

1 QUINN EMANUEL URQUHART & SULLIVAN, LLP
Charles K. Verhoeven (Cal. Bar No. 170151)
2 charlesverhoeven@quinnemanuel.com
50 California Street, 22nd Floor
3 San Francisco, California 94111
Telephone: (415) 875-6600
4 Facsimile: (415) 875-6700

5 Kevin P.B. Johnson (Cal. Bar No. 177129)
kevinjohnson@quinnemanuel.com
6 Victoria F. Maroulis (Cal. Bar No. 202603)
victoriamaroulis@quinnemanuel.com
7 555 Twin Dolphin Drive 5th Floor
Redwood Shores, California 94065
8 Telephone: (650) 801-5000
Facsimile: (650) 801-5100

9 Michael T. Zeller (Cal. Bar No. 196417)
10 michaelzeller@quinnemanuel.com
865 S. Figueroa St., 10th Floor
11 Los Angeles, California 90017
Telephone: (213) 443-3000
12 Facsimile: (213) 443-3100

13 Attorneys for SAMSUNG ELECTRONICS
CO., LTD., SAMSUNG ELECTRONICS
14 AMERICA, INC. and SAMSUNG
TELECOMMUNICATIONS AMERICA, LLC
15

16 UNITED STATES DISTRICT COURT

17 NORTHERN DISTRICT OF CALIFORNIA, SAN JOSE DIVISION

18 APPLE INC., a California corporation,

19 Plaintiff,

20 vs.

21 SAMSUNG ELECTRONICS CO., LTD., a
Korean business entity; SAMSUNG
22 ELECTRONICS AMERICA, INC., a New
York corporation; SAMSUNG
23 TELECOMMUNICATIONS AMERICA,
LLC, a Delaware limited liability company,

24 Defendants.
25

CASE NO. 11-cv-01846-LHK

**DECLARATION OF TÜLİN ERDEM IN
SUPPORT OF SAMSUNG'S OPPOSITION
TO APPLE'S MOTION FOR A
PERMANENT INJUNCTION**

**PUBLIC REDACTED
VERSION**

26
27
28

1 I, TÜLIN ERDEM, declare as follows:

2 **I. QUALIFICATIONS AND STATEMENT OF ASSIGNMENT**

3 **A. Qualifications**

4 1. I am the Leonard N. Stern Professor of Business Administration and Professor of
5 Marketing at the Stern School of Business, New York University. I previously served as the Co-
6 Director of the Center for Digital Economy Research and the Director of the Stern Center for
7 Measurable Marketing.

8 2. Before joining the Stern School of Business in 2006, I was the E.T. Grether
9 Professor of Business Administration and Marketing at the Haas School of Business, University of
10 California at Berkeley. I joined the Haas School of Business in 1993 and served as the Associate
11 Dean for Academic Affairs and the Marketing Group Chair, the Ph.D. Director at the Haas School
12 of Business and the Chair of the campus-wide Committee on Research (COR) at the University of
13 California, Berkeley. I was also the Berkeley representative at the University of California
14 system-wide Committee on Research.

15 3. I hold a BA from Boğazici University and an MA in Economics and a Ph.D. in
16 Business Administration, with a major in marketing and minors in economics and statistics, from
17 the University of Alberta. My research interests include advertising, brand management and
18 equity, consumer behavior and choice, decision-making under uncertainty, econometric modeling,
19 marketing mix effectiveness, marketing research and pricing. I have published several papers in
20 top field journals and have received best paper awards, as well as major research grants, including
21 two major National Science Foundation (NSF) grants.

22 4. I served as the editor-in-chief of the *Journal of Marketing Research*, the preeminent
23 academic journal of the American Marketing Association, which publishes work on consumer
24 behavior, marketing science models, marketing strategy and marketing research methodologies. I
25 also served as an Area Editor at *Marketing Science* and Associate Editor at *Quantitative Marketing
26 and Economics* and the *Journal of Consumer Research*. I serve as an editorial board member of
27 many scholarly journals, including *Journal of Consumer Research*, *Journal of the Academy of*
28

1 *Marketing Science, Marketing Letters and International Journal of Research in Marketing*. I also
2 was the President of the INFORMS Marketing Society (ISMS).

3 5. As a professor, I have taught branding, brand and product management, marketing
4 management and international marketing in undergraduate, MBA and executive education
5 programs. I also have taught doctoral seminars on consumer choice modeling and empirical
6 modeling.

7 6. From 2008 to 2012, I was an Academic Partner at Prophet, a branding and
8 marketing consultancy firm.

9 7. A complete list of my publications, honors, awards and professional activities is
10 provided in my CV, attached in Exhibit 1.

11 **B. Assignment**

12 8. I have been retained by Quinn Emanuel Urquhart & Sullivan, LLP on behalf of
13 Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., and Samsung
14 Telecommunications America, LLC (collectively, "Samsung") in this matter to provide this
15 declaration and, if needed, testimony relating to Apple, Inc.'s ("Apple") request for a permanent
16 injunction that would exclude a number of Samsung smartphones and tablets from the U.S. market
17 due, in part, to the alleged infringement of three utility patents owned by Apple. The three utility
18 patents at issue in this proceeding are: (1) United States Patent No. 7,844,915 ("the '915 patent");
19 (2) United States Patent No. 7,864,163 ("the '163 patent"); and (3) United States Patent No.
20 7,469,381 ("the '381 patent").

21 9. My assignment is to explain, based on my expertise and the materials that I have
22 reviewed, consumer decision-making in connection with the purchase of complex devices
23 containing numerous, multi-level features/attributes (*e.g.*, a smartphone or tablet). I will explain,
24 based on my expertise and the materials I have reviewed, the kinds of features/attributes that drive
25 consumer demand in the smartphone and tablet markets. Specifically, I have been asked to focus
26 on whether the Apple utility patents at issue in its permanent injunction motion (the '915, the '163
27 and the '381 patents) drive consumer demand for Samsung smartphones and tablets when
28 compared to non-infringing alternatives to those patents.

1 10. Counsel has provided me with the descriptions/animations of Apple's three utility
2 patents used by Professor John R. Hauser in his conjoint analysis.¹ Counsel also has provided me
3 with a Galaxy SII Epic 4G Touch device so that I can examine the design-arounds on the '381 and
4 '163 patents. Based on this and the other materials provided, I was asked to determine what
5 conclusions I can reach regarding the likely effect (if any) on consumer decision-making of
6 products being offered with the functionalities included in Prof. Hauser's survey as opposed to the
7 design-around functionalities.

8 11. In connection with the assignment, I will assume that Prof. Hauser's representation
9 of the Apple patents in his survey is accurate (although I understand that Samsung disputes this). I
10 will rely on the information and descriptions contained in the declarations of Mr. Stephen Gray
11 and Dr. Andries van Dam as accurate reflections of Samsung's preferred non-infringing
12 alternatives.

13 12. In preparing this report, I have reviewed documents produced by both Samsung and
14 Apple, as well as the testimony of certain Apple witnesses. A list of materials that I relied upon in
15 reaching my conclusions is provided in Exhibit 2.

16 13. At any hearing on this motion, I expect to use exhibits in support of my testimony
17 consisting of documents produced during discovery of this case, or excerpts or enlargements of
18 them. I also expect to prepare and use demonstrative exhibits to help me to explain opinions that
19 are contained in this declaration. In the event I am provided with additional relevant materials, I
20 reserve the right to supplement this declaration with additional conclusions, bases, and/or
21 supporting material.

22 14. I am compensated at my standard rate of \$900 per hour, plus expenses, for my
23 work in this case. The opinions I express in no way are contingent on the compensation I will
24 receive.

25 **II. OVERVIEW OF OPINION**

26 15. In forming my opinions,

27 _____
28 ¹ Expert Report of John R. Hauser, March 22, 2012 ("Hauser Report").

1 a. I have applied well-accepted and published theories and conceptual
2 frameworks in marketing (such as conceptual frameworks of consumer
3 decision-making).

4 b. I have relied upon Apple and Samsung internal marketing research
5 documents, other marketing materials produced in this case, as well as my
6 own background research about the industry and industry reports, to apply
7 these frameworks to the facts at issue in the case.

8 16. Based on my expertise in consumer decision-making and choice, as well as the
9 materials I reviewed, my opinions can be outlined as follows:

10 i. Smartphones and tablets incorporate numerous features/attributes, each of
11 which consists of many sub-features and/or contributing elements.

12 ii. In making purchase decisions concerning smartphones and tablets,
13 consumers base their decisions on only a subset of all of the available
14 features/attributes (rather than the set of all features/attributes and sub-features).
15 The relevant set of determinative features/attributes and the manner in which they
16 are weighed vary across consumers. In considering the purchase of a smartphone
17 or tablet, consumers do not separately evaluate each sub-feature.

18 iii. Apple's utility patents at issue in its motion (the '915, the '163 and the '381
19 patents) relate to three functionalities that are properly considered a subset (or "sub-
20 feature") of a main feature/attribute of a smartphone or tablet.

21 iv. The functionalities embodied in these three patents are not independently or
22 separately considered in consumer purchase decisions and do not drive consumer
23 demand for Samsung smartphones and tablets.

24 iv. From the consumer's perspective, the functionalities provided by design-
25 arounds that are available to Samsung for the functionalities embodied by the
26 patents at issue perform the relevant functions in ways that are indiscernible or
27 minimally discernible to the end consumer compared to the use of the patents at
28 issue. Given that these three functionalities do not drive consumer demand,

1 different (and minor) variations of how these functionalities are offered (*i.e.*, as
2 implemented through available design-arounds) cannot be expected drive consumer
3 demand either.

4 **III. PATENTS-AT-ISSUE**

5 **A. '915 Patent**

6 17. Issued on November 30, 2010, the '915 patent is entitled "Application
7 Programming Interfaces for Scrolling Operations."² Based on my review of the Declaration of
8 Stephen Gray dated October 18, 2012, I understand that the '915 patent covers a specific
9 technique for distinguishing between scrolling and zooming operations on a touchscreen device,
10 and the technique requires a specific test to be performed in the Android software. For example,
11 scrolling moves the content on the touchscreen the same direction the user moves her finger, and
12 zooming makes the content smaller or larger depending on whether a user moves her fingers
13 closer together or farther apart. It is my understanding that Apple has accused the Web Browser
14 application in Samsung's smartphones/tablets of infringement.

15 18. It is my understanding that Samsung's software has been modified to remove the
16 specific test required by the '915 patent. The design-around software uses a different technique to
17 allow for scrolling and zooming operations. Although the software has been changed, I
18 understand from the Gray Declaration that the user experience remains essentially the same. That
19 is, a user will still be able to scroll with a single finger and zoom with two fingers using the
20 design-around software.

21 **B. '163 Patent**

22 19. Issued on January 4, 2011, the '163 patent is entitled, "Portable Electronic Device,
23 Method, and Graphical User Interface for Displaying Structured Electronic Documents."³

24 20. Based on my review of the Gray Declaration, I understand that the '163 patent
25 covers the following two steps. First, a user taps (or double taps) on a first box of content on a
26

27 ² U.S. Patent 7,844,915.

28 ³ U.S. Patent 7,864,163.

1 touchscreen (*e.g.*, an article on the New York Times webpage). In response, the first box of
2 content is enlarged and substantially centered on the touchscreen. Second, after the first box of
3 content has been enlarged and centered, the user taps (or double taps) on a second box of content
4 (*e.g.*, a second article that appears below the first article on the New York Times webpage). In
5 response, the second box of content is substantially centered on the touchscreen. It is my
6 understanding that Apple has accused the Web Browser application in Samsung's
7 smartphones/tablets of infringement.

8 21. I understand from the Gray Declaration that Samsung has implemented a design-
9 around to avoid the practice of the '163 patent. Under the design-around, when a user single taps
10 on the second box, nothing happens. If the user double taps on the second box, the entire webpage
11 zooms out. In both cases, the second box is not substantially centered on the touchscreen as a
12 result of the second tap/double tap. In preparing this declaration, I used a smartphone that
13 included this design-around functionality.

14 **C. '381 Patent**

15 22. Issued on December 23, 2008, the '381 patent is entitled, "List Scrolling and
16 Document Translation, Scaling, and Rotation on a Touch-Screen Display."⁴

17 23. Based on my review of the Declaration of Andries van Dam dated October 18,
18 2012, I understand that '381 patent claims a snap-back functionality where, if the user translates an
19 electronic document beyond the edge of that document, an area beyond that edge will be
20 displayed. When the user lifts her finger from the touch screen, the document will snap back, such
21 that no area beyond the edge of the document remains in view. It is my understanding that Apple
22 has accused the Gallery, Web Browser and Contacts applications in Samsung's
23 smartphones/tablets of infringement.

24 24. I understand from the van Dam Declaration that the "blue glow" feature designs
25 around the '381 patent. Under this design-around, when the user scrolls to the edge of a
26 document, the document comes to a stop and a blue glow animation appears near the edge of the

27 _____
28 ⁴ U.S. Patent 7,469,381.

1 document. An area beyond the edge of the document never appears. When the user lifts her
2 finger, the blue glow disappears. In preparing this declaration, I used a smartphone that included
3 this design-around functionality.

4 **IV. CONCEPTUAL FRAMEWORK**

5 **A. Product Features, Attributes and Benefits**

6 25. Products can be conceptualized as bundles of attributes (alternately called features)
7 that provide benefits or costs (such as price) to consumers.⁵ Benefits associated with those
8 attributes sought by consumers could be functional (*e.g.*, acceleration in a car),
9 emotional/experiential (*e.g.*, how driving a certain brand of car can make the driver feel excited
10 and exhilarated) and/or self-expressive/symbolic (*e.g.*, one consumer may express her frugality or
11 patriotism by owning a Saturn; another consumer may express her being hip and well-to-do by
12 owning a BMW).⁶

13 26. Some attributes (such as quality) are vertically differentiated rather than being
14 horizontally differentiated. Vertical attributes of products are ones that consumers would prefer
15 more of, *ceteris paribus* (that is, keeping everything else constant). For example, keeping
16 everything else including price constant, people would prefer higher quality over lower quality.
17 This is not true for horizontally differentiated product attributes. Some people may prefer butter
18 with popcorn, some may not; some may prefer one color over another.⁷

19 27. A “brand” is defined as “a name, term, sign, symbol, or design, or combination of
20 them, which is intended to identify the goods or services of one seller or group of sellers and to
21 differentiate them from those of competitors.”⁸ Brand franchise⁹ refers to consumer loyalty

22
23 ⁵ Lancaster, Kelvin (1966), “A New Approach to Consumer Theory,” *Journal of Political
Economy*, 74, 132-157.

24 ⁶ Aaker, David A. (1991). *Managing Brand Equity*. New York: The Free Press.

25 ⁷ Tirole, J. (1990). *The Theory of Industrial Organization*. Cambridge, MA: MIT Press.

26 ⁸ Kotler, Philip (1997). *Marketing Management*. New Jersey: Prentice Hall, p.443.

27 ⁹ Franchise also has a specific meaning in channels and distribution. It refers to the
28 arrangement between a brand name manufacturer and a wholesaler or retailer that gives the
wholesaler or retailer the exclusive right to sell the brand manufacturer's product in a specific
territory. This arrangement is usually established by contractual agreement over a period of time.

1 toward a brand. All the products sold under the same brand name, that is, products that share the
2 same “umbrella brand,”¹⁰ are part of a brand’s franchise since consumer loyalty is geared towards
3 all the products under the same brand name.

4 **B. Consumer Decision Processes & Purchase Behavior**

5 28. Consumer decision processes in regard to consumer purchases or choices are
6 typically conceptualized to have five steps: need arousal, information search, evaluation, purchase
7 and post-purchase.¹¹ Factors such as the degree of involvement, the type of product, and past
8 experience affect whether certain steps are skipped or how important each step is in the
9 decision-making process. To give an extreme example, in impulse purchases, a consumer may
10 jump from need arousal to purchase.

11 29. Consumers may use multiple information sources: individual marketing mix
12 elements of a firm (*e.g.*, advertising), brands, their own past experiences, word of mouth,
13 salespeople, third-party information providers, etc.

14 30. Consumers evaluate products to form perceptions about product attributes and
15 benefits, as well as to formulate their preferences. Consumers develop perceptions about the
16 levels of attributes, which are weighted according to their preferences (that is, importance weights
17 attached to perceived attribute levels). For example, a consumer may attach a higher importance
18 weight to the cavity-fighting attribute of a toothpaste than to the teeth whitening attribute.
19 Likewise, some consumers may attach a high importance weight to (*i.e.*, have a preference for) the
20 “organic” attribute of food products, while other consumers may not. The evaluation of the choice
21 alternative, or the utility consumers derive from that choice alternative, is the sum of these
22 perceptions weighted by their relative importance (importance weights).

23
24
25 ¹⁰ For example, Gucci (*e.g.*, hand bags, fashion eye glasses, watches), Dove (soap,
26 moisturizer, liquid dishwashing detergent), and Oral-B (toothpaste, toothbrush, mouthwash, dental
27 floss) are umbrella brands. *See* Erdem, Tülin (1998), “An Empirical Analysis of Umbrella
28 Branding,” *Journal of Marketing Research*, 35 (3), 339-351.

¹¹ Lilien, Gary L. Philip Kotler and K. Sridhar Moorthy (1992), *Marketing Models*, New
Jersey: Prentice Hall.

1 31. Consumers face multiple decisions in the purchase process. Besides the general
2 decisions of whether to buy, when to buy, and where to buy, there are also decisions such as how
3 much to buy (in frequently purchased product categories), which platform to buy (Windows vs.
4 Apple in PCs, or Apple IOS vs. Android in smartphones), and which features/attributes to consider
5 in forming overall evaluations about options. As a practical matter, some of these decisions can be
6 made simultaneously and others sequentially.

7 32. Not all consumers approach purchase decisions in the same manner, and different
8 consumers may follow different sequences in making purchase decisions. For example, a
9 Samsung marketing research document indicates that 55 percent of Samsung consumers and 35
10 percent of Apple consumers select the wireless service provider first and the mobile phone model
11 second, while 32 percent of Samsung consumers and 24 percent of Apple consumers select the
12 provider and phone simultaneously, and the remaining select the phone first and the provider
13 second.¹²

14 33. In practice, consumers facing complex decision tasks often use heuristics to save on
15 costs of thinking (information processing costs).¹³ For example, if there are many choices to
16 consider, they may first eliminate options using disjunctive rules (*e.g.*, to exclude from
17 consideration any tablet that costs more than \$300). Furthermore, if a product has multiple
18 features/attributes, consumers may focus only on a subset of features/attributes to evaluate and
19 compare options, and research has shown that consumers may consider a smaller subset of options
20 when the number of choices increases. For example, in one leading article, Payne (1976) asked
21 his subjects to choose among two, six or twelve hypothetical apartments.¹⁴ Information was
22 available about each apartment with respect to either four, eight or twelve features/attributes of the
23 apartments such as rent, cleanliness, landlord attitude, noise level, etc. As the number of

24 ¹² “Attitudes and Usage of Smartphone owners,” Hall & Partners (SAMNDCA00252685-
25 775, at 760).

26 ¹³ Shugan, Steven (1980), “The Cost of Thinking,” *The Journal of Consumer Research*, Vol.
27 7(2), 99-111.

28 ¹⁴ Payne, J.W. (1976), “Task Complexity and Contingent Processing in Decision-Making: An
Information Search and Protocol Analysis,” *Organizational Behavior and Human Performance*,
16, 366-387.

1 alternatives and/or the number of features/attributes increased, the subjects were progressively less
2 thorough in their inspections. Payne's results illustrate a commonly observed characteristic of
3 representation and evaluation of alternatives. They appear to include remarkably few of the
4 alternatives' aspects and features/attributes. One explanation of this phenomenon is that people
5 have limited cognitive capacity, and the use of heuristics and selective consideration of
6 features/attributes simplifies decision-making processes.¹⁵

7 **V. ANALYSIS OF SMARTPHONE AND TABLET PURCHASE DECISION-MAKING**

8 34. Both smartphones and tablets are used in different contexts such as text messaging,
9 e-mailing, viewing/editing documents, and listening to music. For example, the Yankee Group
10 Samsung Strategy Session document¹⁶ identified "key" usage contexts for smartphones to be:
11 performing banking transactions, transferring money to friends or family, receiving or redeeming
12 coupons, mobile internet shopping, downloading graphics/logos/wallpapers, downloading ring
13 backs, downloading ring tones, receiving text alerts, posting/uploading photos to web, accessing
14 online community or social networking, locating points of interest, obtaining driving directions
15 (Location-based/GPS services), accessing and browsing of the internet, watching live TV,
16 watching video clips, listening to downloaded or sideloaded music, listening to streaming music,
17 downloading music, playing games, downloading games, taking pictures, participating/voting in
18 contests or polls, using "push to talk" (walkie talkie), instant messaging, accessing e-mail, video
19 messaging, picture messaging/MMS and text messaging/SMS.

20 35. Similarly, there are many activities corresponding to different usage contexts in
21 tablets, including: [REDACTED]

22 [REDACTED]

23 [REDACTED]

24
25
26

27 ¹⁵ Yates, Frank, J. (1990). *Judgment and Decision-Making*. New Jersey: Prentice Hall.
28 ¹⁶ Yankee Group Samsung Strategy Session (SAMNDCA00250503-557, at 519).

1 [REDACTED]

2 [REDACTED].¹⁷

3 36. Given the wide variety of uses, smartphones and tablets incorporate a very large set
4 of features/attributes to deliver the benefits and functionalities consumers seek.

5 **A. Main Features/Attributes of Smartphones and Tablets**

6 37. Both Apple and Samsung internal documents identify many main
7 features/attributes that may play a role in consumer decision-making concerning smartphones and
8 tablets.

9 38. With regard to smartphones, a recent iPhone Buyer Survey identified the following
10 features/attributes that are considered by consumers when choosing an iPhone: [REDACTED]

11 [REDACTED]

12 [REDACTED]

13 [REDACTED].¹⁸ A Hall & Partners Study conducted for Samsung likewise
14 lists many features/attributes, each with multiple levels or sub-features such as voice features
15 (including speakerphone, voice dialing, memo), digital photography capabilities (including digital
16 camcorder, live TV, video call, video share...), MP3 player functionality (including direct
17 download, sideload), text messaging options (including multimedia, IM, Voice, T9 function), and
18 many others.¹⁹

19 39. Similarly, many features/attributes contribute to consumer purchase decisions for
20 tablets. According to Apple's iPad Tracking Study, the list of top features/attributes prompting
21 acquisition of tablets in the US include [REDACTED]

22 [REDACTED]

23 [REDACTED]

24

25 [REDACTED]

26 ¹⁹ "Attitudes and Usage of Smartphone owners," Hall & Partners (SAMNDCA00252685-
27 775, at 719-746).

28 ²⁰ "Q1 FY11 iPad Tracking Study" (APLNDC-Y0000023730-907, at 816).

1 [REDACTED] Another Apple document reported that [REDACTED]
2 [REDACTED]
3 [REDACTED]

4 **1. Defining and Identifying Main Features/Attributes**

5 40. The identification and definition of the full set of features/attributes for
6 smartphones and tablets are subject to some degree of ambiguity and subjectivity, because there is
7 no objective or universal set of features/attributes against which all smartphones and tablets are
8 evaluated. Given the ambiguities inherent in delineating relevant features/attributes, it can be
9 difficult to even provide a comprehensive list of features/attributes considered by consumers in
10 making purchase decisions.

11 41. Thus, even if one could compile a comprehensive list of features/attributes, it is
12 likely that the various features/attribute descriptions would be ambiguous and have different
13 meanings to different individuals or in different contexts. For example, the term “ease of use”
14 refers to the ease of use associated with keyboard and buttons in some documents,²³ and the ease
15 of use associated with Internet features in others.²⁴ As a result, even a comprehensive list will
16 likely have ambiguities.

17 42. A further complication in evaluating the importance of specific features/attributes
18 to consumer decision-making concerning smartphones and tablets is the fact that the complexity
19 and sheer number of features/attributes incorporated into smartphones and tablets mean it is not
20 uncommon for consumers to not even know whether they have a certain feature/attribute. For
21 example, the same smartphone survey conducted for Samsung referenced above notes that 30
22
23

24
25
26
27
28

25 [REDACTED]
26 ²³ “Attitudes and Usage of Smartphone owners,” Hall & Partners (SAMNDCA00252685-
775, at 750).

27 ²⁴ “2009 Wireless Consumer Smartphone Satisfaction Study Volume 1,” J.D. Power and
28 Associates (SAMNDCA00190144-243, at 195).

1 percent of consumers surveyed did not know if their smartphone had a T9 function (a type of
2 predictive texting).²⁵

3 **2. Main Features/Attributes Consist of Many Sub-Features and**
4 **Functionalities**

5 43. One of the main reasons that defining and characterizing the main
6 features/attributes of smartphones and tablets are difficult stems from the fact that each main
7 feature/attribute is really a combination of multiple sub-features and capabilities.

8 44. For example, Apple's iPhone Product Marketing Manager Steven Sinclair testified
9 at his deposition that "[t]here are a lot of features that contribute to ease of use, and if not done
10 correctly, those features can detract from ease of use;"²⁶ "I don't believe we've broken down
11 features in a way that tie directly to ease of use;"²⁷ and "All of the features contribute to ease of
12 use."²⁸

13 45. Due to these circumstances, companies selling complex devices such as
14 smartphones and tablets use general descriptions to refer to groups of features/attributes, and the
15 combination of sub-features therein, in most of their consumer research. Apple, for example, uses
16 the following as descriptions of groups of attributes in its surveys and research of consumer
17 preferences for iPhone attributes: easy to use, service and support, (Trust) Apple brand, quality of
18 apps, battery life, value for price paid, quantity of apps, attractive appearance and design, ability to
19 sync iPhone content, camera with LED flash, retina display, HD video recording and FaceTime
20 video calling.²⁹

21 46. Consequently, the consumer research available from Apple and Samsung has been
22 conducted in such a manner that it will rarely (if ever) be possible to link a specific patent of the
23 types at issue here to a feature/attribute contained in their consumer research, especially in a
24

25 ²⁵ "Attitudes and Usage of Smartphone owners," Hall & Partners (SAMNDCA00252685-
775, at 729).

26 ²⁶ Deposition of Steven Sinclair, April 4, 2012 ("Sinclair Deposition"), at p. 59.

27 ²⁷ Sinclair Deposition, at p. 47.

28 ²⁸ Sinclair Deposition, at p. 52.

29 ²⁹ "iPhone Buyer Survey Q3 FY11" (APLNDC-Y0000027506-599, at 523).

1 manner that would reasonably permit one to conclude that the patent was having an impact on
2 consumer demand.

3 **B. Consumers Do Not Consider All Main Features/Attributes in Making**
4 **Purchase Decisions**

5 47. Academic literature recognizes that in complex decision environments consumers'
6 focus on a limited set of attributes for comparative purposes when making purchase decisions.
7 For example, consumers cannot take into consideration all features/attributes when they are so
8 numerous, as they are in smartphones and tablets (as described above).

9 48. Given the many features/attributes of smartphones and tablets, main purchase
10 drivers are often centered on main benefit groups. For example, Apple internal consumer research
11 suggests that the reasons for purchasing an iPhone are focused on [REDACTED]

12 [REDACTED]
13 [REDACTED]
14 [REDACTED]

15 49. Apple's documents reflect Apple's recognition that consumers ignore the majority
16 of features/attributes. Indeed, Apple's surveys do not even test a majority of them. For example,
17 when comparing consumer preferences for different attributes of the iPhone 4, [REDACTED]

18 [REDACTED]
19 [REDACTED]
20 [REDACTED]
21 [REDACTED]

22 [REDACTED]. Nor should they be mentioned because, as discussed
23 above (and as implicitly recognized by Apple's market research), they will have no impact on
24 consumer decision-making.

25
26 [REDACTED]
27 [REDACTED]
28 [REDACTED]

1 50. Surveys also reflect that there are differences in importance weights (preferences
2 for) attached to features/attributes among different phone users. For example, one Samsung
3 survey notes that iPhone owners put more importance on the brand of the smartphone than owners
4 of other brands of smartphones.³³

5 **C. Consumers Do Not Base Purchase Decisions on Functionalities**
6 **Associated with the Patents at Issue**

7 51. The utility functions covered by the ‘915, the ‘163 and the ‘381 patents are very
8 specific and do not belong to the main set of features/attributes that I describe above as driving
9 consumer decision-making. They may be a part of a main feature/attribute such as “ease of use,”
10 along with numerous other sub-features, but there are simply too many sub-features in these
11 complex devices for consumers to evaluate each one separately and consider them as a factor in
12 their decision-making.

13 52. The Apple and Samsung internal materials I have reviewed do not attempt to
14 directly study the effect of such narrowly defined utility functions on consumer choice (and,
15 hence, demand). I have reviewed the conjoint study conducted by Apple’s expert witness Dr.
16 Hauser, which purports to be directed at the functions at issue here. I understand that Samsung
17 retained Dr. Yoram (“Jerry”) Wind to comment specifically on the conjoint study conducted by
18 Dr. Hauser. I have reviewed Dr. Wind’s declaration. I do not believe that Dr. Hauser’s reported
19 results accurately reflect consumer decision-making in the selection of smartphones or tablets.

20 53. I understand that Apple’s expert witness Terry Musika cited the “Browser Zooming
21 Methods UX Exploration Study”³⁴ as evidence of the importance of the features embodied by the
22 ‘915, ‘163 and ‘381 user interface patents (which are only a few of the many sub-features of
23 features or attributes like ease of use or touchscreen).³⁵ However, Mr. Musika’s reliance on this
24 evidence is misplaced for a number of reasons. First, this document is only even arguably relevant

25 ³³ “Attitudes and Usage of Smartphone owners,” Hall & Partners (SAMNDCA00252685-
775, at 760).

26 ³⁴ PX38 (“Browser Zooming Methods UX Exploration Study”, April 17, 2009,
SAMNDCA11104115-139 at 133).

27 ³⁵ Declaration of Terry Musika in Support of Apple’s Motion for Permanent Injunction,
28 August 29, 2012.

1 to the '163 patent—it does not relate to the other two patents. Second, these were very small
2 sample size studies (*e.g.*, 8 out of 9 respondents preferred the double-tap zooming). Third, the
3 Browser Zooming Methods UX Exploration Study explicitly noted that the data and
4 interpretations were qualitative and no statistical analysis was done.³⁶ “Impromptu” samples were
5 used, and these samples were drawn from messaging device usability studies that did not
6 correspond to mobile internet users.³⁷ Fourth, there were no working prototypes (“[p]aper
7 prototyping has limitation on expression of dynamic interaction of zooming concepts”³⁸). Finally,
8 it is my understanding, based on the Gray Declaration, that the '163 patent is *narrower* than
9 “double tap to zoom.”

10 54. Mr. Musika also cited the 2010 “Behold3 Usability Evaluation Results Report”
11 that found “iPhone: Generates fun for the user with a visual element that seems to bounce...
12 Direction for improvement: Provide a fun visual effect when dragging a web page.”³⁹ This report
13 identified 75 issues associated with different features/sub-features. This particular “visual fun
14 element” was one of the 75+ issues noted.⁴⁰

15 55. In his declaration, Mr. Musika refers to third-party reports that note a better
16 browsing experience on the iPhone compared to Samsung. Mr. Musika, for example, quotes a
17 Gravity Tank report saying that the iPhone is “sexy to use...[Consumers’] experience is almost
18 cinematic. Fun. Gestures like two fingered pinch and flick add a game-like quality to
19 interaction... Whimsical. Lists bounce, icons flutter...”⁴¹

20 56. “Having fun” while using a device could be one of the experiential attributes of a
21 product (although none of the consumer studies looked at a “fun” attribute in smartphones).

22
23 ³⁶ PX38 (“Browser Zooming Methods UX Exploration Study,” April 17, 2009
(SAMNDCA11104115-139, at 120).

24 ³⁷ PX38 (“Browser Zooming Methods UX Exploration Study,” April 17, 2009
(SAMNDCA11104115-139, at 120).

25 ³⁸ PX38 (“Browser Zooming Methods UX Exploration Study,” April 17, 2009
(SAMNDCA11104115-139, at 120).

26 ³⁹ PX46 (“Behold3 Usability Evaluation Results,” at SAMNDCA00508336-441, at 383).

27 ⁴⁰ PX46 (“Behold3 Usability Evaluation Results,” at SAMNDCA00508336-441).

28 ⁴¹ Musika Declaration, at Exhibit 51.

1 However, any such attribute, especially in categories that involve complex devices, is, for practical
2 purposes, composed of so many dimensions that it is impossible to talk about the individual sub-
3 dimensions of “Apple iPhone is fun” or “Apple is fun” or to meaningfully link any of the
4 functionalities covered by the patents at issue to this experience. Apple may have a “fun”
5 association with consumers due to many different influences, including advertising campaigns.

6 57. In light of the foregoing, none of the evidence cited by Mr. Musika provides a
7 meaningful link between the practice of the specific patents at issue and consumer purchase
8 decisions.

9 58. Based on all the materials I reviewed, I do not find any credible evidence that the
10 Apple utility patents at issue here drive consumer demand for Samsung smartphones and tablets.
11 Indeed, these patents do not even qualify to be a “feature/attribute” (such as “size/weight,”
12 “connectivity,” etc.) upon which consumers evaluate these products in purchase decisions. These
13 are only three of the innumerable sub-features that are associated with the broader attributes, such
14 as ease of use or ease of navigation using a touchscreen, that market research tests. I conclude that
15 consumers base their decisions on a subset of main features/attributes (rather than the set of all
16 features and sub-features) in smartphone and tablet markets, and that the utility patents at issue in
17 Apple’s permanent injunction motion (the ‘915, the ‘163 and the ‘381 patents) do not drive
18 consumer demand for Samsung smartphones or tablets.

19 **D. Samsung Design-Around for the Patented Inventions Would Effectively**
20 **Neutralize Any Demand Effects Relating to the Patents-at-Issue**

21 59. As explained above, smartphones and tablets have too many sub-features such as
22 the ones embodied by the ‘915, ‘163 and ‘381 user interface patents for the functionality covered
23 by these specific patents to be drivers of consumer demand. However, for purposes of discussion,
24 let us assume that consumers are aware of and distinctly form perceptions of these three sub-
25 features. If these sub-features did significantly contribute to, for example, overall ease of use
26 perceptions, we would expect to observe higher ratings of features/attributes such as ease of
27 navigating the phone using touchscreen associated with Samsung phones accused of infringing
28

1 versus those that are not accused of infringing. Third-party research⁴² shows that the ease of
2 touchscreen navigation, as well as overall ease of use, was rated by consumers slightly better for
3 Samsung Behold II, Moment and Instinct models, which were not accused of infringing, than for
4 Epic 4G, which was accused of infringing the '163, '381 and '915 patents.⁴³ This is inconsistent
5 with the idea that these patents drive demand for the accused products.

6 60. As described above, I have reviewed information regarding the design-arounds for
7 the products accused of infringing the '163, '381 and '915 patents. As part of my assignment, I
8 was provided a Samsung Galaxy II Epic 4G Touch (Sprint) that allowed me to “experience” any
9 potential differences between a Samsung smartphone with '163 and '381 design-around
10 functionalities versus the functionalities depicted in the videos used by Dr. Hauser. I also own an
11 iPhone 4S.

12 61. Based on my review of the Gray and van Dam Declarations, I understand that the
13 design-arounds are aimed to fulfill the functions performed by the utility patents at issue. In the
14 case of the '915 patent, I understand a user will still be able to scroll using a single finger and
15 zoom using two fingers using the design-around software. In the case of the '163 and '381
16 patents, the differences in user experience between the design-arounds (as described in paragraphs
17 21 and 24, respectively) and the patented attributes are minor. I am unaware of any consumer
18 studies aiming to measure consumer sentiments in regard to different ways of providing the same
19 type of these functionalities, that is, “snap-back” vs. “blue glow” and “double tap to zoom (and
20 center)” vs. “double tap to zoom out the whole page, without the second box being centered
21 substantially.” However, as described above these three functionalities do not drive consumer
22 demand; different variations of how these functionalities are offered cannot drive consumer
23 demand either.

24 _____
25 ⁴² “2011 Wireless Smartphone Satisfaction Study,” J.D. Powers and Associates
(SAMNDCA10246338-445 at 445).

26 ⁴³ The model that faired best among the eight listed in the study was the Vibrant. The
27 Vibrant was accused of infringing all three patents at issue, but I understand that it was found not
28 to infringe the '163 patent at trial. It is worth noting that this model rated better on many non-
touchscreen related features, too.

EXHIBIT 1
CURRICULUM VITAE

Tülin Erdem

Leonard N. Stern Professor of Business and Professor of Marketing

Leonard N. Stern School of Business
New York University
913 Tisch Hall, 40 West Fourth Street
New York, New York 10012-1126
Tel: 212 998 0404, Fax: 212 995 4006
E-mail: terdem@stern.nyu.edu

EDUCATION

1993 Ph.D. Business Administration (major: Marketing), University of Alberta
1989 ABD Economics, University of Alberta
1987 M.A. Economics, University of Alberta
1986 B.A. Economics (Honors), Boğaziçi University

ACADEMIC POSITIONS

2006-present Leonard N. Stern Professor of Business and Professor of Marketing
Stern School of Business, New York University
2003-2006 E.T. Grether Professor of Business Administration and Marketing
Haas School of Business, University of California at Berkeley
1998-2003 Associate Professor (with tenure)
Haas School of Business, University of California at Berkeley
1993-1998 Assistant Professor
Haas School of Business, University of California at Berkeley
1989-1993 Graduate Assistant
Faculty of Business, University of Alberta
1986-1989 Research/ Teaching Assistant
Department of Economics, University of Alberta

AWARDS, HONORS, GRANTS

2008 Finalist, John D.C. Little Best Paper Award
2007-8 Outstanding Reviewer Award, Journal of Marketing
2003 Finalist, William O'Dell Best Paper Award
1998-2002 National Science Foundation (NSF) grant, SBR-9812067, \$ 178,000.00
1998 AMA Doctoral Consortium Faculty Fellow (also in 2000, 2007-12)
1998 Finalist, Paul Green Best Paper Award
1996 Winner of John D.C. Little Best Paper Award
1996 Winner of Frank M. Bass Best Dissertation Paper Award
1995-7 National Science Foundation (NSF) grant SBR-9511280, \$ 100,000.00

1994-5 Junior Faculty Research Grant, University of California, Berkeley
1994 Regents' Junior Faculty Fellowship, University of California, Berkeley
1993 Co-winner of the AMA John A. Howard Doctoral Dissertation Award
1993 Recipient of the Gold Medal of the Governor General of Canada, awarded for academic excellence at the graduate level at Canadian Universities
1992 AMA Doctoral Consortium Fellow
1990-2 Domtar Ph.D. Fellowship, Faculty of Business, University of Alberta

PROFESSIONAL ACTIVITIES

Affiliations: American Economic Association, American Marketing Association, Association for Consumer Research, Econometric Society, Institute for Operations Research and the Management Sciences, Minnesota Supercomputer Institute

Advisory Council: Journal of Marketing Research (2012-present)

Editor-in-Chief: Journal of Marketing Research (2009-2012)

Area Editor: Marketing Science (2002-2009)

Associate Editor: Quantitative Marketing and Economics (2003-present)

Associate Editor: Journal of Consumer Research (2005-2009)

Editorial Board Member: Academy of Marketing Science (2006-present), International Journal of Research in Marketing (1996-present), Journal of Consumer Research (2011-present), Journal of Marketing (2003-present), Journal of Marketing Research (1998-2009), Marketing Letters (1996-present), Marketing Science (1997-2009)

Ad-hoc Reviewer: ACR, AMA John A. Howard Doctoral Dissertation, American Economic Review, Association for Consumer Research, California Management Review, International Economic Review, Journal of Applied Econometrics, Journal of Business and Economic Statistics, Journal of Econometrics, Journal of Agricultural and Resource Economics, Journal of Economic Psychology, Journal of Retailing and Consumer Services, OMEGA, Management Science, Marketing Science Institute, NSF, Psychometrica, Review of Economics and Statistics

President-Elect: ISMS, INFORMS Society of Marketing Science (2004, 2005)

President: ISMS, INFORMS Society of Marketing Science (2006, 2007)

Past-President: ISMS, INFORMS Society of Marketing Science (2008, 2009)

Conference Organizations:

Co-Cahir, 2013 Marketing Science Conference
Co-Chair, 2010 Marketing Dynamics Conference
Co-Chair of Program Committee, Cheung Kong GSB Marketing Research
Forum, Beijing China, June 2009
Co-Chair, 2003 and 2008 QME (Quantitative Marketing and Economics)
Conference
Chair, Marketing Track, 2003 INFORMS International Meetings
Co-Chair, 2001 Tri-Annual Invitational Choice Symposium
Co-Chair, 1997 Marketing Science Conference

Member of the Steering Committee, 2004, 2007, 2010, 2013 Tri-Annual
Invitational Choice Symposium
Member of Advisory Committee, 2011 Marketing Dynamics
Conference
Member of Program Committee, 2006 Marketing Dynamics
Conference
Member of Program Committee, 2004, 2005, 2009 QME (Quantitative
Marketing and Economics) Conference
Member of Program Committee, 2005 ACR (Association for Consumer
Research) Conference

RESEARCH

Interests

Advertising and Pricing, Brand Equity, Branding Strategies, Econometric Modeling, Individual Decision-Making and Choice, Marketing Science Models of Consumer Behavior and Marketing Mix Strategy, Product Management and Strategy.

Refereed Publications

Erdem, Tülin and Sue Ryung Chang (2012), "A Cross-Category and Cross-Country Analysis of Umbrella Branding for National and Store Brands," Special 40th Anniversary issue of *Journal of the Academy of Marketing Science* 40 (1), 86-101.

Shachar, Ron, Tülin Erdem, Gavan Fitzsimons, Keisha Wells (2011), "Brands: The Opiate of the Non-Religious Masses?" *Marketing Science* 30, 92-110.

Erdem, Tülin, Michael Katz and Baohong Sun (2010) "A Simple Test for Distinguishing between Internal Reference Price Theories," *Quantitative Marketing and Economics* 8, 303-332.

- Yang, Sha, Yi Zhao, Tülin Erdem, Ying Zhao (2010), "Modeling the Intra-Household Behavioral Interaction," *Journal of Marketing Research*, 47 (3), 470-484.
- Ching, Andrew, Tülin Erdem and Michael Keane (2009), "The Price Consideration Model of Brand Choice," *Journal of Applied Econometrics* 24, 3 (March-April), 393-420.
- Erdem, Tülin, Michael Keane and Baohong Sun (2008), "A Dynamic Model of Brand Choice When Price and Advertising Signal Product Quality," *Marketing Science*, 27 (6), 1111-1125. (Finalist for the Little Best Paper award).
- Erdem, Tülin, Michael Keane and Baohong Sun (2008), "Advertising and Consumer Price Sensitivity in Experience Goods Markets," *Quantitative Marketing and Economics*, 6 (2), 139-176.
- Bronnenberg, Bart, Jean Pierre Dubé, Carl Mela, Paulo Albuquerque, Tülin Erdem, Brett Gordon, Dominique Hanssens, Guenter Hitsch, Han Hong, Baohong Sun (2008), "Measuring Long Run Marketing Effects and their Implications for Long Run Marketing Decisions," *Marketing Letters*, 19(3), 367-82.
- Swait, Joffre and Tülin Erdem (2007) "Characterizing Brand Effects on Choice Set Formation and Preference Discrimination under Uncertainty," *Marketing Science* 26 (5), 679-697.
- Chintagunta, Pradeep, Tülin Erdem, Peter Rossi and Michel Wedel (2006), "Structural Modeling In Marketing: Review and Assessment," *Marketing Science*, 25 (6) 604-616.
- Erdem, Tülin, Joffre Swait and Ana Valenzuela (2006), "Brands as Signals: A Cross-Country Validation Study," *Journal of Marketing*, 70 (1), 34-49.
- Erdem, Tülin, Kannan Srinivasan, Wilfred Amaldoss, Patrick Bajari, Hai Che, Teck Ho, Wes Hutchinson, Michael Katz, Michael Keane, Bob Meyer and Peter Reiss (2005), "Theory Driven Choice Models," *Marketing Letters*, 16 (3), 225-237.
- Erdem, Tülin, Michael P. Keane, T. Sabri Öncü and Judi Strebel (2005), "Learning About Computers: An Analysis of Information Search and Technology Choice," *Quantitative Marketing and Economics* 3 (3), 207-246.
- Strebel, Judi, Tülin Erdem and Joffre Swait (2004), "Consumer Search in High Technology Markets: Exploring the Use of Traditional Information Channels," *Journal of Consumer Psychology* 14, 96-103.

- Erdem, Tülin and Joffre Swait (2004), "Brand Credibility and its Role in Brand Choice and Consideration," *Journal of Consumer Research* 31 (1), 191-199.
- Erdem, Tülin, Ying Zhao and Ana Valenzuela (2004), "Performance of Store Brands: A Cross-Country Analysis of Consumer Store Brand Preferences, Perceptions and Risk," *Journal of Marketing Research*, 41 (1), 86-100.
- Erdem, Tülin, Susumu Imai and Michael Keane (2003), "A Model of Consumer Brand and Quantity Choice Dynamics under Price Uncertainty," *Quantitative Marketing and Economics*, 1 (1), 5-64. (Lead article.)
- Erdem, Tülin and Baohong Sun (2002), "An Empirical Investigation of Spillover Effects of Marketing Mix Strategy in Umbrella Branding," *Journal of Marketing Research*, 39 (4), 408-420.
- Swait, Joffre and Tülin Erdem (2002), "The Effects of Temporal Consistency of Sales Promotions and Availability on Consumer Choice Behavior," *Journal of Marketing Research*, 34 (3), 304-320.
- Erdem, Tülin, Joffre Swait and Jordan Louviere (2002), "The Impact of Brand Credibility on Consumer Price Sensitivities across Multiple Product Categories," *International Journal of Research in Marketing*, 19 (1), 1-19 (lead article).
- Erdem, Tülin, Glenn Mayhew and Baohong Sun (2001), "Understanding the Reference Price Sensitive Shopper: A Within and Cross-Category Analysis," *Journal of Marketing Research*, 38 (4), 445-457.
- Erdem, Tülin and Baohong Sun (2001), "Testing for Choice Dynamics in Panel Data," *Journal of Business and Economic Statistics*, 19 (2), 142-152.
- Erdem, Tülin, Joffre Swait, Susan Broniarczyk, Dipankar Chakravarti, Jean-Noel Kapferer, Michael Keane, John Roberts, Jan-Benedict Steenkamp and Florian Zettelmeyer (1999), "Brand Equity, Consumer Learning and Choice," *Marketing Letters*, 10 (3) 301-318.
- Erdem, Tülin and Russell Winer (1999), "Econometric Modeling of Competition: A Multi-Category Choice-Based Mapping Approach," *Journal of Econometrics*, 89, 159-175.
- Erdem, Tülin, Michael P. Keane and Baohong Sun (1999), "Missing Price and Coupon Availability Data in Scanner Panels: Correcting for the Self-Selection Bias in the Choice Model Parameters," *Journal of Econometrics*, 89, 177-196.

- Erdem, Tülin (1998), "An Empirical Analysis of Umbrella Branding," *Journal of Marketing Research*, 35 (3), 339-351 (finalist for Paul Green best paper award).
- Erdem, Tülin and Joffre Swait (1998), "Brand Equity as a Signaling Phenomenon," *Journal of Consumer Psychology*, 7 (2), 131-157.
- Meyer, Bob, Tülin Erdem, Fred Feinberg, Itzhak Gilboa, Wes Hutchinson, Aradhna Krishna, Steve Lippman, Carl Mela, Amit Pazgal, Drazen Prelec and Joel Steckel (1997), "Dynamic Influences on Individual Choice Behavior," *Marketing Letters*, 8 (3), 349-360.
- Erdem, Tülin (1996), "A Dynamic Analysis of Market Structure based on Panel Data," *Marketing Science*, 15 (4), 359-378.
- Erdem, Tülin and Michael P. Keane (1996), "Decision-Making under Uncertainty: Capturing Dynamic Choice Processes in Turbulent Consumer Goods Markets," *Marketing Science*, 15 (1), 1-20 (lead article).
- Finn, Adam and Tülin Erdem (1995), "Economic Impact of Tourists Visiting a Mega-Multi Mall," *Tourism Management*, 16 (5), 367-373.
- Winer, Russell, Randolph E. Bucklin, John Deighton, Tülin Erdem, Peter Fader, J. Jeffrey Inman, Hotaka Katahira, Katherine N. Lemon and Andrew Mitchell (1994), "When Worlds Collide: The Implications of Panel Data-based Choice Models for Consumer Behavior," *Marketing Letters*, 5 (4), 383-394.
- Swait, Joffre, Tülin Erdem, Jordan J. Louviere and Chris Dubelaar (1993), "The Equalization Price: A Measure of Consumer-perceived Brand Equity," *International Journal of Research in Marketing*, 10 (special issue on Brand Equity), 23-45.

Other Publications

- Erdem, Tülin and Joffre Swait, "Branding and Brand Equity Models," in *The History of Marketing Science*, eds. Scott Neslin and Russell Winer. Now Publishers Inc., forthcoming.
- Erdem, Tülin (2010), "State of the Journal", *Editorial in Journal of Marketing Research*, 47 (6), 997.
- Erdem, Tülin (2010), "Spanning the Boundaries", *Editorial in Journal of Marketing Research*, 47 (1), 1-2.

Erdem, Tülin and Joffre Swait (2010), "Utility-Based Models of Brand Equity," in *Brands and Brand Management: Contemporary Research*, 207-229, eds. Rohini Ahluwalia, Mike Houston and Barbara Loken. Routledge, New York.

Rangaswamy, Arvind, James J. Cochran, Tülin Erdem, John R. Hauser, Robert J. Meyer (2008), "Editor-in-Chief Search Committee Report: The Digital Future is Now," *Marketing Science*, Editorial, 27,1, 1-3.

Erdem, Tülin and Russell Winer (2002), "A Brief History of Choice Modeling in Marketing," *Marketing Letters*, 13 (3), 157-162 (special issue based on the 5th Invitational Choice Symposium, guest editors T. Erdem and R. Winer).

Working Papers

Cutright, Keisha, Tülin Erdem, Gavan Fitzsimmons and Ron Shachar (2012), "Finding Brands and Losing your Religion?"

Ching, Andrew, Tülin Erdem and Michael Keane (2012), "Learning Models: An Assessment of Progress, Challenges and New Developments."

Che, Hai, Tülin Erdem and Sabri Öncü (2012), "Consumer Learning and Evolution of Consumer Brand Preferences."

Yang, Sha, Yi Zhao, Tülin Erdem and Daeyoung Koh (2012), "Modeling Consumer Choice with Dyadic Learning and Information Sharing: An Intra-household Analysis."

Swait, Joffre, Tülin Erdem and Tom Peters (2011), "Shocks to Brand Equity: An Information Economics Perspective on the US Auto Industry 2006-2010."

Shacham, Rachel, Peter Golder and Tülin Erdem (2011), "A Cigarette, a Six Pack or Porn? The Complementarity of Vices."

Ching, Andrew, Tülin Erdem and Michael Keane (2010), "How Much Do Consumers Know About the Quality of Products? Evidence from the Diaper Market."

Erdem, Tülin, Joffre Swait and Ana Valenzuela (2010) "Economic Development and Brand Credibility."

Guo, Liang and Tülin Erdem (2005) "Measuring Usage Flexibility in Wireless Tariff Choice."

Invited Presentations

Özyeğin University Public Lecture Series, Istanbul, Turkey, July 2012.
ISMS Doctoral Consortium and Marketing Science Conference, Boston, MA,
June 2012.
Research Seminar, School of Business, Rutgers, Newark, April 2012.
Distinguished Speaker Series, Isenberg School of Management, UMASS, Amherst,
March 2012.
Distinguished Speaker Series, School of Business, George Washington University,
March 2012.
Marketing Workshop, Foster School of Business, University of Washington,
November 2011.
Marketing Workshop, Marshall School of Business, USC, August 2011.
Keynote Speaker, Marketing Dynamics Conference, Jaipur, India, July 2011.
ISMS Doctoral Consortium and Marketing Science Conference, Houston, TX,
June 2011.
Research Seminar, Department of Economics, McGill University, Montreal, Canada,
May, 2011.
Marketing Workshop, Koç University, Istanbul, Turkey, March 2011.
Speaker Series, Carey School of Business, John Hopkins University, Baltimore, January
2011.
Marketing Workshop, School of Business, University of Alberta, Edmonton, AB,
November 2010.
Marketing Workshop, School of Management, Yale University, November 2010.
Marketing Speaker Series, Georgia Institute of Technology, Atlanta, GA, October 2010.
London Business School Marketing Research Camp, London, England, July 2010.
ISMS Doctoral Consortium and Marketing Science Conference, Cologne, Germany,
June 2010.
AMA Doctoral Consortium, Texas Christian University, TX, June 2010
Invitational Choice Symposium, hosted by University of Miami and University of
Technology Sydney, May 2010.
Marketing Workshop, Fordham University, NY, May 2010.
Marketing Workshop, HBS, Boston, MA, March 2010.
Marketing Workshop, Baruch College, NY, December 2009.
Keynote Speaker, Marketing Dynamics Conference, NY, NY, August 2009.
AMA Summer Educators' Conference, Chicago, IL, August 2009.
Marketing Workshop, Universidad Autónoma de Madrid, Madrid, Spain, July 2009.
Cheung Kong GSB Marketing Research Forum, Beijing, China, June 2009.
Marketing Science Conference, University of Michigan, Ann Arbor, MI, June 2009.
AMA Doctoral Consortium, Georgia State University, Atlanta, GA, June 2009.
ISMS Doctoral Consortium and Marketing Science Conference, University of Michigan,
Ann Arbor, MI, June 2009.
Marketing Workshop, University of Rochester, April 2009.
Marketing Research Camp, Pennsylvania State University, April 2009.

Advertising Research Foundation, Marketing Modelers' Seminar Series, NY, NY, March 2009.

AMA Winter Educators Conference, Tampa, Florida, February 2009.

Özyeğin University Public Lecture Series, Istanbul, Turkey, December 2008.

Bilkent Research Camp, Bilkent University, Ankara, Turkey, June 2008.

ISMS Doctoral Consortium, University British Columbia, June 2008.

AMA Doctoral Consortium, University of Missouri, June 2008.

Marketing Research Camp, Texas A&M University, April 2008.

Marketing Workshop, Duke University, December 2007.

Marketing Workshop, Columbia University, November 2007.

5th QME Conference, discussant, Chicago, IL, October 2007.

ISMS Doctoral Consortium, Singapore Management University, Singapore, June 2007.

Invitational Choice Symposium, hosted by Wharton School, May 2007/.

AMA Doctoral Consortium, Arizona State University, Tempe, AZ, May 2007.

Advertising Research Foundation, Marketing Modelers' Seminar Series, NY, NY, May 2007.

4-School Colloquium, Columbia, NYU, Wharton, Yale hosted by Wharton, April 2007.

Marketing Research Camp, University of Pittsburgh, February 2007.

Marketing Science Doctoral Consortium, University of Pittsburgh, June 2006.

Marketing Workshop, University of California, Riverside, June 2006.

Marketing Workshop, Yale University, New haven, December 2005.

Distinguished Lectureship Series, University of Michigan, October 2005.

Marketing Workshop, New York University, September 2005.

Graduate School of Management Seminar, Sabancı University, Istanbul, Turkey, July 2005.

Faculty of Business Administration Seminar, Bilkent University, Ankara, Turkey, July 2005.

Marketing Science Doctoral Consortium, Emory University, June 2005.

Hightower Distinguished Lectureship Series, Emory University, December 2004.

IO Workshop, Duke University, October 2004.

ACR Doctoral Consortium, Portland, Oregon, October 2004.

Marketing Science Doctoral Consortium, Erasmus University, Netherlands, June 2004.

Invitational Choice Symposium, hosted by University of Colorado, June 2004.

Marketing Workshop, Stanford University, February 2004.

Business School Seminar Series, San Francisco State University, October 2003.

Marketing Science Doctoral Consortium, University of Maryland, June 2003.

Marketing Workshop, Northwestern University, April 2003.

Marketing Research Camp, Washington University, March 2003.

Cowles Conference on Estimation of Dynamic Demand Models, Economics Department, Yale University, November 2002.

ACR Doctoral Consortium, Atlanta, Georgia, October 2002.

Marketing Workshop, Yale University, May 2002.

Marketing Workshop, University of Colorado, April 2002.

Marketing Workshop, Washington University, St. Louis, May 2001.

Marketing Workshop, MIT, April 2001.
Marketing Workshop, Harvard Business School, April 2001.
Marketing Workshop, University of Houston, March 2001.
AMA Summer Educators Conference Special Session on Brand Equity honoring David Aaker, Chicago, August 2000.
AMA Doctoral Consortium, University of Western Ontario, August 2000.
Marketing Workshop, University of Toronto, March 2000.
Marketing Workshop, University of California, Davis, December 1999.
Econometrics in Tel Aviv, Dept. of Economics, Tel Aviv University, Israel, June 1999.
Marketing Seminar Series, UC Irvine, March 1999.
Marketing Seminar Series, Cornell University, February 1999.
Marketing Research Camp, UCLA, January 1999.
Marketing Seminar Series, University of Pennsylvania, December 1998.
Marketing Seminar Series, New York University, December 1998.
AMA Doctoral Consortium, University of Georgia, August 1998.
Marketing Seminar Series, GSIA, Carnegie Mellon University, May 1998.
CEDA (Committee on Economic Development of Australia) Conference on Building Brands in the Knowledge Economy, Sydney and Melbourne, Australia, September 1998.
Invitational Symposium on Choice Modeling and Behavior, hosted by HEC, Jouy-en-Josas, France, July 1998.
Marketing Workshop, Koc University, Istanbul, Turkey, June 1998.
Applied Econometrics and Quantitative Methods Summer Workshop, Koc University, Istanbul, Turkey, August 1997.
Marketing Workshop, University of Texas at Dallas, May 1997.
Marketing Workshop, MIT, April 1997.
5th Annual Winter Research Retreat, University of Florida, March 1997.
Invitational Symposium on Choice Modeling and Behavior, hosted by Columbia University, June 1996.
Marketing Workshop, MIT, November 1995.
Marketing Workshop, Ohio State University, May 1995.
AMA Advanced Research Techniques Forum, Beaver Creek, Colorado, June 1994.
Marketing Workshop, Stanford University, November 1993.
Invitational Symposium on Choice Modeling and Behavior, hosted by Duke University, July 1993.

Conference Presentations

EIRASS Conference, Zagreb, Croatia, July 2008.
Marketing Science Conference, UBC, Vancouver, Canada, June 2008.
Marketing Science Conference, SMU, Singapore, June 2007.
EIRASS Conference, Budapest, Hungary, July 2006.
Marketing Science Conference, Pittsburgh, PA, June 2006.
Marketing Dynamics Conference, Sacramento, CA, September 2005
Marketing Science Conference, Atlanta, GA, June 2005.

EIRASS Conference, Prague, Czech Republic, July 2004.
Marketing Science Conference, Rotterdam, Netherlands, June 2004.
Quantitative Marketing and Economics Conference, Chicago, IL, October 2003.
EURO/INFORMS Joint International Meeting, Istanbul, Turkey, July 2003.
Marketing Science Conference, Washington D.C., June 2003.
AMA Advanced Research Techniques (ART) Forum, Monterey, CA, June 2003.
Bayes Conference, Columbus, Ohio, November 2002.
Marketing Science Conference, Edmonton, AB, Canada, June 2002.
Marketing Science Conference, Wiesbaden, Germany, July 2001.
EIRASS Conference, Sintra, Portugal, July 2000.
Marketing Science Conference, LA, CA, June 2000.
Marketing Science Conference, Syracuse, NY, May 1999.
Marketing Science Conference, Fontainebleau, France, July 1998.
INFORMS Fall Meetings, Dallas, Texas, October 1997.
Association for Consumer Research Conference, Denver, CO, October 1997.
Marketing Science Conference, Berkeley, CA, March 1997.
Marketing Science Conference, Gainesville, FL, March 1996.
INFORMS Spring Meetings, Los Angeles, CA, April 1995.
Marketing Science Conference, Tucson, AZ, March 1994.
Marketing Science Conference, St. Louis, MI, March 1993.
Marketing Science Conference, London, England, July 1992.
Marketing Science Conference, Delaware, March 1991.
MSI Conference on Managing Brand Equity, Austin, TX, November 1990.
Marketing Science Conference, Urbana, IL, March 1990.

TEACHING

Interests

Brand Management and Strategy, Marketing Management, Marketing Planning,
Marketing Strategy, Marketing Models

Experience

Teaching:

Undergraduate: Marketing Management, Branding, Brand Management and Strategy,
Marketing Strategy and Planning, Economic Development and International Trade
MBA: Marketing Concepts, Marketing Management, Branding/ Brand Management and
Strategy
Ph.D.: Empirical Modeling, Marketing Models, Choice Models, Individual Topics in
Marketing
Executive Education: Brand Equity, Brand Strategy, International Marketing,
Marketing Management and Strategy

Graduate and Post-Graduate Mentorship:

Post-Doctoral Mentorship:

Baohong Sun (1995-1997). Carnegie Mellon University.

Chair of Ph.D. thesis committee:

Sue Chang (2012) "Learning Dynamics in Product Relaunch," University of Georgia.

Rachel Shacham (2011) "Econometric Methods for Modeling the Difficult-to-Observe Phenomena," University of Minnesota.

Johanna Sussman Ilfeld (2004) "Investigating Social Learning Effects in the Consumer Choice of Health Care Plan Adoption." Go-Strolling Inc.

Judi Strebel (1997) "Modeling consumer choice processes for high-tech durable goods: An investigation of consumer learning under uncertainty." University of Arizona, SFSU.

Member of Ph.D. thesis committee:

Marketing

Wenbo Wang (2012), HKUST

Mantian Hu (2012), Chinese University of Hong Kong

Sherif Naser (2008), Washington University, St. Louis.

Yeşim Orhun (2006), University of Chicago, University of Michigan.

Liang Guo (2003), HKUST.

Ying Zhao (2001), HKUST.

Mark Stiving (1996), OSU.

Other

Mürüvvet Çelikbas (2002, Industrial Eng. and OR)

Timothy Beatty (2001, Agricultural Economics)

Craig Mohn (1999, Agricultural Economics)

Panupol Lerssrisuriya (1998, Industrial Eng. and OR)

Alan Cooke (1997, Psychology)

Member of several Oral Examination Committees

Effectiveness

At Haas: Member of Club 6.0 (median 6.0 and above on a 7-point scale in regard to teaching effectiveness) in the majority of the courses taught during 1993-2006.

ADMINISTRATIVE SERVICE

Stern School of Business

2012-present Member of Promotion and Tenure Committee
 2008-2009 Director, Stern Center for Measurable Marketing
 2007-2008 Co-Director, Center for Digital Economy Research (CeDER)
 2007-2009 Member of MBA Core Curriculum Committee
 2007-2009 Member of Senior Faculty Review Committee
 2007-2008 Member of *Ad Hoc* Search Committee in Environmental Studies
 2006-2007 Research Director, Center for Digital Economy Research (CeDER)
 2006-2007 Member of Global Task Force

Haas School of Business

2005-2006 Ph.D. Program Director, Haas School of Business
 2005-2006 Chair, Committee on Research (Academic Senate Committee)
 2005-2006 Member of DIVCO (UC Berkeley Divisional Council)
 2004-2005 Member of UCORP (University Committee on Research Policy).
 UC system-wide committee, UC Berkeley Representative
 2004-2005 Vice-Chair, Committee on Research (Academic Senate Committee)
 2004-2005 Chair, Policy and Planning (P²) Committee
 2003-2004 Member of Policy and Planning (P²) Committee
 2003-2004 Member of Academic Affairs Advisory Council
 2003-2004 Chair, Marketing Group
 2002-2003 Associate Dean for Academic Affairs and Faculty Chair
 2001-2004 Member of Haas School Hiring Committee
 2001-2004 Member of Committee on Research (Academic Senate Committee)
 2001-2002 Co-Associate Dean for Academic Affairs and Chair of Haas School Hiring
 Committee
 2001-2002 Acting Chair, Marketing Group
 1999-2001 Member of Policy and Planning (P²) Committee
 1999-2000 Member of Faculty and Ph.D. Computer Committee (FPCC)
 1999-2000 Member of Space Allocation Committee
 1996 Member of *ad hoc* Marketing Ph.D. Program Evaluation Committee

CONSULTING AND LITIGATION EXPERIENCE

- Academic Partner of Prophet (2008-2012). Prophet is a Strategic Brand and Marketing Consultancy.
- Viacom International Inc., MTV Networks and Harmonix Music Systems Inc. v. Activision Inc., Activision Publishing Inc. and RedOctane Inc., before JAMS Arbitration Panel, JAMS Reference No.: 1220038389 (2008-9). Retained by Kirkland & Ellis, LLP. Testified by deposition on brand equity, brand positioning, communication strategies and likelihood of consumer confusion.
- Co-authored White Paper on economic theory and empirical & econometric research on national cable ownership limits (2007). Filed in FCC cable ownership proceeding. Retained by Comcast.
- *VISA U.S.A. v. First Data Corporation, First Data Resources Inc., First Data Merchants Services Corporation*, Case No. C02-1786 (PJH) (2005-6), Northern District of California. Retained by Bingham McCutchen, LLP. Testified by deposition on brand promise, brand equity, branding strategy, trademark infringement, consumer behavior and decision-making in credit-card industry.
- *Barbara's Sales Inc. v. Intel Corporation, et. al.*, Case No. 02-L-788 (2004), Third Judicial Circuit, Madison County, Illinois. Retained by Korein Tillery. Testified by deposition on misleading positioning and advertising claims, branding strategy, consumer behavior and decision-making in high-tech product categories.

Highly Confidential – Attorneys’ Eyes Only

EXHIBIT 2

Bates Range	
APL7940000082356	– APL7940000082378
APL7940000102312	– APL7940000102332
APL-ITC796-0000508285	– APL-ITC796-0000508544
APLNDC00004618	– APLNDC00004736
APLNDC0000036172	– APLNDC0000036570
APLNDC0001324274	– APLNDC0001324278
APLNDC0001867475	– APLNDC0001867477
APLNDC0002007608	– APLNDC0002007704
APLNDC0002420480	– APLNDC0002420484
APLNDC0002831037	– APLNDC0002831088
APLNDC-X0000006548	– APLNDC-X0000006647
APLNDC-Y0000023361	– APLNDC-Y0000023907
APLNDC-Y0000024130	– APLNDC-Y0000024333
APLNDC-Y0000025024	– APLNDC-Y0000025147
APLNDC-Y0000025460	– APLNDC-Y0000025574
APLNDC-Y0000026687	– APLNDC-Y0000026807
APLNDC-Y0000027136	– APLNDC-Y0000027422
APLNDC-Y0000027506	– APLNDC-Y0000027599
APLNDC-Y0000028850	– APLNDC-Y0000028945
APLNDC-Y0000408237	
SAMNDCA00176053	– SAMNDCA00176171
SAMNDCA00190144	– SAMNDCA00190243
SAMNDCA00201771	
SAMNDCA00201773	
SAMNDCA00203016	
SAMNDCA00203033	
SAMNDCA00203880	– SAMNDCA00204010
SAMNDCA00231459	– SAMNDCA00231502
SAMNDCA00237743	– SAMNDCA00237772
SAMNDCA00237973	
SAMNDCA00249929	– SAMNDCA00250017
SAMNDCA00250503	– SAMNDCA00250557
SAMNDCA00250682	– SAMNDCA00250709
SAMNDCA00252685	– SAMNDCA00252775
SAMNDCA00258674	– SAMNDCA00258827
SAMNDCA00261725	– SAMNDCA00261839
SAMNDCA00268352	– SAMNDCA00268384
SAMNDCA00268763	– SAMNDCA00268831
SAMNDCA00276935	– SAMNDCA00277043
SAMNDCA00380801	– SAMNDCA00380896

Highly Confidential – Attorneys’ Eyes Only

Bates Range (cont.)

SAMNDCA00508313	–	SAMNDCA00508411
SAMNDCA10029586	–	SAMNDCA10029680
SAMNDCA10036081	–	SAMNDCA10036204
SAMNDCA10175266	–	SAMNDCA10175267
SAMNDCA10246338	–	SAMNDCA10246445
SAMNDCA10257309	–	SAMNDCA10257380
SAMNDCA10389445	–	SAMNDCA10389483
SAMNDCA10441301	–	SAMNDCA10441303
SAMNDCA10807316	–	SAMNDCA10807387
SAMNDCA10853181	–	SAMNDCA10853233
SAMNDCA11039743	–	SAMNDCA11039807
SAMNDCA11053867	–	SAMNDCA11053901
SAMNDCA11066185	–	SAMNDCA11066252
SAMNDCA11104115	–	SAMNDCA11104139
SAMNDCA11374409	–	SAMNDCA11374410
SAMNDCA11545927	–	SAMNDCA11546000
SAMNDCA20018416	–	SAMNDCA20018417
S-ITC-003353288	–	S-ITC-003353507
S-ITC-010632298	–	S-ITC-010632332
S-ITC-500047393	–	S-ITC-500047452
S-ITC-500049452		
S-ITC-500054991	–	S-ITC-500054998
S-ITC-500056374	–	S-ITC-500056457
S-ITC-500057690	–	S-ITC-500057758

Legal Documents:

Addendum to Apple Inc.'s Disclosure of Asserted Claims & Infringement Contentions, August 26, 2011.
Amended Verdict Form, August 24, 2012.
Apple Inc.'s Disclosure of Asserted Claims & Infringement Contentions, August 26, 2011, with Exhibits 4–6 and 10–15.
Apple's Motion for a Permanent Injunction and for Damages Enhancements, September 21, 2012.
Declaration of Andries van Dam, Ph.D., October 18, 2012.
Declaration of Marylee Robinson in Support of Apple's Motions for a Permanent Injunction, for Damages Enhancement, for Supplemental Damages, and for Prejudgment Interest, September 21, 2012, with Exhibits 9, 25–29, and 31.
Declaration of Stephen Gray, October 18, 2012.
Declaration of Terry Musika in Support of Apple's Motion for Permanent Injunction, August 29, 2012, with Exhibits 30, 31, 50, 51, 53–61, and 64–68.
Declaration of Yoram (Jerry) Wind, October 19, 2012, with Appendices and Exhibits.
Joint Pretrial Statement and Proposed Order, July 5, 2012.
Manual Filing Notification of Exhibit 32 to the Declaration of Marylee Robinson in Support of Apple's Motions for a Permanent Injunction, for Damages Enhancement, for Supplemental Damages, and for Prejudgment Interest, September 21, 2012.
Plaintiff's Exhibits 30, 38, 46, 57, 69, 145, 146, and 185.
Transcript of Proceedings, Apple v. Samsung C-11-01846-LHK, August 10, 2012, Vol. 6.

Depositions:

Deposition of Philip Schiller, February 17, 2012.
Deposition of Steven Sinclair, April 4, 2012.

Highly Confidential – Attorneys’ Eyes Only

Expert Reports:

Expert Report of John R. Hauser, March 22, 2012, with Exhibits A–K and supporting documents.
Expert Report of Russel S. Winer, March 22, 2012.

Articles and Books:

"iPhone vs. Android," NielsenWire, available at http://blog.nielsen.com/nielsenwire/online_mobile/iphone-vs-android (viewed October 9, 2012).
Aaker, David A. (1991). *Managing Brand Equity*. New York: The Free Press.
Erdem, Tülin (1998), "An Empirical Analysis of Umbrella Branding," *Journal of Marketing Research*, 35 (3), 339-351.
Jessica E. Vascellaro, "Apple Wins Big in Patent Case," *The Wall Street Journal* (August 25, 2012).
Kotler, Philip (1997). *Marketing Management*. New Jersey: Prentice Hall.
Lancaster, Kelvin (1966), "A New Approach to Consumer Theory," *Journal of Political Economy*, 74, 132-157.
Lilien, Gary L. Philip Kotler and K. Sridhar Moorthy (1992), *Marketing Models*, New Jersey: Prentice Hall.
Payne, J.W. (1976), "Task Complexity and Contingent Processing in Decision-Making: An Information Search and Protocol Analysis," *Organizational Behavior and Human Performance*, 16, 366-387.
Shugan, Steven (1980), "The Cost of Thinking," *The Journal of Consumer Research*, Vol. 7(2), 99-111.
Tirole, J. (1990). *The Theory of Industrial Organization*. Cambridge, MA: MIT Press.
Yates, Frank, J. (1990). *Judgment and Decision-Making*. New Jersey: Prentice Hall.

Other:

U.S. Patent 7,469,381.
U.S. Patent 7,844,915.
U.S. Patent 7,864,163.