing a set

of movie options including the movie of interest. The other movies within the option set

would help mask the target of the survey, and would therefore serve to distract the

respondent from the purpose of the study. To restrict the sample to the target group, i.e.,

owners of the Samsung smartphones, I asked respondents in Question S7 (in the

smartphone questionnaire) "In the past two years, which of the following brands of

smartphone have you personally owned?" To minimize demand artifacts, I provided

unrelated options such as Apple, Blackberry, HTC, LG, Motorola, Nokia, and Sony

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[36] See, for example, Diamond, Shari S. (2011), "Reference Guide on Survey Research," in Reference Manual on Scientific Evidence, Third Edition, Federal Judicial Center, pp. 359–387, at pp. 386–387; Smith, D. M., N. Schwarz, T. R. Roberts, and P. A. Ubel (2006), "Why are you calling me? How study introductions change response patterns," *Quality of Life Research*, 15, pp. 621–630.

[37] "Closed-ended" questions provide the respondent with a set of potential responses (answer options) from which to choose. These are distinct from "open-ended" questions, which allow the respondent to formulate his/her own answers. For a discussion of closed-ended and open-ended questions, see Diamond, Shari S. (2011), "Reference Guide on Survey Research," in Reference Manual on Scientific Evidence, Third Edition, Federal Judicial Center, pp. 359–423, at pp. 391–394.

Ericsson, in addition to Samsung. Analogous questions were used in the tablet
questionnaire.

57. In addition, participants could not be employed by (or have a member of their
household who was employed by) a consumer electronics seller, a marketing or market
research firm, a public relations firm, or an advertising agency. These screens are
standard security questions and do not bias the results. Respondents were also required
to have owned at least one of the Samsung products at issue within the last two years.
Because respondents were allowed to select more than one product from the list of
products at issue, they were also asked to indicate the most recently purchased product.
This product was designated as the "most recent" product for the remainder of the
survey.[38] Respondents were also required to have played a role in the decision to
purchase their most recent Samsung product. Respondents' answers to these questions
allowed me to include only appropriate respondents in the survey.

58. **Filters.** To avoid influencing respondents' answers and survey results and to minimize
answers from uninformed respondents, carefully designed surveys include "filters" and
"quasi-filters." Filters are questions and/or answer options that eliminate respondents
who are not relevant or who do not have opinions. Quasi-filters avoid speculation and
guessing that may arise when a respondent is forced to offer an opinion or answer a
question on which he or she has no opinion. For example, typical quasi-filters offer
answer options such as "don't know" or "no opinion." Quoting from the Reference
Manual on Scientific Evidence, "[b]y signaling to the respondent that it is appropriate

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[38] Smartphone survey: "QS7b. Which one of the following Samsung smartphones that you owned was purchased
most recently? This will be referred to as your most recent Samsung smartphone for the rest of this survey."

not to have an opinion, the question reduces the demand for an answer and, as a result, the inclination to hazard a guess just to comply."[39]

59. I used numerous filters in my survey questions and answer options. For example, appropriate questions in my survey included quasi-filters (i.e., the option of "Don't know/Unsure"). Many of the surveys' screener questions served as full-filters. For example, in Question S7b I ask respondents "Which one of the following Samsung smartphones that you owned was purchased most recently?" Respondents that selected "Don't Know/Unsure" were terminated. By employing filters, I avoided asking questions of respondents that might not be relevant and asking respondents to express a belief when the respondent had none or was not sure.

60. **Rotation of answer options.** In closed-ended questions with several answer options, respondents might be more likely to choose an option simply because it is first or last on the list. Such phenomena are known as "order effects."[40] To avoid order effects, I rotated answer options so that different respondents see the options in different orders and any possible order effects cancel out across respondents. There are standard exceptions to the rotation rules. For example, certain options – such as "Other," "None of the above," and "Don't know / Unsure" – always come last in order for the question to preserve logical flow. Another exception to answer rotation occurs when answer options come in a certain logical order, such as those for age brackets. In such circumstances, answer options are usually not rotated.

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[39]   Diamond, Shari S. (2011), "Reference Guide on Survey Research," in Reference Manual on Scientific Evidence, Third Edition, Federal Judicial Center, pp. 359–423, at pp. 389–391.

[40]   For a discussion of order effects, see Diamond, Shari S. (2011), "Reference Guide on Survey Research," in Reference Manual on Scientific Evidence, Third Edition, Federal Judicial Center, pp. 359–423, at pp. 395–396.

61. I rotated answer options in the introductory questions and closed-ended filter questions, where it was appropriate. For example, in question S7 (smartphone questionnaire) I asked the respondents "In the past two years, which of the following brands of smartphone have you personally owned?" I rotated the order of the various brands of smartphone so that Samsung (the brand of interest) was not appearing first or last for all respondents.

62. Once respondents passed through the screening questions, they had to go through an animation and audio test to ensure that they would be able to view the animation and hear the audio during the conjoint exercise. If they passed the test, they were introduced to the features and feature levels used in the conjoint analysis.

63. In order to obtain reliable data from a conjoint exercise, it is important to have clear descriptions of the features and levels. When the features or levels are difficult for a lay person to understand in words or if the descriptions become wordy, an audiovisual or graphical interface should be used.[41] Three of the touchscreen capability levels (for both smartphones and tablets) were chosen such that they would represent a product that included a non-infringing alternative for one or more of the patents at issue.[42] The specific technical descriptions of the touchscreen capability levels and information about their functionality were provided to me by counsel. I have not reviewed or interpreted the patent claims myself and do not have a professional opinion on that

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[41] A good conjoint design makes use of graphics. See, for example, Selove, Matthew, and John R. Hauser (2011), "The Strategic Importance of Predictive Uncertainty in Conjoint Design," Working Paper.

[42] The touchscreen capability levels in the smartphone survey were chosen to capture the following Patents: (i) '828, (ii) '915, and (iii) combination of '915, '381, and '163. The touchscreen capability levels in the tablet survey were chosen to capture the following Patents: (i) '607, (ii) '915, and (iii) combination of '915, '381, and '163.

matter.

64. In order to make it simple for respondents to understand the levels of the features in the conjoint analysis, I directed Cornerstone Research and AMS to work with a graphics firm, who designed animations (with audio) for these levels.[43] I had direct input into the precise nature of the animations and the content of the audio. Pretesting, done by AMS, showed that respondents found these animations to be useful and easy to understand. Because touchscreen capability is the feature at issue in this patent litigation, I introduced animations for two additional features, camera and connectivity, in order to avoid demand artifacts. Three out of the seven features included in the conjoint had animations. To further minimize potential demand artifacts, I introduced graphics (but not animations) for the remaining four features: size and weight, number of apps, storage/memory, and price. For these features it was natural to have graphics without animations. For example, graphics help the respondent to understand the number of apps, but respondents do not need animations to understand the number of apps.

65. Before beginning the conjoint choice tasks, the respondents viewed the descriptions of the various features and levels, including animations and graphics. The following sequence for the presentation of features was chosen: (i) camera, (ii) size and weight, (iii) capabilities of the touchscreen (iv) storage/memory (v) connectivity (vi) number of apps (vii) price. The sequence was chosen to avoid order effects, if any, that may arise due to the features with animations appearing together in the introduction. Touchscreen was chosen to be the third feature to avoid any demand artifacts that may arise with the

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[43] Fulcrum Legal Graphics was hired for the purpose of doing the animations and audio.

first or the last position. (As described is subsequent paragraphs, features and feature levels were randomized in the choice tasks.)

66. The sequence of presentation for the levels across features that had a natural order was standardized to be high-to-low, i.e., the highest feature level would appear first and the lowest feature level would appear last. For example, the levels of storage/memory were presented in the following sequence: (i) 64 GB (ii) 32 GB (iii) 16 GB (iv) 8 GB. All the features, except, touchscreen capability followed this sequence. Because touchscreen capability levels are not strictly ordinal, I randomized the presentation between two different sequences to avoid order effects, if any.

67. For the smartphone survey, the following levels were used for touchscreen capability: (A) reliable touch, auto-switch (1 to 2 fingers), rubberband, tap to re-center after zoom; (B) less reliable touch, auto-switch (1 to 2 fingers), rubberband, tap to re-center after zoom; (C) reliable touch, rubberband, tap to re-center after zoom; and (D) reliable touch. The two sequences used in the initial presentation were (A-B-C-D) and (A-C-D-B). Similarly, for the tablet survey, the following levels were used for touchscreen capability: (A) full multi-touch, auto-switch (1 to 2 fingers), rubberband, tap to re-center after zoom; (B) very limited multi-touch, auto-switch (1 to 2 fingers), rubberband, tap to re-center after zoom; (C) full multi-touch, rubberband, tap to re-center after zoom; and (D) full multi-touch. The two sequences used in the survey were (A-B-C-D) and (A-C-D-B).

68. After being introduced to the features and the feature levels, respondents were introduced to the conjoint task and shown a series of sixteen screens (choice tasks) containing four alternative smartphone (or tablet) options that were described by

combinations of the features. The order in which features were listed was randomized across respondents (i.e., for some respondents Camera would appear at the top and for other respondents Connectivity would appear at the top). However, for any given respondent, the order was the same across the sixteen choice tasks. Feature levels, in contrast, were randomized across the sixteen choice tasks for each respondent.

69. For each set of four alternative smartphones in a choice task, respondents were asked: "If these were your only options and you were choosing a new smartphone [tablet], which Samsung smartphone [tablet] would you choose?" By explicitly asking respondents to focus only on the four options provided to them, the survey was designed with the goal that respondents would not make comparisons with other devices available in the marketplace.

70. In some instances researchers augment the choice among profiles in the choice task by allowing the respondent to choose an "outside option," that is, to choose not to choose among the options (this is also known as the "no-choice" option). This outside-option design is appropriate when a researcher wishes to estimate primary demand for smartphones. If an outside option is used in the survey, then in the estimation researchers estimate an additional partworth for the outside option. The outside option was neither appropriate nor needed in my conjoint analysis design. It was not needed because I sought to estimate the value of a change in the level of touchscreen capability relative to a change in price. These relative estimates are not affected by an outside option. An outside option was not appropriate because respondents were screened to be Samsung owners and instructed "Now imagine that you are in the market to buy another Samsung smartphone. … You will be asked to choose the smartphone that you

would be most likely to purchase." Because outside options are not universally necessary or appropriate, many researchers design conjoint analysis questionnaires without outside options.[44]

71. Respondents were also told "Aside from these features below, you should assume that all other smartphone features are the same for every smartphone offering you see." These instructions focus respondents on making relative choices holding all other potential features of smartphones [tablets] constant so that choices are being made with "all else equal." Any additional impact of features not included in the survey is captured by the error term in the respondent utility. The additive nature of the utility function further assures independence. (I describe tests for higher level interactions in a subsequent paragraph.)

72. Respondents then indicated which of the four options they would choose. The features and feature levels are indicated in the questionnaires in Exhibit D (smartphones) and Exhibit E (tablets).

73. As discussed above, each choice from a choice task by each respondent provides three inequality constraints because the chosen product is preferred to each of the other three products. Sixteen questions give 48 inequality constraints. For "N" respondents we have 48 x N inequality constraints in groups of 48. For example, with N = 500 we have

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[44] Toubia, Olivier, John Hauser and Rosanna Garcia (2007), "Probabilistic Polyhedral Methods for Adaptive Choice-Based Conjoint Analysis: Theory and Application," *Marketing Science*, 26, 5, (September-October), pp. 596–610. Toubia, Olivier, John R. Hauser, and Duncan Simester (2004), "Polyhedral Methods for Adaptive Choice-based Conjoint Analysis," *Journal of Marketing Research*, 41, 1, (February), pp. 116–131. Lenk, Peter J., Wayne S. DeSarbo, Paul E. Green and Martin R. Young (1996), "Hierarchical Bayes Conjoint Analysis : Recovery of Partworth Heterogeneity from Reduced Experimental Designs," *Marketing Science*, 15, 2, pp. 173–191.

24,000 inequality constraints. The inequality constraints derived from respondent choices are used by HB CBC to estimate the market-level distributions of partworths.[45] The profiles in the choice task were chosen randomly in such a way to ensure that they were order and level balanced. The designs were highly efficient in that the designs provided estimates of partworths with high precision.[46]

74. Following these sixteen choice tasks, the survey was concluded. A total of 604 respondents completed the smartphone survey beginning on February 29, 2012 and ending on March 6, 2012. A total of 599 respondents completed the tablet survey beginning on February 29, 2012 and ending on March 6, 2012. The completion rate was 98.4% percent and 99.4% percent for the smartphone and tablet surveys respectively.[47] Details are provided in Exhibit J.

75. Prior to estimating partworths, I set criteria to consider removing respondents who may not have paid sufficient attention during the sixteen choice tasks. Such data screening is common and standard practice to ensure that the final sample is reliable. Specifically, I used the following criteria to consider removing respondents in order to enhance the

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[45] Technically, this is a Bayesian procedure in which we are obtaining the best update of the partworths based on the data. This means that we represent all of the information about the partworths, including the means, medians, covariances, and other statistics. For brevity I refer to these complicated descriptions as simply the estimates of the partworths.

[46] For more technical descriptions see Sawtooth Software Technical Paper (2008), "The CBC System for Choice-Based Conjoint Analysis." Sawtooth Software Research Paper (2000), "An Overview and Comparison of Design Strategies for Choice-Based Conjoint Analysis." Efficiencies were 100% for the complete-enumeration randomized designs.

[47] Out of the total 38,795 participants invited for the smartphone survey, 8,844 began the survey, resulting in a response rate of 22.8%. Out of the total 8,844 participants who began the smartphone survey, 139 chose to terminate the survey themselves, resulting in a completion rate of 98.4%. Out of the total 8,844 participants who started the smartphone survey, 604 passed through the screening questions and qualified for the choice tasks, resulting in an incidence rate of 6.8%. For the tablet survey, the response rate was 23.8%, the completion rate was 99.4%, and the incidence rate was 2.6%.

reliability of the survey.

a. Straight-lining: if a respondent chose the same option (i.e., the first option or the last option) for at least 15 of the16 choice tasks;

b. Devices owned: if a respondent indicated that they owned a total of five or more (Samsung and other) smartphones or tablets;

c. Fast respondents: if a respondent was among the fastest 10% of the respondents in terms of the time taken to complete the survey

d. Slow respondents: if a respondent was among the slowest 10% of the respondents in terms of the time taken to complete the survey

76. After applying these criteria, a sample of 455 respondents was obtained for smartphones and a sample of 415 respondents was obtained for tablets. The results that follow are based on these samples. However, the results do not differ substantively with or without the application of these criteria. I undertook sensitivity analysis by estimating partworths based on samples with and without the application of these criteria and used the partworths to estimate the price premiums associated with the patents at issue. The estimated price premiums do not differ substantively (as shown in Section X, footnote 71). I conclude that the application of these criteria does not bias the results.

IX. Estimation of Partworths

A. Estimation given the available data and information

77. I estimate distributions of partworths for the features and feature levels of smartphones

and tablets using software developed by Sawtooth Software. The software uses a Hierarchical Bayes procedure that analyzes the data to obtain the best possible estimate of the distribution of partworths given the data.[48]

78.   The two surveys provide a wealth of information (inequality constraints) regarding the distribution of relative partworths for the different levels of each feature. In the following paragraphs I illustrate the data for the smartphone and tablet surveys using the example in Table 2 below. Suppose a respondent is choosing between the two products provided in Table 2. The respondent's choice of Product 1 tells us that he or she prefers the bundle of feature-levels that describe Product 1 relative to the bundle of feature-levels that describe Product 2.

79.   The two products in Table 2 differ in their levels of connectivity, storage capacity, and the number of available apps. Comparing the levels of these three characteristics across the two products, one may reasonably infer that the average consumer will prefer the connectivity features and storage capacity of Product 2, which include tethering and 32 GB of storage respectively, both above what Product 1 offers. Similarly, one may infer that the average consumer will prefer the 450,000 apps available for Product 1 to the 300,000 apps available for Product 2. That Product 1 was chosen instead of Product 2 provides us with an additional relative partworth inequality that indicates that the advantage Product 1 enjoyed in the number of apps was greater than the advantage Product 2 enjoyed in terms of connectivity and storage capacity. This is, of course, only a choice among two products. We get substantially more information about relative

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[48]   Sawtooth Software HB CBC Module for Hierarchical Bayes Estimation, Version 5.

partworths from a choice among four products. And even more information when the respondent makes sixteen such choices.

Table 2: A Hypothetical Respondent Choice

	Product 1	**Product 2**
Touchscreen	Reliable Touch	Reliable Touch
Connectivity	Cellular and WiFi	Cellular, WiFi, and Tethering
Camera	3 MP Rear Camera, Standard Video Recording, and Autofocus	3 MP Rear Camera, Standard Video Recording, and Autofocus
Storage Capacity	16 GB	32 GB
Number of Apps	450,000	300,000
Size and Weight	3.5 inches and 4 oz.	3.5 inches and 4 oz.
Price	$99	$99
	Chosen	Not Chosen

80.   In both the smartphone and tablet surveys, a product profile is characterized by seven features. Each feature has four levels, which implies three *relative* partworths per feature. Thus, I need to estimate 21 relative partworths to describe preferences for the smartphones or tablets. In Bayesian methods we "sample" from the distribution of the partworths using Bayes' Rule.[49] We can also use certain statistics to describe either the distribution or the implications of the distribution. For example, we can obtain the

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[49]   See Gelman, Andrew, John Carlin, Hal Stern, and Donald Rubin (2004), *Bayesian Data Analysis*, at pp. 7–9.

median partworths, the mean partworths, or the variation over the population in those partworths. If we choose to calculate the mean partworths we have 21 means – one mean for each partworth. If we choose to calculate the covariance of the partworths over the population of consumers we have 210 covariances and 21 variances. The data from the smartphone and tablet surveys are sufficient to estimate this number of parameters with reasonable precision with the approximately 20,000 inequality constraints in each of the two surveys from the respondents' answers to the choice tasks.[50]

81. The example in Table 2 above also serves to illustrate another aspect of the information about respondents' partworths that we use in the estimation of the partworths. Notice that when we compared Products 1 and 2 in Table 2, it was natural to assume that the respondent would prefer (or be indifferent to) increased memory storage, more connectivity options, and a higher number of available apps. The marketing literature recognizes that the researcher may frequently have such prior information about the estimated partworths and that incorporating this information can lead to better predictions.[51] In our case, everything else being equal, consumer-behavior theory predicts that consumers prefer to pay less; to have more connectivity options; a higher megapixel camera; more memory capacity; and more available apps. I incorporate this

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[50] Smartphones: 455 respondents imply 21,840 inequality constraints. Tablets: 415 respondents imply 19,920 inequality constraints.

[51] See, for example, Allenby, Greg, Neeraj Arora, and James Ginter (1995), "Incorporating Prior Knowledge into the Analysis of Conjoint Studies," *Journal of Marketing Research*, 32, 2, pp. 152–162 ("Researchers often possess prior information about the part-worths, such as the order and range restrictions of product attribute levels. It is known, for example, that consumers would rather pay less for a specific product given that all other product attribute levels are unchanged."). Boatwright, Peter, Robert McCulloch, and Peter Rossi (1999), "Account-Level Modeling for Trade Promotion: An Application of a Constrained Parameter Hierarchical Model," Journal of the American Statistical Association, 94, 448, (December), pp. 1063–1073.

information into the estimation using routine options in the Sawtooth Software HB estimation software.

B. Testing the fit and predictive ability of the model

82. Based on the number of inequality constraints from the conjoint surveys, we expect reasonably precise estimates of the market-level partworth distributions.[52] I confirm this expectation by testing the predictive ability of the model.

83. In the example of classical linear regression we could fit 10 data points perfectly with 10 parameters to be estimated (and get a fit R^2 of 1.0). However, this would be overfitting the data, which usually leads to the model having poor predictive power. We would be more confident in the regression if it fit with fewer parameters (say an intercept and a slope) and if it was developed based on prior theory, even if it had a slightly lower R^2. One way to check for overfitting is to test the model's predictive ability. For example, we might estimate the model on a subset of the data and attempt to use those parameters to predict behavior on the remaining "holdout" data. If the model overfit the "estimation" data,[53] it would not predict well on the holdout data.

84. For the purpose of checking the predictive ability of the model I use in this case, I re-estimated the model three separate times, each time using data on only 15 choice tasks from each respondent. I held out one choice task per respondent. I did this for the fourth, eighth, and twelfth choice tasks. I calculated the fit of the model based on the 15

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[52] Technically, we obtain reasonably precise estimates of the parameters that describe those distributions, such as medians, means, and covariances. For simplicity I refer to these as the market-level partworth distribution.

[53] Estimation data are also called "calibration data."

choice tasks used in estimation (estimation sample). Using the same parameters (without re-estimating) I calculated the predictive ability of the model for the held-out choices. I calculated two standard statistics, the "percent uncertainty explained" (U^2) and the "hit rate."[54]

85. U^2 is the more technical of the two statistics. It represents the percentage of uncertainty that is explained by the model.[55] A model that perfectly predicts every choice would have a U^2 of 1.00. A model that does no better than chance (predicting that each of the four choices would be chosen with probability equal to ¼) would have a U^2 of 0.00. When the fourth, eighth, or twelfth choice tasks were held out in the smartphone survey, the fit U^2 was 0.44.[56] These numbers were 0.41 across the three holdout scenarios for the tablet-survey model. These statistics imply that the model is doing significantly better than chance; in other words, it is picking up substantial information from the data to accurately describe consumer behavior in the estimation sample (the fifteen choice tasks used to fit the model). These statistics are similar in magnitude to

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[54]   Although we mechanically use respondent-level estimates to obtain each respondent's contribution to U^2 or hit rate, it is the market-level statistics on which we focus, consistently with arguments advanced elsewhere in this report.

[55]   Hauser, John R. (1978), "Testing the Accuracy, Usefulness, and Significance of Probabilistic Choice Models: An Information-Theoretic Approach, *Operations Research*, Vol.26, No. 3 (May-June), pp. 406–421.

[56]   In calculating U^2 for the estimation sample it is appropriate to adjust for the degrees of freedom in the model. This is appropriately conservative because it *lowers* the U^2 value. In an HB model we need to estimate the degrees of freedom as affected by the hierarchical constraints. This is a technical calculation involving the Deviation Information Criterion (DIC). We adjust the degrees of freedom by lowering the likelihood value by the degrees of freedom and then computing a ρ^2 fit statistic. See Hardie, Bruce G., Eric J. Johnson, and Peter S. Fader (1993), "Modeling Loss Aversion and Reference Dependence Effects on Brand Choice," *Marketing Science*, 12, 4, (Fall), pp. 378–394. Because Hauser (1978) demonstrates that ρ^2 is numerically equal to U^2 this correction for degrees of freedom can also be used for U^2 while retaining the intuitive interpretation of U^2. See my backup for calculations.

U^2 values reported in research published in academic journals.[57]

86. In order to examine whether the model can be used successfully to predict consumer behavior, I examined the ability of the model to predict choices that were held out. The average U^2 statistic for the holdout choice tasks in the smartphone survey was 0.37 (compared to 0.44 for the estimation samples); in the tablet survey it was 0.32 (compared to 0.41 for the estimation samples). Because U^2 statistics for the holdout samples, which were *not* used to estimate the model, are substantially better than chance, the HB CBC model can form a reliable basis for forecasts and predictions of consumer behavior. Moreover, because the U^2 statistics for the holdout samples do not drop off sharply relative to the U^2 statistics for the estimation samples, the HB CBC model is not "over-fitting" the data.

87. The second statistic that I examine in the same type of holdout analysis is the hit rate. The hit rate is a more intuitive measure. It reports the frequency with which the product chosen by survey respondents is predicted by the model to be the product most likely to be chosen in the choice task. If the model correctly picks the chosen product in every choice task for every respondent, then the model would have a hit rate of 1.00. If the model *never* picked the chosen product, the model would have a hit rate of 0.00. A model that picked one of the four products with equal probability would have a hit rate of 0.25. For the smartphone survey I find an average hit rate of 0.87 in the estimation sample and 0.67 in the holdout samples. For the tablet model, these numbers are 0.86

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[57] For example, a study estimates different specifications of a model and finds U^2 ranging between 0.22 and 0.48. See Guadagni, Peter, and John Little (1983), "A Logit Model of Brand Choice Calibrated on Scanner Data," *Marketing Science*, 2, 3, pp. 203–238.

and 0.64 respectively. Once again, the observation to be made is that (a) these statistics are high, and (b) they are high for both the estimation and holdout samples, indicating that the model's results can be used to reliably predict consumer behavior and estimate the price premium that consumers are willing to pay for the product features associated with the patents at issue.[58]

88.   As explained above, the model I use to estimate partworths for smartphones and tablets incorporates information about consumer behavior. Namely, consumer-behavior theory tells us that preferences are monotonic for ordinal levels of attributes, such as memory capacity: all else equal, people prefer more memory capacity to less. If we were to ignore this information and consumer-behavior theory we would be estimating a model that does not use all of the data available to us. Such a model would be a less reliable description of consumer behavior and a less reliable summary of the data available to us.

89.   The importance of incorporating available consumer behavior in this manner has been recognized in marketing research studies. For example, Allenby *et al* (1995) write that: "In summary, we often have prior knowledge about the part-worths in conjoint studies. Failure to use this prior knowledge in estimation frequently results in part-worths that violate the known structure. … In addition, we demonstrate that the proposed methodology [a Bayesian approach to constrained part-worth estimation] results in part-worth estimates that are more accurate than other approaches across a variety of

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[58]   Note that the calculation of hit rate uses information at the individual respondent level. The statistic itself, however, is at the aggregate level and accurately interpretable.

conditions."[59]

90.   Indeed, when I estimate the model without incorporating available information about consumer behavior, I find that this specification does a worse job statistically than the one that *does* use the available information in predicting consumer behavior.[60] This evidence is consistent with my opinion to use a model that is based on all of the data that is available from the sample of respondents. Therefore, the model that I use is the most appropriate model because it predicts consumer behavior more reliably and because it is consistent with consumer-behavior theory.[61]

C. Consumers positively value the patent-related features

91.   Table 3A summarizes the statistics about the distribution of partworths for the various levels of the touchscreen feature across all respondents in the tablet and smartphone

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[59]   Allenby, Greg, Neeraj Arora, and James Ginter (1995), "Incorporating Prior Knowledge into the Analysis of Conjoint Studies," Journal of Marketing Research, 32, 2, pp. 152–162, at p. 161. For another example, see Boatwright, Peter, Robert McCulloch, and Peter Rossi (1999), "Account-Level Modeling for Trade Promotion: An Application of a Constrained Parameter Hierarchical Model," *Journal of the American Statistical Association*, 94, 448, (December), pp. 1063–1073.

[60] U^2 is 0.15 of smartphones and 0.04 for tablets in the holdout samples for the model that does not incorporate available information about consumer behavior, compared with a U^2 of 0.37 and 0.32 respectively in the holdout samples for the model that I use. It is good empirical practice to do a logical check on models that do not expect to predict as well. A model that does not use all of the available data may overfit the estimation sample when it attempts to adjust parameters to match the limited data. Parameters that are estimated on a model that ignores data are less reliable than parameters estimated on the model that uses all available data.

[61]   After estimating partworths, I also considered whether adding interactions between different attributes would do a better job in the estimation. For tablets, I find that adding interactions to the model would likely harm its ability to reliably predict consumer behavior. For smartphones, I find that the model with added interactions has statistical properties that are worse than the model without interactions: U^2 is 0.21 in the holdout samples for the smartphone model with interactions, well below the model without interactions, which has a U^2 of 0.37. (To maintain comparability in the model with interactions and the model without interactions, both models used prior information from consumer-behavior theory.) Therefore the model that incorporates information about consumer behavior but does not include interactions is the most appropriate model to use for predicting consumer behavior and calculating the price premiums associated with smartphone or tablet features.

surveys. This distribution of the partworths is estimated precisely. I provide standard

errors of the estimated means and heterogeneity in Exhibit K. The relative partworths,

i.e., the differences between partworths of different levels of an attribute, indicate the

value in units of utility of switching between different levels of these features. For

example, Table 3A indicates that on average smartphone-survey respondents value

switching from "reliable touch, rubberband, and tap to re-center after zoom" to

"reliable touch" by 15.3 – (-67.7) = 83.0 units of utility. It is these *relative* partworths

that are used in predicting consumer behavior and that can be used to estimate the price

premiums associated with a particular feature.[62]

92.   Table 3A also reports the variation of partworths over the market.[63] This variation

summarizes the heterogeneity in partworths across respondents; the higher these

standard deviations, the more the partworths vary across respondents. Because

partworths vary across respondents the HB CBC model takes into account that different

respondents value the various features differently.[64] For example, in the smartphone

survey, the standard deviation for "reliable touch" (77.8) was greater than the standard

deviation for "reliable touch, rubberband, and tap to re-center after zoom" (49.3). This

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[62]   The reported mean partworths in Tables 3A and 3B are zero centered with respect to the average partworth across different levels of the corresponding feature, i.e., the zero-centered partworths of different levels of the same feature sum up to zero. For example, suppose a feature has four levels, with partworth estimates of 2, 4, 6 and 8. The average partworth would be 5 and the zero-centered partworths would be -3, -1, 1 and 3. So if the partworth estimate associated with a feature level is below the average partworth across different levels of the feature, the zero-centered partworth of the feature level would be negative.

[63]   This variation over the market should not be confused with the precision by which we estimate the means and standard deviations. For example, the standard errors of the estimated population means are given in Exhibit K and are interpreted differently than the standard deviations that represent population heterogeneity.

[64]   For example, one respondent may value touchscreen features very highly (the difference between the lowest and highest level of touchscreen partworths may be large), while another respondent may be particularly price sensitive (the difference in partworths between different price levels may be very large).

implies that there is greater variation in the partworths for the former than there is for the latter.

Table 3A: Touchscreen Partworth Distribution Smartphones

Touchscreen	Average Market Level Mean	Average Market Level Heterogeneity (Standard Deviation)
Reliable Touch, Auto-Switch (1 to 2 Fingers), Rubberband, and Tap to Re-center after Zoom	64.5	67.5
Reliable Touch, Rubberband, and Tap to Re-center after Zoom	15.3	49.3
Reliable Touch	-67.7	77.8

Source: Smartphone survey data

Note: The statistics are based on 455 respondents.

93.   The mean partworths reported in Table 3A indicate that, on average, respondents in the smartphone-survey place positive value on the patents in question. In the smartphone survey the average partworth (64.5) for "reliable touch, auto-switch (1 to 2 fingers), rubberband, and tap to re-center after zoom" is higher than the partworth (15.3) for "reliable touch, rubberband, and tap to re-center after zoom." Thus, on average, respondents value highly the difference between these feature levels: auto-switch (1 to 2 fingers). Similarly, the average partworth (64.5) for "reliable touch, auto-switch (1 to 2 fingers), rubberband, and tap to re-center after zoom" is higher than the average partworth (-67.7) for "reliable touch." This indicates that, on average, respondents value highly the difference between these feature levels: "auto-switch (1 to 2 fingers), rubberband and tap to re-center after zoom."

Table 3B: Touchscreen Partworth Distribution Tablets

Touchscreen	Average Market Level Mean	Average Market Level Heterogeneity (Standard Deviation)
Full Multi-Touch, Auto-Switch (1 to 2 Fingers), Rubberband, and Tap to Re-center after Zoom	47.5	67.3
Very Limited Multi-Touch, Auto-Switch (1 to 2 Fingers), Rubberband, and Tap to Re-center after Zoom	-7.0	63.9
Full Multi-Touch, Rubberband, and Tap to Re-center after Zoom	-0.2	51.7
Full Multi-Touch	-40.4	63.1

Source: Tablet survey data

Note: The statistics are based on 415 respondents.

94. Similarly, the mean partworths reported in Table 3B indicate that, on average, respondents in the tablet-survey place positive value on the patents in question. Specifically, the average partworth (47.5) for the feature level "full multi-touch, auto-switch (1 to 2 fingers), rubberband, and tap to re-center after zoom" is higher than the average partworth (-7.0) for "very limited multi-touch, auto-switch (1 to 2 fingers), rubberband, and tap to re-center after zoom." Thus, on average, respondents value highly the difference between the feature levels: the difference between full multi-touch and very limited multi-touch. Similarly, the average partworth (47.5) for "full multi-touch, auto-switch (1 to 2 fingers), rubberband, and tap to re-center after zoom" is higher than the partworth (-0.2) for "full multi-touch, rubberband, and tap to re-center after zoom." Thus, on average, respondents value highly the difference between these feature levels: auto-switch (1 to 2 fingers). Finally, the average partworth (47.5) for "full multi-touch, auto-switch (1 to 2 fingers), rubberband, and tap to re-center after zoom" is higher than the average partworth (-40.4) for "full multi-touch." This

indicates that, on average, respondents value highly the difference between these feature levels: "auto-switch (1 to 2 fingers), rubberband and tap to re-center after zoom."

95. In summary, the HB CBC model passes standard statistical tests of fit and predictive ability, which confirms that it is appropriate to use the estimated partworths to forecast consumer behavior and estimate the price premiums of product features associated with the patents at issue. My analysis finds that, on average, respondents in both the tablet and smartphone surveys place a substantial value on the touchscreen features associated with the patents in question. In the next section, I quantify the price premium that consumers are willing to pay for these patent-related features.

X. The Price Premium for the Patent-Related Features

96. In this section I estimate the price premium, if any, for features associated with the patents at issue. Specifically, I have run a market simulation based on the HB CBC partworth estimates to determine how the market's overall tendency for purchasing a product is affected by the trade-off between the product's price and its features associated with the patents at issue. The market's purchase tendency is simulated using the predicted choices by all the survey respondents. For the purposes of testing the price premium attached to the features covered by the patents at issue, I note that I use the term "market" in a specific way to cover only smartphone and tablet types that I have varied in the survey; I have not tested a market for smartphones or tablets in which consumers choose among various brands of smartphones or tablets (e.g., Samsung vs. Apple). I explained previously that my sample consists of owners of Samsung

smartphones or tablets and that the conjoint analysis asked respondents to choose among Samsung smartphones or tablets that varied on the seven features.

97. I used standard procedures in the Sawtooth Software HB CBC software to run the market simulations. Market simulations using HB CBC partworth estimates are often used by firms to simulate what would happen if a new product were introduced to a market or if a firm decided to change a feature or features for an existing product. Forecasts based on such market simulations are sufficiently accurate that firms routinely make decisions based on the results of these simulations.[65]

98. The market simulation for a patent of interest considers a scenario with two alternative product options: one option does not have the feature level associated with the patent while the second option has the feature level associated with the patent. All other features of the two products are held at the same levels (e.g., camera, memory, size and weight).[66] The market simulation uses the HB CBC partworth estimates to predict the number of respondents who would choose each of the two products when the second product (the one with the patent-related features) is offered at a higher price than the first product (the one without the features). The simulation adjusts the price of the second product until the price reaches the level under which the model predicts that the market is indifferent between the two products, i.e., 50% of the respondents will choose each of the two products.

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[65] For example, see Orme, B (2010), "Chapter 10: Market Simulators for Conjoint Analysis," Getting Started with Conjoint Analysis: Strategies for Product Design and Pricing Research. Second Edition, Madison, Wis.: Research Publishers LLC.

[66] In the simulation, the levels of other features do not affect the consumer's choice as long as they are held constant between the two product options.

99. To predict the respondents' choice among the two products considered in the market simulation, I apply an approach commonly used in marketing research called "Randomized First Choice Simulation" (RFC). Under RFC, a consumer picks the product that gives him/her the highest utility among the available choices (i.e., the first choice), where the consumer's utility from each product is calculated as the sum of the estimated partworths for the product's features plus random draws of the unobserved components in the utility.[67]

100. When estimating the price premium associated with features related to a patent, it is important to account for the fact the price premium may vary depending on the price level of the products. This is because consumers' price sensitivity may vary over different price ranges. For example, consumers' utility may drop by 110 units if a smartphone's price increases from $199 to $299 but only by 60 units if the price increases from $99 to $199. This difference in price sensitivity makes intuitive sense as a consumer who is evaluating a $99 phone may be willing to spend more to get added functionalities, but a consumer who is evaluating a $199 smartphone may be less willing to spend as much. This is consistent with the well-established theory of loss aversion, for which Daniel Kahneman won a Nobel Prize in Economics in 2002.[68] The

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[67] The Sawtooth Software HB estimation software assumes that the random perturbations on the partworths of each attribute follow a standard Gumbel distribution and the additional random errors at the product level also follow a Gumbel distribution. My estimates do not change significantly if I do not add any random perturbations, in which case the RFC simulation becomes the "First Choice" (FC) simulation.

[68] Consider a consumer who plans to buy a smartphone with an expectation that he or she would likely pay, say $149. Being loss averse implies that, given the consumer's expected price, he or she cares less about, say, a $20 discount relative to $149 than they do about a $20 price increase from $149. Therefore, if consumers expect that they are likely to pay around $149, they are likely to place more importance on price if comparing two smartphones priced $199, than if they were comparing two smartphones priced at $99. See Kahneman, Daniel, and Amos Tversky (2000), "Prospect Theory: An Analysis of Decision under Risk," in Choices, Values, and

existence of loss aversion has also been documented in the academic literature using real world data.[69] Because of the variation in consumers' price sensitivity over different price ranges, the estimated price premium will also vary over different price ranges.

101. On average, the respondents in the survey sample pay $152 for a smartphone and $390 for a tablet. These are average prices based on actual prices reported by consumers in the survey questionnaires. $152 is between $99 and $199, the two middle price levels in the smartphone survey. As described above, consumers tend to be less price sensitive at lower prices. Therefore, a price range starting with a higher base price ($199 in this case) yields a more conservative (i.e., lower) estimate for the price premium consumers are willing to pay for the features associated with a patent of interest. Thus, I use $199 as the base price (i.e., the price for the product option without the patent-related feature) for the range over which I estimate the patent values for smartphones.

102. For tablets, the $390 average price reported by survey respondents is between $359 and $499 price levels covered in the tablet survey. Again, I use the conservative base price of $499. If I use the lower base price of $359, the estimated patent values are higher.[70]

103. The results of the market-based simulations are presented in Table 4. Specifically, as

Frames, eds. Daniel Kahneman and Amos Tversky, Cambridge University Press, at pp. 32–34 and http://www.nobelprize.org/nobel_prizes/economics/laureates/2002/press.html (accessed on March 20, 2012).

[69] See, for example, Hardie, Bruce, Eric Johnson, and Peter Fader (1993), "Modeling Loss Aversion and Reference Dependence Effects on Brand Choice," Marketing Science, 12, 4, (Autumn), pp. 378–394; and Kalyanaram, Gurumurthy, and Russell Winer (1995), "Empirical Generalizations from Reference Price Research," Marketing Science, 14, 3, Special Issue on Empirical Generalizations in Marketing, pp. G161–G169.

[70] With regard to the other two price levels covered in the surveys (the highest and lowest price levels), since I do not have partworths for price above the highest price levels, I can only use those as starting prices if I extrapolate beyond the price levels I have surveyed. Because consumers tend to be less price sensitive at lower prices, I expect that the price premium associated with the lowest price levels to be higher than the ones reported in the tables. Thus, the numbers that I report are conservative.

shown in the smartphones column, if a smartphone without features associated with Patent '915 is priced at $199, the market-based simulation predicts that the price premium consumers are willing to pay for the features associated with the '915 Patent is $39. In other words, the price of an otherwise identical phone that has the features associated with the '915 Patent could be $39 higher and the market would be indifferent between the two products. The estimated price premium is $100 for features associated with the '915, '163, and '381 Patents combined. For tablets, if the base price is $499, the estimated price premium is $58 for features associated with the '607 Patent, $45 for features associated with the '915 Patent, and $90 for features associated with the '915, '163, and '381 Patents combined.[71]

Table 4: Price Premium for Patent-Related Features

| | Patent | Base price without patent-related feature | |
		Smartphones $199	Tablets $499
1	'607	n/a	$58
2	'915	$39	$45
3	'915 + '163 + '381	$100	$90

104. As a robustness check, I have also calculated the price premium associated with a patent based on how much more a median consumer is willing to pay for the features

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[71] Using the sample without filtering out any respondents who are straight-liners, overly fast, overly slow, or claim having owned many smartphones, the smartphone estimates are $39 for Patent '915, and $100 for Patents '915, '163 and '381 combined, and the tablet estimates are $62 for Patent '607, $42 for Patent '915, and $85 for Patents '915, '163 and '381 combined.

associated with the patent.[72] The median-consumer willingness to pay calculation yields price premium estimates that are similar to what I estimate using the market simulation method.[73]

105. These market simulation and robustness check results show that, for both smartphones and tablets, Samsung consumers are willing to pay a significant price premium for the tested features that are covered by the patents at issue.[74]

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[72] The Willingness-to-Pay (WTP) of a median consumer means half of the respondents have a WTP above the consumer and half below. The WTP calculation compares the partworth change associated with a price change to the partworth change associated with a product feature change, and uses the comparison to impute the price premium that consumers would be willing to pay for the product feature. Specifically, the method first calculates the dollar amount change in price that corresponds to a one-unit change in consumer utility. For example, suppose a change in smartphone price from $199 to $299 is associated with a decrease of 110 units of consumer utility. This is equivalent to saying that a price change of $0.9 (=$100/110) over the $199–$299 range corresponds a one-unit change in consumer utility. For these same respondents, suppose an average of 50 units of consumer utility are gained for going from not having the features associated with Patent '915 to having the features. Thus, for the utility gain from the features, the average partworths imply that consumers would be willing to pay $45 (= $0.9/unit x 50). If the change in price has to move beyond the measured range in order to "buy" units of utility, then we need to take the new range into account. Any price change above the highest measured partworths would require extrapolation and is done with caution. These calculations are illustrative. I performed these calculations using the estimated distribution of partworths for the market. The HB CBC estimation provides 10,000 samples from the distribution of partworths. For each of these samples, I computed the median WTP for the market. I then computed an overall market-level WTP by taking the median of the 10,000 sample median WTPs. As explained in the earlier coin-flipping examples, reporting WTP for an individual respondent would not be sufficiently precise. However, the overall, market-level WTP is sufficiently precise.

[73] For smartphones, the WTP calculation estimates that at a base price of $199 consumers would be willing to pay $40 more for a smartphone that has the functionality associated with Patent '915, and $100 more for the combination of Patents '915, '163 and '381. For tablets, the WTP calculation estimates that at a base price of $499 consumers would be willing to pay $58 more for a tablet that has the functionality associated with the '607 patent, $46 more for Patent '915 and $97 more for the combination of Patents '915, '163 and '381 combined. Because these median WTPs are based on a large number random draws from the distribution of the respondents' partworths, I also calculate the confidence intervals for these median WTPs. My calculation shows that these median WTPs are estimated with reasonable precision. Specifically, for smartphones, 95% of the sample median WTPs are within $10.5 of the market median WTP of $40 for Patent '915, and within less than $0.5 of the market median WTP of $100 for the combination of Patents '915, '163 and '381. For tablets, 95% of the sample median WTPs are within $15.5 of the market median WTP of $58 for Patent '607, within $13.5 of the market median WTP of $46 for Patent '915, and within $21.5 of the market median WTP of $97 for the combination of Patents '915, '163 and '381.

[74] As discussed in Section IX, the model I use to estimate these price premiums related to the patents at issue incorporate both the survey data and information about consumer behavior. Both theory and empirical evidence from the data imply that this model is a better and more reliable model than a model without using information about consumer behavior. For the market simulation method, using the methodology described in detail above,

if I perform the price premium calculations using estimates from a model *without* incorporating information about consumer behavior, I get the following results with a base price of $199 for smartphones and $499 for tablets: the price premium for smartphones is $41 for the '915 Patent and $100 for the '915, '163, and '381 Patents combined, and the price premium for tablets is $58 for the '607 Patent, $46 for the '915 Patent, and $94 for the '915, '163, and '381 Patents combined. For the WTP calculation, if I perform the price premium calculation using estimates from a model *without* incorporating information about consumer behavior, but use the same methodology described in footnote 72, the price premium for smartphones is $23 for the '915 Patent and $74 for the '915, '163, and '381 Patents combined, and the price premium for tablets is $35 for the '607 Patent, $27 for the '915 Patent, and $60 for the '915, '163, and '381 Patents combined.

I, John R. Hauser, declare under penalty of perjury that the statements contained in this report are true and correct to the best of my knowledge, information and belief.

John R. Hauser, SC.D   Date
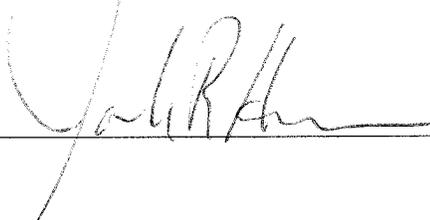
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Sc.D.   M.I.T., 1975, Operations Research Dissertation: "A Normative Methodology for Predicting Consumer Response to Design Decisions: Issues, Models, Theory and Use."

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Lifetime Achievement Awards

Parlin Award 2001, The American Marketing Association describes this award as "the oldest and most distinguished award in the marketing research field."

Converse Award 1996, the American Marketing Association, for "outstanding contributions to the development of the science of marketing."

Churchill Award 2011, the American Marketing Association, Market Research Special Interest Group, for "Lifetime achievement in the academic study of marketing research."

Fellow of the Institute for Operations Research and Management Science (INFORMS)

Inaugural Fellow of the INFORMS Society of Marketing Science (ISMS)

Highly Cited Researcher (ISI Web of Science), Since 2006.

Awards for Published Papers

INFORMS Society of Marketing Science	ISMS Long Term Impact Award, 2011, Finalist
	John D.C. Little Best-paper Award, 2009, Finalist
	John D.C. Little Best-paper Award, 2003, First Place
	John D.C. Little Best-paper Award, 1998, Finalist
(formerly The Institute	John D.C. Little Best-paper Award, 1994, Finalist
of Management Science)	John D.C. Little Best-paper Award, 1993, First Place
	John D.C. Little Best-paper Award, 1990, Honorable Mention

Best paper in Marketing Sciences Literature, 1984, Honorable mention.
Best Paper in Marketing Sciences Literature, 1983, First Place.
Best Paper in Marketing Sciences Literature, 1982, First Place.

Two published articles were cited in 2007 as one of "the top 20 marketing science articles in the past 25 years."

American Marketing Association:	Explor Award (Leadership is on-line market research), 2004, First-Place Finalist, Paul Green Award for contributions to marketing research, 2004 MSI Award for Most Significant Contribution to Practice of Marketing in 1996. Finalist, O'dell Award for best paper in the *Journal of Marketing Research*, published in 1986, awarded in 1991. One of the top 50 most prolific marketing scholars (top journals) in the last 25 years (1982-2006). Total articles, rate of publication, and author-adjusted rate.
Product Development Management Assoc.	Best Paper Award, Finalist, 2003. Best Paper Award, Finalist, 2002. One of ten most-cited papers in the *Journal of Product Innovation Management*. One of the top articles in educational citations in the last twenty years.
Sawtooth Software Conference	Best Presentation and Paper, 2006; Runner-up, 2008.
European Society of Marketing Research:	Best Paper at Rome conference, September 1984.
Emerald Management Reviews	2010 Citation of Excellence (top 50 of 15,000 published papers in 2009)
Doctoral Consortia Faculty	American Marketing Association, 1979, 1984, 1985, 1986, 1988, 1989, 1991, 1993, 1995, 1997, 1998, 2001, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2012. INFORMS Society of Marketing Science, 2002 (founding member), 2003, 2004. European Marketing Academy, 1985

Awards, Teaching

MIT Sloan School of Management:	Nominated for Excellence in Teaching Award 2000, 2007, 2008. Named "Outstanding Faculty" by *Business Week Guide to the Best Business Schools* (1995). Excellence in Teaching Award 1994 (Awarded by the Master's Student class).

Awards for Thesis Supervision

American Marketing Association (Ph.D.):	Winner John Howard Dissertation Award (2010, Matt Selove, Committee) Co-winner John Howard Dissertation Award (2005, Olivier Toubia) 1st Place (1981, Ken Wisniewski) Honorable Mention (1979, Patricia Simmie).
INFORMS (Ph.D.)	Winner of the Frank Bass Award (2004, Olivier Toubia, awarded 2005) Winner of the Frank Bass Award (1989, Abbie Griffin, awarded 1995)
MIT Sloan School of Management (Ph.D.):	1st Place (1987, Peter Fader)
MIT Sloan School of Management (Master's):	1st Place (1991, Jon Silver and John Thompson) 1st Place (1983, Steve Gaskin)

Honorable Mention (1982, Larry Kahn).

Awards, Other

Who's Who in America	Since 1997
Who's Who in Management Science	Since 2000
Who's Who in Economics	Since 2003
Who's Who in Finance and Business	Since 2009
Harvard Business School:	Marvin Bower Fellow, 1987 - 1988.
National Science Foundation Fellowship:	1971 - 1974.
M.I.T.:	National Scholar, 1967 - 1971.
Honor Societies:	Tau Beta Pi, Eta Kappa Nu, Sigma Xi

Directorships, Trustee, Advisory Board

1988 – Present	Founder, Principal, Board Member, Applied Marketing Science, Inc.
March 2003 – July 2009	Trustee, Marketing Science Institute

Academic Appointments

January 1989 - Present:	Kirin Professor of Marketing MIT Sloan School of Management Massachusetts Institute of Technology Cambridge, Massachusetts 02142
July 2010 – June 2011	Head, Marketing Group
July 2005 – June 2009:	Area Head, Management Science Area
July 1988 – June 2003:	Head, Marketing Group
September 1993 - May 2000:	co-Director, International Center for Research on the Management of Technology
September 1997 - May 2000:	Research Director, Center for Innovation in Product Development
June 2001 – June 2006:	Virtual Customer Initiative Leader, Center for Innovation in Product Development
July 1984 - January 1989:	Professor of Management Science MIT Sloan School of Management Massachusetts Institute of Technology Cambridge, Massachusetts 02142
July 1987 - June 1988:	Marvin Bower Fellow Harvard Business School Harvard University Cambridge, Massachusetts 02163
March 1985 - May 1985:	Visiting Lecturer

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European Institute of Business Administration
Fontainebleau, FRANCE

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September 1980 - June 1984:	Associate Professor of Management Science
	MIT Sloan School of Management
	Massachusetts Institute of Technology
	Cambridge, Massachusetts 02142

September 1975 - August 1980:	Assistant Professor of Marketing and of Transportation
	(granted tenure and promoted in 1980)
	Graduate School of Management and Transportation Center
	Northwestern University
	Evanston, Illinois 60201

Teaching Interests

Marketing Management, New Product and Service Development, Competitive Marketing Strategy, Marketing Models, Measurement and Marketing Research, Research Methodology.

Research Interests

Virtual customer methods for rapid customer feedback via the web; polyhedral methods, Greedoid methods, and related theory for the analysis of non-compensatory decision making; customer satisfaction measurement and incentive systems; quality function deployment and customer driven engineering; market measurement, especially voice of the customer; marketing strategy, especially positioning, pricing, and advertising strategy; consumer behavior including information search, agendas, and market structure; prelaunch forecasting and information acceleration for new products; and design and marketing of new products and services, hierarchical Bayes methods for continuous-time Markov processes, website morphing, logical analysis of data, cognitive complexity.

Texts

Urban, Glen L. and John R. Hauser, *Design and Marketing of New Products*, Prentice-Hall, Second Edition 1993.

A comprehensive text that integrates advanced, state-of-the-art techniques to provide graduate-level students and marketing professionals with an understanding of the techniques and an operating ability to design, test, and implement new products and services.

This text has been honored by being selected for both the Prentice-Hall International Series in Management and the Series in Marketing. It has been adopted at a number of major universities. In a 1988 survey it was identified as the most widely used new product textbook at the graduate level.

The revision includes new material on designing for quality, reduced cycle times, prelaunch forecasting, quality improvement, defensive and competitive strategy, value mapping, the integration of marketing and engineering, new issues of organization, customer satisfaction, and new international examples. It is available in Korean and is being translated into Japanese and Chinese.

Third most cited work in the *Journal of Product Innovation*, 1984-2004. (Cited May 2010.)

Urban, Glen L., John R. Hauser, and Niki Dholakia, *Essentials of New Product Management*, Prentice Hall, 1986.

This is an undergraduate textbook which presents the essential concepts but written for a non-technical audience. It has been translated to Japanese and has sold well in Japan.

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Hauser, John R., *Applying Marketing Management: Four Simulations*, Scientific Press, 1986.

> This mini-text and software package contains four tutorial exercises for marketing management concepts. With this package students learn positioning, competitive strategy, new product development, and life cycle forecasting while using the personal computer to simulate marketing management problems. A detailed instructor's manual and transparency masters are also available. It is available in Japanese.

Hauser, John R., *ENTERPRISE: An Integrating Management Exercise*, Scientific Press, 1989.

> This mini-text and software package contains a comprehensive competitive simulation. Students compete in six markets by making marketing and production decisions. A detailed instructor's manual and administrative software is also available. It is available in Japanese.

Journal Editor

> *Marketing Science*, Editor-in-Chief for volumes 8, 9, 10, 11, 12, and 13 (1989-1994). Four issues per year including periodic editorials and journal management. Processed about 120 new papers per year.

Journal Publications

> *Citations Reports:* January 2012 Google Scholar; 12,381 citations and an H-index of 44 from http://scholar.google.com/citations?user=N6s8mO4AAAAJ&hl=en. ISI Web of Science : 3,163citations with an H-index of 30. Not included in automatic ISI report: Design and Marketing of New Products (352) Defensive Marketing Strategies (189), Testing Competitive Market Structures (54), and Dynamic Model of Consumer Response (27). Revised ISI H-index of 31.

> Hauser, John R., Songting Dong, and Min Ding (2012), " Self-Reflection and Articulated Consumer Preferences," forthcoming, *Journal of Product Innovation Management*.

> Hauser, John R. (2012), "Consideration-Set Heuristics," forthcoming, *Journal of Business Research*.

> Dzyabura, Daria and John R. Hauser (2011), "Active Machine Learning for Consideration Heuristics," *Marketing Science*, 30, 5, (September-October), 801-819.

> Hauser, John R. (2011), "A Marketing Science Perspective on Recognition-Based Heuristics (and the Fast and Frugal Paradigm)," *Judgment and Decision Making*, 6, 5, (July), 396-408.

> Ding, Min, John Hauser, Songting Dong, Daria Dzyabura, Zhilin Yang, Chenting Su, and Steven Gaskin (2011), "Unstructured Direct Elicitation of Decision Rules," *Journal of Marketing Research*, 48, (February), 116-127.

> Hauser, John R., Olivier Toubia, Theodoros Evgeniou, Daria Dzyabura, and Rene Befurt (2010), "Cognitive Simplicity and Consideration Sets," *Journal of Marketing Research*, 47, (June), 485-496.

> Urban, Glen L., John R. Hauser, Guilherme Liberali, Michael Braun, and Fareena Sultan (2009), "Morph the Web to Build Empathy, Trust, and Sales," *Sloan Management Review*, 50, 4, (Summer), 53-61.

> Hauser, John R., Glen L. Urban, Guilherme Liberali, and Michael Braun (2009), "Website Morphing," *Marketing Science.*, 28, 2, (March-April), 202-224. Lead article with commentaries by Andrew Gelman, John Gittins, and Hal Varian. Includes rejoinder.

> > Finalist, John D. C. Little Award for Best Article in the Marketing Sciences Literature, 2009.

> > 2010 Emerald Management Reviews Citation of Excellence for one of best articles published in the top 400 business and management journals in 2009. (Top 50 of 15,000 articles.)

Toubia, Olivier, John R. Hauser and Rosanna Garcia (2007), "Probabilistic Polyhedral Methods for Adaptive Choice-Based Conjoint Analysis: Theory and Application," *Marketing Science*, 26, 5, (September-October), 596-610.

      Co-winner, American Marketing Association, John Howard Dissertation Award, 2005

Yee, Michael, Ely Dahan, John Hauser, and James Orlin (2007), "Greedoid-Based Non-compensatory Two-Stage Consideration-then-Choice Inference," *Marketing Science*, 26, 4, (July-August), 532-549.

      First Place, American Marketing Association Explor Award, 2004

Toubia, Olivier and John R. Hauser (2007), "On Managerial Efficient Designs," *Marketing Science*, 26, 6, (November-December), 851-858.

Garcia, Rosanna, Paul Rummel, and John R. Hauser (2007), "Validating Agent-Based Marketing Models Using Conjoint-Analysis," *Journal of Business Research*, 60, 8, (August), 848-857.

Hauser, John R., Gerald Tellis, and Abbie Griffin (2006), "Research on Innovation: A Review and Agenda for Marketing Science," *Marketing Science*, 25, 6, (November-December), 687-717.

      Cited by Thomson Reuters' Essential Science Indicators as a Fast Breaking Paper in Economics and Business in April 2009.

Hauser, John R. and Olivier Toubia (2005), "The Impact of Utility Balance and Endogeneity in Conjoint Analysis," *Marketing Science*, 24, 3, (Summer), 498-507.

Glen L. Urban and John R. Hauser (2004), "'Listening-In' to Find and Explore New Combinations of Customer Needs," *Journal of Marketing*, 68, (April), 72-87.

Toubia, Olivier, John R. Hauser, and Duncan Simester (2004), "Polyhedral Methods for Adaptive Choice-based Conjoint Analysis," *Journal of Marketing Research*, 41, 1, (February), 116-131.

      Finalist, Paul Green Award for contributions to the practice of marketing research.

Toubia, Olivier, Duncan I. Simester, John R. Hauser, and Ely Dahan (2003), "Fast Polyhedral Adaptive Conjoint Estimation," *Marketing Science*, 22, 3, (Summer), 273-303.

      First Place, John D. C. Little Award for Best Article in the Marketing Sciences Literature, 2003

      First Place, Frank M. Bass Award for Best Article Based on a Dissertation, 2005.

      Finalist, INFORMS Society for Marketing Science Long Term Impact Award, 2011

Dahan, Ely and John R. Hauser (2002), "The Virtual Customer," *Journal of Product Innovation Management*, 19, 5, (September), 332-354.

      Finalist, PDMA Best Paper Award in 2003.

Hauser, John R. (2001), "Metrics Thermostat," *Journal of Product Innovation Management*, 18, 3. (May), 134-153.

Finalist PDMA Best Paper Award in 2002.

Cited by the PDMA in 2007 as one of the top articles in the last twenty years in educational citations.

Simester, Duncan I, John R. Hauser, Birger Wernerfelt, and Roland Rust (2000), "Implementing Quality Improvement Programs Designed to Enhance Customer Satisfaction: Quasi-experiments in the United States and Spain," *Journal of Marketing Research*, 37, 1, (February), 102-112.

Hauser, John R. (1998), "Research, Development, and Engineering Metrics." *Management Science*, 44, 12, December, 1670-1689.

Hauser, John R. and Gerry Katz (1998), "Metrics: You Are What You Measure!." *European Management Journal*, 16, 5, (October), 516-528. Highlighted in "A Round-up of Important Articles from Business Periodicals," in *Mastering Management Review* published by the *Financial Times*.

Hauser, John R., Duncan I. Simester, and Birger Wernerfelt (1997), "Side Payments in Marketing," *Marketing Science*, 16, 3, 246-255.

Finalist, John D. C. Little Award for Best Article in the Marketing Sciences Literature, 1997.

Urban, Glen L., John R. Hauser, William J. Qualls, Bruce D. Weinberg, Jonathan D. Bohlmann and Roberta A. Chicos (1997), "Validation and Lessons from the Field: Applications of Information Acceleration," *Journal of Marketing Research*, 34, 1, (February), 143-153.

Hauser, John R. and Florian Zettelmeyer (1997), "Metrics to Evaluate R,D&E," *Research Technology Management*, 40, 4, (July-August), 32-38.

Griffin, Abbie, and John R. Hauser (1996), "Integrating Mechanisms for Marketing and R&D," *Journal of Product Innovation Management*, 13, 3, (May), 191-215.

One of ten most-cited papers in the *Journal of Product Innovation Management* (JPIM 24, 3, 2007, p.209)

Hauser, John R., Duncan I. Simester, and Birger Wernerfelt (1996), "Internal Customers and Internal Suppliers," *Journal of Marketing Research,* 33, 3, (August), 268-280.

Urban, Glen L., Bruce Weinberg and John R. Hauser (1996), "Premarket Forecasting of Really-New Products," *Journal of Marketing,* 60,1, (January), 47-60. Abstracted in the Journal of Financial Abstracts, 2, 23A, (June) 1995.

1996 MSI Award for the most significant contribution to the advancement of the practice of marketing.

Hauser, John R., Duncan I. Simester, and Birger Wernerfelt (1994), "Customer Satisfaction Incentives," *Marketing Science*, 13, 4, (Fall), 327-350.

Finalist, John D. C. Little Award for Best Article in the Marketing Sciences Literature, 1994.

Hauser, John R., Glen L. Urban, and Bruce Weinberg (1993), "How Consumers Allocate their Time When Searching for Information," *Journal of Marketing Research,* 30, 4, (November), 452-466.

Hauser, John R. (1993), "How Puritan Bennett Used the House of Quality," *Sloan Management Review*, 34, 3, (Spring), 61-70. Reprinted in *Taiwan Philips News* (in Chinese), 23, 1, (Feb), 1994.

Griffin, Abbie and John R. Hauser (1993), "The Voice of the Customer," *Marketing Science*, 12, 1, (Winter), 1-27.

First-place, John D. C. Little Award for Best Article in Marketing Sciences Literature, 1993.

First Place, Frank M. Bass Award for Best Article Based on a Dissertation, 1995.

    Cited in 2007 by the INFORMS Society of Marketing Science as one "of the top 20 marketing science articles in the past 25 years.

Griffin, Abbie and John R. Hauser (1992), "Patterns of Communication Among Marketing, Engineering, and Manufacturing -- A Comparison between Two New Product Teams," *Management Science*, 38, 3, (March), 360-373.

    One of the 500 most-cited articles in the first 50 years of *Management Science*.

Urban, Glen. L., John. R. Hauser, and John. H. Roberts (1990), "Prelaunch Forecasting of New Automobiles: Models and Implementation," *Management Science*, 36, 4, (April), 401-421. Reprinted in *Modeling for Management, Vol. 1*, George P. Richardson, ed., Dartmouth Publishing Co., Hampshire England.

    INFORMS (TIMS) Finalist, Best Article in Marketing Science Literature, 1990.

Hauser, John R. and Birger Wernerfelt (1990), "An Evaluation Cost Model of Consideration Sets," *Journal of Consumer Research*, 16, (March), 393-408.

Hauser, John R. and Birger Wernerfelt (1989), "The Competitive Implications of Relevant-Set/Response Analysis," *Journal of Marketing Research*, 26, 4, (November), 391-405.

Hauser, John R. and Don Clausing (1988), "The House of Quality," *Harvard Business Review*, 66, 3, (May-June), 63-73. Reprinted in *The Product Development Challenge*, Kim B. Clark and Steven C. Wheelwright, eds., Harvard Business Review Book, Boston MA 1995. Reprinted in *IEEE Engineering Management Review*, 24, 1, Spring 1996. Translated into German and published in Hermann Simon and Christian Homburg (1998), *Kunderzufriedenheit*, (Druck and Buchbinder, Hubert & Co.: Gottingen, Germany).

Fader, Peter and John R. Hauser (1988), "Implicit Coalitions in a Generalized Prisoner's Dilemma," *Journal of Conflict Resolution*, 32, 3, (September), 553-582.

Hauser, John R. (1988), "Competitive Price and Positioning Strategies," *Marketing Science*, 7, 1, (Winter), 76-91.

Hauser, John R. (1986), "Agendas and Consumer Choice," *Journal of Marketing Research*, 2 , 3, (August), 199-212. (Includes unpublished appendix containing "Proofs of Theorems and Other Results.") Reprinted in Gregory S. Carpenter, Rashi Glazer, and Kent Nakamota (1997), *Readings on Market-Driving Strategies, Towards a New Theory of Competitive Advantage,* (Reading, MA: Addison-Wesley Longman ,Inc.)

    Finalist, 1991 American Marketing Associations O'dell Award for Best Paper in *JMR* (5-year lag)

Hauser, John R. and Glen L. Urban (1986), "Value Priority Hypotheses for Consumer Budget Plans," *Journal of Consumer Research*, 12, 4, (March), 446-462.

Eliashberg, Jehoshua and John R. Hauser (1985), "A Measurement Error Approach for Modeling Consumer Risk Preference," *Management Science*, 31, 1, (January), 1-25.

Hauser, John R., and Steven P. Gaskin (1984), "Application of the `DEFENDER' Consumer Model," *Marketing Science*, 3, 4, (Fall), 327-351. Reprinted (in French) in *Recherche et Applications on Marketing*, Vol. 1, April 1986, pp. 59-92.

Urban, Glen L., P. L. Johnson and John R. Hauser (1984), "Testing Competitive Market Structures," *Marketing Science*, 3, 2, (Spring), 83-112.

    INFORMS (TIMS) Finalist, Best Article in Marketing Science Literature, 1984.

Hauser, John R. (1984), "Consumer Research to Focus R&D Projects" *Journal of Product Innovation Management*, 1, 2, (January), 70.84.

Hauser, John R., and Steven M. Shugan (1983), "Defensive Marketing Strategy," *Marketing Science*, 2, 4, (Fall), 319-360.

   INFORMS (TIMS) Best Article in Marketing Science Literature, 1983.

      Cited in 2007 by the INFORMS Society of Marketing Science as one "of the top 20 marketing science articles in the past 25 years.

   Republished in 2008 as one of eight "classic" articles in *Marketing Science*.

Hauser, John R., and Kenneth J. Wisniewski (1982), "Application Predictive Test, and Strategy Implications of a Dynamic Model of Consumer Response," *Marketing Science*, 1, 2, (Spring), 143-179.

Hauser, John R., and Kenneth J. Wisniewski (1982), "Dynamic Analysis of Consumer Response to Marketing Strategies," *Management Science*, 28, 5, (May), 455-486.

   INFORMS (TIMS) Best Article in Marketing Science Literature, 1982.

Tybout, Alice M. and John R. Hauser (1981), "A Marketing Audit Using a Conceptual Model of Consumer Behavior: Application and Evaluation," *Journal of Marketing*, 45, 3, (Summer), 81-101.

Hauser, John R., and Patricia Simmie (1981), "Profit Maximizing Perceptual Positions: An Integrated Theory for the Selection of Product Features and Price," *Management Science*, 27, 2, (January), 33-56.

   One of the 500 most-cited articles in the first 50 years of *Management Science*.

Hauser, John R., Frank S. Koppelman and Alice M. Tybout (1981), "Consumer-Oriented Transportation Service Planning: "Consumer Analysis and Strategies," *Applications of Management Science*, 1, 91-138.

Hauser, John R., and Steven M. Shugan (1980), "Intensity Measures of Consumer Preference," Operation Research, 28, 2, (March-April), 278-320.

Hauser, John R., and Frank S. Koppelman (1979), "Alternative Perceptual Mapping Techniques: Relative Accuracy and Usefulness, *Journal of Marketing Research*, 16, 4, (November), 495-506.

Hauser, John R., and Glen L. Urban (1979), "Assessment of Attribute Importances and Consumer Utility Functions: von Neumann-Morgenstern Theory Applied to Consumer Behavior," *Journal of Consumer Research*, 5, (March), 251-262.

Koppelman, Frank S. and John R. Hauser (1979), "Destination Choice Behavior for Non-Grocery Shopping Trips," *Transportation Research Record*, 673, 157-165.

Hauser, John R. (1978), "Consumer Preference Axioms: Behavioral Postulates for Describing and Predicting Stochastic Choice," *Management Science*, 24, 13, (September), 1331-1341.

Hauser, John R. (1978), "Testing the Accuracy, Usefulness and Significance of Probabilistic Models: An Information Theoretic Approach," *Operations Research*, 26, 3, (May-June), 406-421.

Hauser, John R. and Glen L. Urban (1977), "A Normative Methodology for Modeling Consumer Response to Innovation," *Operations Research*, 25, 4. (July-August), 579-619.

Published Notes and Commentaries

Hauser, John R. (2011), "New Developments in Product-Line Optimization," forthcoming the *International Journal on Research in Marketing*. Commentary on papers by Michalek, Ebbes, Adigüzel, Feinberg, and Papalambros, "Enhancing Marketing with Engineering," and Tsafarakis, Marinakis, and Matsatsinis, "Particle Swarm Optimization for Optimal Product Line Design."

Hauser, John R. (2011), "Paul E. Green: An Applications' Guru," in Vithala Rao, Ed., *Paul Green's Legends Volume: Conjoint Analysis Applications*, (Newbury Park, CA: Sage Publications). Forthcoming.

Hauser, John R. (2011), "Perspectives on Paul E. Green," in V. Srinivasan, Ed., *Paul Green's Contributions to Conjoint Analysis – Early Years,* (Newbury Park, CA: Sage Publications). Forthcoming.

Hauser, John R., Glen L. Urban, Guilherme Liberali, and Michael Braun (2009), "Response to Comments on 'Website Morphing,'" *Marketing Science,* 28, 2, (March-April), 227-228.

Hauser, John R. and Steven M. Shugan (2007), "Comments on 'Defensive Marketing Strategy,'" *Marketing Science*, 27, 1, (January-February), 85-87.

Rangaswamy, Arvind , Jim Cochran, Tülin Erdem, John R. Hauser, and Robert J. Meyer (2007), "Editor-in-Chief Search Committee Report: The Digital Future is Here," *Marketing Science*, 27, 1, (January-February), 1-3.

Hauser, John R. (2006), "Twenty-Five Years of Eclectic Growth in Marketing Science," *Marketing Science* (invited commentary), 25, 6, (November-December), 557-558.

Hauser, John R., Greg Allenby, Frederic H. Murphy, Jagmohan Raju, Richard Staelin, and Joel Steckel (2005), "Marketing Science – Growth and Evolution," *Marketing Science*, 24, 1, (Winter), 1-2, invited editorial.

Hauser, John R., Scott Carr, Barbara Kahn, James Hess, and Richard Staelin (2002), "Marketing Science: A Strong Franchise with a Bright Future," *Marketing Science*, 21, 1, (Winter), invited editorial.

Hauser, John R. and Birger Wernerfelt (1988), "Existence and Uniqueness of Price Equilibria in Defender," *Marketing Science*, Vol. 7, No. 1, (Winter), 92-93.

Hauser, John R. (1984), "Price Theory and the Role of Marketing Science," *Journal of Business*, Vol. 57, No. 1, (January), S65-S72.

Hauser, John R. (1980), "Comments on 'Econometric Models of Probabilistic Choice Among Products'," *Journal of Business*, 53, 3, Part 2, (July 1980), S31-S34.

Papers in Edited Volumes and/or Proceedings

Selove, Matthew and John R. Hauser (2010), "How Does Incorporating Price Competition into Market Simulators Affect Product Design Decisions?," *Proceedings of the Sawtooth Software Conference*, Newport Beach, CA, Oct 6-8, 2010.

Hauser, John R. and Glen L. Urban (2009), "Profile of John D. C. Little," in Saul I. Gass and Arjang A. Assad eds. *Profiles in Operations Research,* (New York, NY: Springer).

Ding, Min, Steven Gaskin, and John Hauser (2009), "A Critical Review of Non-compensatory and Compensatory Models of Consideration-Set Decisions," *2009 Sawtooth Software Conference Proceedings*, Delray, FL, March 23-27, 2009, 207-232.

> Runner-up, Best Paper at Sawtooth Software Conference, 2009.

Gaskin, Steven, Theodoros Evgeniou, Daniel Bailiff, John Hauser (2007), "Two-Stage Models: Identifying Non-

Compensatory Heuristics for the Consideration Set then Adaptive Polyhedral Methods Within the Consideration Set," *Proceedings of the Sawtooth Software Conference* in Santa Rosa, CA, October 17-19, 2007.

Hauser, John R. and Ely Dahan (2010), "New Product Development," in Rajiv Grover, Ed., *Essentials of Marketing Management,* (Englewood Cliffs, NJ: Prentice Hall), forthcoming January 2011.

Toubia, Olivier, Theodoros Evgeniou, and John Hauser (2007), "Optimization-Based and Machine-Learning Methods for Conjoint Analysis: Estimation and Question Design," in Anders Gustafsson, Andreas Herrmann and Frank Huber, Eds, *Conjoint Measurement: Methods and Applications*, 4E, (New York, NY: Springer). 231-258.

Hauser, John R., Ely Dahan, Michael Yee, and James Orlin (2006), ""Must Have" Aspects vs. Tradeoff Aspects in Models of Customer Decisions," *Proceedings of the Sawtooth Software Conference* in Del Ray Beach, FL, March 29-31, 2006

    Best Paper at the Sawtooth Software Conference, 2006.

Hauser, John R. and Vithala Rao (2004), "Conjoint Analysis, Related Modeling, and Applications," *Advances in Market Research and Modeling: Progress and Prospects,,* Jerry Wind and Paul Green, Eds., (Boston, MA: Kluwer Academic Publishers), 141-168.

Dahan, Ely and John R. Hauser (2003), "Product Management: New Product Development and Launching," *Handbook of Marketing*, Barton Weitz and Robin Wensley, Eds, Sage Press, (June), 179-222.

Hauser, John R. (1997), "The Role of Mathematical Models in the Study of Product Development," *Proceedings of the 14th Paul D. Converse Awards Conference*, University of Illinois, Champaign-Urbana, IL, 72-90.

Swanson, Derby A. and John R. Hauser (1995), "The Voice of the Customer: How Can You Be Sure You Know What Customers Really Want?," *Proceedings* of the 1st Pacific Rim Symposium of Quality Function Deployment, MacQuarie University, NSW Australia, February 15-17.

Little, John D. C., Leonard M. Lodish, John R. Hauser, and Glen L. Urban (1993), "Comment on `Marketing Science's Pilgrimage to the Ivory Tower' by Hermann Simon," in *Research Traditions in Marketing*, Gary L. Lilien, Bernard Pras, and Gilles Laurent, eds, (Kluwer), 45-51.

Hauser, John R. (1986), "Theory and Application of Defensive Strategy" in *The Economics of Strategic Planning,* Lacy G. Thomas, ed., (Lexington Books, D. C. Heath & Co.: Lexington, MA), 113-140. Reprinted by the Marketing Science Institute.

Hauser, John R. (1985), "The Coming revolution in Marketing Theory," in R. Russell, ed., *Marketing in an Electronic Age*, (Harvard Business School Press: Boston, MA), 344-363.

Hauser, John R. and Glen L. Urban (1984), "Consumer Durables: Actual Budgets Compared to Value Priority Model - Preliminary Results and Managerial Implications," *Proceedings* of the ESOMAR-Congress, Rome, Italy, (September). (Awarded Best Paper at Conference).

Hauser, John R., John H. Roberts and Glen L. Urban (1983), "Forecasting Sales of a New Consumer Durable: A Prelaunch Modeling and Measurement Methodology," *Advances and Practices of Marketing Science*, Fred S. Zufryden, ed., (The Institute of Management Science: Providence, RI), 115-128.

Hauser, John R., and Glen L. Urban (1982), "Prelaunch Forecasting of New Consumer Durables: Ideas on a Consumer Value-Priority Model," in A. D. Shocker and R. Srivastava, eds., *Analytic Approaches to Product and Market Planning*, Vol. 2, (Marketing Science Institute: Cambridge Massachusetts), 276-296.

Hauser, John R. (1982), "Comments on 'A Survey of Experimental Market Mechanisms for Classical Environments'," *Research in Marketing, Supplement 1: Choice Models for Buyer Behavior*, L. McAlister, ed., (JAI Press: Greenwich, CT), Spring, 49-56.

Hauser, John R. (1981), "Comments on 'Violations of Regularity and the Similarity Hypothesis by Adding Asymmetrically Dominated Alternatives to the Choice Set'," *Proceedings of the Special Conference on Choice Theory*, Joel Huber, ed., (Duke University: Durham, NC), June.

Hauser, John R., and Frank S. Koppelman (1979), "An Empirical Comparison of Techniques to Model Consumer Perceptions and Preferences," in A. D. Shocker, ed., *Analytic Approaches to Product and Marketing Planning*, (Marketing Science Institute: Cambridge, Massachusetts), 216-238.

Tybout, Alice M., John R. Hauser, and Frank S. Koppelman (1977), "Consumer-Oriented Transportation Planning: An Integrated Methodology for Modeling Consumer Perceptions, Preferences and Behavior," *Advances in Consumer Research*, Vol. 5, (Chicago, Illinois), October.

Hauser, John R. and Steven M. Shugan (1977), "Extended Conjoint Analysis with Intensity Measures and Computer Assisted Interviews: Applications to Telecommunications and Travel, " *Advances in Consumer Research*, Vol. 5, (Chicago, Illinois), October.

Hauser, John R. and Frank S. Koppelman (1977), "Designing Transportation Services: A Marketing Approach." *Proceedings of the Transportation Research Forum*, (Atlanta, GA), October, 638-652.

Hauser, John R. and Peter R. Stopher (1976), "Choosing an Objective Function Based on Modeling Consumer Perceptions and Preferences," *Proceedings of the International Conference on Cybernetics and Society*, (Washington, D.C.), November, 26-31.

Magazine Articles

Hauser, John R., Abbie Griffin, and Steve Gaskin (2011), "The House of Quality," *Wiley International Encyclopedia of Marketing*, (Chichester, West Sussex UK: John Wiley & Sons, Ltd.).

Abbie Griffin, Steve Gaskin, Robert Klein, Gerry Katz, and John R. Hauser (2009), "The Voice of the Customer," *Wiley International Encyclopedia of Marketing*, (Chichester, West Sussex UK: John Wiley & Sons, Ltd.).

Hauser, John R. (2002), "Marketing Makes a Difference," *Marketing Management*, (January/February), 11, 1, 46-47.

Hauser, John R. (2000), "Going Overboard on Platforms," *AMS Voices,* 8.

Hauser, John R. (1997), "The Problem with Pinball," *AMS Voices,* 4.

Hauser, John R. (1996), "You Are What You Measure," *AMS Voices*, 1.

Hauser, John R. (1995), "Internal Customers," *Insight*, 4, 1.

Hauser, John R. (1994), "Quality Function Deployment," *Marketing Encyclopedia for the Year 2000*, Jeffrey Heilbrunn, ed., American Marketing Association, Chicago, IL, 60606.

Hauser, John R. (1993), "Are Customer-Satisfaction Programs Profitable?, *Insight*, 3.

Hauser, John R. (1988), "Customer Driven Engineering," *Design News*, (July 18), p. 50.

Hauser, John R. and Robert L. Klein (1988), "Without Good Research, Quality is a Shot in the Dark," *Marketing News*, Vol. 22, No. 1, January 4. Page 1.

Hauser, John R. (1986), "`Defender' Helps Mature Brands Ward off New Foes," *Marketing Educator*, 5, 3, (Fall), 5.

Working Papers

Liberali, Guilherme, Glen L. Urban, and John R. Hauser (2012), " Competitive Information, Trust, Brand Consideration, and Sales: Two Field Experiments " (Cambridge, MA: MIT Sloan School of Management), March.

Hauser, John R., Glen L. Urban, and Guilherme Liberali (2011), "Website Morphing 2.0: Technical and Implementation Advances Combined with the First Field Experiment of Website Morphing," (Cambridge, MA: MIT Sloan School of Management), July.

Selove, Matthew and John R. Hauser (2011), "The Strategic Importance of Accuracy in Conjoint Design," (Cambridge, MA: MIT Sloan School of Management), July.

Lin, Song, Juanjuan Zhang, and John R. Hauser (2012), "Learning from Experience, Simply," (Cambridge, MA: MIT Sloan School of Management), March.

Urban, Glen L., Guilherme Liberali, Erin MacDonald, Robert Bordley, and John R. Hauser (2012), "Morphing Banner Advertisements," (Cambridge, MA: MIT Sloan School of Management), March.

Draft Working Papers

Ding, Min, John R. Hauser, and Lixin Huang (2009), "Sleuthing Game," draft working paper, (Cambridge, MA: MIT Sloan School of Management).

Older Working Papers (Support published papers with additional information)

Braun, Michael, Clarence Lee, Glen L. Urban, and John R. Hauser (2009), "Does Matching Website Characteristics to Cognitive Styles Increase Online Sales?," (Cambridge, MA: MIT Sloan School of Management).

Zettelmeyer, Florian and John R. Hauser (1995), "Metrics to Evaluate R&D Groups: Phase I, Qualitative Interviews," Working Paper, International Center for Research on the Management of Technology, MIT, Cambridge, MA, 02142.

Hauser, John R. (1991), "Comparison of Importance Measurement Methodologies and their Relationship to Consumer Satisfaction," (Cambridge, MA: MIT Sloan School of Management).

Research in Progress

Review of consideration set research. With Don Lehmann.

Review of incentive alignment in marketing research. With Min Ding and Joel Huber.

Genetic Algorithms for Understanding Consumer Preferences with Kamal Malek and Kevin Karty.

Advertising morphing. With Glen Urban and Gui Liberali.

Applications of conjunctive decision rules for managerial strategy in the auto industry. With Glen Urban and Gui Liberali.

Research Reports (not otherwise listed)

Hauser, John R. (1996), "R&D Metrics: An Annotated Bibliography," ICRMOT Working Paper, M.I.T., Cambridge, MA 02142. (June) Also available as a Marketing Science Institute Working Paper (November).

Hauser, John R. and Greg Cirmak (1987), "Consumer Driven Engineering for the CHEK Automobiles," Information Resources, Inc. Report to General Motors, Inc. Details the results of a major study on consumer perceptions and preferences of luxury automobiles. April.

Hauser, John R. (1983), "Critique of Market Studies for Cellular Radio Telephone:. Affidavits before the FCC evaluating market studies, June and September.

Hauser, John R. (1983), "Forecasts of Demand and Cellular Radio Telephone,: Affidavits before the FCC for five major and nine minor markets. June and April.

Hauser, John R., and J. Bertan (1982), "Auto Show Interviews," Internal Report to Buick Division of General Motors, June.

Hauser, John R., and Kenneth J. Wisniewski (1981), "Monitoring the Implementation of Innovative Transportation Services, Phase I: Final Report," Technical Report to the Urban Mass Transit Administration, Research Grant IL-11-0012, May.

Hauser, John R. and Kenneth J. Wisniewski (1979), "Consumer Analysis for General Travel Destinations," Technical Report, Transportation Center, Northwestern University, March.

Hauser, John R. and Steven M. Shugan (1978), "Designing and Building a Market Research Information System," Technical Report, Transportation Center, Northwestern University, February.

Hauser, John R. (1978), "Forecasting and Influencing the Adoption of Technological Innovations," Technical Report, Transportation Center, Northwestern University, October.

Hauser, John R., Alice M. Tybout and Frank S. Koppelman (1978), "Consumer-Oriented Transportation Services Planning: The Development and Implementation of a Questionnaire to Determine Consumer Wants and Needs," Technical Report, Transportation Center, Northwestern University, October.

Tybout, Alice M., Frank S. Koppelman and John R. Hauser (1977), "Consumer Views of Transportation in Evanston: A Report Based on Focus Group Interviews," Technical Report, Transportation Center, Northwestern University, June.

Koppelman, Frank S., John R. Hauser and Alice M. Tybout (1977), "Preliminary Analysis of Perceptions, Preferences, Beliefs and Usage of Transportation Services for Travel to Downtown Evanston," Technical, Report, Transportation Center, Northwestern University, May.

Hauser, John R. (1977), "Results of the Focus Group Interviews for Shared Ride Auto Transit," Cambridge Systematics Consultant's Report, May.

Hauser, John R. (1976), "Report on the Applicability of Attitudinal research for Improving the Effectiveness of Transportation Demand Models," Position Paper commissioned by Cambridge Systematics, Inc., April.

Wilson, Nigel, R. W. Weissberg and John R. Hauser (1976), "Advanced Dial-a-Ride Algorithms--Final Report," M.I.T. Department of Civil Engineering Technical Report, April.

Hauser, John R., et al. (1974), "The Chemung County Transit Survey." Volunteers in Technical Assistance (a division of VISTA) publication for Chemung County, NY, June. (Includes analysis of transportation options based on the results of the survey designed and implemented by the technical team.)

Hauser, John R. (1974), "A Cost Model for RTS (Rochester, NY) Conventional Bus Routes," M.I.T., Department of Civil Engineering Report, January.

Hauser, John R. (1973), "An Efficient Model for Planning Bus Routes in Communities with Populations Between 20,000 and 250,000," M.I.T., Operations Research Center Working Paper OR-029-993, November.

Research Grants

July 2007 – June 2008	Understanding Non-compensatory Decision Making for Consideration Decisions (under Consortium with MIT Center for eBusiness and General Motors, Inc.
June 2000 – May 2006	Center for Innovation in Product Development, MIT, Initiative Leader, Virtual Customer.
January 2001 – May 2002	eBusiness Center at MIT. Design and Delivery of Online Promotions. (with John Little, Duncan Simester, and Glen Urban).
January 1997 – May 2000	Center for Innovation in Product Development, Engineering Research Center Grant from the National Science Foundation. Research Director. In addition, research grants for non-monetary incentives, procurement metrics, and virtual customer methods.
June 1999 – May 2000	"Metrics Thermostat," International Center for Research on the Management of Technology (Principal Investigator).
June 1999- May 2001	"New Product Metrics at Ford and the US Navy," Center for Innovation in Product Development
June 1999- May 2001	"Lean Sustainment Metrics at the USAF," Lean Sustainment Initiative at MIT
June 1994 - May 1999	"Metrics to Value R&D," International Center for Research on the Management of Technology (Principal Investigator). General topic. Detailed proposals were for various aspects of the problem.
June 1991 - May 1994	"Customer Needs, Customer Satisfaction, Sales, and Profit: Providing the Right Incentives to Engineering and R&D," International Center for Research on the Management of Technology (co-Principal Investigator with Birger Wernerfelt)
January 1990 - June 1992	"Information Acceleration and Preproduction Forecasting of New Autos, Phases I and II." General Motors Electric Vehicle Project. (Associate)
December 1988 - June 1990	"Improved Methodologies to Measure Consumer Needs," Procter & Gamble Company. (Principal Investigator)
September 1981 - December 1985	"Prelaunch Forecasting System for New Consumer Durables and Its Applications to Auto Purchases," General Motors, Buick Division (co-Principal Investigator with Glen L. Urban).
January 1981 - May 1981	"Marketing Approaches in Travel Demand," United Parcel Service Grant (Faculty Advisor).
January 1979 - August 1980	"Monitoring the Implementation of Innovative Public Transportation Services" from University Research Program of the Urban Mass Transportation Administration (Principal Investigator).
July 1975 - September 1977	"Consumer-Oriented Transportation Service Planning." from the Program of University Research, U.S. Department of Transportation (Faculty Associate).

September 1977 - January 1978	"Consumer-oriented Transportation Service: Modification and Evaluation" from Program of University Research, USDOT (Faculty Associate).
May 1976 - September 1978	"Enhancement of Communications with a Small Scientific Community Using Slow-Scan Televideo Terminals and Voice-Grade Telephone Lines" from the National Science Foundation (Faculty Associate).
January 1976 - December 1976	"A Method for Assessing Pricing and Structural Changes on Transport Mode Use," U.S. Department of Transportation (Faculty Associate).
September 1976 - June 1977	"Prediction of Urban Recreational Demand" from the National Science Foundation (Faculty Consultant).

Invited Lectures (Outside the Sloan School)

Wharton School, University of Pennsylvania, April 2009, "Website Morphing"

Max Planck Institute for Human Development, Center for Adaptive Behavior and Cognition, Summer Institute on Bounded Rationality in Psychology and Economics, August 2006, "Greedoid-Based Non-Compensatory Consider-then-Choice Inference."

Northwestern University, Evanston, IL, April 2006, "Greedoid-based Non-compensatory Inference."

University of Michigan, Seminar Series, October 2004, "Table Stakes: Non-compensatory Consideration-then-Choice Inference."

Management Roundtable Special Conference on "Taking the Voice of the Customer to the Next Level," Boston, MA October 2004, "The Virtual Customer."

Marketing Science Institute Research Generation Conference, Atlanta, GA, May 2004, "New Products/Innovation," (with Gerry Tellis).

Marketing Science Institute Conference on Emerging Approaches for Successful Innovation, Chicago, IL, May 2003, "'Listening-In' to Find Unmet Customer Needs and Solutions."

University of California at Los Angeles, "Polyhedral CBC (and other fun stuff), February 2003

New York University, "Polyhedral Methods," March 2003.

Industrial Liaison Program – Research Directors' Conference, April 2002, "The Virtual Customer."

University of Maryland, "Polyhedral Methods for Conjoint Analysis," March 2002.

Marketing Science Institute Trustees Meeting on Marketing Outside the Silo, Boston, MA, April 2002, "Challenges and Visions for Marketing's Role in Product Development Processes."

Managing Corporate Innovation -- ILP Symposium celebrating ten years of Management of Technology Research at MIT. "Dealing with the Virtual Customer: Fast Web-based Customer Input." April 2001

Epoch Foundation, Cambridge, MA, October 2000, "The Virtual Customer."

Yale University Research Seminar in Marketing, New Haven, CN, March 2000, "Metrics Thermostat."

Analysis Group Economics Seminar, Boston, MA, December 1999, "The Use of Marketing Research in Litigation." Also New York, NY, March 2000 and Washington, D. C., March 2002.

Boston Chapter of the Society for Concurrent Engineering, Waltham, MA, October 1999, "Metrics Thermostat."

University of Michigan DuPont Distinguished Speakers' Series, Ann Arbor, MI, March 1998, "New Product Metrics."

Kirin Brewery Co. Limited, Tokyo, JAPAN, December 1998, "You Are What You Measure!" and "Scientific Studies of the Voice of the Customer."

NEC Corporation, Tokyo, JAPA, December 1998, "Scientific Studies of the Voice of the Customer."

University of California at Los Angeles, Los Angeles, CA, February 1997, "Research, Development, and Engineering Metrics"

Stanford University, Stanford, CA, December 1996, "Metrics to Value R,D&E"

University of California at Los Angeles, Los Angeles, CA, February 1997, "Research, Development, and Engineering Metrics"

Duke University, Durham, NC, "Internal Customers and Internal Suppliers," Nov. 1995.

University of Minnesota, Minneapolis, MN, "Voice of the Customer," "Internal Customers and Captive Suppliers," May 1995.

Winter Retreat, University of Florida, Gainesville, FL, "Internal Customers and Captive Suppliers," December 1993.

Product Development Association - Boston, "Design and Marketing of New Products II: Advances in Product Development Management over the Last 13 Years," May 1993.

3M, Minneapolis, MN, "Incentives to Encourage a Long-term Perspective and a Customer Focus," Workshop on "Towards a World-class Research, Development, and Engineering Organization," November 1992.

Baxter Health Care, Orange County, CA, "The Voice of the Customer," August 1992.

TIMS College on the Practice of Management Science (*New Directions in Management Science*), Cambridge, MA: "The Voice of the Customer," October 1991.

IBM, Inc., Boca Raton, FL: "Voice of the Customer for Performance Graphics," May 1991.

Kirin Brewery Company, Ltd. Tokyo, JAPAN: "New Product Development" and "Customer Satisfaction and Customer Needs," April 1991.

American Iron and Steel Institute, Detroit, MI: "Satisfying the Customer -- Technical Issues," February 1991.

Warner Lambert, Inc., Mountain Laurel, PA: "Communication Among R&D and Marketing," October 1990.

Digital Equipment Corporation, Maynard, MA: "Voice of the Customer," May 1990.

Life Insurance Marketing and Research Association, Inc.: 31st Research Planning Conference, Boston, MA, "The House of Quality." June 1989.

University of Illinois: "Customer Driven Engineering." April, 1988.

Marketing Science Institute and IBM Thornwood Educational Facility: Quality through Customer Driven Engineering." April, 1988.

Harvard Business School: "Customer Driven Engineering: Integrating Marketing and Engineering." February, 1988.

Vanderbilt University: "Competitive Price and Advertising Strategies" and "Customer Driven Engineering." October, 1988.

Columbia University: "Price, Positioning, and Advertising Games: To Equilibrate of Not, Does it Pay to be Smart?" May, 1987.

New York Marketing Modelers' Club: "Would You Really Rather Have a Buick?: Prelaunch Forecasting of New Automobiles," May 1987.

M.I.T. Applied Economics: "Competitive Product Selection and Advertising Models." April, 1987.

Northwestern University: "Agendas and Consumer Choice," August, 1986.

AMA Faculty Consortium on Marketing Strategy at the University Tennessee, Knoxville. "Defender: Analyses for Competitive Strategy," July, 1986.

Ohio State University: "Defensive and Competitive Strategy." May, 1986.

Boston University: "Research in Competitive Strategy." November, 1985.

Midwest Electronics Association, Minneapolis, MN: "New Products for High-Tech Firms." October, 1985.

University of Pennsylvania: "Agendas and Consumer Choice," August, 1985.

Herstein Institute, Vienna Austria: "Competitive Strategy," May, 1985.

Cadbury-Schweppes, Birmingham, England: "New Product Development and Defensive Strategy." May, 1985.

Rhone-Poulenc and Aluminum Pechiney, Paris, France: "New Product Development." April, 1985.

University of Michigan: "Defensive and Competitive Strategy." February, 1985.

Marketing Science Institute Special Mini-Conference: "Defensive Marketing Strategies for Consumer Firms." September 1983.

University of Chicago, Graduate School of Business, Chicago, IL. "Agendas and Consumer Choice," May 1984.

European Institute for Business Administration (INSEAD), Fontainebleau, FRANCE. "Agendas and Consumer Choice," June 1984.

University of Connecticut. "Defensive Marketing: Theory, Measurement, and Models," April, 1983.

University of Osaka, JAPAN "Defensive Marketing: Theory, Measurement, and Models," August, 1983.

Kao Soap, Ltd., Tokyo, JAPAN: "Defensive Marketing," August, 1983.

Johnson & Johnson, K. K., Tokyo, JAPAN: "Defensive Marketing," August, 1983.

Analog Devices, Inc., Norwood, MA. "New Product Development," May, 1982.

University of Rochester Research Seminar, "Prelaunch Forecasting of New Consumer Durables," April 1982.

Frito-Lay R & D Laboratory, Dallas, TX, "Marketing and R & D for New Products," October 1981.

University of California at Los Angels Research Seminar, "Defensive Marketing Strategies," July, 1981.

Purdue University Research Seminar, "Product Realization," October 1979.

Stanford University Research Seminar, "Product Realization," October 1979.

Elrick and Lavidge, Inc., Chicago, Illinois, "Product Realization," October 1979.

Booz, Allen and Hamilton, Inc., Chicago, Illinois, "New Service Planning for Hospitals," April 1979.

Cornell University Research Seminar, "Intensity Measures of Consumer Preference," February 1979.

University of Rochester Research Seminar, "Product Realization: Synthesis of Marketing and Economic Theory," December 1978.

Region VI Center of Health Planning, New Orleans, LA, "Finding the Linkage Through Marketing,: August 1978.

Nebraska Hospital Association, Kearney, NE, "Hospital Marketing Surveys," May 1978.

Executive Development Group, Waterloo Management Education Centre, Toronto, Ontario, Canada, "Designing New Industrial Products," February 1978.

Academic Update, Xavier University Graduate Program in Hospital and Health Administration, Cincinnati, OH, "Designing Hospital Services: A Marketing Approach," October 1977.

The Hospital Marketing Workshop, Ireland Educational Corporation, Chicago, Illinois, "Analyzing the Hospital Markets," January 1977 and May 1977.

Association for College Unions - International, 1976 Fall Conference in Green Bay, WI, Keynote Speech - "Designing Successful Services: A Marketing Approach," October 1976.

University of Chicago, Graduate School of Business, Research Seminar, "Testing Probabilistic Models," April 1976.

Council for the Advancement and Support of Education, Conference on Marketing Alumni Program, New York, NY, Keynote Speech, February 1976.

Presentations at Professional Meetings (No published proceedings, some co-presented or presented by co-author[s])

The 2012 Theory & Practice in Marketing (TPM) Conference on Marketing Strategy, Harvard University, Boston, MA. May 2-3, 2012. Glen L. Urban, Guilherme Liberali, Erin MacDonald, Robert Bordley, and John R. Hauser*, "Morphing Banner Advertising."

INFORMS Marketing Science Conference, Boston, MA, June 2012.
- Song Lin*, Juanjuan Zhang, and John R. Hauser, "Learning from Experience, Simply."
- Glen L. Urban, Guilherme Liberali, Erin MacDonald, Robert Bordley, and John R. Hauser*, "Morphing Banner Advertising"
- Matt Selove* and John R. Hauser, "The Strategic Importance of Accuracy in Conjoint Design."

New England Marketing Conference, Cambridge, MA, October 28, 2011. Gui Liberali, Glen L. Urban and John R. Hauser*, " Providing Unbiased Competitive Information to Encourage Trust, Consideration, and Sales: Two Field Experiments."

Yale School of Management, Center for Customer Insight, The Customer Insights Conference, New Haven, CT,

May 12-14, 2011. John R. Hauser and Matthew Selove*, "The Strategic Importance of Accuracy in the Relative Quality of Conjoint Analysis."

INFORMS Marketing Science Conference, Cologne, Germany, June 2010 (*indicates primary presenter if not me)
- Liberali, Guilherme*, John R. Hauser, and Glen L. Urban, "Optimal Time-to-Morph and Cognitive Costs of Morphing."
- Liberali, Guilherme, Glen L. Urban, and John R. Hauser, "Do Competitive Test Drives and Product Brochures Improve Sales?"
- Urban, Glen L.*, Jong Moon Kim, Erin MacDonald, John R. Hauser and Daria Dzyabura, "Developing Consideration Rules for Durable Goods Markets."

2010 Advanced Research Techniques Forum, San Francisco, CA, June 6-9, 2010, "Unstructured Direct Elicitation of Non-compensatory and Compensatory Decision Rules," with Min Ding, Songting Dong*, Daria Dzyabura (listed as Silinskaia), Zhilin Yang, Chenting Su, and Steven Gaskin.

2009 AMA Sheth Foundation Doctoral Consortium, J. Mack Robinson College of Business, Georgia State University, June 2009. E-Commerce and Digital Marketing Topics.

INFORMS Marketing Science Conference, Ann Arbor, MI, June 2009 (* indicates primary presenter if not me)
- "An Empirical Test of Incentive-Compatible Direct Elicitation of Heuristic Decision Rules for Consideration and Choice," with Min Ding, Songting Dong, Daria Dzyabura, Zhilin Yang, Chenting Su, and Steven Gaskin
- "Adaptive Profile Evaluation to Identify Heuristic Decision Rules in "Large" and Challenging Experimental Designs," with Daria Dzyabura (formerly Silinskaia)* and Glen L. Urban..
- "Morphing Websites in the Presence of Switching Costs," with Guilherme Liberali* and Glen L. Urban.
- "Continuous-Time Markov-Process with Misclassification: Modeling and Application to Auto Marketing," with Glen L. Urban* and Guilherme Liberali.
- "An Incentive-Aligned Sleuthing Game For Survey Research," with Min Ding*
- "Would You Consider a Buick Even if It Were #1 in JD Power?" with Erin MacDonald* and Glen Urban
- "Cognitive Simplicity and Consideration Sets," with Rene Befurt*, Daria Dzyabura, Olivier Toubia, and Theodoros Evgeniou
- "John D. C. Little, a Pioneer in Marketing Science (Festschrift paper)," with Glen L. Urban

INFORMS Marketing Science Conference, Vancouver, B.C., June 2008 (* indicates primary presenter if not me)
- "Cognitive Styles and Website Design," with Michael Braun, Glen L. Urban, and Clarence Lee.
- Modeling Cognitive Complexity to Predict Consideration Sets," with Daria Dzyabura (formerly Silinskaia)*, Theodoros Evgeniou, Olivier Toubia, and Rene Befurt.
- "Morphing Websites to Match Individual Cognitive Styles," with Michael Braun*, Glen L. Urban, and Guilherme Liberali

Sawtooth Software Conference, Delray, FL, March 2009, "A Critical Review of Non-compensatory and Compensatory Models of Consideration-Set Decisions," with Min Ding and Steven Gaskin

AMA Doctoral Consortium, Robert J. Trulaske, Sr. College of Business, University of Missouri, June 2007, "Looking Ahead: Directions for Scholarly Research in Marketing" and "Building Teaching Effectiveness: Stimulating Student Interest."

Sawtooth Software Conference, Santa Rosa, CA, October 2007, "Two-Stage Models: Identifying Non-Compensatory Heuristics for the Consideration Set then Adaptive Polyhedral Methods Within the Consideration Set," with Steven Gaskin, Theodoros Evgeniou, Daniel Bailiff.

AMA Advance Research Technologies Forum, Sante Fe, New Mexico, June 2007, "Two-Stage Models: Identifying Non-Compensatory Heuristics for the Consideration Set then Adaptive Polyhedral Methods Within the Consideration Set," with Steven Gaskin, Theodoros Evgeniou, and Daniel Bailiff.

AMA Doctoral Consortium, W. P. Carey School of Business, Arizona State University, May 2007, "Consideration The New Battlefield in Product Development."

Agent-based Models of Market Dynamics and Consumer Behaviour, University of Surrey, Guildford, UK, January 2006, "Co-opetition for the Diffusion of Resistant Innovations: A Case Study in the Global Wine Industry using an Agent-based Model." with Rosanna Garcia. Also presented at the American Marketing Association's Advanced Research Techniques (ART) Forum in June 2006 at Monterrey CA.

AMA Doctoral Consortium, University of Maryland, College Park, MD, July 2006, "Creating Value: Products and Brands."

Marketing Science Conference, University of Pittsburgh, Pittsburgh, PA, June 2006, "A Truth-telling Sleuthing Game for Survey Research," with Min Ding.

Marketing Science Conference, University of Pittsburgh, Pittsburgh, PA, June 2006, On Managerially Efficient Experimental Designs,: with Olivier Toubia.

Sawtooth Software Conference on Conjoint Analysis, Delray Beach, FL, March 2006, "Must Have" Aspects vs. Tradeoff Aspects in Models of Customer Decisions," with Michael Yee, James Orlin, Ely Dahan.

AMA Doctoral Consortium, University of Connecticut, Storrs CT, June 2005, "The Virtual Customer."

Marketing Science Conference, Emory, Atlanta, GA, June 2005, "Direct, Nonparametric Product Optimization Using Interactive Genetic Algorithms," with Kamal Malek and Kevin Karty.

Marketing Science Conference, Emory, Atlanta, GA, June 2005, "Non-Deterministic Polyhedral Methods for Adaptive Choice-Based Conjoint Analysis: Application to the Diffusion of the New Wine Cork," with Olivier Toubia and Rosanna Garcia.

Marketing Science Conference, Emory, Atlanta, GA, June 2005, "Greedoid-Based Non-compensatory Two-Stage Consideration-then-Choice Inference," with Michael Yee, Jim Orlin, and Ely Dahan.

Marketing Science Doctoral Consortium, Rotterdam, The Netherlands, June 2004, "Research that Has Impact."

Marketing Science Conference, Rotterdam, The Netherlands, June 2004, "Improving Choice-Based Polyhedral Methods by Taking Response Error into Account," with Olivier Toubia.

Marketing Science Conference, Rotterdam, The Netherlands, June 2004, "The Dream Versus Reality of CRM," with Glen L. Urban, Eric Bradlow, and, Mahesh Kumar.

Marketing Science Conference, Rotterdam, The Netherlands, June 2004, "Non-compensatory Consideration-then-Choice Adaptive Conjoint Analysis," with Michael Yee and James Orlin.

AMA Doctoral Consortium, Texas A&M University, College Station, TX, June 2004, "Virtual Customer Initiative."

AMA Advanced Research Techniques Forum, June 2004, "Conjoint Adaptive Ranking Database System (CARDS)," with Ely Dahan, James Orlin, and Michael Yee.

AMA Doctoral Consortium, University of Minnesota, Minneapolis, MN, June 2003, "The Review Process."

Marketing Science Doctoral Consortium, University of Maryland, June 2003, "Roots of Marketing Science Thought," with John Little.

Marketing Science Conference, University of Maryland, June 12-15, 2003, "Individual-level Adaptation of Choice-Based Conjoint Questions: More Efficient Questions and More Accurate Estimation," (with Olivier Toubia and Duncan Simester).

Marketing Science Conference, University of Alberta, Canada, June 28, 2002, "Configurators, Utility Balance, and Managerial Use," (with Duncan Simester and Olivier Toubia).

Marketing Science Doctoral Consortium, University of Alberta, Canada, "Helping Managers Structure and Make Decisions," June 27, 2002. (Founding Consortium).

Marketing Science Conference, University of Alberta, Canada, June 28, 2002, "Adaptive Choice-Based Conjoint Analysis with Polyhedral Methods," (with Duncan Simester and Olivier Toubia*).

Advances in Marketing Research and Modeling: The Academic and Industry Impact of Paul E. Green, Wharton, Philadelphia, PA, May 2002, "New Methods of Data Collection and Estimation Using Polyhedral Estimation Techniques."

Production and Operations Management Society (POMS) Conference 2002 - High Tech POM, San Francisco, CA, April 2002, "The Virtual Customer," (with Ely Dahan*).

Product Development Association (PDMA) International Research Conference, Santa Clara, CA, October 2001, "The Virtual Customer," (with Ely Dahan*).

New England Marketing Conference, Cambridge, MA, September 2002, "Fast Polyhedral Adaptive Conjoint Estimation," (with Ely Dahan, Duncan Simester, and Olivier Toubia).

Marketing Science Conference, Wiesbaden, Germany, July 2001, "Empirical Test of Web-based Conjoint Analysis Including ACA, Efficient Fixed Designs, Polyhedral Methods, and Hybrid Methods," (with Ely Dahan, Duncan Simester, and Olivier Toubia*)

Marketing Science Conference, Wiesbaden, Germany, July 2001, "Evaluation of Fast Polyhedral Adaptive Conjoint Estimation," (with Duncan Simester and Olivier Toubia).

The 12th Annual Advanced Research Techniques Forum, Amelia Island, Florida, June 2001, "The Virtual Customer: Communication, Conceptualization, and Computation," (with Ely Dahan*).

AMA Doctoral Consortium, University of Miami, June 2001, "Role of Technology in Marketing."

Marketing Science Conference, UCLA, June 2000, "Applications of the Metrics Thermostat."

Marketing Science Conference, UCLA, June 2000, "The Virtual Customer." (with Ely Dahan and Duncan Simester).

Marketing Science Institute Marketing Metrics Workshop, Washington, D.C. October 1999, "Metrics for New Product Development: Making Agency Theory Practical," Plenary Speaker.

Marketing Science Conference, Syracuse, NY, May 1999, "Balancing Customer Input, Speed to Market, and Reduced Cost in New Product Development: What is the Most Profitable Strategy"

ICRMOT Conference on Technology Alliances and New Product Development: A Cross-cultural Perspective, Mishima, JAPAN, December 1998, "You Are What You Measure!"

AMA Doctoral Consortium, Athens, Georgia, August 1998, "Quantitative Advances in Marketing Models."

AMA Winter Educators' Conference, Austin, TX, February 1998 (Plenary Speaker), "New Challenges in the Marketing-Product Development Interface."

AMA Doctoral Consortium, Cincinnati OH, August 1997, "Working with Industry."

Marketing Science Conference, Berkeley CA, March 1997, "Cultivating Technological Managers for Customer Expertise."

Marketing Science Institute Conference on Interfunctional Interfaces: The Management of Corporate Fault Zones, Palo Alto, CA, December 1996, "Multi-Stage Modeling of R&D/Marketing Interfaces in New Product Development."

Marketing Science Conference, Berkeley CA, March 1997, "Cultivating Technological Managers for Customer Expertise."

Envisioning the Future on Internet Marketing: Research and Strategy Implications, M.I.T., September 1996, "Agents and Intermediaries: Roles, Trust, and Value."

"Can R&D be Evaluated on Market-Driven Criteria?," (with Florian Zettelmeyer). Marketing Science Conference, University of Florida, Gainesville, March 1996

"Information Acceleration," (with Glen Urban, William Qualls, Bruce Weinberg, Jon Bohlmann, and Roberta Chicos). Wharton Conference on Innovation in Product Development, Philadelphia, PA, May 1995.

"Metrics by Which Managers Evaluate R&D Groups," (with Florian Zettelmeyer). Association of Consumer Research, Boston, MA, October 1994.

"Satisfying the Internal Customer," (with Birger Wernerfelt and Duncan Simester) Marketing Science Conference, University of Arizona, Tucson, AZ, March 1994.

"Customer-Satisfaction Based Incentive Systems," AMA Educator's Conference, Boston, MA, August 1993.

"Marketing in the 1990s: Emerging Issues," AMA Doctoral Consortium, University of Illinois, August 1993.

"Quality Function Deployment and the Voice of the Customer," Pharmaceutical Management Science Association, Phoenix AZ, May 1993.

"In a World of Active Time-constrained Customers, How Can a Firm be the Great Communicator," (with Birger Wernerfelt), Marketing Science Conference, Washington University, St. Louis, MO, March 1993.

"Customer Needs, Customer Satisfaction, Sales, and Profit," (with Birger Wernerfelt, Ronit Bodner, and Duncan Simester), ORSA/TIMS Joint National Conference, San Francisco, CA, November 1992.

"Customer Satisfaction and Employee Rewards," (with Birger Wernerfelt, Ronit Bodner, and Duncan Semester), Marketing Science Conference, London, England, June 1992.

"Information Acceleration and Preproduction Forecasting of Electric Autos," (with Glen L. Urban and Bruce Weinberg), Marketing Science Conference, London, England, June 1992.

"The Voice of the Customer and Customer Satisfaction," ORSA/TIMS Joint National Meeting, Anaheim, CA, October 1991.

"Modeling Marketing Phenomena," AMA Doctoral Consortium, University of Southern Calif. August 1991.

"Relationship of Satisfaction to Customer Needs and to Market Share," 1st Congress on Customer Satisfaction and Market-Driven Quality, American Marketing Association, Orlando FL, May 1991.

"Time Flies When You're Having Fun: How Consumers Allocate Their Time When Evaluating Products" (with Bruce Weinberg, Glen Urban, and Miguel Villas-Boas), Marketing Science Conference, Wilmington, DL, March 1991.

"Information Acceleration and Preproduction Forecasting of New Autos," (with Glen Urban, and Bruce Weinberg), Marketing Science Conference, Wilmington, DL, March 1991.

"Beyond Quality Function Deployment," ORSA/TIMS Joint National Meeting, Philadelphia, PA October 1990. (Conference-wide Tutorial)

"Competitive Marketing Strategies," Operations Research 1990 (Osterreichische Gesellschaft fur Operations Research), Vienna, Austria, August 1990. (Invited Speaker)

"New Product Development: A Quantitative Analysis of Interfunctional Communication" (with Abbie Griffin), Marketing Science Conference, Urbana, IL, March 1990.

"Integrated Product Development: New Methodological Developments" (with Abbie Griffin), Marketing Science Conference, Durham, N.C., March 1989.

"Customer Driven Engineering" (with Gregory Cirmak and Robert Klein), ORSA/TIMS Joint National Meeting, Washington, D.C., April 1988.

"Competitive Advertising and Pricing in Duopolies" (with Birger Wernerfelt), Marketing Science Conference, Seattle, Washington, March 1988.

"Customer Driven Engineering" (with Abbie Griffin), Marketing Science Conference, Seattle, Washington, March 1988.

"Customer Needs," Visions of Design Practices for the Future, Newton, MA, October 1987.

"Effective Strategies in Oligopoly" (with Peter Fader), ORSA/TIMS Joint National Meeting, Miami Beach, Florida, November 1986.

"Competitive Strategy Contest: Result and Analysis" (with Peter Fader), Marketing Science Conference, Dallas, TX, March 1986.

"The PC As a Tool to Teach Complex Marketing Science Concepts," Marketing Science Conference, Dallas, TX, March 1986.

"The Coming Revolution in Marketing Theory," Plenary Speaker, European Marketing Conference, Bielefeld, West Germany. April 1985.

"Defensive Strategy" Confer. on Economics of the Firm, Universite de Paris X, Nanterre, France, April 1985.

"Competitive Marketing Strategies" Marketing Science Conference, Nashville, Tennessee, March 1985.

"Developing New Product Management: Past Progress, Current Efforts, Current Needs" (Panel) Marketing Science Conference, Nashville, Tennessee, March 1985.

"Testing Competitive Marketing Structures: Theory and Applications" (with Glen Urban) ORSA/TIMS Joint National Meeting, Dallas, TX November 1984.

"Competitive Strategy," ORSA/TIMS Joint National Meeting, Dallas, Texas, November 1984.

"Forecasting Automobile Sales: An Application of a Value Priority Algorithm," (with Glen Urban), John Roberts

and John Dabels), TIMS XXVI International Meeting, Copenhagen, Denmark, June 1984.

"Consumer Durables: The Actual Consumer Budgets Compared to the Value Priority Model," (with Glen Urban), Marketing Science Conference, Chicago, Illinois, March 1984.

"Defensive Strategy Models: Application and Predictive Text," (with Steven Gaskin, and Karl Irons) ORSA/TIMS Joint National Meeting, Orlando, Florida, November 1983.

"New Product Research: Focus on Defensive strategies," Roundtable Program, ORSA/TIMS Joint National Meeting, Orlando, FL, November 1983.

"Intensity of Preference," (with Steven Shugan) ORSA/TIMS Joint National meeting, San Diego, CA, October 1982.

"Measurement Error Theories for von Neumann-Morgenstern Utility Functions," (with Jehoshua Eliashberg) ORSA/TIMS Joint National Meeting, San Diego, CA, October 1982.

"Consumer Preference Models: Axioms and Statistics," ORSA/TIMS Joint National Meeting, Houston, Texas, October 1981.

"Economic Models of Consumer Behavior," (panel discussion), ORSA/TIMS Joint National Meeting, Houston, Texas, October 1981.

"Defensive Marketing Strategies, Part II," (with Steven Shugan), ORSA/TIMS Joint National Meeting, Houston, Texas, October 1981.

"Agendas and Choice Probabilities," (with Amos Tversky), Association of Consumer Research, St. Louis, Missouri, October 1981, and Special Conference on Choice Theory, Durham, North Carolina , June 1981.

"Strategic Response to Competitive New Products," (with Steven Shugan), ORSA/TIMS Joint National Meeting, Toronto, Ontario, Canada, May 1981.

"Applications of a Dynamic Semi-Markov Model of Consumer Choice," (with Ken Wisniewski), ORSA/TIMS Joint National Meeting, Colorado Springs, Colorado, November 1980.

"Models of Consumer Behavior," (panel discussion), ORSA/TIMS joint National Meetings, Colorado Springs, Colorado, November 1980.

"Dynamic Semi-Markov Models of Consumer Behavior," (with Ken Wisniewski) TIMS International Conference on Marketing, Paris, June 1980.

"Profit Maximizing Perceptual Positioning," (with Patricia Simmie) TIMS International Conference on Marketing, Paris, June 1980.

"An Error Theory for von Neumann-Morgenstern Utility Assessment," (with Jehoshua Eliashberg), ORSA/TIMS Joint National Meeting, Washington, D.C., May 1980.

"Defender: Defensive Strategies Against New Products" (with Steven Shugan), ORSA/TIMS Second Special Interest Conference on Marketing Measurement and Analysis, Austin, Texas, March 1980.

"Adaptive Control of New Product Launches," (with Ken Wisniewski), ORSA/TIMS Joint National Meeting, Milwaukee, Wisconsin, October 1979.

"The Value of Up-front Research in New Products," (with Glen Urban), TIMS International Meeting, Honolulu, Hawaii, June 1979.

"Methods for Computing Probabilities of Choice," (with Steven Shugan), TIMS International Meeting, Honolulu, Hawaii, June 1979.

"Forecasting and Improving the Adoption of New High Technology Products," (with Pat Lyon), ORSA/TIMS Joint National Meeting, New Orleans, Louisiana, May 1979.

"A Methodology for Product Realization: Multi-method Procedures," (with Patricia Simmie), ORSA/TIMS Joint National Meeting, Los Angeles, California, November 1978.

"Searching for Marketing Segments" (with Ken Wisniewski), ORSA/TIMS Joint National Meeting, New York, New York, May 1978.

"P.A.R.I.S.: An Interactive Market Research System," (with Steven Shugan), ORSA/TIMS Joint National Meeting, New York, New York, May 1978.

"Extended Conjoint Analysis," (with Steven Shugan), ORSA/TIMS Joint National Meeting, Atlanta, Georgia, November 1977.

"Consumer Preference Functions: Theory, Measurement, Estimation , and Application," (with Steven Shugan), ORSA/TIMS Joint National Meeting, Atlanta, Georgia, November 1977.

"Measuring Consumer Preferences for Health Care Plans," (with Glen Urban), ORSA/TIMS Joint National Meeting, San Francisco, California, May 1977.

"Improved Transportation Design with Consumer Response Models: An AMTRAK Example" (with Frank Koppelman), ORSA/TIMS Joint National Meeting, Miami, Florida, November 1976.

"A Comparison of Statistical and Direct Multiattribute Utility Assessment Procedures," (with Glen Urban), ORSA/TIMS Joint National Meeting, Las Vegas, Nevada, November 1985.

"Measuring Consumer Preferences: An Axiomization for Describing Choice," ORSA/TIMS Joint National Meeting, Las Vegas, Nevada, November 1975.

"Modeling Consumer Response to Innovations," (1) Milwaukee Chapter of ORSA/TIMS, November 1985; (2) Chicago Chapter of ORSA/TIMS, December 1975.

"Modeling Decisions of Choice Among Finite Alternatives: Applications to Marketing and to Transportation Demand Theory," ORSA/TIMS Joint National Meeting, San Juan, Puerto, Rico, October 1974.

"An Efficient Model for Planning Bus Routes in Medium Sized Communities," ORSA/TIMS Joint National Meeting, San Diego, CA, November 1973.

Professional Affiliations

The Institute for Operations Research and Management Science

American Marketing Association

Product Development and Management Association, Certified New Product Development Professional

Association for Consumer Research

Professional Services

President-elect, INFORMS Society of Marketing Science (January 2012 – present).

Secretary, INFORMS Society of Marketing (January 2002 – December 2005). Founding Officer.

Advisory Council, INFORMS College of Marketing (1994 - 2002)

Council of The Institute of Management Sciences (1987 - 1989)

Associate Editor for Marketing, *Management Science*, (1980 - 1981)

Department Editor for Marketing, *Management Science*, (1982 - 1988)

Editor-in-Chief, *Marketing Science*, (1989 - 1994)

Editorial Advisory Board, *Sloan Management Review* (2000-2002).

Associate Editor, *Journal of Marketing Research* (April 2006 – June 2009). First time in journal history that Area Editors have been appointed.

Senior Advisory Board, *Journal of Marketing Research* (July 2009 on). First time such an advisory board was formed.

Advisory Board, *Marketing Science* (January 2010 on).

Emeritus Editorial Board, *Marketing Science* (present, includes active reviewing of papers).

Editorial Boards, *Marketing Science*, (1980 – 1988, Editor 1989-1995, 2003- 2008, including acting Area Editor), *Journal of Product Innovation Management* (1997 - present), *Journal of Marketing* (2005- present, outstanding reviewer 2006), *European Management Journal* (advisory, 1998 - 2002), *International Journal for Research in Marketing* (2007 – present).

Reviewer: *Advances in Consumer Research, Applications in Management Science, European Journal of Research in Marketing, Journal of the Academy of Marketing Science,* Journal *of Consumer Research, Journal of Marketing, Journal of Marketing Research, Journal of Mathematical Psychology, Journal of Product Innovation Management, Management Science, Marketing Science, Operations Research, Review of Marketing, Sloan Management Review, Transportation Research Record, Transportation Science,* AMA Dissertation Prize, AMA Educators' Conference, American Institute of Decision Sciences Dissertation Prize, Nicholson Dissertation Prize, Marketing Science Institute Dissertation Award, Product Development Management Association Dissertation Prize, Prentice-Hall Books, National Science Foundation.

Conference Chairman: Conference Chair, Profitable Customer-Driven Organizations: Developing the Blueprint, Management Roundtable, May 1994.

Segment Chairman: Yale School of Management, Center for Customer Insight, The Customer Insights Conference, New Haven, CT. May 12-14, 2011. New Product Innovations.

Non-traditional Models of Consumer Preference and Choice, Adaptive Preference and Estimation, Optimizing Product Design and Customer Targeting, Obtaining Information From or About Consumers (Atlanta, GA, 2005, co-chair four sessions)

TIMS International Meeting, Copenhagen, Denmark, June 1984 (two sessions).

TIMS College of Marketing, Houston, Texas, October 1981 (twelve sessions).

TIMS College of Marketing, Milwaukee, Wisconsin, October 1979 (five sessions).

American Marketing Association Educator's Conference, Chicago, Illinois, August 1978, (three sessions).

INFORMS Marketing Science Conference, Atlanta GA, June 2005 (four sessions)

Session Chairman: *INFORMS (Previously named ORSA or TIMS)*

Virtual Customer Initiative (Rotterdam, The Netherlands, 2004)

New Approaches to Mapping (University of Maryland, 2003)

The Virtual Customer (University of Alberta, Canada 2002)

The Virtual Customer (Wiesbaden, Germany 2001)

Building Competitive Advantage Through Product Quality and R&D (Gainesville, FL 1996)

Customer Satisfaction and Its Role in Global Competition (San Francisco, CA 1992)

Competitive R&D (Washington, D.C., April 1988)

Competitive Marketing Strategy, (St. Louis, Michigan, November 1987)

Competition in Multiattributed Spaces (Atlanta, Georgia, November 1985).

Marketing: Consumer Measurement (Copenhagen, Denmark, June 1984)

Marketing: Dynamic Structures (Copenhagen, Denmark, June 1984)

Product Policy (Orlando, Florida, November 1983)

Product Policy (San Diego, California, October 1982)

New Product Introduction and Defense in Competitive Environments, (Detroit, Michigan, April 1982)

New Product and Product Policy Models, (Houston, Texas, October 1981)

New Product Models (Toronto, Ontario, Canada, May 1981)

Models of Consumer Behavior (Colorado Springs, Colorado, November 1980)

New Product Realization and Selection (Los Angeles, California, November 1978).

Session Chairman: *Association of Consumer Research*

Mathematical Theories of Consumer Behavior (St. Louis, Missouri, October 1981)

Committee Memberships

Editor Selection Committee, *Marketing Science*, INFORMS College of Marketing, 2001 (chair), 2004 (chair), 2007.

Editor Selection Committee, *Journal of Marketing Research,* American Marketing Association, 1999.

Conference Steering Committee, Duke Invitational Symposium on Choice Modeling and Behavior, June 1993.

Editor Selection Committee, *Management Science,* TIMS.

Founding Committee for *Marketing Science*, TIMS College of Marketing, (1979 - 1982).

Management Science Roundtable, TIMS, (1982 - 1988)

Marketing Strategy Steering Committee, Marketing Science Institute, (1983 - 1984).

Organizing Committee for Conference on Economics of the Firm, April 1985, Universite de Paris X Nanterre.

Organizing Committee for 1985 Conference in Bielefeld, West Germany, European Marketing Academy.

Publications Committee (1980 - 1982), Operations Society of America.

Scientific Committee for 1986 Conference in Helsinki, Finland.

Student Affairs Committee (1978 - 1979), Operations Society of America.

Litigation Consulting (<u>on behalf of</u>, *deposition testimony, †court, commission, or arbitration testimony)

<u>Alcatel-Lucent USA Inc.</u> v. Amazon.com, Inc. et al. (Patent Infringement)* †

<u>Allergan, Inc.</u> Engagement. (Off-label Prescriptions),

American Express Travel Related Services, Inc. v. <u>Visa USA, Inc., et. al.</u>* (Evaluation of marketing research).

American Multi-Cinema, Inc. v. <u>American Movie Classics Company, Inc., et. al.</u> (Confusion).

Amway v. <u>Procter & Gamble</u> (Damages)*,

Atlantic Recording Corporation, et. al. v. <u>XM Satellite Radio, Inc.</u> (Copyright infringement).

<u>Axcan Scandipharm, Inc.</u> V. Global Pharmaceuticals And Impax Laboratories, Inc. (False Advertising).

Berlex v. <u>Biogen, Inc</u>. (Damages)*,

Blue Mountain Arts, Susan Polis Schutz, and Stephen Schutz v. <u>Hallmark Card, Inc.</u> (Trade Dress),

James And Lisa Camenson, et al.; v. <u>Milgard Manufacturing Inc.</u>, et. al. (Class action)

Comm-Tract Corp. v. <u>Northern Telecom, Inc.</u> (Advice only),

Computer Aid, Inc. v. <u>Hewlett Packard</u> (damages)*,

<u>Creative Laboratories, Inc.</u> v. Apple Computer, Inc. (Intellectual Property),

<u>CTC Communications Corporation</u> v. Bell Atlantic Corporation (Damages),

<u>Curt Schlesinger and Peter Lore, on behalf themselves and the Certified Class, Plaintiffs</u>, v. Ticketmaster* (Class action, false advertising, confusion)

<u>Dayna Craft, et al.</u> v. Philip Morris Companies, Inc. and Philip Morris Inc. (Class Action).*

EPD v. <u>Curtis</u> (Product Confusion)†,

Stephen S. Gallagher, et. al. v. <u>State Farm Mutual Automobile Insurance Company, et al.</u> (Class Action)

Geico v. <u>Google and Overture Services (Yahoo), Inc.</u> (Trademark Infringement),

<u>Gillette</u> v. S. C. Johnson (Patent Infringement),

Heublein vs. <u>Seagrams and Gallo</u> (Liability),

<u>Hewlett-Packard, Inc.</u> v. Factory Mutual Insurance Company (Insurance Coverage)*

Intel v. <u>Advanced Micro Devices</u> (Damages)*,

J. B. D. L. Corp. d/b/a, Beckett Apothecary v. <u>Wyeth-Ayerst Laboratories, Inc. and American Home Products Corporation</u>, (Class Action),

Jerry Jacobs, et. al. v. <u>Osmose Inc., et. al</u>. (Class Action)*,

<u>Jay Kordich, et. al.</u> v. Salton Maxim Housewares, Inc., et. al. (Trademark)†,

In RE <u>J.P. Morgan Chase</u> Cash Balance Litigation (Class Action),*

Lending Tree, Inc. v. <u>The Gator Corporation</u> (Intellectual Property),

Lotus v. <u>Borland</u> (Damages)*,

Luciano F. Paone v. <u>Microsoft Corporation</u> (Patent Infringement)*.

<u>Louis Vuitton Malletier, S. A.</u> v. Hyundai Motor America (Trademark Infringement)*,

<u>Marvin Lumber and Cedar Company</u> v. PPG Industries, Inc., et. al. (Survey Design),

<u>MasterCard International, Inc</u>. v. First National Bank of Omaha (Product Confusion)*,

Mayo Foundation v. <u>Mayo Health Facilities</u> (Product Confusion)†,

<u>Mead Johnson Nutritionals</u> v. unnamed party (False Advertising),

<u>Merck & Co.</u> (Lanham Act Advice)

In Re <u>Microsoft Corporation</u> Antitrust Litigation (Multi-district Litigation)*

Millennium Laboratories, Inc. v. <u>Ameritox, Ltd.</u> (False Advertising).

<u>Pacific Bell Telephone Company</u> in New Regulatory Framework Review of Customer Satisfaction before the California Public Utility Commission†

<u>Pfizer Consumer Healthcare</u> (Lanham Act Advice)

Playtex v. <u>Procter & Gamble</u> (Claims Substantiation)*†

<u>Procter & Gamble</u> v. Amway (Liability and Damages)*†,

<u>Procter & Gamble</u> v. Haugan, et. al. (Liability and Damages)†,

<u>Putnum Fund Trustees,</u> (Investment Fraud, advice on market research)

<u>Ram Broadcasting, Inc.</u> (Cellular Telephone Filings),

RealPlayer, Inc. v. <u>Microsoft Corporation</u> (Anti-trust)

Roberts et. al. v. <u>Enterprise Rent-a-Car Company of Boston, Inc.</u>,

The Republic of Columbia v. <u>Diageo North America, et al.</u> (Anti-trust).

St. Clair Intellectual Property Consultants, Inc. v. <u>Research in Motion, Ltd.</u> and General Imaging Co. (Patent infringement)

<u>Barbara Schwab, et. al.</u> v. Philip Morris, USA (Class Action)*

SoundExchange, Inc. vs. <u>Sirius Satellite Radio, Inc. and XM Satellite Radio, Inc.</u>: In the Matter of Adjustment of

Rates and Terms for Preexisting Subscription Services and Satellite Digital Radio Services*,†

State of Colorado, et. al. v. Warner Chilcott Holdings Company III, Ltd., et. al. (Anti-trust)*

State of Florida and Plaintiff States Antitrust Litigation for Disposable Contact Lenses (Survey Analysis)†,

Stipic, et. al. v. Behr Process Corporation and Masco International (Class Action)*,

Straumann Company v. Lifecore Biomedical, Inc. (Product Confusion)*,

Sun Microsystems, Inc. v. Microsoft Corporation (Anti-trust),

Tivo, Inc. v. Echostar Communications Corporation, et. al*.

Tropicana Products, Inc. v. Vero Beach Groves, Inc. (Lanham Act)†,

Wal-Mart Stores, Inc (and other retailers) v. Mastercard International, Inc. (Liability and Damages, Anti-trust)*,

We Media, Inc. v. We: Women's Entertainment, LLC. (Product Confusion)*.

Marketing, Marketing Research, and Product Development Consulting

American Home Foods, Inc.; American Airlines; American Hospital Supply Corporation; Analog Devices, Inc; Andersen Consulting, Inc. (Accenture), Applied Marketing Science, Inc.; A.T.&T.; Avon; Barton-Aschmann Associates; Baxter Cardiovascular Group, Booz Allen Hamilton, Inc., Cambridge Systematics, Inc.; Colgate-Palmolive; Costello Associates, Inc.; Economics' Laboratories, Inc.; Elrick and Lavidge, Inc.; Evanston Hospital; Evanston, Illinois and Schaumburg, Illinois (Transportation Planning); Fidelity Investments; French's Inc., G.D. Searle, Inc.; General Foods, Inc.; General Motors, Inc., Buick Division, Chevrolet Division, Marketing and Product Planning; Gillette; IBM, Inc.; Information Resources, Inc.; Intel, Inc., Johnson & Johnson; Kodak; Macromedia, Inc., Management Decision Systems, Inc.; M/A/R/C, Inc.; Merck, Inc., Navistar International, Inc.; Pacific Gas and Electric Company, Pepsi-Cola, Inc.; Polaroid; Procter & Gamble Company; Product Genesis, Inc.; RAM Broadcasting, Inc.; Regional Transportation Authority; Richardson-Vicks, Inc.; Southern Company Services, Inc.; Time-Life Books; Volunteers in Technical Assistance, and Wyeth-Ayerst Laboratories, Inc. Co-founder, principal, and board member, Applied Marketing Science, Inc., Advisory Board, Affinnova, Inc.

M.I.T. or MIT Sloan Committee Work

Committee on the Undergraduate Program, 2003 – 2005.

MIT Sloan Committee on Educational Technology, 2004 – 2006.

Center for Innovation in Product Development

Leader, Virtual Customer Initiative, 2000 - 2006

Research Director, 1997 – 2000

Center for Transportation Studies, 1981 - 1982.

Master of Science in Transportation Committee.

Committee to Investigate Sloan-Logo Research Notes (MIT Sloan, chair), 2001-2002.

Associated Faculty Committee to Review the Organizational Learning Center (MIT Sloan), 1995.

Dean's Consultation Committee (MIT Sloan), 2008-2009.

Dean Search Committee (MIT Sloan), 1993

Building Committee for the E51 Expansion, MIT Sloan, 1992, Ad Hoc

Organization Committee for the New MIT Sloan Building, E62, (2007- 2009)

Executive Educational Programs Committee (MIT Sloan), 1983 – 1985, 1998-1999, 2007

Faculty Admissions Committee, 2004-2009

Faculty Council (MIT Sloan), 1999

International Center on Research for the Management of Technology (MIT Sloan)

       Co-Director, (1993 - 2000).

       Joint Steering Committee (1990 - 1993).

Management Science Area, MIT Sloan School of Management

       Area Head, (2005- 2009)

       Chairman of Subcommittee on Peer Group Comparisons, (1981 - 1982)

       Committee on Management Science Curriculum Redesign, (1982 - 1983)

       Marketing Group Head (1986, 1988 – 2003, 2010-2011)

Management of Technology Program Committee (MIT Sloan), 2001- 2003

Master's Program Committee, MIT Sloan, (1980 – 1987, 2007 – 2011))

       Chairman: Subcommittee On Placement, (1981 - 1982).

       Core Curriculum Reassessment Committee (1991-1992)

       Core Curriculum Implementation Committee (1992-1994)

       Subcommittee on Admissions, Special Consideration, (2007 – 2009).

       Subcommittee on the Management Science Core, (1982 - 1983).

       Subcommittee on Entrepreneurship and Innovation Evaluation (Chair, 2008).

       Subcommittee on Tracks (2008-2009)

           Ad hoc committee to develop a Marketing, Operations and Strategy Track (2011).

       Subcommittee on Strategy Curriculum (2009)

       Subcommittee on Course Ratings (2011)

Operations Research Center

       Admissions Committee, (1981 - 1982).

       Associated Faculty (1980 – present)

       Operations Research Committee (2001- 2003)

       President's Committee (1984).

Personnel and Policy Committee, MIT Sloan (Executive Committee, 2005 – 2009)

       Chair of ad hoc committees for reappointment, promotion, and tenure (1983 - present)

       Member of ad hoc committees for reappointment, promotion, and tenure (1981 - present)

Symposium Director, Marketing Center, MIT Sloan School, M.I.T., (1981 - 1982).

Zannetos Dissertation Award Committee, MIT Sloan, (1981-82, 1996-97, chair 1997-1998).

M.I.T. Subjects Taught (often multiple sections)

15.810, Marketing Management (Core)	Spring 1990, 1991, 1992, 1993, 1994, 1995, 1997, 1998, 1999, 2001, 2004, 2005. 2006. Fall 1999, 2006, 2007, 2008, 2011. (Teaching awards listed on page 2 of vita.)
15.812, Marketing Management (UG)	Fall 1981, 1982, 1984, 1985, 1986. Spring 1981, 1984, 2006.
15.813, Marketing Management in Public Sector	Fall 1980.
15.814, Marketing Mgmt (Mgmt of Technology)	Fall 1988, 1993, 1999, 2001.
15.820, Advanced Marketing Management	Spring 1990
15.828, New Product Development	Spring 1981, 1982, 1989; Fall 1982, 1984; 1985.
15.838, Ph.D. Seminar (Various Topics)	Spring 1986, 1997, 2002, 2006, 2011.
15.839, Marketing and Statistics Workshop	Spring 1982; Fall 1982, 1984.
15.TH4. Thesis Project on Competitive Strategy	Spring 1985, 1986.

Summer Session, ILP, and External Executive

       A.T.&T Course on New Product Development, 1986.

       European Institute for Business Administration (INSEAD) European Marketing Programme, 1985.

       Greater Boston Area Executive Program, 1982, 1983.

       M.I.T. Civil Engineering, Demand Theory, 1980, 1981, and 1982.

       M.I.T. ILP, Marketing Strategy and Models in the Information age, 1983.

M.I.T., Management of R&D, 1989, 1990, 1991, 1992, 1993, 1994. 1995, 1996, 1997, 1998, 1999.

M.I.T. Marketing Science Symposium, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988.

M.I.T./M.I.P. Executive Program, 1992.

M.I.T. New Product Development, 1997.

Pedagogical Developments.

In 1990 and 1991, Prof. John D. C. Little and I redesigned the core curriculum in Marketing Management and taught the course to the entire Master's class. As structured the course builds upon the strengths of M.I.T. (international, strong disciplinary base, functional integration, and information technology) and combines case studies, problem assignments, and lectures in an eighteen-session course.

In the 1991-1992 I was part of a committee of six faculty members that redesigned the core curriculum at the Sloan School. I supervised the voice-of-the-customer analyses of students and recruiters and encouraged the committee to design a program that these customers would find exciting. The new core was implemented in the 1993-1994 academic year. Student satisfaction increased significantly.

Teaching Notes

Note on Defensive Marketing Strategy (2005, for 15.810, Marketing Management)

Note on Product Development (2005, for 15.810, Marketing Management)

Note on the Voice of the Customer (2005, for 15.810, Marketing Management)

Note on Consumer Behavior (2005, for 15.810, Marketing Management)

Note on Life Cycle Diffusion Models (2005, for 15.810, Marketing Management)

Note on Engineering Product Design (2006, for 15.810, Marketing Management)

Note on Conjoint Analysis (2007, for 15.810, Marketing Management)

M.I.T. Thesis Supervision

(a)   *Sloan School of Management, Master's Theses*

Hafiz Adamjee (joint with John Scaife), "The Face of the Customer: The Use of Multimedia in Quality Function Deployment," - (1993). This product was subsequently commercialized and was a finalist for the *New Media* Invision 1994 Multimedia award at COMDEX/Spring '94.

Ramay Akras, "Competitive Strategy in the Marketing of Small DDP Computers: an Analysis of Emerging Price and Product Position Patterns," - (1986).

Frederic Amerson, "Strategic Marketing Simulation: Improvements to the Enterprise Integrating Exercise," - (1989).

Andrivet, Sébastien (Sloan Fellows Program), "Customer research, customer-driven design, and business strategy in Massively Multiplayer Online Games," – (2007)

Andrew Anagnos (joint with Karen Van Kirk), "A Framework for Analyzing Quality in the News Media," - (1991)

Allen Aerni, "Measurement of Customer Satisfaction," - (1994).

Joel Berez, "An Investigation of Decision Hierarchies" - (1981).

Harel Beit-on, "Competitive Strategy for Small Business Jet Aircraft," - (1985).

Willy Biberstein (SDM Program), "Framework for Customer Interaction Throughout the Automotive Product Development Process," (February 2002).

Andre Borschberg (joint with Webb Elkins), "Defensive Marketing Strategy: Its Application to a financial Decision Support System" - Reader (1983).

Philippe Bosquet, "European Airline Deregulation: Defining Air France's Strategy for the 1990's," - Reader (1989)

Jill A. Christians, (joint with Cheryl M. Duckworth), "Expectations and Customer Satisfaction: A Market Research Study for Plimoth Plantation," Reader (1994).

Poh-Kian Chua (MOT Program), "R,D&E Metrics: Shaping the Outcomes of Your R,D&E Investment," – (1998).

Leslie K. Cooper, "The Structure of Recruiter Needs at the Sloan School of Management: A Quantitative Assessment," - (1992).

Teruyuki Daino (Sloan Fellows Program), "How a Leading Company Can Overcome a Competitive Challenge: A Case Study of Anheuser-Busch Company." – (1998).

Laura E. Donohue, "Software Product Development: An Application of the Integration of R&D and Marketing via Quality Function Deployment" - (1990)

Cheryl M. Duckworth (joint with Jill A. Christians), "Expectations and Customer Satisfaction: A Market Research Study for Plimoth Plantation," Reader (1994).

Webb Elkins (joint with Andre Borschberg), "Defensive Marketing Strategy: Its Application to a Financial Decision Support System" - Reader (1983).

Rasheed El-Moslimany (LFM Program), "Getting Value from the Value Chain: Comfort Choice," Co-Advisor. (June 2002)

Julio Faura (MOT Program), "Contribution to Web-based Conjoint Analysis for Market Research," (2000).

Richard Feldman, "Decision Support Systems for Forecasting Communications in the Home," - Reader (1985).

Anders T. Fornander, "The Continuing Operating System Battle in the Personal Computer Industry," - Reader (1994).

Carl Frank (MOT Program), "Metrics Thermostat for Strategic Priorities in Military System Acquisition Projects," (2000).

Mihaela Fulga, "Competitive Pricing and Positioning Strategies in the Dating Service Market," - (1986).

Steven P. Gaskin, "Defender: Test and Application of a Defensive Marketing Model" - (1986). 1st Place, Brooks Award.

Peter N. Goettler, "A Pre-market Forecasting Model of New Consumer Durables: Development and Application," - Reader (1986).

Patti N. Goldberger, "Competitive Strategy in the Market for Running Shoes," - (1985).

Akhil Gupta, "The Personal Computer Industry: Economic and Market Influences on Product Positioning Strategies," - (1986).

Michael Halloran (joint with Marc Silver), "Defensive Marketing Strategy: Empirical Applications" - (1983).

Carla Heaton, "Competitive Strategy in the Facsimile Market," - (1985).

Judith Hee, "Determining Manufacturer's Coupon Strategies" - Reader (1981).

Jonathan E. Higginson, "Understanding Dependencies in Research and Development at the Charles Stark Draper Laboratory." - (1997).

Scott D. Hill, "Correlation of Core Competencies with Market-Driven or Self-Guided Research," - (1995).

Dan Isaacs, "Competitive Pricing and Positioning Strategies in the Imported Beer Marketing," - (1986).

Francois Jacques, "Marketing Strategies in Innovative Industries: The Case of Package/Document Delivery Services," - Co-Advisor (1985).

Lawrence Kahn, "Competitive Positioning: A Study of Recruiter's and Employer's Perceptions of the Sloan School of Management" - (1982). Honorable mention Brooke's Thesis Prize.

D. Darcy Kay, "Competitive Strategy for Anti-arthritic Drugs" - (1985).

Young Joo Kim (MOT Program), "R&D Management Applications of The Dynamic Metrics Framework" – (1998)

Sidney A. Kriger, "The Effect of Quality Function Deployment on Communications of the New Product Development Teams," - (1989)

Yasuke Kume, "New Marketing Strategy of Telecommunications in Japan" - Reader (1981).

Elvind Lange, "Measuring Market Response to Marketing Mix Variables Using Dynamic Modeling and Its Implications for Brand Strategy" - Reader (1981).

Stephen P. Langhans, "Defensive Marketing Strategy: A Consumer Semi-Durable Case Example" - (1983).

In-Kyu Lee, "Evaluating System for the Upstream Center of R&D for being Market-Oriented in a Consumer Electronics Company," - (1995).

Michael Leslie (joint with Joel Wachtler), "A Methodology for Making International Marketing Mix Decisions," - Reader (1985).

Kit Mee Lim, "Competitive Strategy among Companies Offering Credit Cards," - Reader (1985).

James A. Lutz, "Competitive Marketing Strategy in the CAD Marketplace," - (1985).

Larry D. Lyons, "Forecasting the Impact of Competitive Entries on Sales of a New Consumer Durable" - Reader (1984).

Arpita Majundar (SDM Program), "Strategic Metrics for Product Development at Ford Motor Company," - (2000).

Catherine E. Manion, "A Survey of Customer Satisfaction Incentive Systems for Salespersons," - (1993).

Maureen E. Matamoros, "Information Overload," – Reader (1986).

Meghan McArdle (LFM Program), "Internet-based Rapid Customer Feedback for Design Feature Tradeoff Analysis," – co-Advisor (2000)

Fernando Motta, "Competitive Strategy Among Panamanian Banks," - (1985).

Neil Novich, "Price and Promotion Analysis Using Scanner Data" - Reader (1981).

Kenji Nozaki, "Marketing and Technology Strategy for the Japanese Architectural Design Company," - (1989).

Seiji Nozawa, "Voice of the Customer Analysis in the Japanese Beer Market." - (1997).

Minho Park (MOT Program), "R&D Matrix at LG Electronics." - (1997)

Stephen Pearse, "Production and Sales Forecasting: A Case Study and Analysis" - Reader (1982).

Ning P. Peng, "An Exploration of the Impact and Success of Customer Satisfaction Programs," - (1994).

Homer Pien (MOT Program), "Competitive Advantage through Successful Management of R&D." - (1997)

Susan B. Poulin, "Defensive Strategy in the Automatic Test Equipment Industry" (1984).

Jill W. Roberts, "MBA Recruiters' Needs: Voice of the Customer Analysis," - (1992).

Lisa Gayle Ross, "A Voice of the Customer Analysis of M.B.A. Schools: The Student Segment," - (1992). Lisa was a runner-up for the George Hay Brown Marketing Scholar of the Year in 1992.

Tamaki Sano, "Strategy for Kirin as a Global Brand" – (2009) Sloan Fellow.

John Scaife (joint with Hafiz Adamjee), "The Face of the Customer: The Use of Multimedia in Quality Function Deployment," - (1993). See award listed under Adamjee.

Paul E. Schoidtz, "Advertising, Price, and Positioning Equilibria," - (1986).

Hongmei Shang, "A Simulation Analysis of Optimal Task Assignment for Growing Managers from R&D Labs," – (February 2000).

Rosemarie Shield, "Competitive Pricing and Positioning Strategies in the Chromatographic Instruments Market," - , (1986).

Jon Silver (joint with John C. Thompson, Jr.), "Beta-binomial Analysis of Customer Needs -- Channels for Personal Computers," - (1991). 1st Prize, Brooks Award.

Marc Silver (joint with Michael Halloran), "Defensive Marketing Strategy: Empirical Applications" - (1983).

Lisa Silverman, "An Application of New Product Growth Modeling to Automobile Introductions" - (1982).

Sheryl Sligh, "An Assessment of the Analog Modem Market," - (1991).

Jamie Smith, "Industrial Buying Process of Pension Funds for Real Estate," - (1982).

Yoshihito Takahashi (MOT), "Analysis of Strategy in an Ethical Drug Industry," – Reader (2000).

Genevieve Tchang, "A Methodology for Planning and Evaluating External Relations at Business Schools" - Reader (1982).

John C. Thompson, Jr. (joint with Jon Silver), "Beta-binomial Analysis of Customer Needs -- Channels for Personal Computers," - (1991). 1st Place, Brooks Award.

V. Mullin Traynor, "The Dissemination and Adoption of New Technology: Control Data's Computer-Based Training System, Plato, and the Electric Utilities" - (1982).

Karen Van Kirk (joint with Andrew Anagnos), "A Framework for Analyzing Quality in the News Media," - (1991)

Joel Wachtler (joint with Michael Leslie), "A Methodology for Making International Marketing Mix Decisions," - Reader (1985).

Tamao Watanabe, "Customer Analysis of the U.S. Cardiovascular Drug Market: Focusing on Physician's Drug Choice" - (1991)

Stephen L. Weise, "Expert Decision Support Systems for Marketing Management," – Reader (1986).

Nancy Werner, "Competitive Price and Positioning in the Integrated Office Automation Systems Market" - (1986).

Julie Wherry, "Pre-Test Marketing: Its Current State in the Consumer Goods Industry and Its Effect on Determining a Networked Good." - (2006).

Ali Yalcin, "The Potentials and Limitations of Customer Satisfaction Indices in Captive Customer-Supplier Environments," - (1995)

Sandra Yie, "The Core Curriculum at Sloan: Establishing a Hierarchy of Needs," - (1992).

Judy Young, "Responsive Marketing Strategy at AT&T" - (1982).

(b)   *Aeronautics S.M. Theses*

Keith Russell (LSI), "Reengineering Metrics Systems for Aircraft Sustainment Teams: A Metrics Thermostat for Use in Strategic Priority Management," (February 2001).

(c)   *Electrical Engineering, S.B. and M.Eng. Theses*

Chan, Christine W. Y. (M. Eng), "Measuring Non-Monetary Incentives Using Conjoint Analysis," Co-Advisor (1999).

Emily Hui (M.Eng.), "Application of Polyhedral Conjoint Analysis to the Design of Sloan's Executive Education Programs." June 2003.

Brian T. Miller (S. B.), "A Verification of Price Equilibria Based on Non-Zero Conjectural Variation," (1986).

(d)   *Mechanical Engineering, Master's Theses*

Burt D. LaFountain, "An Empirical Exploration of Metrics for Product Development Teams" – (1999)

Tina Savage, "The Virtual Customer: A Distributed Methodology for Linking Product Design and Customer Preferences." Co-Advisor (1998).

(e)   *Operations Research Center, Master's Theses*

Jeffrey Moffit (ORC), " Applying the Metrics Thermostat to Naval Acquisitions for Improving the Total Ownership Cost – Effectiveness of New Systems," (2001)

Olivier Toubia (ORC), "Interior-point Methods Applied to Internet Conjoint Analysis," (February 2001), Co-Advisor.

(f)   *Urban Studies, Master's Theses*

Marijoan Bull, "Affirmative Fair Housing Marketing" - Committee Member (1982).

Barry Cosgrove, "Marketing Analysis for the Brockton Area Transportation Authority" – Committee Member (1981).

(g)   *Sloan School of Management, Ph.D. Theses*

Makoto Abe, "A Marketing Mix Model Developed from Single Source Data: A Semiparametric Approach." Committee member (August 1991). Abe is on the faculty at the University of Tokyo.

Daria Dzyabura, "Essays on Machine Learning in Marketing (tentative title)," Chairman (expected June 2012).

Peter Fader, "Effective Strategies in Oligopolies," Chairman (February 1987). Sloan School of Management, Zannetos Prize, 1st Place. Fader is on the faculty at the University of Pennsylvania.

Fred Feinberg, "Pulsing Policies for Aggregate Advertising Models" Committee Member (August 1988). Feinberg is on the faculty of the University of Michigan.

Dave Godes, " Friend or Foe?: The Relationship Between Learning and Incentives and two additional essays in marketing," (June 2000), Committee Member. Primary advisor on listed essay. Zannetos Prize, 1st Place. Godes is on the faculty of the University of Maryland.

Abbie Griffin, "Functionally Integrated New Product Development: Improving the Product Development Process Through Linking Marketing and Technology Development," Chairman. (June 1989). Griffin is on the faculty at the University of Utah and was editor of *Journal of Product Innovation Management* from 1997-2003 Frank Bass Dissertation Award (INFORMS).

Gurumurthy Kalyanaram, "Empirical Modeling of the Dynamics of the Order of Entry Effect on Market Share, Trial Penetration and Repeat Purchases for Frequently Purchased Consumer Goods," Committee Member (March 1989). G. K. was on the faculty at the University of Texas, Dallas.

Eriko Kitazawa, "Customer Satisfaction at Japanese Utility Franchises," Committee Member (1996).

John H. Roberts, "A Multiattributed Utility Diffusion Model: Theory and Application to the Prelaunch Forecasting of Autos". Committee Member (February 1984). Roberts is on the faculty at the London Business School.

Matt Selove, "The Strategic Importance of Accuracy in Conjoint Design," Committee Member (June 2010). Selove is on the faculty at the University of Southern California. John Howard Dissertation Award (AMA), 2010.

Duncan I. Simester, "Analytical Essays on Marketing," Committee Member, (June 1993). Sloan School of Management, Zannetos Prize, Honorable Mention. Simester is on the faculty of M.I.T.

Olivier Toubia, "New Approaches to Idea Generation and Consumer Input in the Product Development Process," (June 2004). Toubia is on the faculty of Columbia University. Frank M. Bass Dissertation Award (INFORMS), 2005, John Howard Dissertation Award (AMA), 2005.

Miguel Villas-Boas, "On Promotions and Advertising Policies: A Strategic Approach." Committee member (February 1991). Villas-Boas is on the faculty at the University of California, Berkeley.

Bruce Weinberg, "An Information-Acceleration-Based Methodology for Developing Preproduction Forecasts for Durable Goods: Design, Development, and Initial Validation." Committee Member. (August 1992). Weinberg was on the faculty at Boston University.

Florian Zettelmeyer, "Three Essays on Strategic and Organizational Uses of Information in Marketing." Committee Member. Zettelmeyer is on the faculty of Northwestern University.

(h)   *Civil Engineering, Ph.D. Thesis*

Karla Karash (Ph.D.), "An Application of the Lens Model in Measuring Retail Attractiveness and the Effects of Transportation Programs" - Committee Member (August 1983). Karash was at the MBTA.

(i)   *Mechanical Engineering, Ph.D. Thesis*

Javier Gonzalez-Zugasti (Mechanical Engineering, Ph.D.), "Models for Product Family Design and Selection," (June 2000), Committee Member.

(j)   *Operations Research Center, Ph.D. Thesis*

Yee, Michael (Operations Research, Ph.D.), "Inferring Non-Compensatory Choice Heuristics," (June 2006), Co-Advisor. Yee is at MIT's Lincoln Laboratories.

Northwestern University Ph.D. Thesis Supervision (1975 - 1980 Academic Years)

Steven M. Shugan, "A Descriptive Stochastic Preference Theory and Dynamic Optimization: Applications Toward Predicting Consumer Choice' Chairman (September 1977). Shugan is on the faculty at the University of Florida and current editor of *Marketing Science*.

Patricia Simmie, "Product Realization: Theory, Models, and Application" - Chairman (June 1979), American Marketing Association Dissertation Prize, Honorable Mention. Simmie was at York University.

Ken J. Wisniewski, "A Semi-Markov Theory of Consumer Response: New Theoretical Properties, Simulation Testing, and Empirical Application" Chairman (June 1981). American Marketing Association Dissertation Prize, First Place. Wisniewski was on the University of Chicago.

John R. Hauser
Expert Testimony 2008-2012

In the Matter of Determination of Rates and Terms for Preexisting Subscriptions and Satellite Digital Audio Radio Services, Docket No. 2011-1 CRB PSS/Satellite II, Before the Copyright Royalty Judges, Library of Congress. Deposition testimony, March 2, 2012.

Alcatel Lucent, Inc. v. Amazon.Com, Inc., et al., Civil Docket No. 6:09-CV-422. United States District Court For The Eastern District Of Texas Tyler Division, Deposition testimony, June 3, 2011, Trial testimony, October 13, 2011.

Luciano F. Paone v. Microsoft Corporation, Case No. CV-07-2973, United States District Court, Eastern District of New York. Deposition Testimony, September 23, 2011.

Louis Vuitton Malletier v. Hyundai Motor America, Case Number 10-CIV-1611-PKC, United States District Court, Southern District of New York. Deposition testimony, May 6, 2011.

Curt Schlesinger, et al. v. Ticketmaster, Case No. BC30456, Superior Court of the State of California for the County of Los Angeles. Deposition testimony, November 19, 2010.

St. Claire Intellectual Property Consultants, Inc. v. Research In Motion LTD., et al., Research In Motion Corporation, Civil Action No. 08-371-JJF-LPS, United States District Court for the District of Delaware. Deposition testimony, February 26, 2010.

Dayna Craft, et al. v. Philip Morris Companies, Inc. and Philip Morris Inc., Case No. 002-00406-02, Division No. 6, Missouri Circuit Court, Twenty-Second Judicial Circuit (City of St. Louis). Deposition testimony, November 11-12, 2009.

Playtex Products, Inc. v. The Procter & Gamble Company, Case No. 08 Civ. 1532 (WHP). Deposition testimony, February 25, 2009. Trial testimony, March 19, 2009.

In RE J.P. Morgan Chase Cash Balance Litigation, Master File No. 06. Div. 0732 (HB), United States District Court, Southern District of New York. Deposition testimony, December 10, 2008.

EXHIBIT C

MATERIALS RELIED UPON

A. **Academic Articles and Books**

1. Allenby, Greg M., Neeraj Arora, and James Ginter (1995), "Incorporating Prior Knowledge into the Analysis of Conjoint Studies," *Journal of Marketing Research*, 32, 2.

2. Allenby, Greg M., and Peter E. Rossi (2003), "Perspectives Based on 10 Years of HB in Marketing Research," Sawtooth Software Research Paper Series.

3. Boatwright, Peter, Robert McCulloch, and Peter Rossi (1999), "Account-Level Modeling for Trade Promotion: An Application of a Constrained Parameter Hierarchical Model," *Journal of the American Statistical Association*, 94, 448, (December).

4. Dahan, Ely, and John R. Hauser (2002), "The Virtual Customer," *Journal of Product Innovation Management*, 19.

5. Gelman, Andrew, John Carlin, Hal Stern, and Donald Rubin (2004), *Bayesian Data Analysis*.

6. Green, Paul E., Abba M. Krieger, and Yoram Wind (2001), "Thirty Years of Conjoint Analysis: Reflections and Prospects," *Interfaces*, 31, 3, (May-June).

7. Griffin, Abbie and John R. Hauser (1993), "The Voice of the Customer," *Marketing Science*, Vol. 12, No. 1, (Winter).

1. Guadagni, Peter, and John Little (1983), "A Logit Model of Brand Choice Calibrated on Scanner Data," *Marketing Science*, 2, 3.

8. Hardie, Bruce G., Eric J. Johnson, and Peter S. Fader (1993), "Modeling Loss Aversion and Reference Dependence Effects on Brand Choice," *Marketing Science*, 12, 4, (Fall).

9. Hauser, John R., Olivier Toubia, Theodoros Evgeniou, Rene Befurt, and Daria Dzyabura (2010), "Disjunctions of Conjunctions, Cognitive Simplicity and Consideration Sets," *Journal of Marketing Research*, Vol. 47, (June).

10. Hauser, John R. and Vithala Rao (2004), "Conjoint Analysis, Related Modeling, and Applications," *Advances in Marketing Research: Progress and*

EXHIBIT C

Prospects, Jerry Wind and Paul Green, Eds., (Boston, MA: Kluwer Academic Publishers).

11. Hauser, John R. (1978), "Testing the Accuracy, Usefulness, and Significance of Probabilistic Choice Models: An Information-Theoretic Approach, *Operations Research*, Vol.26, No. 3 (May-June).

12. Kahneman, Daniel, and Amos Tversky (2000), "Prospect Theory: An Analysis of Decision under Risk," in *Choices, Values, and Frames*, eds. Daniel Kahneman and Amos Tversky, Cambridge University Press.

13. Kalyanaram, Gurumurthy, and Russell Winer (1995), "Empirical Generalizations from Reference Price Research," *Marketing Science*, 14, 3, Special Issue on Empirical Generalizations in Marketing.

14. Lenk, Peter J., Wayne S. DeSarbo, Paul E. Green and Martin R. Young (1996), "Hierarchical Bayes Conjoint Analysis: Recovery of Partworth Heterogeneity from Reduced Experimental Designs," Marketing Science, 15, 2.

15. Orme, B (2010), "Chapter 10: Market Simulators for Conjoint Analysis," Getting Started with Conjoint Analysis: Strategies for Product Design and Pricing Research. Second Edition, Madison, Wis.: Research Publishers LLC

16. Rossi, Peter E. and Greg M. Allenby (2003), "Bayesian Statistics and Marketing," *Marketing Science*, 22, 3, (Summer).

17. Sawyer, Alan G. (1975), "Demand Artifacts in Laboratory Experiments in Consumer Research," *Journal of Consumer Research*, 1, 4, (March).

18. Selove, Matthew, and John R. Hauser (2011), "The Strategic Importance of Predictive Uncertainty in Conjoint Design," Working Paper.

19. Shimp, Terence A., Eva M. Hyatt, and David J. Snyder (1991), "A Critical Appraisal of Demand Artifacts in Consumer Research," *Journal of Consumer Research*, 18, 3, (December).

20. Smith, D.M., N. Schwarz, T.R. Roberts, and P.A. Ubel (2006), "Why are you calling me? How study introductions change response patterns," *Quality of Life Research*, 15.

EXHIBIT C

21. Toubia, Olivier, Duncan I. Simester, John R. Hauser, and Ely Dahan (2003), "Fast Polyhedral Adaptive Conjoint Estimation," *Marketing Science*, 22, 3, (Summer).

22. Toubia, Olivier, John R. Hauser, and Duncan Simester (2004), "Polyhedral Methods for Adaptive Choice-based Conjoint Analysis," *Journal of Marketing Research*, 41, 1, (February).

23. Toubia, Olivier, John Hauser and Rosanna Garcia (2007), "Probabilistic Polyhedral Methods for Adaptive Choice-Based Conjoint Analysis: Theory and Application," *Marketing Science*, Vol. 26, No. 5, (September-October).

24. Urban, Glen L., and John R. Hauser (1980), *Design and Marketing of New Products*, (Englewood Cliffs, NJ; Prentice-Hall, Inc.).

25. Urban, Glen L., and John R. Hauser (2004), "'Listening-In' to Find and Explore New Combinations of Customer Needs," *Journal of Marketing*, Vol. 68, No. 2, (April).

B. Other Publications

1. Diamond, Shari S. (2011), "Reference Guide on Survey Research," in Reference Manual on Scientific Evidence, Third Edition, Federal Judicial Center.

2. Sawtooth Software Research Paper (2000), "An Overview and Comparison of Design Strategies for Choice-Based Conjoint Analysis."

3. Sawtooth Software Technical Paper (2008), "The CBC System for Choice-Based Conjoint Analysis."

4. Research Now, "ARF QEP Panel Profile Snapshots."

5. Research Now, "Panel Quality: Our Values."

C. Websites

1. "CAPTCHA: Telling Humans and Computers Apart Automatically," CAPTCHA, http://www.captcha.net/, visited on March 21, 2012.

2. "Charles Coolidge Parlin - Marketing Research Award," American Marketing Association,

EXHIBIT C

http://www.marketingpower.com/Calendar/Pages/CharlesCoolidgeParlinAward.aspx, visited on March 22, 2012.

3. "The Paul D. Converse Awards," American Marketing Association, http://www.marketingpower.com/Community/ARC/Pages/Career/Awards/Converse.aspx, visited on March 22, 2012.

4. "Previous Recipients," 18th Paul D. Converse Marketing Symposium, http://business.illinois.edu/converse/previous.htm, visited on March 22, 2012.

5. "2009 Charles Coolidge Parlin Marketing Research Award," American Marketing Association, January 14, 2009, http://www.marketingpower.com/ResourceLibrary/Pages/MarketingThoughtLeaders/MarketingThoughtLeaders11409/Parlin_Marketing_Research_Award.aspx, visited on March 22, 2012.

6. http://cell-phones.toptenreviews.com/smartphones/, visited on March 21, 2012.

7. http://www.marketingpower.com/Community/ARC/Pages/Connections/SIGs/MarketingResearch/Churchill.aspx, visited on March 22, 2012.

8. http://www.nobelprize.org/nobel_prizes/economics/laureates/2002/press.html, visited on March 20, 2012.

9. http://www.researchnow.com/en-gb/Panels/PanelQuality/ResearchIntegrity.aspx, visited on March 21, 2012.

10. www.samsung.com, visited on March 21, 2012.

11. http://tablets-review.toptenreviews.com/, visited on March 21, 2012.

Smartphone Conjoint Survey Questionnaire

<u>**LEGEND:**</u>
[PROGRAMMER NOTES IN BOLD CAPS AND BRACKETS]
Notes to respondent in italics

<u>**FORMAT:**</u> The survey consists of the following tracks:

Introduction & Screening (questions labeled QS)
Conjoint Setup
Conjoint Exercise

Overview

Quota: n=500 who have owned certain models of Samsung smartphone in the past two years

Inbound sample: Targeted sample of smartphone owners

[NO SURVEY TITLE WILL BE DISPLAYED TO RESPONDENTS]

Introduction & Screening

[INTRODUCTION 1] Thank you for your willingness to participate in our study. The responses you give to these questions are very important to us. If you don't know an answer to a question or if you are unsure, please indicate this by choosing the DON'T KNOW/UNSURE option. It is very important that you do not guess.

Your answers will be kept in confidence. The results of this study will not be used to try to sell you anything.

This survey should take about 20-25 minutes to complete.

When you are ready to get started, please click the "NEXT" button.

[NEXT PAGE]

[INSERT CAPTCHA]

QS0. Please enter the code exactly as in the image above, and then click "NEXT" to continue.

** code is case sensitive **

[NEXT PAGE]

QS1. What type of electronic device are you using to complete this survey? *(Select one only)*
 [RANDOMIZE]
⊙ Desktop computer **[CONTINUE]**
⊙ Laptop computer **[CONTINUE]**
⊙ Tablet computer (e.g., Apple iPad, Kindle Fire, Samsung Galaxy Tab) **[TERMINATE]**
⊙ Smartphone (e.g., iPhone, Blackberry) **[TERMINATE]**
⊙ Other mobile or electronic device **[ANCHOR; TERMINATE]**

[TEXT FOR TERMINATES "Thank you for your interest in our study. We are no longer looking for people who match your characteristics. We appreciate your time."]

[NEXT PAGE]

QS2. In which state do you live? (*Select one only)* **[DROP DOWN LIST OF 50 STATES + DC]**

REGION. **[HIDDEN VARIABLE; ASSIGN US CENSUS REGION BASED ON QS2]**

[NEXT PAGE]

QS3. Are you…? *(Select one only)*
⊙ Male
⊙ Female

[NEXT PAGE]

QS4. Into which of the following categories does your age fall? *(Select one only)*
⊙ Under 13 **[TERMINATE]**
⊙ 13-17 **[CONTINUE]**
⊙ 18-34 **[CONTINUE]**
⊙ 35-49 **[CONTINUE]**
⊙ 50-64 **[CONTINUE]**
⊙ 65+ **[CONTINUE]**
⊙ Prefer not to say **[TERMINATE]**

[NEXT PAGE]

[TERMINATE IF AGE OR GENDER DO NOT MATCH RESPONDENT PARAMETERS PASSED BY PANEL PROVIDER]

QS5. Do you or does any member of your household work for any of the following types of companies or in any of the following industries? *(Select all that apply)* [RANDOMIZE]
- ☐ A company that makes or sells consumer electronics [TERMINATE]
- ☐ A company that makes or sells home appliances
- ☐ A company that makes or sells automotive parts
- ☐ A marketing or market research firm [TERMINATE]
- ☐ A public relations or advertising agency [TERMINATE]
- ☐ None of the above [ANCHOR; EXCLUSIVE]

[NEXT PAGE]

QS6. In the **past two years** have you personally owned any of the following? *(Select all that apply)* [RANDOMIZE]
- ☐ Smartphone [CONTINUE]
- ☐ Laptop computer
- ☐ Tablet computer
- ☐ Desktop computer
- ☐ Portable MP3 player
- ☐ Blu-ray player
- ☐ Video game player
- ☐ Portable GPS
- ☐ None of the above [ANCHOR; EXCLUSIVE]

[IF SMARTPHONE NOT SELECTED IN QS6, TERMINATE]

[NEXT PAGE]

QS7. In the **past two years**, which of the following brands of smartphone have you personally owned? *(Select all that apply)* [RANDOMIZE]
- ☐ Apple (iPhone 3GS, iPhone 4S, etc.)
- ☐ BlackBerry (Bold, Torch, etc.)
- ☐ HTC (Evo 3D, Rezound, etc.)
- ☐ LG (Optimus One, Optimus Black, etc.)
- ☐ Motorola (Droid 4, Droid Razr, etc.)
- ☐ Nokia (N8, N900, etc.)
- ☐ Samsung (Galaxy Nexus, Galaxy S II, etc.) [CONTINUE]
- ☐ Sony Ericsson (Xperia, Vivaz, etc.)
- ☐ None of the above [ANCHOR; EXCLUSIVE]

[IF SAMSUNG NOT SELECTED IN QS7, TERMINATE]

[NEXT PAGE]

QS7a. **[IF MORE THAN ONE BRAND OF PHONE SELECTED IN QS7, INSERT:** "Now we are going to ask you about one of the brands of smartphone you have owned."**]** In the **past two years**, which specific model(s) of **Samsung** smartphone have you owned? *(Select all that apply)*

- ❒ Acclaim [*]
- ❒ Admire
- ❒ Captivate [*]
- ❒ Captivate Glide
- ❒ Conquer 4G
- ❒ Continuum [*]
- ❒ Dart
- ❒ DoubleTime
- ❒ Droid Charge [*]
- ❒ Epic 4G [*]
- ❒ Exec
- ❒ Exhibit 4G [*]
- ❒ Exhibit II 4G
- ❒ Fascinate [*]
- ❒ Focus
- ❒ Focus Flash
- ❒ Focus S
- ❒ Galaxy Ace [*]
- ❒ Galaxy Attain
- ❒ Galaxy Nexus
- ❒ Galaxy Precedent
- ❒ Galaxy Prevail [*]
- ❒ Galaxy S (i9000) [*]
- ❒ Galaxy S 4G [*]
- ❒ Galaxy S II [*]
- ❒ Galaxy S II Epic 4G [*]

- ❒ Galaxy S II Skyrocket [*]
- ❒ Galaxy S II/2 (i9100) [*]
- ❒ Galaxy S Showcase [*]
- ❒ Gem [*]
- ❒ Gravity [*]
- ❒ Gravity Smart [*]
- ❒ Illusion
- ❒ Indulge [*]
- ❒ Infuse 4G [*]
- ❒ Intercept [*]
- ❒ Mesmerize [*]
- ❒ Nexus S [*]
- ❒ Nexus S 4G[*]
- ❒ Replenish [*]
- ❒ Repp
- ❒ Showcase i500 [*]
- ❒ Sidekick [*]
- ❒ Stratosphere
- ❒ Transfix
- ❒ Transform [*]
- ❒ Vibrant [*]
- ❒ Vitality
- ❒ Other (please specify)
- ❒ Don't know / Unsure **[ANCHOR; EXCLUSIVE] [TERMINATE]**

[TERMINATE IF NO STARRED (*) SAMSUNG MODEL SELECTED]

[IF ONE SMARTPHONE SELECTED IN QS7a, SKIP TO QS7c; ELSE IF MORE THAN ONE SMARTPHONE SELECTED IN QS7a, ASK QS7b]

[NEXT PAGE]

QS7b. Which <u>one</u> of the following Samsung smartphones that you owned was <u>purchased most recently</u>? This will be referred to as your most recent Samsung smartphone for the rest of this survey. *(Select one only)* **[SHOW THE PRODUCTS SELECTED IN QS7a, IN THE SAME ORDER AS IN QS7a]**

- ◉ **[INSERT MODEL]**
- ◉ **[INSERT MODEL]**
- ◉ Don't know / Unsure **[TERMINATE]**

[MUST SELECT A STARRED (*) SMARTPHONE TO CONTINUE, OTHERWISE TERMINATE]

QS7c. Thinking of your **[IF MORE THAN ONE SMARTPHONE SELECTED IN QS7a, INSERT** "most recent"**]** Samsung smartphone, to what degree were you involved in the decision to select the product? *(Select one only)*

◉ You had <u>no involvement in the decision</u> to select this product (i.e., you received it from someone else, or you simply purchased it but did not have any input into the choice of the model or features) **[TERMINATE]**

◉ You were <u>involved in the decision</u> to select this product but <u>did not purchase</u> it yourself (i.e., you may have specified the brand or model you desired or specified the key features you desired, but someone else bought it) **[CONTINUE]**

◉ You were the <u>primary decision maker</u> in the selection of this product <u>and purchased</u> it for yourself or someone else **[CONTINUE]**

◉ Don't know / Unsure **[ANCHOR] [TERMINATE]**

[NEXT PAGE]

QS7d. Approximately how much did it cost to buy your **[IF MORE THAN ONE SMARTPHONE SELECTED IN QS7a, INSERT** "most recent"**]** Samsung smartphone, excluding sales tax? Please give your best estimate.

Please include only the cost of the phone itself, without optional accessories or monthly service fees. If your phone was free as part of wireless service contract, please enter $0.

$ **[REQUIRE A WHOLE NUMBER FROM $0 TO $999, INCLUSIVE]**

◉ Don't know / Unsure **[TERMINATE]**

QS8. (ANIMATION/AUDIO TEST)

Before the survey begins, it is important to verify that you are able to see and hear videos that will be presented to you. Please click on the button to watch the video and then type the word you heard in the box below.

[INSERT FLASH VIDEO BUTTON LABELED "Click to play sound". ONCE CLICKED, THE FLASH VIDEO PLAYS AN AUDIO CLIP SAYING THE WORD "DOG".]

What word did you hear? (Type the exact word you heard.) **[OPEN-ENDED]**

[TERMINATE IF ANYTHING OTHER THAN "DOG" OR "DOG." IS TYPED (NOT CASE SENSITIVE)]

[NEXT PAGE]

Conjoint Setup

[INTRODUCTION 2] Now imagine that you are **in the market to buy another Samsung smartphone.**

The following questions will involve a series of exercises in which **you will be shown four different Samsung smartphones at one time**. You will be asked to **choose the smartphone that you would be most likely to purchase**.

For purposes of these exercises, you may assume:

- You would buy the smartphone as part of a new **two-year contract**.

- **Monthly phone/data plan fees are NOT included in the purchase price of the smartphone**, but all types of phone/data plans are available through any of the major service providers (AT&T, Sprint, T-Mobile, Verizon).

Click "NEXT" to continue. **[WAIT 5 SECONDS BEFORE SHOWING 'NEXT' BUTTON]**

[NEXT PAGE]

Next you will be shown descriptions of the seven features that will be used to define each Samsung smartphone you will be evaluating:
1. Camera
2. Size & Weight
3. Touchscreen
4. Storage/Memory
5. Connectivity
6. Number of apps available
7. Price

You will be shown videos of three of these features to help you understand them better: Camera, Touchscreen and Connectivity.

Click "NEXT" to continue. **[WAIT 5 SECONDS BEFORE SHOWING 'NEXT' BUTTON]**

[NEXT PAGE]

Camera Introduction

Each smartphone you will be evaluating comes with a **camera** that may vary in the following features:

- **Locations of the camera.** A <u>rear-facing</u> camera that takes a picture of what you are looking at. The smartphone might also have a <u>front-facing</u> camera that takes pictures of you and allows others to see you during a video chat.

- **Resolution / number of megapixels ("MP").** Higher resolution (more MP) allows you to view or print larger photos without getting a "blocky" or "pixilated" look.

- **Video recording capabilities.** Standard or High Definition (HD) video. High Definition video is of high quality and is well suited for viewing on large screens.

- **Autofocus**. The camera automatically focuses the image when taking a photo.

- **Zoom.** Optical zoom allows you to get a closer view of what you are photographing.

Below are the **four different smartphone camera options** that you will be asked to consider in this survey. Please read the descriptions below and <u>click on each of the icons to view brief videos</u> which describe these smartphone options in more detail. These descriptions and videos will be available for you to review throughout the exercises.

Icon representing this smartphone camera option (Click each to see a brief video)	Short Description	Detailed Description
12MP Rear 2MP Front High Res Zoom	**12 MP Rear Camera, HD Video Recording, Autofocus, 2MP Front Camera, Zoom**	• 12MP Rear-facing camera • High Definition (HD) video recording • Autofocus • 2MP Front-facing camera • Zoom
8MP Rear 2MP Front Good Res	**8 MP Rear Camera, HD Video Recording, Autofocus, 2 MP Front Camera**	• 8MP Rear-facing camera • High Definition (HD) video recording • Autofocus • 2MP Front-facing camera
8MP Rear Good Res	**8 MP Rear Camera, HD Video Recording, Autofocus**	• 8MP Rear-facing camera • High Definition (HD) video recording • Autofocus
3MP Rear Low Res	**3 MP Rear Camera, Standard Video Recording, Autofocus**	• 3 MP Rear-facing camera • Standard definition video recording • Autofocus

[REQUIRE RESPONDENT TO CLICK EACH ICON AND VIEW EACH VIDEO BEFORE PROCEEDING TO THE NEXT PAGE.]
Please click each of the four icons above to watch the brief videos before proceeding.
[WAIT 10 SECONDS BEFORE SHOWING 'NEXT' BUTTON]
[NEXT PAGE]
Size & Weight Introduction

Each smartphone you will be evaluating varies in the following ways:

- **Size.** The diagonal length of the screen, in inches.

- **Weight.** In ounces (oz.).

Below are the **four different smartphone size and weight options** that you will be asked to consider in this survey. Please read the descriptions below. These descriptions will be available for you to review throughout the exercises.

Icon representing this smartphone size and weight option	Short Description	Detailed Description
	4.5 inches, 6 oz.	
	4.3 inches, 5.3 oz.	

	4 inches, 5 oz.	
	3.5 inches, 4 oz.	

 [WAIT 10 SECONDS BEFORE SHOWING 'NEXT' BUTTON]

[NEXT PAGE]

Touchscreen Introduction

Each smartphone you will be evaluating comes with a **touchscreen** that may vary in the following features:

- **Touchscreen reliability**. Whether the smartphone accurately carries out what you intend to do when you touch the screen.

- **Automatically switch between single- and multi-touch.** Whether you can automatically switch back and forth between using only one finger on the screen ("single touch"), and using two or more fingers on the screen ("multi-touch").

- **Rubberband effect.** Whether or not the touchscreen contains a "rubberband" effect in which the screen "bounces" when you reach the end of a webpage or image.

- **Tap to re-center after zoom.** Whether, after zooming in and centering, the touchscreen permits you to tap the screen to center other content on the screen.

Below are the **four different smartphone touchscreen options** that you will be asked to consider in this survey. Please read the descriptions below and <u>click on each of the icons to view brief videos</u> which describe these smartphone options in more detail. These descriptions and videos will be available for you to review throughout the exercises.

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Icon representing this smartphone touchscreen option (Click each to see a brief video)	Short Description	Detailed Description
	Reliable Touch, Auto-Switch (1 to 2 Fingers), Rubberband, Tap to Re-center after Zoom	• Reliably and Accurately Tracks Finger Movement • Automatically Switch between Touch with One Finger and Touch with Two Fingers • Rubberbands at Edge of Webpages or Images • Tap to Center Other Content After Zooming
	Less Reliable Touch, Auto-Switch (1 to 2 Fingers), Rubberband, Tap to Re-center after Zoom	• Does Not Always Reliably and Accurately Track Finger Movement • Automatically Switch between Touch with One Finger and Touch with Two Fingers • Rubberbands at Edge of Webpages or Images • Tap to Center Other Content After Zooming
	Reliable Touch, Rubberband, Tap to Re-center after Zoom	• Reliably and Accurately Tracks Finger Movement • No Automatic Switch Between Single and Multi-Touch • Rubberbands at Edge of Webpages or Images • Tap to Center Other Content After Zooming
	Reliable Touch	• Reliably and Accurately Tracks Finger Movement • No Automatic Switch Between Single and Multi-Touch • Does Not Rubberband • Does Not Allow Tap to Center Other Content After Zooming

Please click each of the four icons above to watch the brief videos before proceeding.

Storage/Memory Introduction

Each smartphone you will be evaluating varies in the amount of **storage/memory:**

- **Storage/memory** refers to the amount of songs, photos, etc. which you are able to keep on your smartphone. In the exercises that follow, the **storage/memory will be included in the smartphone price shown**.

Below are the **four different smartphone storage/memory options** that you will be asked to consider in this survey. Please read the descriptions below. These descriptions will be available for you to review throughout the exercises.

Icon representing this storage/memory option	Short Description	Detailed Description
	64 GB (16,000 songs or 23,000 photos)	Able to hold 16,000 songs OR 23,000 photos
	32 GB (8,000 songs or 12,000 photos)	Able to hold 8,000 songs OR 12,000 photos
	16 GB (4,000 songs or 6,000 photos)	Able to hold 4,000 songs OR 6,000 photos
	8 GB (2,000 songs or 3,000 photos)	Able to hold 2,000 songs OR 3,000 photos

Connectivity Introduction

Each smartphone you will be evaluating comes with the following **connectivity** features:

- **Cellular service.** All smartphones enable cellular service for phone and data through your service provider (for example, AT&T or Verizon).

- **WiFi.** Allows you to connect to a home, office or public wireless network. A WiFi network allows you to access the Internet without the use of wires or cables, and without using your cellular service provider's network.

Each smartphone you will be evaluating may have some or all of the following additional **connectivity** features:

- **Tethering**. Allows you to share the smartphone's Internet connection with your computer. This sharing can take place wirelessly (via WiFi) or by physical connection using a cable. In the case of tethering wirelessly, the feature is known as a mobile hotspot.

- **MicroUSB port.** Can connect to other devices via MicroUSB. For example, you are able to save content from your smartphone, such as photos and data, onto a flash memory drive via a MicroUSB port.

- **HDMI output port.** Able to connect your smartphone to a widescreen TV.

Below are the **four different smartphone connectivity options** that you will be asked to consider in this survey. Please read the descriptions below and <u>click on each of the icons to view brief videos</u> which describe these smartphone options in more detail. These descriptions and videos will be available for you to review throughout the exercises.

Icon representing this smartphone connectivity option (Click each to see a brief video)	Short Description	Detailed Description
	Cellular, WiFi, Tethering, MicroUSB, HDMI	- Wireless Cellular Service from Service Provider - WiFi Network Access - Tethering to Share Cellular Service With Computers - MicroUSB port available - HDMI output port available
	Cellular, WiFi, Tethering, MicroUSB	- Wireless Cellular Service from Service Provider - WiFi Network Access - Tethering to Share Cellular Service With Computers - MicroUSB port available

	Cellular, WiFi, Tethering	• Wireless Cellular Service from Service Provider • WiFi Network Access • Tethering to Share Cellular Service With Computers
	Cellular, WiFi	• Wireless Cellular Service from Service Provider • WiFi Network Access

[REQUIRE RESPONDENT TO CLICK EACH ICON AND VIEW EACH VIDEO BEFORE PROCEEDING TO THE NEXT PAGE.]

Please click each of the four icons above to watch the brief videos before proceeding.

[WAIT 10 SECONDS BEFORE SHOWING 'NEXT' BUTTON]

[NEXT PAGE]

Number of Apps Available Introduction

Each smartphone you will be evaluating varies in the **number of apps available**:

• "Apps" refers to applications that are either available for free or that may be purchased. Examples may include apps for social networking, Internet radio, games, etc.

• Apps must be downloaded and enabled. They do not come with your smartphone.

Below are the **four different smartphone options for number of apps available** that you will be asked to consider in this survey. Please read the descriptions below. These descriptions will be available for you to review throughout the exercises.

Icon representing this option for number of apps available	Short Description	Detailed Description
	600,000	600,000 apps are available for download
	450,000	450,000 apps are available for download

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	300,000	300,000 apps are available for download
	150,000	150,000 apps are available for download

Price Introduction

Each smartphone you will be evaluating varies in its **purchase price:**

- Monthly data plan fees are NOT included in the purchase price of the smartphone.

Below are the **four different smartphone price options** that you will be asked to consider in this survey. Please read the descriptions below. These descriptions will be available for you to review throughout the exercises.

Icon representing this option for price	Short Description	Detailed Description
$299	**$299**	$299 with 2-year service contract
$199	**$199**	$199 with 2-year service contract
$99	**$99**	$99 with 2-year service contract
FREE ($0)	**Free ($0)**	Free ($0) with 2-year service contract

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Below is a summary of all the smartphone features and options that you may see in the upcoming exercises. Please review this table to gain an understanding of the varying options that will be presented to you. Both here and in the exercises, you may place your mouse over any icon below to review its definition and click for video or more information.

This table will be available for you to view throughout the following exercises.

Aside from these features below, you should assume that all other smartphone features are the same for every smartphone offering you see.

<u>**Summary of Features and Options:**</u>
[THIS TABLE TO BE AVAILABLE VIA A LINK AT THE TOP OF THE CHOICE TASK (SEE FINAL PAGE OF SURVEY). ROTATE ORDER OF TOUCHSCREEN ATTRIBUTE LEVELS, LEFT-TO-RIGHT, IN THE SAME ORDER AS ROTATED EARLIER IN THE SURVEY. CLICK ON ICONS TO LAUNCH ANIMATION VIDEOS (WHERE APPLICABLE).]

With this camera:	12 MP Rear Camera, HD Video Recording, Autofocus, 2MP Front Camera, Zoom	8 MP Rear Camera, HD Video Recording, Autofocus, 2 MP Front Camera	8 MP Rear Camera, HD Video Recording, Autofocus	3 MP Rear Camera, Standard Video Recording, Autofocus
	12MP Rear 2MP Front, High Res, Zoom	8MP Rear 2MP Front, Good Res	8MP Rear, Good Res	3MP Rear, Low Res
With this size and weight:	4.5 inches, 6 oz.	4.3 inches, 5.3 oz.	4 inches, 5 oz.	3.5 inches, 4 oz.
	4.5" 6 oz.	4.3" 5.3 oz.	4" 5 oz.	3.5" 4 oz.
With this touchscreen:	Reliable Touch, Auto-Switch (1 to 2 Fingers), Rubberband, Tap to Re-center after Zoom	Less Reliable Touch, Auto-Switch (1 to 2 Fingers), Rubberband, Tap to Re-center after Zoom	Reliable Touch, Rubberband, Tap to Re-center after Zoom	Reliable Touch
	Reliable Touch, Auto Switch, Rubberband, Tap to Re-center after Zoom	Less Reliable Touch, Auto Switch, Rubberband, Tap to Re-center after Zoom	Reliable Touch, Auto Switch, Rubberband, Tap to Re-center after Zoom	Reliable Touch, Auto Switch, Rubberband, Tap to Re-center after Zoom

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With this storage/memory:	64 GB (16,000 songs or 23,000 photos)	32 GB (8,000 songs or 12,000 photos)	16 GB (4,000 songs or 6,000 photos)	8 GB (2,000 songs or 3,000 photos)
With this connectivity:	Cellular, WiFi, Tethering, MicroUSB, HDMI	Cellular, WiFi, Tethering, MicroUSB	Cellular, WiFi, Tethering	Cellular, WiFI
With this number of apps available:	600,000	450,000	300,000	150,000
With this price:	$299	$199	$99	Free ($0)

[NEXT PAGE]

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Conjoint Exercise

If these were your only options and you were choosing a new smartphone, which Samsung smartphone would you choose? Choose by clicking one of the buttons below. Click the arrow at the bottom to continue.

Assume that the Samsung smartphones do not vary on any other features other than the features that are shown to vary. **Please click any icon below to review its definition and click for video or more information.** [SHORT DESCRIPTION + ICON WILL BE DISPLAYED IN EACH CELL; HOVER OVER ICON FOR FURTHER DESCRIPTIONS AND ANIMATIONS; A LINK AT THE TOP OF THE PAGE WILL BE AVAILABLE FOR PEOPLE TO VIEW THE "Summary of Features and Options" TABLE SHOWN ON THE PREVIOUS PAGES]

With this camera:	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]
With this size and weight:	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]
With this touchscreen:	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]
With this storage/memory:	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]
With this connectivity:	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]
With this number of apps available:	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]
With this price (with 2-year contract):	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]
	○	○	○	○

[CONJOINT EXERCISE TAKES PLACE HERE. CHOICE TASK REPEATED 16 TIMES. ATTRIBUTE ORDER RANDOMIZED ACROSS RESPONDENTS.]

[END OF SURVEY]

Tablet Conjoint Survey Questionnaire

<u>**LEGEND:**</u>
[PROGRAMMER NOTES IN BOLD CAPS AND BRACKETS]
Notes to respondent in italics

<u>**FORMAT:**</u> The survey consists of the following tracks:

Introduction & Screening (questions labeled QS)
Conjoint Setup
Conjoint Exercise

Overview

Quota: n=500 who have owned certain models of Samsung tablets in the past two years

Inbound sample: Targeted sample of tablet owners

[NO SURVEY TITLE WILL BE DISPLAYED TO RESPONDENTS]

Introduction & Screening

[INTRODUCTION 1] Thank you for your willingness to participate in our study. The responses you give to these questions are very important to us. If you don't know an answer to a question or if you are unsure, please indicate this by choosing the DON'T KNOW/UNSURE option. <u>It is very important that you do not guess.</u>

Your answers will be kept in confidence. The results of this study will not be used to try to sell you anything.

This survey should take about 20-25 minutes to complete.

When you are ready to get started, please click the "NEXT" button.

[NEXT PAGE]

[INSERT CAPTCHA]
QS0. Please enter the code exactly as in the image above, and then click "NEXT" to continue.
** code is case sensitive **

[NEXT PAGE]

QS1. What type of electronic device are you using to complete this survey? *(Select one only)*
[RANDOMIZE]
- ⊙ Desktop computer **[CONTINUE]**
- ⊙ Laptop computer **[CONTINUE]**
- ⊙ Tablet computer (e.g., Apple iPad, Kindle Fire, Samsung Galaxy Tab) **[TERMINATE]**
- ⊙ Smartphone (e.g., iPhone, Blackberry) **[TERMINATE]**
- ⊙ Other mobile or electronic device **[ANCHOR; TERMINATE]**

[TEXT FOR TERMINATES "Thank you for your interest in our study. We are no longer looking for people who match your characteristics. We appreciate your time."]

[NEXT PAGE]

QS2. In which state do you live? (*Select one only)* **[DROP DOWN LIST OF 50 STATES + DC]**

REGION. **[HIDDEN VARIABLE; ASSIGN US CENSUS REGION BASED ON QS2]**

[NEXT PAGE]

QS3. Are you…? *(Select one only)*
- ⊙ Male
- ⊙ Female

[NEXT PAGE]

QS4. Into which of the following categories does your age fall? *(Select one only)*
- ⊙ Under 13 **[TERMINATE]**
- ⊙ 13-17 **[CONTINUE]**
- ⊙ 18-34 **[CONTINUE]**
- ⊙ 35-49 **[CONTINUE]**
- ⊙ 50-64 **[CONTINUE]**
- ⊙ 65+ **[CONTINUE]**
- ⊙ Prefer not to say **[TERMINATE]**

[NEXT PAGE]

[TERMINATE IF AGE OR GENDER DO NOT MATCH RESPONDENT PARAMETERS PASSED BY PANEL PROVIDER]

QS5. Do you or does any member of your household work for any of the following types of companies or in any of the following industries? *(Select all that apply)* [RANDOMIZE]
- ❐ A company that makes or sells consumer electronics [TERMINATE]
- ❐ A company that makes or sells home appliances
- ❐ A company that makes or sells automotive parts
- ❐ A marketing or market research firm [TERMINATE]
- ❐ A public relations or advertising agency [TERMINATE]
- ❐ None of the above [ANCHOR; EXCLUSIVE]

[NEXT PAGE]

QS6. In the **past two years** have you personally owned any of the following? *(Select all that apply)* [RANDOMIZE]
- ❐ Smartphone
- ❐ Laptop computer
- ❐ Tablet computer [CONTINUE]
- ❐ Desktop computer
- ❐ Portable MP3 player
- ❐ Blu-ray player
- ❐ Video game player
- ❐ Portable GPS
- ❐ None of the above [ANCHOR; EXCLUSIVE]

[IF TABLET COMPUTER NOT SELECTED IN QS6, TERMINATE]

[NEXT PAGE]

QS7. In the **past two years**, which of the following brands of tablet computer have you personally owned? *(Select all that apply)* [RANDOMIZE]
- ❐ Acer (Iconia Tab)
- ❐ Amazon (Kindle Fire)
- ❐ Apple (iPad, iPad2)
- ❐ Asus (Transformer, Transformer Prime)
- ❐ Barnes & Noble (Nook Color)
- ❐ BlackBerry (Playbook)
- ❐ HP (TouchPad)
- ❐ HTC (Flyer)
- ❐ Motorola (Xoom and Droid Xyboard)
- ❐ Samsung (Galaxy Tab, Galaxy Tab 10.1, Galaxy Tab 10.1 LTE) [CONTINUE]
- ❐ None of the above [ANCHOR; EXCLUSIVE]

[IF SAMSUNG NOT SELECTED IN QS7, TERMINATE]

[NEXT PAGE]

QS7a. **[IF MORE THAN ONE BRAND OF TABLET SELECTED IN QS7, INSERT: "**Now we are going to ask you about one of the brands of tablet computer you have owned.**"]** In the **past two years**, which specific model(s) of **Samsung** tablet computer have you owned? *(Select all that apply)*
- ❐ Galaxy Tab **[*]**
- ❐ Galaxy Tab 10.1 **[*]**
- ❐ Galaxy Tab 10.1 LTE **[*]**
- ❐ Other (please specify) **[TERMINATE IF NOTHING ELSE SELECTED]**
- ❐ Don't know / Unsure **[ANCHOR; EXCLUSIVE] [TERMINATE]**

[TERMINATE IF NO STARRED (*) SAMSUNG MODEL SELECTED]

[IF ONE TABLETSELECTED IN QS7a, SKIP TO QS7c; ELSE IF MORE THAN ONE TABLET SELECTED IN QS7a, ASK QS7b]

[NEXT PAGE]

QS7b. Which <u>one</u> of the following Samsung tablet computers that you owned was <u>purchased most recently</u>? This will be referred to as your most recent Samsung tablet for the rest of this survey. *(Select one only)* **[SHOW THE PRODUCTS SELECTED IN QS7a, IN THE SAME ORDER AS IN QS7a]**
- ⊙ **[INSERT MODEL]**
- ⊙ **[INSERT MODEL]**
- ⊙ Don't know / Unsure **[TERMINATE]**

[MUST SELECT A STARRED (*) TABLET TO CONTINUE, OTHERWISE TERMINATE]

QS7c. Thinking of your **[IF MORE THAN ONE TABLET SELECTED IN QS7a, INSERT "**most recent**"]** Samsung tablet computer, to what degree were you involved in the decision to select the product? *(Select one only)*
- ⊙ You had <u>no involvement in the decision</u> to select this product (i.e., you received it from someone else, or you simply purchased it but did not have any input into the choice of the model or features) **[TERMINATE]**
- ⊙ You were <u>involved in the decision</u> to select this product but <u>did not purchase</u> it yourself (i.e., you may have specified the brand or model you desired or specified the key features you desired, but someone else bought it) **[CONTINUE]**
- ⊙ You were the <u>primary decision maker</u> in the selection of this product <u>and purchased</u> it for yourself or someone else **[CONTINUE]**
- ⊙ Don't know / Unsure **[ANCHOR] [TERMINATE]**

[NEXT PAGE]

QS7d. Approximately how much did it cost to buy your **[IF MORE THAN ONE TABLET SELECTED IN QS7a, INSERT "**most recent**"]** Samsung tablet computer, excluding sales tax? Please give your best estimate.

Please include only the cost of the tablet itself, without optional accessories or monthly data plan fees.

$ **[REQUIRE A WHOLE NUMBER FROM $0 TO $999, INCLUSIVE]**

⊙ Don't know / Unsure **[TERMINATE]**

QS8. (ANIMATION/AUDIO TEST)

Before the survey begins, it is important to verify that you are able to see and hear videos that will be presented to you. Please click on the button to watch the video and then type the word you heard in the box below.

[INSERT FLASH VIDEO BUTTON LABELED "Click to play sound". ONCE CLICKED, THE FLASH VIDEO PLAYS AN AUDIO CLIP SAYING THE WORD "DOG".]

What word did you hear? (Type the exact word you heard.) **[OPEN-ENDED]**

[TERMINATE IF ANYTHING OTHER THAN "DOG" OR "DOG." IS TYPED (NOT CASE SENSITIVE)]

[NEXT PAGE]

Conjoint Setup

[INTRODUCTION 2] Now imagine that you are **in the market to buy another Samsung tablet computer.**

The following questions will involve a series of exercises in which **you will be shown four different Samsung tablets at one time**. You will be asked to **choose the tablet that you would be most likely to purchase**.

Click "NEXT" to continue. **[WAIT 5 SECONDS BEFORE SHOWING 'NEXT' BUTTON]**

[NEXT PAGE]

Next you will be shown descriptions of the seven features that will be used to define each Samsung tablet you will be evaluating:
1. Camera
2. Size & Weight
3. Touchscreen
4. Storage/Memory
5. Connectivity
6. Number of apps available
7. Price

You will be shown videos of three of these features to help you understand them better: Camera, Touchscreen and Connectivity.

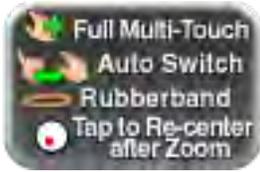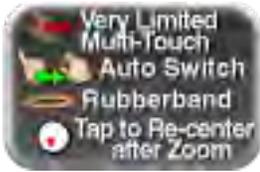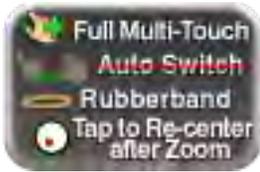Click "NEXT" to continue. **[WAIT 5 SECONDS BEFORE SHOWING 'NEXT' BUTTON]**

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Camera Introduction

Each tablet you will be evaluating comes with a **camera** that may vary in the following features:

- **Locations of the camera.** A <u>rear-facing</u> camera that takes a picture of what you are looking at. The tablet might also have a <u>front-facing</u> camera that takes pictures of you and allows others to see you during a video chat.

- **Resolution / number of megapixels ("MP").** Higher resolution (more MP) allows you to view or print larger photos without getting a "blocky" or "pixilated" look.

- **Video recording capabilities.** Standard or High Definition (HD) video. High Definition video is of high quality and is well suited for viewing on large screens.

- **Autofocus**. The camera automatically focuses the image when taking a photo.

- **Zoom.** Optical zoom allows you to get a closer view of what you are photographing.

Below are the **four different tablet camera options** that you will be asked to consider in this survey. Please read the descriptions below and <u>click on each of the icons to view brief videos</u> which describe these tablet options in more detail. These descriptions and videos will be available for you to review throughout the exercises.

Icon representing this tablet camera option (Click each to see a brief video)	Short Description	Detailed Description
12MP Rear 2MP Front — High Res — Zoom	**12 MP Rear Camera, HD Video Recording, Autofocus, 2MP Front Camera, Zoom**	12MP Rear-facing camera - High Definition (HD) video recording - Autofocus 2MP Front-facing camera - Zoom
8MP Rear 2MP Front — Good Res	**8 MP Rear Camera, HD Video Recording, Autofocus, 2 MP Front Camera**	8MP Rear-facing camera - High Definition (HD) video recording - Autofocus 2MP Front-facing camera
8MP Rear — Good Res	**8 MP Rear Camera, HD Video Recording, Autofocus**	8MP Rear-facing camera - High Definition (HD) video recording - Autofocus
3MP Rear — Low Res	**3 MP Rear Camera, Standard Video Recording, Autofocus**	3 MP Rear-facing camera - Standard definition video recording - Autofocus

[REQUIRE RESPONDENT TO CLICK EACH ICON AND VIEW EACH VIDEO BEFORE PROCEEDING TO THE NEXT PAGE.]

Please click each of the four icons above to watch the brief videos before proceeding.

[WAIT 10 SECONDS BEFORE SHOWING 'NEXT' BUTTON]

[NEXT PAGE]

Size & Weight Introduction

Each tablet you will be evaluating varies in the following ways:

- **Size.** The diagonal length of the screen, in inches.

- **Weight.** In pounds (lbs.).

Below are the **four different tablet size and weight options** that you will be asked to consider in this survey. Please read the descriptions below. These descriptions will be available for you to review throughout the exercises.

Icon representing this tablet size and weight option	Short Description	Detailed Description
	10 inches, 2 lbs.	
	9 inches, 1.75 lbs.	
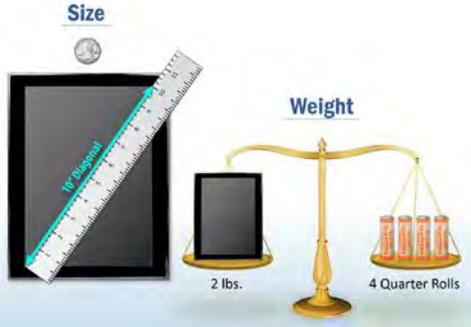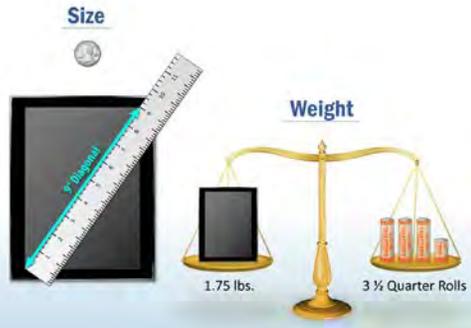
	8.5 inches, 1.5 lbs.	
	7 inches, 1 lb.	

[WAIT 10 SECONDS BEFORE SHOWING 'NEXT' BUTTON]

[NEXT PAGE]

Touchscreen Introduction

Each tablet you will be evaluating comes with a **touchscreen** that may vary in the following features:

- **Multi-touch capability.** Whether the tablet is capable of reliably performing a full range of multi-touch operations -- operations where two, three or more fingers are used on the screen at the same time.

- **Automatically switch between single- and multi-touch.** Whether you can automatically switch back and forth between using only one finger on the screen ("single touch"), and using two or more fingers on the screen ("multi-touch").

- **Rubberband effect.** Whether or not the touchscreen contains a "rubberband" effect in which the screen "bounces" when you reach the end of a webpage or image.

- **Tap to re-center after zoom.** Whether, after zooming in and centering, the touchscreen permits you to tap the screen to center other content on the screen.

Below are the **four different tablet touchscreen options** that you will be asked to consider in this survey. Please read the descriptions below and click on each of the icons to view brief videos which describe these tablet options in more detail. These descriptions and videos will be available for you to review throughout the exercises.

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Icon representing this tablet touchscreen option (Click each to see a brief video)	Short Description	Detailed Description
	Full Multi-Touch, Auto-Switch (1 to 2 Fingers), Rubberband, Tap to Re-center after Zoom	• Full Multi-Touch Capability • Automatically Switch between Touch with One Finger and Touch with Two Fingers • Rubberbands at Edge of Webpages or Images • Tap to Center Other Content After Zooming
	Very Limited Multi-Touch, Auto-Switch (1 to 2 Fingers), Rubberband, Tap to Re-center after Zoom	• Single-Touch with Very Limited Multi-Touch Capability • Automatically Switch between Touch with One Finger and Touch with Two Fingers • Rubberbands at Edge of Webpages or Images • Tap to Center Other Content After Zooming
	Full Multi-Touch, Rubberband, Tap to Re-center after Zoom	• Full Multi-Touch Capability • No Automatic Switch Between Single and Multi-Touch • Rubberbands at Edge of Webpages or Images • Tap to Center Other Content After Zooming
	Full Multi-Touch	• Full Multi-Touch Capability • No Automatic Switch Between Single and Multi-Touch • Does Not Rubberband • Does Not Allow Tap to Center Other Content After Zooming

Please click each of the four icons above to watch the brief videos before proceeding.

Storage/Memory Introduction

Each tablet you will be evaluating varies in the amount of **storage/memory:**

- **Storage/memory** refers to the amount of songs, photos, etc. which you are able to keep on your tablet. In the exercises that follow, the **storage/memory will be included in the tablet price shown**.

Below are the **four different tablet storage/memory options** that you will be asked to consider in this survey. Please read the descriptions below. These descriptions will be available for you to review throughout the exercises.

Icon representing this storage/memory option	Short Description	Detailed Description
	64 GB (16,000 songs or 23,000 photos)	Able to hold 16,000 songs OR 23,000 photos
	32 GB (8,000 songs or 12,000 photos)	Able to hold 8,000 songs OR 12,000 photos
	16 GB (4,000 songs or 6,000 photos)	Able to hold 4,000 songs OR 6,000 photos
	8 GB (2,000 songs or 3,000 photos)	Able to hold 2,000 songs OR 3,000 photos

[WAIT 10 SECONDS BEFORE SHOWING 'NEXT' BUTTON]

[NEXT PAGE]

10

Connectivity Introduction

Each tablet you will be evaluating comes with the following **connectivity** feature:

- **WiFi.** Allows you to connect to a home, office or public wireless network. A WiFi network allows you to access the Internet without the use of wires or cables, and without using your cellular service provider's network.

Each tablet you will be evaluating may have some or all of the following additional **connectivity** features:

- **Bluetooth.** With Bluetooth, the tablet can connect to other compatible devices wirelessly over a short range. For example, you can play songs on this tablet and listen to them on a Bluetooth headset.

- **MicroUSB port.** Can connect to other devices via MicroUSB. For example, you are able to save content from your tablet, such as photos and data, onto a flash memory drive via a MicroUSB port.

- **HDMI output port.** Able to connect your tablet to a widescreen TV.

Below are the **four different tablet connectivity options** that you will be asked to consider in this survey. Please read the descriptions below and <u>click on each of the icons to view brief videos</u> which describe these tablet options in more detail. These descriptions and videos will be available for you to review throughout the exercises.

Icon representing this tablet connectivity option (Click each to see a brief video)	Short Description	Detailed Description
	WiFi, Bluetooth, MicroUSB, HDMI	- WiFi Network Access - Bluetooth to Listen on Headset - MicroUSB port available - HDMI output port available
	WiFi, Bluetooth, MicroUSB	- WiFi Network Access - Bluetooth to Listen on Headset - MicroUSB port available
	WiFi, Bluetooth	- WiFi Network Access - Bluetooth to Listen on Headset

		· WiFi Network Access
	WiFi	

Please click each of the four icons above to watch the brief videos before proceeding.

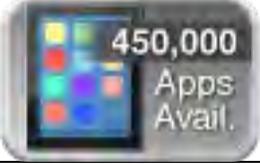## Number of Apps Available Introduction

Each tablet you will be evaluating varies in the **number of apps available**:

- "Apps" refers to applications that are either available for free or that may be purchased. Examples may include apps for social networking, Internet radio, games, etc.

- Apps must be downloaded and enabled. They do not come with your tablet.

Below are the **four different tablet options for number of apps available** that you will be asked to consider in this survey. Please read the descriptions below. These descriptions will be available for you to review throughout the exercises.

Icon representing this option for number of apps available	Short Description	Detailed Description
	600,000	600,000 apps are available for download
	450,000	450,000 apps are available for download
	300,000	300,000 apps are available for download

	150,000	150,000 apps are available for download

[WAIT 10 SECONDS BEFORE SHOWING 'NEXT' BUTTON]

[NEXT PAGE]

Price Introduction

Each tablet you will be evaluating varies in its **purchase price:**

Below are the **four different tablet price options** that you will be asked to consider in this survey. Please read the descriptions below. These descriptions will be available for you to review throughout the exercises.

Icon representing this option for price	Short Description	Detailed Description
$659	**$659**	$659 purchase price
$499	**$499**	$499 purchase price
$359	**$359**	$359 purchase price
$199	**$199**	$199 purchase price

[WAIT 10 SECONDS BEFORE SHOWING 'NEXT' BUTTON]

[NEXT PAGE]

Below is a summary of all the tablet features and options that you may see in the upcoming exercises. Please review this table to gain an understanding of the varying options that will be presented to you. Both here and in the exercises, you may place your mouse over any icon below to review its definition and click for video or more information.
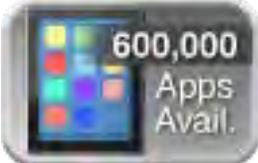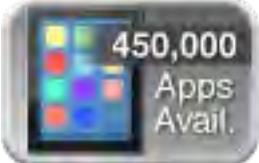
This table will be available for you to view throughout the following exercises.

Aside from these features below, you should assume that all other tablet features are the same for every tablet offering you see.

Summary of Features and Options:

[THIS TABLE TO BE AVAILABLE VIA A LINK AT THE TOP OF THE CHOICE TASK (SEE FINAL PAGE OF SURVEY). ROTATE ORDER OF TOUCHSCREEN ATTRIBUTE LEVELS, LEFT-TO-RIGHT, IN THE SAME ORDER AS ROTATED EARLIER IN THE SURVEY. CLICK ON ICONS TO LAUNCH ANIMATION VIDEOS (WHERE APPLICABLE).]

With this camera:	12 MP Rear Camera, HD Video Recording, Autofocus, 2MP Front Camera, Zoom	8 MP Rear Camera, HD Video Recording, Autofocus, 2 MP Front Camera	8 MP Rear Camera, HD Video Recording, Autofocus	3 MP Rear Camera, Standard Video Recording, Autofocus
	12MP Rear 2MP Front — High Res Zoom	8MP Rear 2MP Front — Good Res	8MP Rear — Good Res	3MP Rear — Low Res
With this size and weight:	10 inches, 2 lbs.	9 inches, 1.75 lbs.	8.5 inches, 1.5 lbs.	7 inches, 1 lb.
	10" 2 lbs.	9" 1.75 lbs.	8.5" 1.5 lbs.	7" 1 lbs.

14

With this touchscreen:	Full Multi-Touch, Auto-Switch (1 to 2 Fingers), Rubberband, Tap to Re-center after Zoom	Very Limited Multi-Touch, Auto-Switch (1 to 2 Fingers), Rubberband, Tap to Re-center after Zoom	Full Multi-Touch, Rubberband, Tap to Re-center after Zoom	Full Multi-Touch
With this storage/memory:	64 GB (16,000 songs or 23,000 photos)	32 GB (8,000 songs or 12,000 photos)	16 GB (4,000 songs or 6,000 photos)	8 GB (2,000 songs or 3,000 photos)
With this connectivity:	WiFi, Bluetooth, MicroUSB, HDMI	WiFi, Bluetooth, MicroUSB	WiFi, Bluetooth	WiFi
With this number of apps available:	600,000	450,000	300,000	150,000
With this price:	$659	$499	$359	$199

[NEXT PAGE]

15

Conjoint Exercise

(Page [INSERT PAGE] of 16)
If these were your only options and you were choosing a new tablet computer, which Samsung tablet would you choose? Choose by clicking one of the buttons below. Click the <u>arrow</u> at the bottom to continue.

Assume that the Samsung tablets do not vary on any other features other than the features that are shown to vary. **Please click any icon below to review its definition and click for video or more information.** [SHORT DESCRIPTION + ICON WILL BE DISPLAYED IN EACH CELL; HOVER OVER ICON FOR FURTHER DESCRIPTIONS AND ANIMATIONS; A LINK AT THE TOP OF THE PAGE WILL BE AVAILABLE FOR PEOPLE TO VIEW THE "Summary of Features and Options" TABLE SHOWN ON THE PREVIOUS PAGES]

With this camera:	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]
With this size and weight:	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]
With this touchscreen:	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]
With this storage/memory:	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]
With this connectivity:	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]
With this number of apps available:	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]
With this price:	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]	[SHORT DESCRIPTION + ICON]
	○	○	○	○

 [CONJOINT EXERCISE TAKES PLACE HERE. CHOICE TASK REPEATED 16 TIMES. ATTRIBUTE ORDER RANDOMIZED ACROSS RESPONDENTS.]

[END OF SURVEY]

SMARTPHONE SURVEY SCREENSHOTS

Welcome Screen
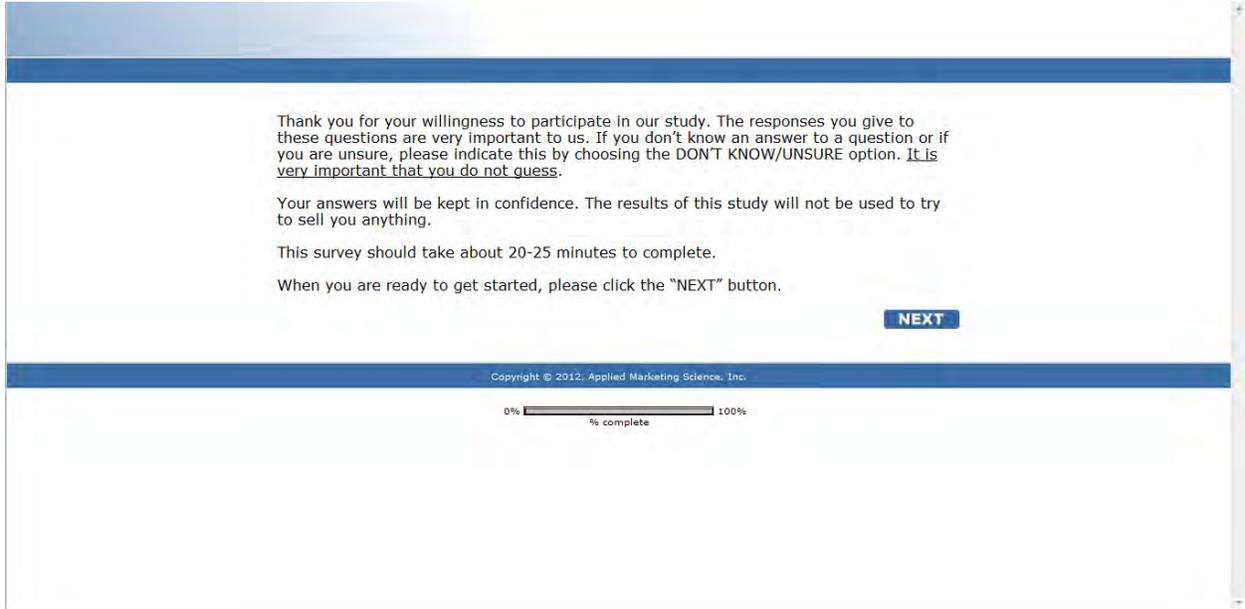
Verification

QS1

What type of electronic device are you using to complete this survey?

(Select one only)

- ⚪ Smartphone (e.g., iPhone, Blackberry)
- ⚪ Tablet computer (e.g., Apple iPad, Kindle Fire, Samsung Galaxy Tab)
- ⚪ Desktop computer
- ⚪ Laptop computer
- ⚪ Other mobile or electronic device

NEXT

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QS2

In which state do you live?

(Select one only)

<--select one--> ▼

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QS3

Are you...?

(Select one only)

○ Male
○ Female

NEXT

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QS4

Into which of the following categories does your age fall?

(Select one only)

○ Under 13
○ 13 - 17
⦿ 18 - 34
○ 35 - 49
○ 50 - 64
○ 65+
○ Prefer not to say

NEXT

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QS5

Do you or does any member of your household work for any of the following types of companies or in any of the following industries?

(Select all that apply)

- [ ] A company that makes or sells automotive parts
- [ ] A marketing or market research firm
- [ ] A public relations or advertising agency
- [ ] A company that makes or sells home appliances
- [ ] A company that makes or sells consumer electronics
- [ ] None of the above

NEXT

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QS6

In the **past two years** have you personally owned any of the following?

(Select all that apply)

- [ ] Laptop computer
- [ ] Portable MP3 player
- [ ] Blu-ray player
- [ ] Video game player
- [ ] Portable GPS
- [ ] Tablet computer
- [ ] Smartphone
- [ ] Desktop computer
- [ ] None of the above
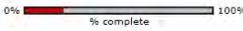
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QS7

In the **past two years**, which of the following brands of smartphone have you personally owned?

(Select all that apply)

- ☐ Motorola (Droid 4, Droid Razr, etc.)
- ☐ Apple (iPhone 3GS, iPhone 4S, etc.)
- ☐ HTC (Evo 3D, Rezound, etc.)
- ☐ BlackBerry (Bold, Torch, etc.)
- ☐ LG (Optimus One, Optimus Black, etc.)
- ☐ Nokia (N8, N900, etc.)
- ☐ Samsung (Galaxy Nexus, Galaxy S II, etc.)
- ☐ Sony Ericsson (Xperia, Vivaz, etc.)
- ☐ None of the above

NEXT

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QS7A

In the **past two years**, which specific model(s) of **Samsung** smartphone have you owned?

(Select all that apply)

☐ Acclaim	☐ Galaxy S II Skyrocket
☐ Admire	☐ Galaxy S II/2 (i9100)
☐ Captivate	☐ Galaxy S Showcase
☐ Captivate Glide	☐ Gem
☐ Conquer 4G	☐ Gravity
☐ Continuum	☐ Gravity Smart
☐ Dart	☐ Illusion
☐ DoubleTime	☐ Indulge
☐ Droid Charge	☐ Infuse 4G
☐ Epic 4G	☐ Intercept
☐ Exec	☐ Mesmerize
☐ Exhibit 4G	☐ Nexus S
☐ Exhibit II 4G	☐ Nexus S 4G
☐ Fascinate	☐ Replenish
☐ Focus	☐ Repp
☐ Focus Flash	☐ Showcase i500
☐ Focus S	☐ Sidekick
☐ Galaxy Ace	☐ Stratosphere
☐ Galaxy Attain	☐ Transfix
☐ Galaxy Nexus	☐ Transform
☐ Galaxy Precedent	☐ Vibrant
☐ Galaxy Prevail	☐ Vitality
☐ Galaxy S (i9000)	☐ Other. Please specify: _____
☐ Galaxy S 4G	☐ Don't know / Unsure
☐ Galaxy S II	
☐ Galaxy S II Epic 4G	

NEXT

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QS7B

Which <u>one</u> of the following Samsung smartphones that you owned was <u>purchased most recently</u>? This will be referred to as your most recent Samsung smartphone for the rest of this survey.

(Select one only)

- ○ Galaxy S II Skyrocket
- ○ Galaxy S II/2 (i9100)
- ○ Galaxy S Showcase
- ○ Don't know / Unsure

NEXT

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QS7C

Thinking of your Samsung smartphone, to what degree were you involved in the decision to select the product?

(Select one only)

- ○ You had <u>no involvement in the decision</u> to select this product (i.e., you received it from someone else, or you simply purchased it but did not have any input into the choice of the model or features)
- ○ You were <u>involved in the decision</u> to select this product but <u>did not purchase</u> it yourself (i.e., you may have specified the brand or model you desired or specified the key features you desired, but someone else bought it)
- ○ You were the <u>primary decision maker</u> in the selection of this product <u>and purchased</u> it for yourself or someone else
- ○ Don't know / Unsure

NEXT

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QS7D

Approximately how much did it cost to buy your Samsung smartphone, excluding sales tax? Please give your best estimate.

Please include only the cost of the phone itself, without optional accessories or monthly service fees. If your phone was free as part of wireless service contract, please enter 0.
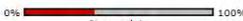
(Enter a whole number)

$ _____

☐ Don't know/Unsure

NEXT

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QS8

Before the survey begins, it is important to verify that you are able to see and hear videos that will be presented to you. Please click on the button to watch the video and then type the word you heard in the box below.

Click to watch the video

What word did you hear?

(Type the exact word you heard.)

[_____]

Please click the button above to watch the video before proceeding.

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QINTRO1

Now imagine that you are **in the market to buy another Samsung smartphone.**

The following questions will involve a series of exercises in which **you will be shown four different Samsung smartphones at one time. You will be asked to choose the smartphone that you would <u>be most likely to purchase</u>.**

For purposes of these exercises, you may assume:

- You would buy the smartphone as part of a new **two-year contract**
- **Monthly phone/data plan fees are <u>NOT</u> included in the purchase price of the smartphone**, but all types of phone/data plans are available through any of the major service providers (AT&T, Sprint, T-Mobile, Verizon)

Click "NEXT" to continue.

The Next button will appear in just a moment

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QINTRO2

Next you will be shown descriptions of the seven features that will be used to define each Samsung smartphone you will be evaluating:
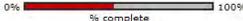
1. Camera
2. Size & Weight
3. Touchscreen
4. Storage/Memory
5. Connectivity
6. Number of apps available
7. Price

You will be shown videos of three of these features to help you understand them better: Camera, Touchscreen and Connectivity.

Click "NEXT" to continue.

NEXT

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QATTR1

Each smartphone you will be evaluating comes with a **camera** that may vary in the following features:

- **Locations of the camera**. A rear-facing camera that takes a picture of what you are looking at. The smartphone might also have a front-facing camera that takes pictures of you and allows others to see you during a video chat.

- **Resolution / number of megapixels ("MP")**. Higher resolution (more MP) allows you to view or print larger photos without getting a "blocky" or "pixilated" look.

- **Video recording capabilities**. Standard or High Definition (HD) video. High Definition video is of high quality and is well suited for viewing on large screens.

- **Autofocus**. The camera automatically focuses the image when taking a photo.

- **Zoom**. Optical zoom allows you to get a closer view of what you are photographing.

Below are the **four different smartphone camera options** that you will be asked to consider in this survey. Please read the descriptions below and click on each of the icons to view brief videos which describe these smartphone options in more detail. These descriptions and videos will be available for you to review throughout the exercises.

Icon representing this smartphone camera option (Click each to see a brief video)	Short Description	Detailed Description
12MP Rear 2MP Front — High Res, Zoom	**12 MP Rear Camera, HD Video Recording, Autofocus, 2MP Front Camera, Zoom**	- 12 MP Rear-facing camera - High Definition (HD) video recording - Autofocus - 2MP Front-facing camera - Zoom
8MP Rear 2MP Front — Good Res	**8 MP Rear Camera, HD Video Recording, Autofocus, 2 MP Front Camera**	- 8 MP Rear-facing camera - High Definition (HD) video recording - Autofocus - 2MP Front-facing camera
8MP Rear — Good Res	**8 MP Rear Camera, HD Video Recording, Autofocus**	- 8 MP Rear-facing camera - High Definition (HD) video recording - Autofocus
3MP Rear — Low Res	**3 MP Rear Camera, Standard Video Recording, Autofocus**	- 3 MP Rear-facing camera - Standard definition video recording - Autofocus

Please click each of the four icons above to watch the brief videos before proceeding.

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QATTR2

Each smartphone you will be evaluating varies in the following ways:

- **Size**. The diagonal length of the screen, in inches.

- **Weight**. In ounces (oz.).

Below are the **four different smartphone size and weight options** that you will be asked to consider in this survey. Please read the descriptions below. These descriptions will be available for you to review throughout the exercises.

Icon representing this smartphone size and weight option	Short Description	Detailed Description
	4.5 inches, 6 oz.	
	4.3 inches, 5.3 oz.	
	4 inches, 5 oz.	
	3.5 inches, 4 oz.	

NEXT

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QATTR3

Each smartphone you will be evaluating comes with a **touchscreen** that may vary in the following features:

- **Touchscreen reliability**. Whether the smartphone accurately carries out what you intend to do when you touch the screen.

- **Automatically switch between single- and multi-touch**. Whether you can automatically switch back and forth between using only one finger on the screen ("single touch"), and using two or more fingers on the screen ("multi-touch").

- **Rubberband effect**. Whether or not the touchscreen contains a "rubberband" effect in which the screen "bounces" when you reach the end of a webpage or image.

- **Tap to re-center after zoom**. Whether, after zooming in and centering, the touchscreen permits you to tap the screen to center other content on the screen.

Below are the **four different smartphone touchscreen options** that you will be asked to consider in this survey. Please read the descriptions below and click on each of the icons to view brief videos which describe these smartphone options in more detail. These descriptions and videos will be available for you to review throughout the exercises.

Icon representing this smartphone touchscreen option (Click each to see a brief video)	Short Description	Detailed Description
	Reliable Touch, Auto-Switch (1 to 2 Fingers), Rubberband, Tap to Re-center after Zoom	- Reliably and Accurately Tracks Finger Movement - Automatically Switch between Touch with One Finger and Touch with Two Fingers - Rubberbands at Edge of Webpages or Images - Tap to Center Other Content After Zooming
	Reliable Touch, Rubberband, Tap to Re-center after Zoom	- Reliably and Accurately Tracks Finger Movement - No Automatic Switch Between Single and Multi-Touch - Rubberbands at Edge of Webpages or Images - Tap to Center Other Content After Zooming
	Reliable Touch	- Reliably and Accurately Tracks Finger Movement - No Automatic Switch Between Single and Multi-Touch - Does Not Rubberband - Does Not Allow Tap to Center Content Other After Zooming
	Less Reliable Touch, Auto-Switch (1 to 2 Fingers), Rubberband, Tap to Re-center after Zoom	- Does Not Always Reliably and Accurately Track Finger Movement - Automatically Switch between Touch with One Finger and Touch with Two Fingers - Rubberbands at Edge of Webpages or Images - Tap to Center Other Content After Zooming

Please click each of the four icons above to watch the brief videos before proceeding.

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QATTR4

Each smartphone you will be evaluating varies in the amount of **storage/memory**:

- **Storage/memory** refers to the amount of songs, photos, etc. which you are able to keep on your smartphone. In the exercises that follow, the **storage/memory will be included in the smartphone price shown**.

Below are the **four different smartphone storage/memory options** that you will be asked to consider in this survey. Please read the descriptions below. These descriptions will be available for you to review throughout the exercises.

Icon representing this storage/memory option	Short Description	Detailed Description
64GB	64 GB (16,000 songs or 23,000 photos)	Able to hold 16,000 songs OR 23,000 photos
32GB	32 GB (8,000 songs or 12,000 photos)	Able to hold 8,000 songs OR 12,000 photos
16GB	16 GB (4,000 songs or 6,000 photos)	Able to hold 4,000 songs OR 6,000 photos
8GB	8 GB (2,000 songs or 3,000 photos)	Able to hold 2,000 songs OR 3,000 photos

NEXT

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QATTR5

Each smartphone you will be evaluating comes with the following **connectivity** features:

- **Cellular service**. All smartphones enable cellular service for phone and data through your service provider (for example, AT&T or Verizon).

- **WiFi**. Allows you to connect to a home, office or public wireless network. A WiFi network allows you to access the Internet without the use of wires or cables, and without using your cellular service provider's network.

Each smartphone you will be evaluating may have some or all of the following additional **connectivity** features:

- **Tethering**. Allows you to share the smartphone's Internet connection with your computer. This sharing can take place wirelessly (via WiFi) or by physical connection using a cable. In the case of tethering wirelessly, the feature is known as a mobile hotspot.

- **MicroUSB port**. Can connect to other devices via MicroUSB. For example, you are able to save content from your smartphone, such as photos and data, onto a flash memory drive via a MicroUSB port.

- **HDMI output port**. Able to connect your smartphone to a widescreen TV.

Below are the **four different smartphone connectivity options** that you will be asked to consider in this survey. Please read the descriptions below and <u>click on each of the icons to view brief videos</u> which describe these smartphone options in more detail. These descriptions and videos will be available for you to review throughout the exercises.

Icon representing this smartphone connectivity option (Click each to see a brief video)	Short Description	Detailed Description
Cellular WiFi Tethering Micro USB HDMI	**Cellular, WiFi, Tethering, MicroUSB, HDMI**	• Wireless Cellular Service from Service Provider • WiFi Network Access • Tethering to Share Cellular Service With Computers • MicroUSB port available • HDMI output port available
Cellular WiFi Tethering Micro USB	**Cellular, WiFi, Tethering, MicroUSB**	• Wireless Cellular Service from Service Provider • WiFi Network Access • Tethering to Share Cellular Service With Computers • MicroUSB port available
Cellular WiFi Tethering	**Cellular, WiFi, Tethering**	• Wireless Cellular Service from Service Provider • WiFi Network Access • Tethering to Share Cellular Service With Computers
Cellular WiFi	**Cellular, WiFi**	• Wireless Cellular Service from Service Provider • WiFi Network Access

Please click each of the four icons above to watch the brief videos before proceeding.

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QATTR6

Each smartphone you will be evaluating varies in the **number of apps available**:

- "Apps" refers to applications that are either available for free or that may be purchased. Examples may include apps for social networking, Internet radio, games, etc.

- Apps must be downloaded and enabled. They do not come with your smartphone.

Below are the **four different smartphone options for number of apps available** that you will be asked to consider in this survey. Please read the descriptions below. These descriptions will be available for you to review throughout the exercises.

Icon representing this option for number of apps available	Short Description	Detailed Description
600,000 Apps Avail.	600,000	600,000 apps are available for download
450,000 Apps Avail	450,000	450,000 apps are available for download
300,000 Apps Avail	300,000	300,000 apps are available for download
150,000 Apps Avail	150,000	150,000 apps are available for download

NEXT

0% 100%
% complete

QATTR7

Each smartphone you will be evaluating varies in its **purchase price**:

- Monthly data plan fees are NOT included in the purchase price of the smartphone.

Below are the **four different smartphone price options** that you will be asked to consider in this survey. Please read the descriptions below. These descriptions will be available for you to review throughout the exercises.

Icon representing this option for price	Short Description	Detailed Description
$299	**$299**	$299 with 2-year service contract
$199	**$199**	$199 with 2-year service contract
$99	**$99**	$99 with 2-year service contract
FREE ($0)	**Free ($0)**	Free ($0) with 2-year service contract

NEXT

0% ▬▬▬▬▬▬▬ 100%
% complete

QINTRO3

Below is a summary of all the smartphone features and options that you may see in the upcoming exercises. Please review this table to gain an understanding of the varying options that will be presented to you. Both here and in the exercises, you may place your mouse over any icon below to review its definition and click for video or more information.

This table will be available for you to view throughout the following exercises.

Aside from these features below, you should assume that all other smartphone features are the same for every smartphone offering you see.

Summary of Features and Options:

With this camera:	12 MP Rear Camera, HD Video Recording, Autofocus, 2MP Front Camera, Zoom	8 MP Rear Camera, HD Video Recording, Autofocus, 2 MP Front Camera	8 MP Rear Camera, HD Video Recording, Autofocus	3 MP Rear Camera, Standard Video Recording, Autofocus
With this size and weight:	4.5 inches, 6 oz.	4.3 inches, 5.3 oz.	4 inches, 5 oz.	3.5 inches, 4 oz.
With this touchscreen:	Reliable Touch, Auto-Switch (1 to 2 Fingers), Rubberband, Tap to Re-center after Zoom	Reliable Touch, Rubberband, Tap to Re-center after Zoom	Reliable Touch	Less Reliable Touch, Auto-Switch (1 to 2 Fingers), Rubberband, Tap to Re-center after Zoom
With this storage/memory:	64 GB (16,000 songs or 23,000 photos)	32 GB (8,000 songs or 12,000 photos)	16 GB (4,000 songs or 6,000 photos)	8 GB (2,000 songs or 3,000 photos)
With this connectivity:	Cellular, WiFi, Tethering, MicroUSB, HDMI	Cellular, WiFi, Tethering, MicroUSB	Cellular, WiFi, Tethering	Cellular, WiFI
With this number of apps available:	600,000	450,000	300,000	150,000
With this price:	$299	$199	$99	Free ($0)

NEXT

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QCONJOINT (repeated 16 times)

(Page 1 of 16)

If these were your only options and you were choosing a new smartphone, which Samsung smartphone would you choose?
Choose by clicking one of the buttons below. Click the arrow at the bottom to continue.

Assume that the Samsung smartphones do not vary on any other features other than the features that are shown to vary.
Please click any icon below to review its definition and click for video or more information.

With this price (with 2-year contract):	Free ($0)	$99	$299	$199
With this number of apps available:	300,000	150,000	450,000	600,000
With this size and weight:	4.3 inches, 5.3 oz.	4.5 inches, 6 oz.	3.5 inches, 4 oz.	4 inches, 5 oz.
With this connectivity:	Cellular, WiFi, Tethering	Cellular, WiFi	Cellular, WiFi, Tethering, MicroUSB, HDMI	Cellular, WiFi, Tethering, MicroUSB
With this touchscreen:	Less Reliable Touch, Auto-Switch (1 to 2 Fingers), Rubberband, Tap to Re-center after Zoom	Reliable Touch, Rubberband, Tap to Re-center after Zoom	Reliable Touch, Auto-Switch (1 to 2 Fingers), Rubberband, Tap to Re-center after Zoom	Reliable Touch
With this storage/memory:	64 GB (16000 songs or 23000 photos)	8 GB (2000 songs or 3000 photos)	16 GB (4000 songs or 6000 photos)	32 GB (8000 songs or 12000 photos)
With this camera:	3 MP Rear Camera, Standard Video Recording, Autofocus	8 MP Rear Camera, HD Video Recording, Autofocus, 2 MP Front Camera	8 MP Rear Camera, HD Video Recording, Autofocus	12 MP Rear Camera, HD Video Recording, Autofocus, 2MP Front Camera, Zoom
	○	○	○	○

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CONCLUSION SCREEN

TABLET SURVEY SCREENSHOTS

Welcome Screen

Thank you for your willingness to participate in our study. The responses you give to these questions are very important to us. If you don't know an answer to a question or if you are unsure, please indicate this by choosing the DON'T KNOW/UNSURE option. It is very important that you do not guess.

Your answers will be kept in confidence. The results of this study will not be used to try to sell you anything.

This survey should take about 20-25 minutes to complete.

When you are ready to get started, please click the "NEXT" button.

NEXT

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Verification

60K134

Please enter the code exactly as in the image above, and then click "NEXT" to continue.

** code is case sensitive **

NEXT

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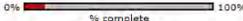
QS1

QS2

QS3

Are you...?

(Select one only)

○ Male
○ Female

NEXT

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QS4

Into which of the following categories does your age fall?

(Select one only)

○ Under 13
○ 13 - 17
○ 18 - 34
○ 35 - 49
○ 50 - 64
○ 65+
○ Prefer not to say

NEXT

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QS5

Do you or does any member of your household work for any of the following types of companies or in any of the following industries?

(Select all that apply)

- [ ] A company that makes or sells consumer electronics
- [ ] A marketing or market research firm
- [ ] A company that makes or sells home appliances
- [ ] A company that makes or sells automotive parts
- [ ] A public relations or advertising agency
- [ ] None of the above

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QS6

In the **past two years** have you personally owned any of the following?

(Select all that apply)

- [ ] Video game player
- [ ] Laptop computer
- [ ] Portable MP3 player
- [ ] Desktop computer
- [ ] Portable GPS
- [ ] Smartphone
- [ ] Tablet computer
- [ ] Blu-ray player
- [ ] None of the above

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QS7

In the **past two years**, which of the following brands of tablet computer have you personally owned?

(Select all that apply)

- ☐ Barnes & Noble (Nook Color)
- ☐ Apple (iPad, iPad2)
- ☐ Acer (Iconia Tab)
- ☐ Amazon (Kindle Fire)
- ☐ Asus (Transformer, Transformer Prime)
- ☐ Samsung (Galaxy Tab, Galaxy Tab 10.1, Galaxy Tab 10.1 LTE)
- ☐ Motorola (Xoom and Droid Xyboard)
- ☐ HTC (Flyer)
- ☐ HP (TouchPad)
- ☐ BlackBerry (Playbook)
- ☐ None of the above

NEXT

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QS7A

In the **past two years**, which specific model(s) of **Samsung** tablet computer have you owned?

(Select all that apply)

- ☐ Galaxy Tab
- ☐ Galaxy Tab 10.1
- ☐ Galaxy Tab 10.1 LTE
- ☐ Other. Please specify: _____
- ☐ Don't know / Unsure

NEXT

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QS7B

Which one of the following Samsung tablet computers that you owned was purchased most recently? This will be referred to as your most recent Samsung tablet for the rest of this survey.

(Select one only)

○ Galaxy Tab 10.1
○ Galaxy Tab 10.1 LTE
○ Don't know / Unsure

NEXT

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QS7C

Thinking of your most recent Samsung tablet computer, to what degree were you involved in the decision to select the product?

(Select one only)

○ You had no involvement in the decision to select this product (i.e., you received it from someone else, or you simply purchased it but did not have any input into the choice of the model or features)

○ You were involved in the decision to select this product but did not purchase it yourself (i.e., you may have specified the brand or model you desired or specified the key features you desired, but someone else bought it)

○ You were the primary decision maker in the selection of this product and purchased it for yourself or someone else

○ Don't know / Unsure

NEXT

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QS7D

Approximately how much did it cost to buy your most recent Samsung tablet computer, excluding sales tax? Please give your best estimate.

Please include only the cost of the tablet itself, without optional accessories or monthly data plan fees.

(Enter a whole number)

$ _____

☐ Don't know/Unsure

NEXT

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QS8

Before the survey begins, it is important to verify that you are able to see and hear videos that will be presented to you. Please click on the button to watch the video and then type the word you heard in the box below.

[Click to watch the video]
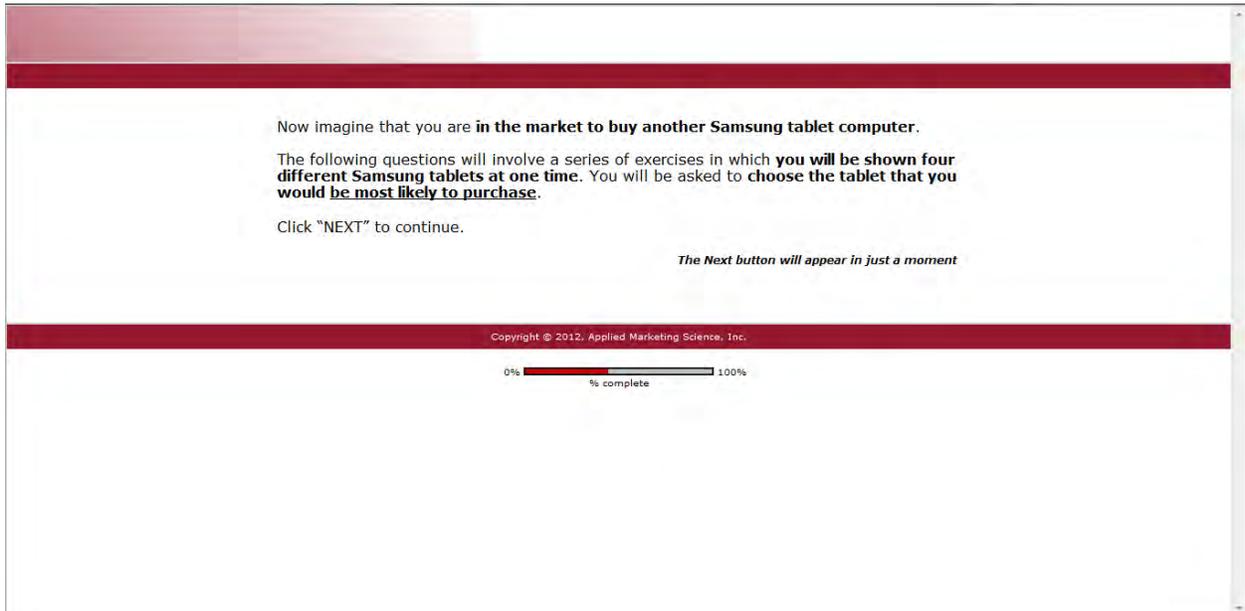
What word did you hear?

(Type the exact word you heard.)

[_____]

Please click the button above to watch the video before proceeding.

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QINTRO1

Now imagine that you are **in the market to buy another Samsung tablet computer**.

The following questions will involve a series of exercises in which **you will be shown four different Samsung tablets at one time.** You will be asked to **choose the tablet that you would <u>be most likely to purchase</u>**.
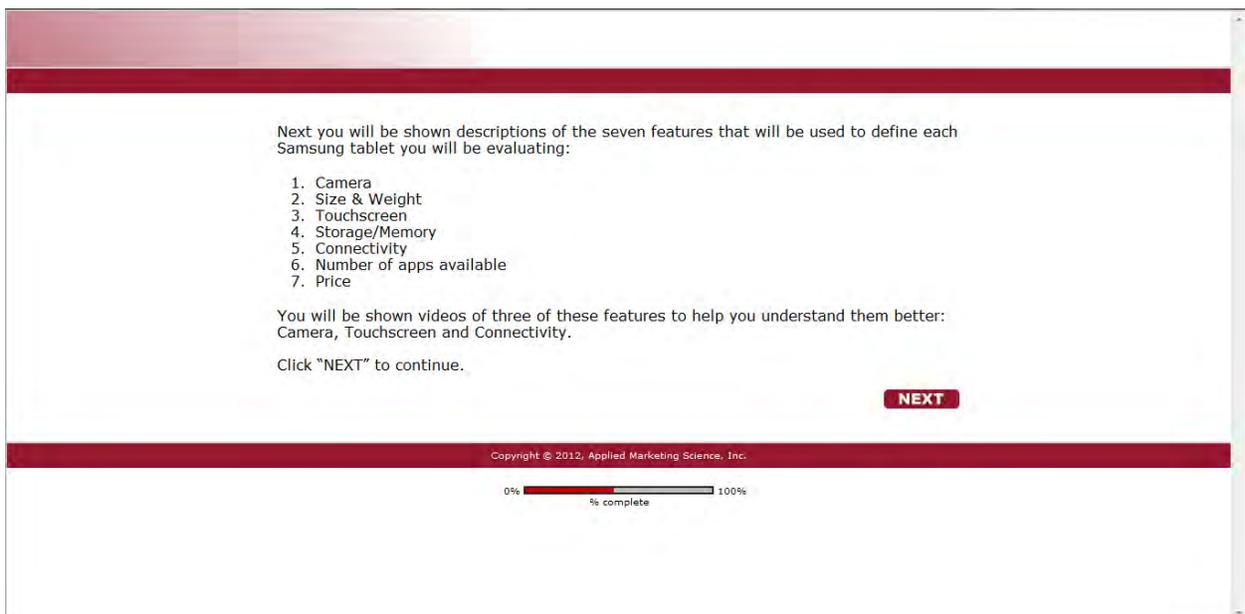
Click "NEXT" to continue.

The Next button will appear in just a moment

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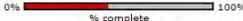
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QINTRO2

Next you will be shown descriptions of the seven features that will be used to define each Samsung tablet you will be evaluating:

1. Camera
2. Size & Weight
3. Touchscreen
4. Storage/Memory
5. Connectivity
6. Number of apps available
7. Price

You will be shown videos of three of these features to help you understand them better: Camera, Touchscreen and Connectivity.

Click "NEXT" to continue.

NEXT

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QATTR1

Each tablet you will be evaluating comes with a **camera** that may vary in the following features:

- **Locations of the camera**. A rear-facing camera that takes a picture of what you are looking at. The tablet might also have a front-facing camera that takes pictures of you and allows others to see you during a video chat.

- **Resolution / number of megapixels ("MP")**. Higher resolution (more MP) allows you to view or print larger photos without getting a "blocky" or "pixilated" look.

- **Video recording capabilities**. Standard or High Definition (HD) video. High Definition video is of high quality and is well suited for viewing on large screens.

- **Autofocus**. The camera automatically focuses the image when taking a photo.

- **Zoom**. Optical zoom allows you to get a closer view of what you are photographing.

Below are the **four different tablet camera options** that you will be asked to consider in this survey. Please read the descriptions below and click on each of the icons to view brief videos which describe these tablet options in more detail. These descriptions and videos will be available for you to review throughout the exercises.

Icon representing this tablet camera option (Click each to see a brief video)	Short Description	Detailed Description
12MP Rear 2MP Front High Res Zoom	**12 MP Rear Camera, HD Video Recording, Autofocus, 2MP Front Camera, Zoom**	• 12 MP Rear-facing camera • High Definition (HD) video recording • Autofocus • 2MP Front-facing camera • Zoom
8MP Rear 2MP Front Good Res	**8 MP Rear Camera, HD Video Recording, Autofocus, 2 MP Front Camera**	• 8 MP Rear-facing camera • High Definition (HD) video recording • Autofocus • 2MP Front-facing camera
8MP Rear Good Res	**8 MP Rear Camera, HD Video Recording, Autofocus**	• 8 MP Rear-facing camera • High Definition (HD) video recording • Autofocus
3MP Rear Low Res	**3 MP Rear Camera, Standard Video Recording, Autofocus**	• 3 MP Rear-facing camera • Standard definition video recording • Autofocus

Please click each of the four icons above to watch the brief videos before proceeding.

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QATTR2

Each tablet you will be evaluating varies in the following ways:

- **Size**. The diagonal length of the screen, in inches.
- **Weight**. In pounds (lbs.).

Below are the **four different tablet size and weight options** that you will be asked to consider in this survey. Please read the descriptions below. These descriptions will be available for you to review throughout the exercises.

Icon representing this tablet size and weight option	Short Description	Detailed Description
10" 2 lbs.	10 inches, 2 lbs.	Size / Weight — 2 lbs. / 4 Quarter Rolls
9" 1.75 lbs.	9 inches, 1.75 lbs.	Size / Weight — 1.75 lbs. / 3½ Quarter Rolls
8.5" 1.5 lbs.	8.5 inches, 1.5 lbs.	Size / Weight — 1.5 lbs. / 3 Quarter Rolls
7" 1 lbs.	7 inches, 1 lb.	Size / Weight — 1 lb. / 2 Quarter Rolls

NEXT

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QATTR3

Each tablet you will be evaluating comes with a **touchscreen** that may vary in the following features:

- **Multi-touch capability**. Whether the tablet is capable of reliably performing a full range of multi-touch operations -- operations where two, three or more fingers are used on the screen at the same time.

- **Automatically switch between single- and multi-touch**. Whether you can automatically switch back and forth between using only one finger on the screen ("single touch"), and using two or more fingers on the screen ("multi-touch").

- **Rubberband effect**. Whether or not the touchscreen contains a "rubberband" effect in which the screen "bounces" when you reach the end of a webpage or image.

- **Tap to re-center after zoom**. Whether, after zooming in and centering, the touchscreen permits you to tap the screen to center other content on the screen.

Below are the **four different tablet touchscreen options** that you will be asked to consider in this survey. Please read the descriptions below and <u>click on each of the icons to view brief videos</u> which describe these tablet options in more detail. These descriptions and videos will be available for you to review throughout the exercises.

Icon representing this tablet touchscreen option (Click each to see a brief video)	Short Description	Detailed Description
	Full Multi-Touch, Auto-Switch (1 to 2 Fingers), Rubberband, Tap to Re-center after Zoom	• Full Multi-Touch Capability • Automatically Switch between Touch with One Finger and Touch with Two Fingers • Rubberbands at Edge of Webpages or Images • Tap to Center Other Content After Zooming
	Full Multi-Touch, Rubberband, Tap to Re-center after Zoom	• Full Multi-Touch Capability • No Automatic Switch Between Single and Multi-Touch • Rubberbands at Edge of Webpages or Images • Tap to Center Other Content After Zooming
	Full Multi-Touch	• Full Multi-Touch Capability • No Automatic Switch Between Single and Multi-Touch • Does Not Rubberband • Does Not Allow Tap to Center Other Content After Zooming
	Very Limited Multi-Touch, Auto-Switch (1 to 2 Fingers), Rubberband, Tap to Re-center after Zoom	• Single-Touch with Very Limited Multi-Touch Capability • Automatically Switch between Touch with One Finger and Touch with Two Fingers • Rubberbands at Edge of Webpages or Images • Tap to Center Other Content After Zooming

Please click each of the four icons above to watch the brief videos before proceeding.

0% [====] 100%
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QATTR4

Each tablet you will be evaluating varies in the amount of **storage/memory**:

- **Storage/memory** refers to the amount of songs, photos, etc. which you are able to keep on your tablet. In the exercises that follow, the **storage/memory will be included in the tablet price shown.**

Below are the **four different tablet storage/memory options** that you will be asked to consider in this survey. Please read the descriptions below. These descriptions will be available for you to review throughout the exercises.

Icon representing this storage/memory option	Short Description	Detailed Description
64GB	64 GB (16,000 songs or 23,000 photos)	Able to hold 16,000 songs OR 23,000 photos
32GB	32 GB (8,000 songs or 12,000 photos)	Able to hold 8,000 songs OR 12,000 photos
16GB	16 GB (4,000 songs or 6,000 photos)	Able to hold 4,000 songs OR 6,000 photos
8GB	8 GB (2,000 songs or 3,000 photos)	Able to hold 2,000 songs OR 3,000 photos

NEXT

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QATTR5

Each tablet you will be evaluating comes with the following **connectivity** features:

- **WiFi**. Allows you to connect to a home, office or public wireless network. A WiFi network allows you to access the Internet without the use of wires or cables, and without using your cellular service provider's network.

Each tablet you will be evaluating may have some or all of the following additional **connectivity** features:

- **Bluetooth**. With Bluetooth, the tablet can connect to other compatible devices wirelessly over a short range. For example, you can play songs on this tablet and listen to them on a Bluetooth headset.
- **MicroUSB port**. Can connect to other devices via MicroUSB. For example, you are able to save content from your tablet, such as photos and data, onto a flash memory drive via a MicroUSB port.
- **HDMI output port**. Able to connect your tablet to a widescreen TV.

Below are the **four different tablet connectivity options** that you will be asked to consider in this survey. Please read the descriptions below and click on each of the icons to view brief videos which describe these tablet options in more detail. These descriptions and videos will be available for you to review throughout the exercises.

Icon representing this tablet connectivity option (Click each to see a brief video)	Short Description	Detailed Description
WiFi / Bluetooth / Micro USB / HDMI	**WiFi, Bluetooth, MicroUSB, HDMI**	• WiFi Network Access • Bluetooth to Listen on Headset • MicroUSB port available • HDMI output port available
WiFi / Bluetooth / Micro USB	**WiFi, Bluetooth, MicroUSB**	• WiFi Network Access • Bluetooth to Listen on Headset • MicroUSB port available
WiFi / Bluetooth	**WiFi, Bluetooth**	• WiFi Network Access • Bluetooth to Listen on Headset
WiFi	**WiFi**	• WiFi Network Access

Please click each of the four icons above to watch the brief videos before proceeding.

0% 100%
% complete

QATTR6

Each tablet you will be evaluating varies in the **number of apps available**:

- "Apps" refers to applications that are either available for free or that may be purchased. Examples may include apps for social networking, Internet radio, games, etc.
- Apps must be downloaded and enabled. They do not come with your tablet.

Below are the **four different tablet options for number of apps available** that you will be asked to consider in this survey. Please read the descriptions below. These descriptions will be available for you to review throughout the exercises.

Icon representing this option for number of apps available	Short Description	Detailed Description
600,000 Apps Avail.	600,000	600,000 apps are available for download
450,000 Apps Avail.	450,000	450,000 apps are available for download
300,000 Apps Avail.	300,000	300,000 apps are available for download
150,000 Apps Avail.	150,000	150,000 apps are available for download

NEXT

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QATTR7

Each tablet you will be evaluating varies in its **purchase price**:

Below are the **four different tablet price options** that you will be asked to consider in this survey. Please read the descriptions below. These descriptions will be available for you to review throughout the exercises.

Icon representing this option for price	Short Description	Detailed Description
$659	**$659**	$659 purchase price
$499	**$499**	$499 purchase price
$359	**$359**	$359 purchase price
$199	**$199**	$199 purchase price

NEXT

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QINTRO3

Below is a summary of all the tablet features and options that you may see in the upcoming exercises. Please review this table to gain an understanding of the varying options that will be presented to you. Both here and in the exercises, you may place your mouse over any icon below to review its definition and click for video or more information.

This table will be available for you to view throughout the following exercises.

Aside from these features below, you should assume that all other tablet features are the same for every tablet offering you see.

Summary of Features and Options:

With this camera:	12 MP Rear Camera, HD Video Recording, Autofocus, 2MP Front Camera, Zoom	8 MP Rear Camera, HD Video Recording, Autofocus, 2 MP Front Camera	8 MP Rear Camera, HD Video Recording, Autofocus	3 MP Rear Camera, Standard Video Recording, Autofocus
With this size and weight:	10 inches, 2 lbs.	9 inches, 1.75 lbs.	8.5 inches, 1.5 lbs.	7 inches, 1 lb.
With this touchscreen:	Full Multi-Touch, Auto-Switch (1 to 2 Fingers), Rubberband, Tap to Re-center after Zoom	Full Multi-Touch, Rubberband, Tap to Re-center after Zoom	Full Multi-Touch	Very Limited Multi-Touch, Auto-Switch (1 to 2 Fingers), Rubberband, Tap to Re-center after Zoom
With this storage/memory:	64 GB (16,000 songs or 23,000 photos)	32 GB (8,000 songs or 12,000 photos)	16 GB (4,000 songs or 6,000 photos)	8 GB (2,000 songs or 3,000 photos)
With this connectivity:	WiFi, Bluetooth, MicroUSB, HDMI	WiFi, Bluetooth, MicroUSB	WiFi, Bluetooth	WiFi
With this number of apps available:	600,000	450,000	300,000	150,000
With this price:	$659	$499	$359	$199

NEXT

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QCONJOINT (repeated 16 times)

CONCLUSION SCREEN

Click here to see Summary of Features & Options

Click **HERE** to complete the survey.

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FINDINGS FROM PRETESTS

Samsung Smartphone and Tablet Owners (n=20)	
Potential Issue	**Finding and Solution**
Smartphones and tablets owned by many teenagers are purchased by their parents. As a result, teenagers may get screened out when asked if they purchased their smartphones and tablets.	Even if teenagers do not purchase their smartphones and tablets, they could be involved in the purchase decision. Therefore, the screening question was focused on "involvement in purchase decision" rather than the actual purchase.
Some feature levels may not be clear to respondents and may require detailed descriptions.	Animations, voice-overs, and graphics were used to supplement feature level descriptions to ensure respondent comprehension. **Camera.** People commonly understand basic camera features (e.g., zoom, image quality / megapixels, etc.); however, they do not have a common language for describing the camera location (front vs. rear facing). Therefore, visual imagery and audio explanation was used to supplement the descriptions. **Touchscreen.** Consumers understand the basic concepts of the multi-touch touchscreen, including rubberbanding, reliability, etc. However, they need more detailed descriptions to fully comprehend the touchscreen capability. Visual and auditory information, descriptive language, and short labels were used to aid comprehension. **Size and Weight.** Consumers have difficulty reliably quantifying the size and weight of small devices unless they are provided relevant benchmarks. When they do think of size, they think in terms of screen diagonal size, which is the way manufacturers describe the devices. Diagonal screen size was used as the "size" dimension, as this captures the size dimension of the devices. This was visualized with a ruler diagonally across the screen. Weight (in pounds for tablets, ounces for smartphones) was shown in comparison to common household items (stacks of change). **Storage/Memory.** Some consumers think of storage in terms of number of songs, photos or other files they can store. Storage space was described in GB as well as in terms of songs and photos. It was also clarified that storage space is what comes with the device because some consumers think of added storage (e.g., SD card). **Connectivity.** Consumers are familiar with WiFi but some had difficulty fully understanding "tethering" without further explanation. Visual and auditory aids were used to describe this feature.

Samsung Smartphone and Tablet Owners (n=20)	
Potential Issue	**Finding and Solution**
	Price. Many consumers purchase smartphones with a 2-year contract. Therefore, price for smartphones was clearly described as the carrier-subsidized price with a 2-year contract.
Some respondents may not be able to effectively use multimedia content due to technical issues.	Internet connection speeds and multimedia setups vary across respondents. The following steps were taken to avoid any technical difficulty while taking the survey: • Multimedia content was preloaded, wherever possible, to minimize download time for animations. Download progress was also shown to the respondents so that they could get a sense of the waiting time. • Multimedia files were reduced in size to reduce download time without sacrificing clarity.
Respondents may not recall descriptions of the levels during the actual choice task.	Descriptive icons were developed for each feature level to ensure that respondents could recall the meaning of levels during the choice tasks. Respondents were also provided with the option of viewing multimedia content and descriptions of the attribute levels during the choice task.

EXHIBIT I

SURVEY INVITATION

Email Subject:
Get Rewarded for Your Time - Study about Consumers

Email Body:
Dear <%First%>,

Based on your e-Rewards(R) profile, you are invited to earn e-Rewards Currency for participating in a research survey. If you qualify and complete the survey:

    Full reward amount: $11.00 in e-Rewards Currency

Full survey length: approximately 25 minutes

*** IMPORTANT *** This survey must be taken on a DESKTOP or LAPTOP COMPUTER. If you are viewing this invitation on a smartphone, tablet or other electronic device, please try this invitation link on a desktop or laptop computer.

To complete the survey on your DESKTOP or LAPTOP COMPUTER and earn e-Rewards Currency, simply click the link below, or copy the URL into your browser:

http://<%website%>/pro.do?FT=<%uniqueid%>

We encourage you to respond quickly -- this e-Rewards invitation will be available only until a predetermined number of responses have been received. Please Note: you will only receive e-Rewards credit for taking the survey once.

Continue to check your inbox and your Member home page for future opportunities to earn e-Rewards Currency.

We value your time,

The e-Rewards Team

SCREENING STATISTICS FOR SMARTPHONES

Q. No.	Screening Criteria	Number of Respondents	Percent of Respondents
	Self-terminated	139	1.6%
QS1	Taking survey on inappropriate electronic device	591	6.7%
QS3/QS4	Failed to validate on age or gender	462	5.2%
QS4	Age younger than 18 or refused	44	0.5%
QS5	Works in consumer electronics industry, marketing/marketing research industry, or public relations or advertising agency	238	2.7%
QS6	Doesn't own a smartphone	770	8.7%
QS7	Doesn't own a Samsung smartphone	5,563	62.9%
QS7a	Doesn't own Samsung smartphone model at issue	320	3.6%
QS7b	Doesn't know which model was purchased most recently, or didn't purchase a model at issue most recently	18	0.2%
QS7c	Was not involved in decision to select the product	34	0.4%
QS7d	Doesn't know how much it cost to purchase the product	45	0.5%
QS8	Failed animation test	16	0.2%
	Completed Surveys	604	6.8%
	Total Survey Respondents	8,844	100%
	Total Survey Invitations	38,795	

Note:
The percentages are calculated out of the total survey respondents (8,844). The percentages represent the proportion of respondents that were screened out at particular questions in the survey. For example, 5,563 respondents, or 62.9% of the total respondents, were screened out when they were asked if they had owned a Samsung smartphone in the past two years (QS7).

SCREENING STATISTICS FOR TABLETS

Q. No.	Screening Criteria	Number of Respondents	Percent of Respondents
	Self-Terminated	126	0.6%
QS1	Taking survey on inappropriate electronic device	2,528	11.2%
QS3/QS4	Failed to validate on age or gender	1,048	4.6%
QS4	Age younger than 18 or refused	78	0.3%
QS5	Works in consumer electronics industry, marketing/marketing research industry, or public relations or advertising agency	542	2.4%
QS6	Doesn't own a tablet	3,682	16.3%
QS7	Doesn't own a Samsung tablet	13,734	60.8%
QS7a	Doesn't own Samsung tablet model at issue	114	0.5%
QS7b	Doesn't know which model was purchased most recently, or didn't purchase a model at issue most recently	4	0.0%
QS7c	Was not involved in decision to select the product	85	0.4%
QS7d	Doesn't know how much it cost to purchase the product	47	0.2%
QS8	Failed animation test	19	0.1%
	Completed Surveys	599	2.6%
	Total Survey Respondents	22,606	100%
	Total Survey Invitations	94,932	

Note:
The percentages are calculated out of the total survey respondents (22,606). The percentages represent the proportion of respondents that were screened out at particular questions in the survey. For example, 13,734 respondents, or 60.8% of the total respondents, were screened out when they were asked if they had owned a Samsung tablet in the past two years (QS7).

Table K1: Smartphone Touchscreen Partworths
Estimation Precision of Market Level Average

Touchscreen	Average Market Level Mean	Standard Error of Market Level Mean
Reliable Touch, Auto-Switch (1 to 2 Fingers), Rubberband, and Tap to Re-center after Zoom	64.5	2.1
Reliable Touch, Rubberband, and Tap to Re-center after Zoom	15.3	2.3
Reliable Touch	-67.7	2.8

Source: Smartphone survey data

Note: The statistics are based on 455 respondents.

Table K2: Smartphone Touchscreen Partworths
Estimation Precision of Market Level Heterogeneity

Touchscreen	Average Market Level Heterogeneity (Standard Deviation)	Standard Error of Market Level Heterogeneity
Reliable Touch, Auto-Switch (1 to 2 Fingers), Rubberband, and Tap to Re-center after Zoom	67.5	2.5
Reliable Touch, Rubberband, and Tap to Re-center after Zoom	49.3	2.7
Reliable Touch	77.8	3.2

Source: Smartphone survey data

Note: The statistics are based on 455 respondents.

Table K3: Tablet Touchscreen Partworths
Estimation Precision of Market Level Average

Touchscreen	Average Market Level Mean	Standard Error of Market Level Mean
Full Multi-Touch, Auto-Switch (1 to 2 Fingers), Rubberband, and Tap to Re-center after Zoom	47.5	2.4
Very Limited Multi-Touch, Auto-Switch (1 to 2 Fingers), Rubberband, and Tap to Re-center after Zoom	-7.0	2.7
Full Multi-Touch, Rubberband, and Tap to Re-center after Zoom	-0.2	2.7
Full Multi-Touch	-40.4	2.7

Source: Tablet survey data

Note: The statistics are based on 415 respondents.

Table K4: Tablet Touchscreen Partworths
Estimation Precision of Market Level Heterogeneity

Touchscreen	Average Market Level Heterogeneity (Standard Deviation)	Standard Error of Market Level Heterogeneity
Full Multi-Touch, Auto-Switch (1 to 2 Fingers), Rubberband, and Tap to Re-center after Zoom	67.3	2.8
Very Limited Multi-Touch, Auto-Switch (1 to 2 Fingers), Rubberband, and Tap to Re-center after Zoom	63.9	3.1
Full Multi-Touch, Rubberband, and Tap to Re-center after Zoom	51.7	3.1
Full Multi-Touch	63.1	3.2

Source: Tablet survey data

Note: The statistics are based on 415 respondents.