AN EVALUATION OF CONSUMER BUYING CRITERIA AND ITS IMPACT ON THE PURCHASE OF COMMODITIZED LAPTOPS

by

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Abstract

Laptop vendors are constantly looking for new ways to differentiate themselves. The commodization of this market precipitates a deeper view into what drives a consumer purchase of one brand over another. Do certain demographic profiles exist that are more likely to purchase a particular brand? Do certain product or brand attributes serve as the final decision criteria in the purchase process? What is compelling between laptop brands to drive selection?

Results support the premise that relationships exist and that consumers are more likely to purchase one brand over another based on age, education level, gender or technical competence. The likely selection of a laptop brand can also be associated with a particular product or brand attribute.

A better understanding of the laptop consumer enhances a vendor's ability to properly segment and market the message to the right audience, increasing the likelihood of purchase. Implications for laptop vendors and recommendations for them as well as future research are presented.

Dedication

To Stephen, whose commitment and dedication to this journey was equal if not sometimes greater than my own. To Olivia and Elle, may this serve in later years as evidence that anything can be achieved if you work hard.

Acknowledgments

To committee members, Dr. Dick Murphy and Dr. Elaine Guerazzi, thank you for your careful guidance and direction from the first proposal to the final submission. Your contributions were appreciated and made this final product what it is.

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CHAPTER 1. INTRODUCTION

Introduction to the Problem

The era of highly differentiated laptops in the consumer industry is over. No longer does one vendor dominate the market, enjoying their product being seen as exceedingly superior to its competition. What once served to distinguish a laptop provider has now been equalized across the field; every vendor offers the same microprocessors, the same RAM capacity, the same graphics cards, the same networking and wireless functionality. The commoditization of the market has diminished a vendor's ability to strongly differentiate themselves among consumers. With all things virtually equal within the box, what is it that makes a consumer choose one brand over another? Is it still within the box or outside of it that drives the decision? While the evaluative buying criteria consumers use when purchasing these products may be known, what was not known was the impact each of them have in contributing to that decision, and whether combinations of these criteria aligned with a certain demographic profile of a customer segment.

Background of the Study

The introduction of computer technology to the consumer market brought with it an evolution of change within the household that is comparable to the likes of radios and televisions in the 20th century. It served as a catalyst in jumpstarting not only how consumers obtain information but also the rapidity, quality and density with which they retrieve it. Computers serve as a source of entertainment in addition to its role as resource and productivity tool.

Over the years as the benefits of household computers exponentially increased while simultaneously being realized, the technology had equally improved at the same rate. What was once a massive box and monitor taking up an entire desktop was now a sleek, stylish addition to one's décor, the size of a coffee table book. What had piggybacked on this technology boom was the paradigm shift in the computer industry from highly proprietary, differentiated and premium-priced hardware to industry-standard, commoditized components that were priced accordingly. Despite the loss of high margin goods, manufacturers continued to push the boundaries of the technology to deliver one more choice point to the consumer – mobile computing. The explosion of laptop/mobile notebooks on to the market further improved user productivity and introduced a sense of freedom otherwise unknown. Similar to any market where a hot product enters, manufacturers were quick to replicate and develop their own under their brand.

The Personal Computer was viewed by consumers in the United States as a valuable tool to enhance productivity and improve the entertainment experience. While the form factor of choice in households today remains the desktop, maintaining more than 50% of the ownership, laptop/mobile notebooks are improving their position, up to 17%. Price difference between the two remains the primary reason for the gap, although manufacturers are introducing lower priced laptops that directly challenge the price of many desktops. The increase of wireless capabilities and the corresponding benefits were beginning to tip the scales toward the mobile computing direction (Daoud & Shim, 2005).

Fast forward from the introduction of the computer to the laptop today, where the market has became saturated with well-known brands, each offering nearly indistinguishable products to a population of consumers that are now more educated, have easier access to more information to compare and contrast competitive products and ultimately make a much more fact-based,

informed decision. While consumers enjoy the benefit of being more educated with public access to free information regarding laptops, manufacturers continue to conduct studies on consumer behaviors behind closed doors. Little to no market segmentation exist publicly that states who the laptop buyer really is. No public studies had been located at this point of this dissertation development, as market research studies are traditionally private.

What has been studied is the decision making process itself, grounded in theory and tested in practice, specifically when consumers seek ought the information that is available to them. Within the normative model of decision making, the consumer collected information about alternatives, evaluated them based on their relevance and made a decision that will maximize the value of that decision (Lau, 1995; Abelson & Levi, 1985). How the consumer collected his information affected the choice strategy he selected. The more complex the decision task, the more likely strategies will be employed to simplify that task (Johnson & Payne, 1985; Thorngate, 1980).

Statement of the Problem

As industry standard components within a laptop became more prevalent, the ability to differentiate became more difficult. The commoditization of this market created a challenge for manufacturers to identify the internal motivation among the consumer base that influenced their purchase of one brand over another. This commoditization had proven it difficult for any one vendor to considerably differentiate themselves in the consumer market. Laptop vendors needed to know if relationship existed between the profile of these consumers, the most important buying criteria they used when considering the purchase and the final brand that was selected at point of purchase.

Purpose of the Study

The purpose of this study was to determine if a relationship existed between the brand of laptop consumers selected and a variety of demographic and evaluative buying criteria considered in the process. The demographic variables examined included age, education level and the degree of technical competence. The result provided laptop vendors a unique perspective on the consideration and selection phase. The results further enabled useful segmentation of the population to better target messaging and promotions that will resonate with the appropriate audience. There is tremendous business value in vendors gaining insight into the consumers' minds around this topic as it can drive better marketing activity to influence awareness, consideration, preference and ultimately purchasing campaigns. Marketing the wrong product features to the wrong audience results in a low marketing Return on Investment (ROI). Customer insight is powerful and can properly navigate the vendor toward the right direction in developing message and value propositions that hit the mark, resulting in higher sales and higher returns on their investment.

Research Questions

Humans are inquisitive. They seek to answer the many questions that are posed as a result of their observations and interpretations. Research acts a framework to help guide an individual through the process of producing high quality, reliable answers to those questions, enabling better decision making. All research begins with the simplest form of a question. While the process for development and refinement is built into the design of the research and its methodology, the spark of inquiry that fuels it is primal and basic

This study strove to answer a series of nine research questions within two categories through the development of relevant hypotheses and use of statistical techniques to either prove or disprove them.

Demographics

1. Is there a relationship between the demographics of a laptop user and the brand purchased?

2. Does a relationship exist between the demographics of a laptop user and the most important evaluative buying criteria identified by the consumer in contributing to the purchase decision?

3. Is there a relationship between the relative importance of various information sources and the demographics of a laptop user?

4. Does a relationship exist between the between the demographics of a laptop user and the tangible, product-like attributes considered in the purchase decision?

5. Does a relationship exist between the between the demographics of a laptop user and the soft, intangible attributes considered in the purchase decision?

Brand

1. Is there a relationship between the laptop brand purchased and the relative importance of various information sources used by the consumer?

2. Does a relationship exist between the tangible, product-like attributes considered in the purchase decision and the laptop brand selected?

3. Does a relationship exist between the soft, intangible attributes considered in the purchase decision and the laptop brand selected?

4. Is there a relationship between the laptop brand purchased and the most important evaluative buying criteria identified by the consumer in contributing to the purchase decision?

Significance of the Study

Identifying if a consumer tendency existed toward the use of tangible product attributes, (i.e. "speeds and feeds") versus less tangible criteria (i.e. brand awareness, or "I like Dell's commercials") helped determine the appropriate course of action to influence them throughout their purchase journey. For instance, a 75 year-old female with a High School Diploma and no technical background would consider the purchase of one laptop over another for very different reasons than a 30 year-old Computer Technician who is heavily into gaming. Each individual develops his or her own collective set of attributes that is evaluated, assessed and weighed to enable a purchase decision. By better understanding the relationships between the criteria, including their relative importance in relation to demographic variables, laptop vendors can more accurately target the appropriate value proposition that will resonate with the intended audience. This type of focused segmentation and targeted messaging can result in a higher Return on Marketing Investment (ROMI). The better equipped vendors are to send the right message to the right audience, the better the likelihood it will result in increased sales. The number one function of Marketing is to grow the top line by filling the sales funnel with prospective buyers.

Definition of Terms

The definitions below were sourced from the online technical resource, whatis.com.

Application program interface (API).

> An application program interface (API - and sometimes spelled application programming interface) is the specific method prescribed by a computer operating system or by an application program by which a programmer writing an application program can make requests of the operating system or another application.
>
> An API can be contrasted with a graphical user interface or a command interface (both of which are direct user interfaces) as interfaces to an operating system or a program."

(Retrieved October 14, 2006 from http://searchexchange.techtarget.com/sDefinition/0,,sid43_gci213778,00.html)

Commoditization.

Commoditization is the existence of like attributes to a product or service. When a product becomes indistinguishable from others like it and consumers buy on price alone, it becomes a commodity. (Retrieved October 14, 2006 from http://www.investopedia.com/terms/c/commoditization.asp)

Digital-to-analog conversion.

Digital-to-analog conversion is a process in which signals having a few (usually two) defined levels or states (digital) are converted into signals having a theoretically infinite number of states (analog). A common example is the processing, by a modem, of computer data into audio-frequency (AF) tones that can be transmitted over a twisted pair telephone line. The circuit that performs this function is *a* digital-to-analog converter (DAC). (Retrieved October 14, 2006 from http://searchsmb.techtarget.com/sDefinition/0,,sid44_gci213875,00.html)

Graphics card.

A video adapter (alternate terms include graphics card, display adapter, video card, video board and almost any combination of the words in these terms) is an integrated circuit card in a computer or, in some cases, a monitor that provides digital-to-analog conversion, video RAM, and a video controller so that data can be sent to a computer's display. Today, almost all displays and video adapters adhere to a common denominator de facto standard, Video Graphics Array (VGA). VGA describes how data - essentially red, green, blue data streams - is passed between the computer and the display. It also describes the frame refresh rates in hertz. It also specifies the number and width of horizontal lines, which essentially amounts to specifying the resolution of the pixels that are created. VGA supports four different resolution settings and two related image refresh rates. (Retrieved October 14, 2006 from http://searchsmb.techtarget.com/sDefinition/0,290660,sid44_gci213290,00.html)

Hard disk.

A hard disk is part of a unit, often called a "disk drive," "hard drive," or "hard disk drive," that stores and provides relatively quick access to large amounts of data on an electromagnetically charged surface or set of surfaces. Today's computers typically come with a hard disk that contains several billion bytes (gigabytes) of storage.

A hard disk is really a set of stacked "disks," each of which, like phonograph records, has data recorded electromagnetically in concentric circles or "tracks" on the disk. A "head" (something like a phonograph arm but in a relatively fixed position) records (writes) or reads the information on the tracks. Two heads, one on each side of a disk, read or write

the data as the disk spins. Each read or write operation requires that data be located, which is an operation called a "seek." (Data already in a disk cache, however, will be located more quickly.)

A hard disk/drive unit comes with a set rotation speed varying from 4500 to 7200 rpm. Disk access time is measured in milliseconds. Although the physical location can be identified with cylinder, track, and sector locations, these are actually mapped to a logical block address (LBA) that works with the larger address range on today's hard disks." (Retrieved October 14, 2006 from http://searchstorage.techtarget.com/sDefinition/0,,sid5_gci212227,00.html)

Laptop/mobile computer.

A laptop computer, usually called a notebook computer by manufacturers, is a battery- or AC-powered personal computer generally smaller than a briefcase that can easily be transported and conveniently used in temporary spaces such as on airplanes, in libraries, temporary offices, and at meetings. A laptop typically weighs less than 5 pounds and is 3 inches or less in thickness. (Retrieved October 14, 2006 from http://searchmobilecomputing.techtarget.com/sDefinition/0,,sid40_gci213610,00.html)

Operating system.

An operating system (sometimes abbreviated as "OS") is the program that, after being initially loaded into the computer by a boot program, manages all the other programs in a computer. The other programs are called applications or application programs. The application programs make use of the operating system by making requests for services through a defined application program interface (API). In addition, users can interact directly with the operating system through a user interface such as a command language or a graphical user interface (GUI). Retrieved October 14, 2006 from (http://searchsmb.techtarget.com/sDefinition/0,,sid44_gci212714,00.html)

Processor.

A processor is the logic circuitry that responds to and processes the basic instructions that drive a computer.

The term processor has generally replaced the term central processing unit (CPU). The processor in a personal computer or embedded in small devices is often called a microprocessor. (Retrieved October 14, 2006 from http://searchsmb.techtarget.com/sDefinition/0,,sid44_gci212833,00.html)

RAM.

RAM (random access memory) is the place in a computer where the operating system, application programs, and data in current use are kept so that they can be quickly reached by the computer's processor. RAM is much faster to read from and write to than the other kinds of storage in a computer, the hard disk, floppy disk, and CD-ROM. However, the

> data in RAM stays there only as long as your computer is running. When you turn the computer off, RAM loses its data. When you turn your computer on again, your operating system and other files are once again loaded into RAM, usually from your hard disk.
>
> RAM can be compared to a person's short-term memory and the hard disk to the long-term memory. The short-term memory focuses on work at hand, but can only keep so many facts in view at one time. If short-term memory fills up, your brain sometimes is able to refresh it from facts stored in long-term memory. A computer also works this way. If RAM fills up, the processor needs to continually go to the hard disk to overlay old data in RAM with new, slowing down the computer's operation. Unlike the hard disk which can become completely full of data so that it won't accept any more, RAM never runs out of memory. It keeps operating, but much more slowly". Retrieved October 14, 2006 from (http://searchmobilecomputing.techtarget.com/sDefinition/0,290660,sid40_gci214255,00.html)

Conceptual Framework

What is it that compels a consumer to purchase the Dell laptop instead of the HP when a consumer is comparing them side by side? Is it just the price? Has the consumer previously had a bad experience with HP? Are the Dell commercials intriguing enough to make consumers think they look like a fun company so their products must be the best? Does someone from a younger generation with a higher degree of technical competency tell an older family member that Dell is the only thing to buy? What drives the decision, and is there any relationship between those drivers and the consumer profile making them?

Howard-Sheth (1969) and Engel (1983) developed models that can explain and predict human behavior and how it related to decision making, focusing on the process, learning and perceptions and attitudes. But did a key set of attributes exist that could influence that decision one way or the other? Specifically as it related to technology, the Technology Adoption Model (TAM) proposed five attributes that will be discussed in greater detail in Chapter 2. They

include: (a) perceived usefulness, (b) perceived ease of use, (c) relative advantage, (d) technology attitude, and (e) brand (Taylor & Todd, 1995).

The first of several variables analyzed in this study was the brand of laptop selected in the purchase decision. Additional variables included both tangible, product-related factors like price and features as well as intangible, brand-related attributes like brand image and outside recommendations. The demographic variables were age, education, gender and level of technical competency. What was tested is the existence of a relationship between these variables and the laptop brand purchased. For example, whether or not the competency level of the consumer influenced the purchasing decision was studied. It is often conjectured that those consumers with a high level of technical competency may have a tendency to align more with the physical attributes versus with lower levels that choose to align emotionally. The age of the consumer is another indicator, as it is often speculated whether younger consumers make buying decisions based on intangible attributes such as brand image while older consumers depend more heavily on the more tangible attributes like reliability.

Organization of the Remainder of the Study

Chapter Two reviews the relevant literature examining decision-making theory at its most basic level and then delves deeper into consumer choice as it relates within that theory and further reviews specific attributes that would affect that choice and the role that brand equity plays within. Chapter Three reviews the methodology of this secondary research study while Chapter Four presents the analysis of the data. The final Chapter provides a thorough review of the findings including recommendations to vendors and future research.

CHAPTER 2. LITERATURE REVIEW

Introduction

Fundamental to unlocking the secret of internal motivations surrounding consumer purchase is understanding three key areas: (a) decision making theory that serves as the foundation and the role information plays in this process and the acquisition strategy of the user, (b) what drives consumer choice and the attributes that act as influencers to ultimately enable purchase decisions, and (c) importance of brand and the resulting brand equity that contributes to a consumer's choice to purchase. Each of these three areas will be reviewed in this chapter.

Decision Making Theory

Data is data, but information is power. When data can be transformed into information, the user is equipped with better decision making tools. Different data can become information to different people, all based on its relevancy to the user in achieving the desired goal of making an informed decision. The stages a consumer experiences in working through this process are similar, and a certain sense of consistency has emerged as a result of continuous research around decision making.

Decision Making Theory and Information Acquisition

In order for a decision to be made, an individual must first identify a perceived need that must to be met. As mentioned, for this discussion, the individual will be identified as a consumer with the need for a product or service. Then the process begins. Within the normative

model of decision making, the consumer collects information about alternatives, evaluates them based on their relevancy and makes a decision that will maximize the value of that decision (Lau, 1995;Abelson & Levi, 1985). Otherwise known as the value-maximization theory, the normative model has been criticized as too broad, ignoring human limitations (Moorthy, Ratchford & Talukdar, 1997; Thaler, 1985), and an evolutionary, bounded rationality model emerged to enhance it. Here consumers were assumed to have limited processing capability, selectively search alternatives and terminate the search when a suitable solution has been found (Simon, 1985). Further criticism emerged from this model as well. By selective selection, the consumer is compromising the random nature of the information search and may compromise the decision choice. How a consumer collects his information affects the choice strategy he uses. For example, decision makers choose a certain strategy depending on the complexity of the task. The more complex the decision task, the more likely people employ strategies to simply that task (Johnson & Payne, 1985; Thorngate, 1980). While several theories exist, the value-maximization/normative model has remained relatively intact and enhanced with the limitation of human processing capacity.

Rationality: Substantive Versus Procedural

The first stage of defining relevancy as it relates to the consumer decision process within Abelson and Levi's (1985) framework is grounded in the notion that consumers are rational and have the ability to apply a certain sense of logic to the determination and definition of relevant information to aid them in the decision making process. Consumers are considered rational decision-makers in the traditional economic theory of consumer behavior. They implement choice strategies that are the most advantageous to their outcome, based on their perception of the decision environment. The use of cost/benefit analysis demonstrates optimal nature of the

consumer's strategy (Moorthy, Ratchford & Talukdar, 1997; Payne, 1982). In addition Simon (1985) suggests that every consumer, when making a decision, has and uses a "utility function" that generates a ranking within the alternatives and enables the selection of the product with the highest utility. This process assumes a substantively rational solution.

Procedural rationality as defined by Simon (1985) is the flexible nature of human behavior that adapts and adjusts to the external factors facing and internal factors constraining the consumer. Because it was developed within psychology and the primary focus is on the process, procedural rationality concentrates on the process that generates a particular behavior rather than the outcome. The intent is to observe the individual and the process though which they work that will generate the rational thinking behind the decision.

Compensatory Versus Noncompensatory Choice Rules

The two major rules guiding choice strategies discussed in the literature are compensatory and noncompensatory. They are differentiated based on three characteristics: the level of attractiveness, commensurability across attributes and form of processing (intradimensional versus interdimensional). The former describes a complex and sophisticated method for Abelson and Levi's (1985) third element of decision making, information integration, while the latter equally descriptive to information integration deploys a simplistic approach. Each of these rules is also used in the second stage of information collection.

Compensatory choice rules require commensurability, enabling trade-off of attribute value of one over another. For example, when purchasing a home, the total square footage may be sacrificed for an ocean view. The level of attractiveness of each of these attributes could be high but trade-offs on initial ranking could occur. Generally compensatory choice mandates an

interdimensional form of processing, where the consumer assigns an overall rating to each attribute in the choice set (Abelson & Levi, 1985).

Noncompensatory choice rules differ. Commensurability is not required, and attribute trade-offs are not allowed. Within this category of rules, there exist conjunctive and disjunctive rules. Both require a set of cutoffs on the choice dimensions. The conjunctive rule assumes a minimum set and product rejection when it does not exceed all of them. The form of processing is interdimensional. Using the home search example above, the consumer using a conjunctive, noncompensatory rule would consider each home separately and reject either if it did not meet both the square footage and view requirements. A caveat to this rule is that if more than one product exceeds all of the requirements, the model will yield an equal number of acceptable alternatives. At this point, the consumer would either develop more stringent cutoffs or use a different choice rule that would yield only one solution.

Disjunctive rules also require those cutoffs, although the filter is different. "An alternative would be considered acceptable if it has at least one value greater than the corresponding cutoff" (Abelson & Levi, 1985, p. 260). With the home example, the homes to be considered acceptable would have at least the desired square footage or view. Both are not necessary. The caveat to this rule is that a different set of cutoffs would generate a different set of alternatives, allowing for multiple choices. The same issue applies to the conjunctive rules.

Information Search Strategies

Once the relevancy is determined the surgical approach in searching for information can begin. The strategies are learned and deployed cumulatively as the consumer steers his way through the process. The search strategies enable the integration of the information and the eventual selection of the product, exploring all three stages of Abelson and Levi's (1985) model:

relevance, assembly and integration. First the idea of rationality enables the definition of relevance. That breaks through to pave the way for assembling information which in turn enables the integration.

An emergent belief exists among decision science researchers that consumer preferences are often times developed during the decision process rather than being pre-existing (Tversky, Sattath & Slovic, 1988; Bettman, 1979). "People often do not have well-defined preferences; instead, they may construct them on the spot when needed, such as when they must make a choice" (Bettman, Luce & Payne, 1988, p. 188). The concept of constructive preference enhances the ideas of Simon's (1985) bounded rationality and limited processing capacity. It introduces the dynamic of human learning and adaptability, further refining the concepts to explain the intricate actions of consumer behavior and decision making. "One important property of this constructive viewpoint is that preference will often be highly context dependent. This implies that processing approaches may change as consumers learn more about problem structure during the course of making a decision" (Bettman, Luce & Payne, 1988, p. 188). Agility connotates a level of intelligence and rationality, bound together by reason and logic.

Three search strategy models exist defined by the underlying choice rules (compensatory versus noncompensatory and interdimensional versus intradimensional): linear, additive difference, conjunctive and elimination-by-aspects (Payne, 1976). The additive model represents the consumer choosing between multi-attribute products by evaluating each product separately in a pre-determined choice set, an interdimensional form of processing. Each product attribute is first analyzed and then combined with other attributes that are perceived by the consumer to deliver the most value thereby creating the choice set (Lau, 1995).

In contrast, an intradimensional rule is employed within the additive difference model. Products are compared at the individual attribute level, differentiation is identified and the sum of the results is used to identify the best product. With both the linear and additive difference models, the strategies use a compensatory strategy (Lau, 1995).

A non-compensatory strategy is used for the elimination-by-aspects (EBA) model. In opposition to the linear and additive difference models, EBA does not support commensurability (i.e. value tradeoffs). Product attributes are weighted based on perceived importance of the consumer. The attribute is then selected with probability proportional to its weight. Those products that do not meet the proportional values for the selected attributes are eliminated. The consumer considers only one product attribute at a time, an intradimensional form of processing (Tversky, 1972).

Information Processing Theory of Consumer Choice

The theoretical framework of Bettman's (1979) Information Processing Theory of Consumer Choice (IPTCC) consists of six key elements that represent the hypothetical value chain, each chronologically and cumulatively dependent on the other, with four key summary points: (a) the choice process is iterative and goal-directed, (b) rather than strictly sequential, the process is cyclical, (c) in certain circumstances consumers abandon the conscious decision process in placement of "learned rules and procedures," and (d) selection or what is termed "choice decisions" can be made at several different levels within the process.

Considerable research has proven that individuals possess a limited capacity to process information, and when required to consider multiple attributes simultaneously the ability decreases, further limiting the processing capability (Bettman, 1979; Dawes, 1976; Lindsay & Norman, 1972; Norman & Bobrow, 1975; Simon, 1969). The first of six elements, processing

capacity, contributes to the theory that with limited capability, the use of heuristics (simple decision strategies) and previous experience plays a significant role in decision making. Braunstein (1976) defines heuristics as uncomplicated problem-solving methods that generate acceptable results to often complicated problems. The outcome is achieved by limiting the search to only possible solutions. Lau and Rediawsk (2001) define them as "problem-solving strategies (often employed automatically or unconsciously) which serve to keep the information processing demands of the task within bounds" (p.252). There is no argument that heuristics are used in place of capacity and processing capability. Primitive in nature, they compensate for these gaps and enable more accurate choices with minimal cognitive effort (Abelson & Levi, 1985).

Internal motivation dictates the amount of the limited processing capacity that is dedicated to a particular decision making activity. It also affects the choice of one behavior rather than a different one, as it prescribes a certain action that drives the consumer to a particular outcome (Bettman, 1979). A caveat to be considered regarding motivation is the control issue that motivational or emotional forces present. They tend to produce a sense of irrationality that may lead to judgmental biases (Abelson & Levi, 1985). Internal motivation is personal and drives unique behaviors in each consumer, yet the end result is the same. A purchase decision has been made. The drivers that triggered the process are likely different as is the path taken.

The third element, attention and perceptual coding, breaks attention into two different categories: voluntary and involuntary. Voluntary attention occurs when a consumer consciously allocates his processing capacity toward an intended action while pursuing a pre-determined

goal. Involuntary attention on the other hand occurs as "an allocation of effort to stimuli based more upon automatic mechanisms than upon current goals" (Bettman, 1979, p. 25).

As Bettman (1979) and Abelson and Levi (1985) posit, consumers acquire information they deem relevant to aid in achieving the goal of making decision. In addition the information must be evaluated for relevancy. Information acquisition and evaluation, the fourth element of the IPTCC, suggests that a conscious information processing effort is present only in a complex choice scenario. Consumers tend not to seek out new information when making a habitual choice.

For situations where information is sought, two sources exist: internal memory and external. Information from one's memory is what Bettman (1979) refers to as strongly associated, proposing that little processing effort is necessary. For example, when a consumer frequently purchases their favorite brand of toothpaste, any type of information processing is absent. The decision is made without thought. Information stored in memory, prior knowledge, does affect the information processing model and has been studied extensively (Brucks, 1985; Johnson & Russo, 1984; Bettman & Park, 1980). Different measures within the prior knowledge concept have been studied including frequency of purchase (Bettman & Park, 1980), formal training (Sujan, 1985;Hutchinson, 1983) and self-reporting (Johnson & Russo, 1984; Alba, 1983). For situations when the information in memory is either non-existent or insufficient, it will be sought externally from a variety of resources.

Bettman and Kakkar (1977) support the series of studies that have been conducted to show that how a consumer collects information is heavily dependent on the format in which that information is presented (Capon & Burke, 1977; Payne 1976; Tversky, 1969) . The search patterns differ as the display format does. The strategies employed by a consumer in selecting a

particular product over another have been boiled down to two emerging patterns: Choice by Processing Brands (CPB) and Choice by Processing Attributes (CPA). Information is gathered on several attributes of one brand first and then collected on a second, a third, and the process continues with CPB. CPA strategy is used by consumers who first look at one attribute across several brands and then proceed to the second attribute. These could be referred to as vertical (CPB) versus horizontal (CPA) approaches to brand products. The use of these strategies by consumers to assembly relevant information to enable their decision is strongly affected by the structure of that information being presented.

The consumer's use of cost/benefit analysis demonstrating rationality was discussed earlier as it related to the determination of relevancy. This is also applicable to discuss as it relates to the information search of that relevant content. Within the context of information search, the same principles apply. A consumer's search is optimized when the perceived benefit and cost of that search are considered. Experience increases expertise and drives the demand for more information, while product knowledge decreases the demand (Moorthy, Ratchford & Talukdar, 1997). The degree of pre-existing knowledge versus the perceived cost of acquiring new knowledge in an effort to decide which product is the best fit for the need is weighed. When a consumer searches on a brand and retrieves all the attribute information desired, "the uncertainty of that brand is removed, and its true utility revealed " (p.265), thus producing a high benefit relative to a lower perceived cost of information acquisition. If the consumer brings existing brand knowledge, the perceived cost is even lower. Moorthy, Ratchford and Talukdar's (1997) study was able to show that these factors affect the search behavior of the consumer and highlight the effect prior brand knowledge has on the search process.

Svenson (1979) summarized several studies in this area, documenting that an increase in the number of product attributes to be considered had a greater effect on the information search than a comparable increase in products. The limited processing capacity of consumers is clearly demonstrated here. An interesting point to consider is the difference in effect of information collection between the change of product attributes versus number of products. The more attributes, the less information consumers sought. Multi-attribute products, while warranting more information yet resulting in the collection and assembly of less, would lead one to conclude that these types of products and the choices presented to the consumer yield less than desirable results for both the consumer and product vendor. Vendors should integrate these learnings into the development of their products and corresponding attributes.

In referring back to the third stage of Abelson and Levi's (1985) decision making theory, integrating information to make decisions, Bettman's (1979) concept of perceptual coding supports it. Perceptual coding describes the process through which a consumer navigates by interpreting the meaning of information to which he has directed attention. Several theories propose that the interpretation of that information is developed by using both "information from memory" and "the perceptual input itself" (Bettman, 1979, p.25; Lindsay & Norman, 1972).

In addition to perceptual coding, the amount of information the consumer collects in the assembly stage can contribute to the success of a quality decision or the failure of a low quality decision.

Bettman, Luce, and Payne (1998) found the following:

> Decisions become more difficult as the amount of information increases, as the time resources available for processing the information decrease, as the degree of conflict among attributes increases, as the amount of missing information increases, as the information display format becomes less organized or more complex. (p. 199)

Information load can be defined as the independent number of informational items. When asked to choose between two products, consumers search equally on both alternatives demonstrating the use of a compensatory decision rule. When asked to review and choose between several products with more attributes to consider, the search concentrates on only a few attributes within the choice set, utilizing a noncompensatory strategy. When faced with too many options, consumers reduce the amount of information collected by artificially reducing the number of alternative product combinations to achieve the objective of choosing one product (Payne, 1976). Less information is sought and noncompensatory strategies used to simplify the task. While time pressure may contribute (Wallsten, 1980; Wright, 1974), findings of these studies conclude that the use of simpler, less optimal rules enable the otherwise complex task to be completed (Abelson & Levi, 1985).

Information load and decision quality are inversely related. High levels of information can considerably reduce decision quality. In research conducted by Malhotra (1982), the effects of a wide range of content and information on decision quality was studied with a varied set of measures including a self-determination of overload. The results of the study support the theory and existence of relationship between the amount of information a consumer sees and the quality of the decision made in support of that information. Consumers who are faced with too many attributes are cognitively unable to make the number of necessary comparisons to thoroughly rank them. As a result, they resort to simple choice rules and heuristics to achieve the objective.

Further studies by Scammom (1977) suggest that when confronted with increasing amounts of information, consumers will likely split their time between all of the informational objects causing a dilution of the content consumption and eventual overload, causing low decision quality and dissatisfaction among the consumer over their product choice.

The final element of the Process, consumption and learning, refers to the consumer's progression through the stages to arrive at a final purchase decision and ultimately consume the product. The experience as a result of the purchase and consumption can be recycled and used as information for future purchase decisions.

In a world of endless data, the skill to convert it into useful information to enable an educated, high quality decision is greatly coveted. The three stages of relevancy, assembly and integration are equally important and equally deserving of further observation as they relate to consumer decision making. The more data, the less likely the consumer is able to wade through it and result in a quality decision. A paradox exists. Consumers crave data. They covet information. Yet when presented with a limitless supply, they are overloaded and forced to ignore the abundance. The human condition creates an environment that sustains the individual and supports them in their decision making process. With too much, we get less. With too little, we get less. The careful, delicate balance between starvation and overload is the utopia vendors need to obtain to better enable more satisfied, higher quality decisions consumers can enjoy.

Consumer Choice Through Decision Making

This section will introduce to the reader the models that support the underlying drivers to consumer choice and the attributes that act as influencers to enable purchase decisions. It will answer the questions: what drives consumer choice and what attributes from those drivers influence purchase? The reader will understand how the consumer approaches the concept of making a decision and the internal, processes and tools he uses to arrive at that decision. For the purposes of this discussion, the scope of attributes influencing purchase as they relate to consumer choice will be bound to the area of technology adoption. The concepts of consumer

choice and decision making are described in the general context. Discussion relation to them focus in on the technology adoption component.

Choice can be a double-edged sword. When not faced with it, one feels mandated. When faces with its entirety, one feels overwhelmed. In between exists a delicate balance, once where the decision-maker believes enough in the way of resources has been allocated to enable him to generate a high quality decision. In the context of consumer choice, the process an individual assumes to ensure the quality is driven by the individual, similar in methodology to all but unique in deployment.

Drivers to Choice

What drives a consumer to choose one product over another? What combination of variables, alternatives, external or internal factors compels the decision? The answer, intricate in its delivery yet simple in its response is fundamentally human behavior. How humans process information and make choices around the selection and consumption of products is fundamentally to answer the question of what drives the actions. Swift and continuous technological change in conjunction with the explosion of information sources like the web and television have given consumers too much choice within a time-pressured environment. How can consumers adapt and cope with the decisions they make? Bettman, Luce and Payne (1998) suggest the process is adaptive and present a conceptual framework of five components that helps unlock the secret of understanding the process consumers undergo to form their purchase decisions. Howard and Sheth (1969) focus on four stages of attitudes, perceptions and learning, while Engel (1983) focuses on decision making as problem solving. This section of the paper will guide the reader through a series of theoretical and applied behavior models that provide the foundation, structure and eventual answer to the question: what drives consumer choice?

Constructive Consumer Choice Processes in Summary

Is the consumer choice process adaptive? Are consumers agile enough to recognize at a moment in time through reflection that a different approach might yield a more acceptable outcome? Bettman, Luce and Payne (1998) say yes, and support it with five summary concepts that will be presented here. Consumers are goal oriented and develop their process for making a choice to achieve their goal. Driving factors include motivation, like increasing decision quality, reducing effort level or decreasing negative emotions. Because consumers are rational in nature, they also recognize that limited cognitive processing capability requires them to selectively process the most relevant information (Bettman, Luce & Payne, 1998).

Continuing with the theme of information, consumers do differ in the rules and strategies they employ when collecting and analyzing it. Several argue that increased knowledge and expertise better enable the consumer to assess the information and select more effective decision strategies (Alba & Hutchinson, 1987; Russo & LeClerc, 1994; West, Brown & Hoch, 1996).

Even further down the discussion with information, Bettman, Payne and Luce (1998) state that how the information is displayed and presented can also affect/influence the consumer's decision. Using Slovic's (1972) principle of concreteness as the basis for their argument, they demonstrate that consumers are more likely to use information "that is explicitly displayed and will use it in the form it is displayed, without transforming it" (p.202).

Consumers will also vary their process when product categories are comparable and noncomparable. Comparable choices are product alternatives in choice sets that have similar attributes, like a BMW versus a Mercedes. Noncomparable categories involve no similar attributes, like comparing cellular phone to a Mercedes. In those kinds of situations consumers

tend to “develop more abstract attribute or compare overall evaluations” (Bettman, Payne & Luce, 1998, p.203) to process the information.

Time constraint is the fifth and final contributing element to an adaptive decision process. Time dictates availability to process, compare and choose. Consumers will limit each phase as appropriate to accommodate the constraints (Betmman, Payne & Luce, 1998).

Howard-Sheth Model

Four stages exist within the Howard-Sheth (1969) model, all to occur sequentially, building cumulative momentum to aid the consumer in his choice: (a) inputs, (b) perceptual constructs, (c) learning constructs, and (d) outputs. The inputs a consumer receives are a series of informational objects around the brand or product that can be categorized in three ways, significative, symbolic or social. Information around the physical attributes of a product, like features and functionality are significative. Verbal and visual information in the form of advertising is symbolic, and social content is received through the consumer’s social environment by means of product opinions and recommendations (Warner, 1997).

Perceptual constructs are built as a result of the informational inputs. While the inputs serve as the foundation on which to develop a purchase decision, the perceptual construct further refines the base to filter those inputs and frame them in a manner that is comprehensible for the consumer. Two different actions occur here to achieve that objective, contributing to the goal: stimulus ambiguity and overt search. Stimulus ambiguity is not an action, rather an experience; however, the phenomenon describes a state of confusion and lack of clarity around the messages attempting to be received by consumer that thwarts the progress. While many might consider an obstacle like this to detract from the goal, it contributes strongly by leading the consumer to an overt search, concentrating on collecting intelligence/information about the subject of the

message. Not every consumer experiences ambiguity and not every consumer will conduct an overt search. These two actions result in a stronger, more vetted set of perceptual constructs that prepare the consumer to learn (Warner, 1997).

Learning constructs are strongly influenced by the preceding perceptual constructs. Four learning constructs exist, each driving different reactions, although each equally driving choice: (a) motivation, (b) brand comprehension, (c) confidence, and (d) attitude. Consumers are motivated to satisfy a perceived need, and it is this internal motivation that influences the evaluative criteria used to select the appropriate product to purchase (Warner, 1997).

Howard and Sheth (1969) argue that perceptions can be influenced. Brand comprehension simply defined is a consumer's overall perception of a product. Targeted messaging, previous experience with the brand and external recommendations from trusted sources are three primary factors that influence and drive product choice over another. Brand comprehension, Howard and Sheth (1969) argue, has an equally powerful capability of influencing consumer attitudes toward particular products (Warner, 1997).

The work and navigation through a series of stages up to this point all contributes to the level of confidence the consumer experiences toward the capability of a particular product to satisfy his initial, perceived need. Confidence determines the next step. Does the consumer feel confident that he is on the right path, that enough information has been collected and properly filtered to aid in his decision? Does he feel as though he has missed something, or has the work up to this point secured his position allowing him to develop an attitude about his selection?

Attitude and confidence drive the intention to purchase, which leads to the actual purchase or output. Attitude is developed as a result of the confidence created by consumer wile

forming hi opinion through collecting information by way of inputs, developing perceptions as a result of learning from those perceptions. The output is the purchase.

Engel Model

The Howard-Sheth Model (1969) places greater emphasis on perception, attitudes and learning, while the Engel Model (1983) concentrates on decision-making processes. The Engel Model (1983) views consumer decision-making as a problem-solving exercise, assuming the purchase of a particular product will resolve the initial problem. The most common sequence within a decision-making framework introduces six stages of the consumer experience: (a) define the problem, (b) generate alternative solutions, (c) evaluate alternatives, (d) decide on the solution, (e) implement decision, and (f) monitor results. Engel (1983) enhances the sequence by overlaying the driving human factors behind the sequence, preserving the process. Motivation drives the recognition of a need to define the problem in the first stage. To generate alternative solutions in the second, the consumer must conduct an information search. The evaluation stage is where consumers employ a series of decision rules and strategies, dependent on the amount of information and the limitations of their processing capacity to eventually arrive at a decision (Warner, 1997).

Theory of Reasoned Action (TRA)

Fishbein and Ajzen's (1975) Theory of Reasoned Action (TRA) stems from social psychology and the focus on the determinants of consciously intended behavior. In its simples form, the theory suggest that an individual's actions are a direct result of his intentions that are based on personal attitudes and social norms toward a particular behavior. Attitudes related to the evaluation of personal beliefs that a behavior will generate a certain outcome and

consequence. Intentions to engage in particular behavior are additionally affective by subjective norms, "the person's perception that most people who are important to him or her think that he or she would or should not perform the behavior in question" (Fishbein & Ajzen, 1975, p.302). It is a social filter of sorts, a conscience to play back the potential outcome before it occurs to allow the individual to assess the risks and rewards.

Theory of Planned Behavior (TPB)

Recognizing that TRA as a predictor of actual behavior was solid in its fundamental assumptions, was at the same time limited with respect to analyzing only those behaviors that were under an individual's control, Ajzen (1991) introduced the Theory of Planned Behavior (TPB). TPB supplements TRA by appending the control factor. TPB adds the perceived behavioral control component as a determinant of intentions to perform a behavior. Perceived behavioral control refers to an individual's assessment of "the presence or absence of requisite resources and opportunities to perform the actions" (Ajzen & Madden, 1986, p.457). It has to do with volition and self-efficacy beliefs. This involves the individual's perception of his control over the performance of the behavior and personal judgment regarding the obstacles that may be encountered. Volition in this context relates to the freedom to make a decision. Self-efficacy beliefs are "judgments of how well one can execute courses of action to deal with prospective situations" (Bandura, 1982, p.122). Summarized, the construct focuses on the individual's evaluation of access to necessary resources, skills and opportunities to perform a behavior as it compares to the internal and external factors that could hinder performance of the intended behavior (Ajzen, 1991).

Technology Adoption Model (TAM)

The Technology Adoption Model (TAM) (Davis, 1989; David, Bagozzi & Warshaw, 1989) examines the adoption of technology based on the perceived usefulness and ease of use of the technology by the consumer. Building on the concepts of TRA, TAM theory applies its fundamentals to the adoptions of technology, introducing variables like perceived usefulness and perceived ease of use and removing subjective norms. The objective of TAM is to provide an "explanation of the determinants of computer acceptance that is general, capable of explaining usage behavior across a broad range of systems or end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified" (David, Bagozzi, & Warshaw, 1989, p. 985).

Through TAM, Davis (1989) posits that an individual's behavioral intention to adopt and use a particular technology is determined by the individual's attitude toward it. Two factors contribute to the development of the attitude: perceived usefulness and perceived ease of use. Will this technology enhance the individual's performance professionally or socially? Will the use of this technology be effortless? Each of these questions is a descriptor for the factors.

The two perceptions around usefulness (utility) and use are cognitions around the innovation of technology. Usefulness is the cognitive evaluation of the individual regarding the utility provided by the innovation. Use is an indicator of the cognitive effort necessary to properly deploy the technology. The usefulness variable is heavily influenced by the ease of use. All other variables being equal, the easier the technology is perceived to be to use, the useful it is perceived to be.

A key strength of TAM is its predictive power. It has been empirically verified as a tool for predicting technology use (Szajna, 1996) and emerged as the dominant model in the literature

(Venkatesh, 2000; Venkatesh & Davis, 1996; Szajna, 1994; Davis, 1989). Its capability has been demonstrated to explain between 17% to 33% of the variance in attitude and usage intentions (Thompson, Higgins & Howell, 1991; Davis, Bagozzi & Warshaw, 1989). The variables introduced in this model, perceived ease of use and perceived usefulness, continue to collect empirical support and momentum in predicted technology acceptance behavior (Venkatesh, 2000: Venkatesh & Davis, 1996). As its popularity is growing, TAM is being used outside of the IS research within the marketing discipline within consumer research around online retail shopping (O'Cass & French, 2003;Childers, Christopher, Peck & Carson, 2001), buying intentions on the web (Gentry & Calantone, 2002) and understanding technology-based self-service usage (Dabholkar & Bagozzi, 2002).

Discussion

Howard-Sheth(1969), Engel, (1983) TRA, and TPB are used in explaining and predicting human behavior and how it relates to decision-making. Howard-Sheth and Engel focus on the process, learning and the perceptions and attitudes with formulating and making a decision. TRA and TPB predict the behavior that fuels those decisions. TAM uses TRA and TPB as a theoretical foundation to explain technology adoption and usage. It leverages the behavioral aspect and extrapolates the theoretical view to directly apply it to the acceptance of technology. So when the answer to the question of consumer choice drivers is simply stated as "human behavior", one can follow the logic and progression of that journey. Human behavior, in all its complexity, can be harnessed and represented in a series of theoretical models, like TRA and TPB, that simplify and collectively connect the dots, and then those models can be used to further develop other aspects of a human action, like decision making, within the framework of Howard-Sheth or Engel, and then be applied to a particular area such as technology adoption, as

in TAM. The interaction being outlined here could be graphically depicted as a triangle segmented into three horizontal sections,. The base has the largest surface area and broadest distribution, serves as the foundation for further refinement as the researcher progresses up the triangle. The middle section, more defined and dependent on the strength of the base, supports the highly focused tip, pointed in intent and direction and resting on the other two. The top two sections are heavily reliant upon the structure and strength of the first, rich in study and deep in theory.

Attributes as Influencers to Purchase

How can consumers narrow their focus and attention to a subset of brands out of a larger one? The primary approach to the development of consideration sets, collections of attributes consumer evaluate when deciding which product to purchase, has been cost-benefit. It uses the expected utility maximization framework to support the theory that consumers weigh the cost of evaluating each attribute and brand and adding it to the set against the benefit of adding or dropping others (Erdem & Swait, 2004: Hauser & Wernerfelt, 1990).

When evaluating those attributes, do some more than others influence the purchase decision? The following section proposed five key attributes that play the role of influencer: (a) perceived usefulness, (b) perceived ease of use, (c) relative advantage, (d) technology attitude and (e) brand.

Within the TAM model, the variable, perceived usefulness, has been identified as the most significant factor in technology acceptance as it relates to professional adoption, more important that the perceived ease of use (Taylor & Todd, 1995; Hu, Chau, Sheng & Tam, 1999; Davis 1989). It is the determination of the likelihood that the technology will somehow benefit

the individual. Based on the cost-benefit tradeoff of adopting one over the other, perceived usefulness deals primarily with the perception of the outcomes of the use of technology and determines behavior through attitude. In the consumer context, Childers, Christopher and Carson (2001) studied the internal motivations for online retail shopping and discovered a significant positive relationship between perceived usefulness of interactive media and attitudes toward them.

For initial technology acceptance and ultimate purchase, perceived ease of use is essential as it is to sustain continued use (Davis, Bogazzi & Warshaw, 1989). It affects adoption attitudes for potential adopters (Karahanna, Straub, & Chervany, 1999) and is consistent with Childers, Christopher, and Carson's (2001) and more recently Dabholkar and Bagozzi's (2002) consumer related studies, finding a direct, positive effect of ease of use. While not the most significant factor of acceptance, perceived ease of use is functional in determining the onset of new technology adoption and the continued use.

Another attribute that acts as a driver to influence purchase is relative advantage. Rogers (1983) posits that individuals are more likely to adopt a product that offers advantages versus one that has little additional benefit. As defined, relative advantage pertains to the superiority of a product in terms of cost, functionality and image in comparison to others.

Although perceived usefulness and relative advantage are closely related (Moore and Benbasat, 1991), a distinction is necessary when comparing the two. When an individual is evaluating a product and considering its usefulness, he is determining the level of agreement that that product helps perform a particular function in terms of productivity, effectiveness and performance within a specific task-related context. With relative advantage the individual is comparing the collective attributes between two products and weighing them, measured in terms

of profitability (economic), social benefits (prestige) and product-related variables (feature superiority). The former focuses on utility of each product separately while the latter evaluates multiple products and their attributes simultaneously (Davis, 1989).

Consistent with TAM, according to Forrester's 2005 State of Consumers and Forecasted Technology Study (Kolko, 2004) the attitude a consumer portrays about a given technology (technology attitude) contributes to the prediction and adoption of that technology. To support the development of an attitude taxonomy, Forrester Research conducted its Consumer Technographics survey to "gain insight about consumers' technology behaviors, demand and attitudes" (Schadler & Golvin, 2004, p.1). Results from the report conclude that technology optimists are 44% more likely to use the web and purchase technology than pessimists. Technology attitude varies widely within the age and income demographics. A conclusion to be drawn is that the emotional and behavioral component of the evaluation of brands is as strong if not stronger than the physical, tangible product attributes. Brand awareness and credibility is another intangible, emotionally driven attribute that influences purchase.

Typically consumers consider several different brands before determining which one will best meet their needs. Making one decision around a particular brand has the possibility to affect a subsequent decision around another. For example, evaluating the cost of a very expensive car first, as opposed to a very inexpensive one, can make a moderately priced car seem quite inexpensive. The type of judgment and decision around the relative expensiveness of the car is the same while the content (cost of expensive versus inexpensive) is different (Dhar, Nowlis & Sherman, 1999). The trustworthiness of a brand influences consumer choice, specifically as it relates to brand choice. Its credibility increases the likelihood that consumers will include brand within the consideration set. Erdem and Swait (2004) investigated the effect brand credibility had

on product consideration, proposing that "one important mechanism through which brands' impact on choice and consideration materializes is via brand credibility (p.191).

When product vendors know more about their products than consumers do, the market is said to have asymmetrical information. The information balance is heavily skewed toward the manufacturer rather than toward the consumers. In an instance like this, a product's brand could serve as the differentiating element that sets the wheels in motion toward a better distribution of information. What distinguishes the brand itself between other individual attributes that could be more easily commoditized, is that the former personifies the collective and cumulative effect of past marketing strategies. (Wernerfelt, 1988). An individual strategy at any given point in time, like charging a premium price, offering an extended warranty or selling through specific channels may contribute to the differentiation every company seeks, but it is highly contingent upon market conditions. Brand and the corresponding credibility associated with it, has an historical component to it. Erdem and Swait (2004) state that brand credibility is "based on the sum of past behaviors" (p. 192), and can be defined as the "believability of product information contained in a brand, which requires that consumers perceive that the brand have the willingness to continuously deliver what has been promised" (p. 192).

In following with the notion of commoditized product, something widely existent in the technology field, consumer researchers suggest that brand is the differentiating element (Erdem & Schait, 2004; Chernev, 1997). This is consistent with the study findings that similarity along one attribute tends to augment differences with other attributes. All of them equal, the brand comparison would be the most significant differentiating element and determinant of product selection (Mellers & Biagini, 1994; Tversky & Shafir, 1992; Meyer & Eagle, 1982).

Summary

Human behavior drives consumer choice, and in highly commoditized markets, where very little differentiates one product from another and most attributes are similar, consumers rely on more emotionally driven, behavior-oriented attributes that will influence their purchase. The attitude one has as it relates to technology determines their likelihood for consumption. The importance of brand to be used as an evaluative buying criteria is significant as is technology attitude. Both of these are somewhat subjective and difficult to measure, making it challenging for product manufacturers to differentiate themselves in the eyes of the consumer. If the product's physical attributes appear to be undistinguishable versus the competitor when compared by the consumer, it will be these qualitative more intangible considerations that will sway the consumer toward one brand over the other. As a marketing professional, it is within this environment where value propositions need to be real and more research to better understand and quantify these evaluative criteria to better target and craft a message that will resonate.

Brand's Role in Influencing Purchase

Brand "identifies and embodies all that a company is" (Greenbaum, 2006, p.46). Simply stated, Kotler (1991) provides an intuitive definition of the brand concept that removes complexity and hones in on the benefits: "a brand can be defined as a name, term, sign, symbol or combination of them which is intended to identify goods and services of one seller to differentiate them from those of competitors" (p. 442). It is value realized as a result of the brand, otherwise known as brand equity that had a direct impact on consumer choice, affecting it in several ways within several different contexts. This section will review two conceptual frameworks that study the power and equity within a brand and the role it plays in the influencing consumer purchase decisions.

Teas and Grapentine (1996) offer a framework that examines the role brand plays in affecting consumer choice and the degree to which it provides equity or value to the consumer. Figure 1 represents their assessment. During several of the stages within the buying process the brand of a company provides a certain sense of value to consumers by: simplifying the purchase decision task, reducing their perceived risk, and providing direct value to the consumer, acting as an evaluative attribute.

Table 1. Brand's Role in Consumer Choice

Brand Effects Issues	Information Search	Consideration and Preference	Purchase	Evaluation Post-purchase
Search Attributes	Reduce acquisition	Included as evaluative criteria		
Use Attributes		Included as evaluative criteria	Risk mitigation	
Credibility Attribute				Risk mitigation
Brand Loyalty/Switching Costs	Reduce acquisition effort	Simplifies decision	Decision simplification/risk mitigation	
Brand as a Valued Attribute		Included as evaluative criteria	Decision Criteria	Satisfaction

With select stages of the purchasing decision cycle defining the columns and a collection of brand equity effects that influence that purchase decision along the rows within Teas and

Grapentine's (1993) conceptual framework, it is apparent the amount of influence brand equity can have on consumer choice is considerable and complicated.

Looking at the brand effects issues in more detail will enable researched to better understand the role brand might be expected to play throughout the consumer's purchase decision cycle. A search attribute is "a characteristic of a product that can be evaluated by acquiring information during the pre-purchase decision process" (Teas & Grapentine, 1993, p. 26). For example, consumers typically have a choice set loosely defined as they begin this process. If a consumer were looking to purchase a car, he probably has a list of attributes, like the type (SUV versus sedan), number of doors and price. When considering the purchase of a wedding gown, color, fabric, cut and design would be search attributes. The role brand plays in this scenario as an indicator of search attributes in relation to the information search is around the amount of information the consumer feels compelled to collect. Teas and Grapentine (1993) posit that a brand produces enough utility for the consumer to feel comfortable with simplifying their decision process, limiting their information search and including the brand as an evaluative criteria on which to base the purchase decision.

While search attributes can be evaluated before the purchase of a product, use attributes are those product characteristics that can only be evaluated after. Examples of use attributes would include whether or not a consumer would find the taste of a particular food product appealing or if a snow blower really performed as well as it claimed, or if an investment would actually yield the rate of return it was boasting. None of these attributes can be evaluated until after the product has been purchased and used/consumed. Enter brand equity. When a consumer uses brand as an indicator of a use attribute, he is basing the estimated or forecasted performance of the product on the brand alone, assuming that product brand will have a perceived advantage

over other alternatives. The importance brand plays here is that if the perceived equity from the consumer is significant enough, chances are that he will include the product in the consideration phase among other products that have been previously used. The brand enables consideration without prior experience (Teas & Grapentine, 1993).

A credibility attribute is a characteristic of product that the consumer can never completely evaluate, like knowing what the long term health risks are of food using Nutra-sweet or if adequate maintenance procedures are properly being implemented by airlines. While brands cannot eliminate the inability of a consumer to fully evaluate these attributes, it can provide a better sense of perception around the concerns. For example, organic brands of food might be associated with less risk than others, because no chemicals or preservatives are used. Within this context brand serves to reduce a certain degree of risk that the consumer perceives around these "unknowns". Brand can also act as a risk reducer after the purchase of a product that has been consumed several times, instilling a sense of confidence of its safety. So while the consumer may never completely know or evaluate the credence attributes, brand can alleviate a portion of the anxiety as a result of the limitation (Teas & Grapentine, 1993).

Brand in one instance can carry a product to consideration even if it is substandard to the other products within the set. In the other instance, it can generate a sense of loyalty that diminishes the likelihood of other alternatives being considered, establishing a perceived switching cost to the consumer. In other words, a customer believes that the opportunity cost to switch from one brand to another is too high to contemplate. When consumers demonstrate brand loyalty, they typically reduce their information search substantially, often times completely eliminating it and do not evaluate other brands, resulting in a simplification of the decision (Teas & Grapentine, 1993).

A certain prestige or perceived status is attached to specific brands such as owning a Rolls Royce or Astin Martin compared to a Chevy Malibu. In addition to prestige, a sense of quality, safety or other intrinsic value to the consumer is also inherent within a brand. Within this context, brand also serves to enable a particular product to be included within the consideration set. Some consumers might consider nothing other than brand name alternatives compared to generic because of the prestige or status they believe it projects on themselves as individuals (Teas & Grapentine, 1993).

Brand and the equity it delivers to a particular product influences consumer purchase, beginning as early in the decision process of selecting evaluative attributes through to the end where the choice is finally made. It can be the primary reason a product is purchased or the determining factor to consider purchase despite its other values being known. The power is recognized and the factors that portray, nurture and build these perceptions within the customer base is a hot research area (Yoo, Donthu & Lee, 2000; Park & Srinivasan, 1994; Keller, 1993).

Aaker Model (1991)

In his conceptual framework of brand equity, Aaker (1991) suggests three things: (a) both the customer and the firm benefit from brand equity, (b) the value for the customer enhances the firm's value, and (c) brand equity is made up of several dimensions. His claims of mutual benefit to firm and consumer around brand equity have been supported. Mahajan, Rao and Srivastava (1994) proved brand equity affects merger and acquisition decisions. The strength or potential of a brand, as measured by consumer perception can significantly contribute to a merger or acquisition, adding leverage to the discussion of price. With a strong brand, or one that is believed to be emerging with potential, the merger or acquisition in heavily weighed as the candidate is measured on potential contribution to the purchasing firm's brand and bottom line.

Brand equity affects stock market reactions (Lane & Jacobsen, 1995; Simon & Sullivan, 1993) and it can determine the feasibility of extending a brand name (Rangaswamy, Burke & Oliva, 1993). As shown in Teas and Grapentine's (1993) framework, brand equity increases the chance of product selection. It also increases the tolerance for price premiums (Barwise, 1993; Keller, 1993; Simon & Sullivan, 1993). Within the stock market, highly recognized brands may enjoy more leniency or endure more scrutiny as a result. IBM in recent years, despite underperforming against expectations saw little change in their stock price, while Andersen consulting, known for its auditing expertise was virtually decimated in the market because of its failure to deliver on its core competency and being partially blamed for the Enron scandal. An excellent example demonstrating brand equity as it relates to premium pricing is generic versus brand name pain relievers. When looking at the ingredients of a generic acetaminophen versus a brand name like Tylenol, they are identical. Despite that fact, consumers continue to purchase the Tylenol brand over the drugstore's generic version that is priced lower.

As a multi-dimensional concept, brand equity consists of brand loyalty and brand awareness with several sub-elements within the primary categories (Aaker, 1991, 1996). Schocker and Weitz (1988) are consistent in their assessment and highlight brand while Keller (1993) focuses on customer brand knowledge, made up of brand awareness and image. Yoo, Donthu and Lee (2000) further support Aaker's model, and present their findings as consistent to Aaker (1991).

"The equity of a brand hinges on the number of people who purchase it regularly" (Zinkhan, 1992, p.125). A significant installed base of highly satisfied customers is the ultimate goal. Loyalty is a result of the product being experienced and a high level of satisfaction after its consumption. The operative word is experience. The term experience is further enhanced with

the descriptor “perceived experience”. Each consumer’s experience is unique, yet the collective results need to be positive enough the generate a sense of loyalty to the brand (Aaker, 1991).

Brand awareness is related to the position the brand holds in the consumer’s memory and the ease in which it is recalled when prompted. Brand recognition is a component of brand awareness and is related to the consumer’s ability to recognize previous exposure to it. Brand awareness plays an important role in decision making in two ways: (a) better brand awareness increases the likelihood that it will be part of the consideration set, and (b) the level of brand awareness can affect further decisions about those brands within the consideration set (Keller, 1993; Aaker, 1991). Both Keller (1993) and Aaker (1991) cite the elaboration likelihood model (Petty & Cacioppo, 1986) as suggesting that choice may be based on brand awareness when the decision has low involvement as a result of little motivation.

Both Teas and Grapentine’s (1996) and Aaker’s (1991) conceptual frameworks identify the fundamental building blocks to brand, brand equity and the intrinsic power. The preceding pages have provided a justification and mostly theoretical context in preparation for the discussion of what brand equity really is, as posited by several experts in the marketing field and which definition would be the most applicable to the high tech industry.

Brand Equity Definitions

The initial academic definitions of brand equity presented to the marketing world during the “brand boom” have been difficult to use and apply, but since then several have developed into useful descriptions. While many variations exist many authors are consistent with Farquhar’s (1989) definition of brand equity as the value added by the brand to the product (Yoo, Donthu & Lee, 2000; Keller, 1993; Aaker, 1991; Leuthesser, 1988). While several “one-offs”

exist, they can be grouped based on similarity in tone and intent. In line with Farquhar (1989), one of the most widely recognized and accepted firm-based definitions of brand equity include Rangaswarmy, Burke and Oliva's (1993):

> Brand equity is defined in terms of the marketing effects uniquely attributable to the brand – for example, when certain outcomes result from the marketing of a product or service because of its brand name that would not occur if the same product or service did not have that name. (p.61)

Keller (1993) chooses to define brand equity from the customer's perspective, referring to it as "customer-based" brand equity, describing it as the "differential effect of brand knowledge on consumer response to the marketing of the brand" (p.1).

Aaker (1991) also defines brand equity from the outside-in approach, describing it as a consumer's perception around "the value added to the functional product or service by associating it with the brand name" (p.4). He also defines brand equity from a product-centric viewpoint, as "a set of brand assets and liabilities linked to a brand, its name and symbol that add to or detract from the value provided by a product or service to a firm and/or to that firm's customers (p.15).

Simon and Sullivan (1993) provide yet another firm-based definition of brand equity, as an asset to the firm, increasing cash flow to the business. They further attempt to quantify brand equity as being estimated by subtracting the utility of physical product attributes from the total utility of the brand.

Compare and Contrast

The universal component of every brand equity definition includes the notion of value add. Whether it is customer-oriented or firm-based, every definition, regardless of perspective, identifies the fundamental purpose of brand equity as adding incremental value. The most

significant similarity among all five definitions revolves around this thought. Word choice is varied but intent is similar. Whether it is Aaker (1991) or Farquhar's (1989) term "value added" or "uniquely attributable" description by Rangaswarmy, Burke and Oliva (1993), each author is attempting to articulate the difference that brand contributes to the overall worth of a product. Keller's (1993) choice of the word "differentiated" aligns with the other definitions.

The strongest difference exists between the author's perspective from which the definition originated, firm-based, customer-based or product-centric. Keller's (1993) view is customer-oriented, defining equity in terms of the difference in effect the brand has on the customer's knowledge of that brand. Aaker (1991) also chooses to adopt this approach and focus his definition around the consumer's perception of the incremental value of the product as a result of the brand. In other words, did the consumer's perception of the brand help better position it in his mind for consideration versus one whose brand perception was not as prominent? He uses a similar definition to provide a product-centric angle, choosing to highlight only the product's position in terms of value, without discussing customer perception.

Application to High Tech

Of the five definitions identified and discussed, only one seems the least optimal. Simon and Sullivan's (1993) definition of brand equity as being an asset increasing cash flow to the business, while not inaccurate, is too limited and does not capture the dynamic nature of the high tech market. Because of the striking similarity with the other four, a fair determination could not be made, as most of the differentiation between them was a simple matter of word choice. The perspective from which they were written, while a distinguishable characteristic, was not strong enough to support the selection of one definition over the other. That said, this writer is of the

opinion that any definition that articulates the incremental value achieved by either the product as a result of a consumer perception or the value perceived from the consumer perspective is valid and effective within the high-tech industry. Whether the value is bolted on the product or ties to the consumer is of little significance. The most important factor is the benefit realized as a result of strong brand equity; higher revenue with a more loyal installed customer base.

Summary

The fundamental concept of brand is fairly simple as defined by Kotler (1991): "A brand can be defined as a name, term, sign, symbol or combination of them which is intended to identify goods and services of one seller to differentiate them from those of competitors" (p. 442). In even simpler terms a brand is a distinguishing characteristic that sets its product or service apart from the competition. The value, or equity associated with a brand is more complex. Brand equity also includes the perceptions and expectations of consumers in addition to their loyalty and awareness (Keller, 1993, Aaker, 1991). It is highly individualized and largely exists within the consumers' minds and is difficult to quantify yet can be measured in terms of consumer perception, intent to purchase and willingness to pay (Harrison & Dwight, 2006).

The dynamic nature of the high tech industry including creeping R&D costs and the commoditization of technology has placed pressure in the system for manufacturers to embrace the power of brand equity, understand it and how it can deliver incremental value back to the bottom line by means of higher product sales. Given the high degree of similarity within the definitions no one stood out as the most appropriate; Simon and Sullivan's (1993) financial, product-centric perspective was the least effective in identifying what brand equity is in the high tech arena. Consumers in the market for technology products are driven by a perceived need. Continuing with the laptop example, a majority of the product features within the laptop are

similar thereby creating a virtually level playing field. All product-based attributes equal, the importance of brand and brand equity are magnified, and the more the manufacturers can associate that equity to the overall product, the easier it is for them to qualify the investment in marketing versus R&D. The intangible nature brand equity and the inconsistency in its measurement that deliver back to the business are challenges and ones that will continue to plague organizations. What will not change is the benefit realized from strong brand equity.

CHAPTER 3. METHODOLOGY

This chapter discusses the methodology proposed to investigate the existence of a relationship between consumer demographic variables, evaluative buying criteria and the laptop brand purchased by the consumer. The topics discussed in this chapter begin with the design of the study, its purpose and the proposed approach followed by the study of the population and sample. The measurement strategy and variables are then discussed. The hypotheses are presented first with a reiteration of the research questions introduced in Chapter1, the supporting hypotheses for that question and detailed description of the related variables. The chapter concludes with the proposed data analysis procedure to test the hypotheses along with the assumptions and limitations of the study.

Design of the Study

Purpose of the Study

The purpose of this study was to determine if a relationship exists between the brand of laptop consumers select and a variety of demographic and evaluative buying criteria considered in the process. The demographic variables tested included age, education level and the degree of technical. The result can provide laptop vendors a unique perspective on the consideration and selection phase. The results further enable useful segmentation of the population to better target messaging and promotions that will resonate with the appropriate audience. There is tremendous business value in vendors gaining insight into the consumers' minds around this topic as it can

drive better marketing activity to influence awareness, consideration, preference and ultimately purchasing campaigns. Marketing the wrong product features to the wrong audience results in a low marketing ROI. Customer insight is powerful and can properly navigate the vendor toward the right direction in developing message and value propositions that hit the mark, resulting in higher sales and higher returns on their investment.

Methodology

This researcher used secondary data, collected and approved for use by Hewlett-Packard. The secondary data was collected from a web-based survey commissioned by HP in April 2006 with Survey Sampling International (SSI) to better understand laptop consumer behavior and brand loyalty. HP will cut and analyze this data several ways over the next 12 months. The first rollout was a one dimensional report focusing on HP consumers only. The proposed analysis by this researcher included a multi-dimensional view examining several brands simultaneously focusing on a key subset of data that is discussed further in this chapter.

The selection process HP underwent to determine the appropriate third party to conduct the survey involved the development of a Request for Proposal and submittal to five industry recognized firms. A rigorous review of the responses was performed that involved interviews with key HP stakeholders and the top 2 firms. The decision was made by comparing the soundness of methodology, available references and thoroughness of deliverables committed by the firm.

Survey Sampling International offers sampling solutions globally and is used by 43 of the top 50 research firms in the world and was responsible for inventing and introducing to the market low incidence target samples in 1991. Founded in 1977, the company offers sampling

products via the Internet, phone, mail and personal interview. In 1995 SSI launched the first web site dedicated to supporting marketing research industry, WorldOpinion. (Retrieved October 15, 2006 from http://www.surveysampling.com/)

The data was a compilation of responses from a web-based survey, targeted at laptop owners in the United States to gain clarity around the relative importance of buying criteria to these consumers. The measurement questions focused on assessing the prioritization of pre-identified criteria used by consumers, understanding how they contribute to the selection process in addition to a series of demographic identifications that will aid in the segmentation process. This direction was provided by HP. The development of the questions was the responsibility of SSI with input from HP. This stage of the project required dedicated resources from HP and SSI to design a survey that would meet the needs of HP while maintaining the methodology preserved by SSI and was completed in approximately fifteen hours over the course of one business week and six iterations.

A quantitative study testing the series of hypotheses around the criteria and demographics and how they relate to the purchase decision was conducted to determine if any or a combination of these variables could be linked to buying behavior, defined as the brand of laptop purchased.

Study of the Population and Sample

Description of Sample

The data consisted of a total of 775 respondents who had recently purchased a laptop in or after April 2005. The sample of 775 participants in this survey was solicited by email invitation to SSI panelists, who were pre-registered users that had completed a detailed profile. More than 1,000 potential respondents were invited to participate, and with a series of qualifying

questions to fill the predetermined quota established by HP, candidates that did not meet the criteria were terminated from completion of the survey.

They were recruited though thousands of websites, with the assistance of data aggregators, to compile the potential population. In using such a wide array or sources for their panelists, SSI can minimize their bias and better ensure consistency of panel composition over time. Potential panelists receive a series of profiling surveys to gather their shopping habits, auto ownership, ailments, lifestyles, hobbies and interests. Response rates from these subgroups are as high as 60% within SSI. An incentive and rewards program is in place to strike a response chord with the population, and frequent checks of response rates with the individuals is assessed, often resulting in removal of non-responders.

Census-based weighting was applied to the data to enable generalization to the overall laptop consumer population within the United States. Within the framework of the instrument, the demographic variables that were sought included income, age, gender, education and level of technology competency.

Only those brands laptop brands that had a minimum of 50 responses were used in this study, resulting in 595 cases examined with five brands: Apple, Compaq, Dell, Hewlett-Packard (HP) and Toshiba. This coincides with the five most popular selling laptop brands. At the time of purchase HP had continued to market and sell Compaq-branded laptops in the market due to the brand recognition Compaq had gained in the consumer market.

Measurement Strategy

Data Collection Instrument and Measures

The self-administered, on-line survey consisted of seventeen questions, including nine descriptive, demographic questions as mentioned above with drop down menus, Likert-scale choices or ranking requests. The remaining 8 questions were dedicated toward testing attitudes, information sources, brand equity and criteria ranking. Researchers were testing for attitudes toward technology and information needs as they related to technology adoption and information access and search. How important certain information sources, like advertising and websites, contribute to the purchasing decision was included in addition to the consumer's position and perception around the current brand of their choice. Brand equity was examined through the perceptions of the respondents around company reliability/quality, ease of use, transparency to the public, category leadership and referenceability; all of these questions used a 5-point Likert Scale. A copy of the survey can be found in Appendix A.

Validity

Having taken fifteen hours and six iterations, the design and test of the survey instrument involved 4 stages. First, research was conducted to identify the known buying criteria consumers consider when purchasing laptops. Sources for this material involved secondary research reviews from industry analysts such as International Data Corporation (IDC) and Gartner Research as well as reviews of relevant and timely literature around the topic of consumer choice specifically in the consumer industry. An additional source of information came from personal interviews conducted by SSI with HP employees within the Mobile Computing Business Unit. Upon completion of the research, with the assistance of HP, SSI developed the survey questions.

The third stage in ensuring validity of the instrument was through the use of two pilot testing sessions. These assessments were conducted to ensure quality of the question formation, sequence and answers as reviewed by intuitiveness and ease of completion. The final phase involved the sixth iteration of the instrument before its launch.

Variables

Excluding the laptop brand purchased, the remaining variables that were studied were broken out between two categories, demographic and brand/product attributes as they related to evaluative buying criteria. A series of demographic attributes of the survey participant represented the first group, and in this instance, the consumer of the laptop. They included gender, age, education level and technology competency. The brand/product attributes were broken down between physical, tangible product related measures such as product features and reliability. The brand-like attributes were the less tangible, "soft" measures such as past experience with the computer vendor and the use of various information sources that contributed to the decision. Each of these variables are discussed in more detail in conjunction with the research question and corresponding hypotheses.

Research Questions and Hypotheses

Each research question, supporting hypotheses and description of related variables are provided in the following section.

Demographics

Research question 1. Is there a relationship between the demographics of a laptop user and the brand of laptop purchased?

$H1_0$ The brand of laptop purchased is independent of the age of the laptop owner.

$H2_0$ The brand of laptop purchased is independent of the education level of the laptop owner.

Education level is categorized as "no college," "associates degree," "bachelor's degree," "graduate courses taken," and "graduate degree."

$H3_0$ The brand of laptop purchased is independent of the gender of the laptop owner.

Gender is categorized as "male" or "female."

$H4_0$ The brand of laptop purchased is independent of the technical competence of the laptop owner.

The technology competency is addressed in question 15 of the survey to gauge the comfort level of the participant around new technology and their level of expertise. Question 15 asks:

> Which of the following statements best describes your level of technology competency? Please select only one.
> a) Others frequently seek my advice on and assistance with technical topics
> b) I'm no expert, but I can generally get by on my own technology know-how
> c) I need to ask a lot of questions to cope with technology
> d) I have trouble finding the "on" switch

Note that the responses are in decreasing order of technical competence, with response "a" indicating the highest level and response "d" the lowest.

Research question 2. Does a relationship exist between the demographics of a laptop user and the most important evaluative buying criteria identified by the consumer in contributing to the purchase decision?

$H5_0$ A laptop owner's most important evaluative criteria for purchasing the laptop is independent of his/ her age.

In Question 11, respondents were asked to choose the most important criterion in their final purchase decision, with the choices being "price," "product quality/features/design," "brand image," "recommendations," and "ease of purchase."

$H6_0$ A laptop owner's most important evaluative criteria for purchasing the laptop is independent of his/ her education level.

$H7_0$ A laptop owner's most important evaluative criteria for purchasing the laptop is independent of his/ her gender.

$H8_0$ A laptop owner's most important evaluative criteria for purchasing the laptop is independent of his/ her technical competence.

Research question 3. Is there a relationship between the relative importance of various information sources and the demographics of a laptop user?

Direct mail, catalog, email are marketing techniques to communicate with the consumer base. The vehicle, whether it be a postcard or catalog in traditional mail or an email outlining the details of an new laptop or upcoming promotion, is intended to communicate directly with the identified consumer in an effort to provide him with the necessary information to consider purchasing.

$H9_0$ How important the laptop owner sees the use of direct mail, catalogs or email from the Manufacturer as an information source for laptop purchasing is independent of his / her age.

$H10_0$ How important the laptop owner sees the use of direct mail, catalogs or email from the Manufacturer as an information source for laptop purchasing is independent of his / her education level.

$H11_0$ How important the laptop owner sees the use of direct mail, catalogs or email from the Manufacturer as an information source for laptop purchasing is independent of his / her gender.

$H12_0$ How important the laptop owner sees the use of direct mail, catalogs or email from the Manufacturer as an information source for laptop purchasing is independent of his / her technical competence.

The Manufacturer or Retail websites refer specifically to the dedicated section that provides the information necessary to consumer to consider, select and if desired, purchase the laptop.

$H13_0$ How important the laptop owner sees the use of manufacturer or retail websites as an information source for laptop purchasing is independent of his / her age.

$H14_0$ How important the laptop owner sees the use of manufacturer or retail websites as an information source for laptop purchasing is independent of his / her education level.

$H15_0$ How important the laptop owner sees the use of manufacturer or retail websites as an information source for laptop purchasing is independent of his / her gender.

$H16_0$ How important the laptop owner sees the use of manufacturer or retail websites as an information source for laptop purchasing is independent of his / her technical competence.

Retail store visits refer to the physical locality of a traditional "brick and mortar" store into which a consumer can go to seek out product knowledge in addition to the ability to touch and handle the prospective laptops.

17_0 How important the laptop owner sees the use of retail store visits as an information source for laptop purchasing is independent of the laptop owner's age.

$H18_0$ How important the laptop owner sees the use of retail store visits as an information source for laptop purchasing is independent of the laptop owner's education level.

$H19_0$ How important the laptop owner sees the use of retail store visits as an information source for laptop purchasing is independent of the laptop owner's gender.

$H20_0$ How important the laptop owner sees the use of retail store visits as an information source for laptop purchasing is independent of the laptop owner's technical competence.

A recommendation from friends, family or neighbors does not distinguish technical competence. It is intended to represent individuals in a positioning of trust with the respondent, whose opinion is respected. The recommendation could be a result of past experiences or

working knowledge of the vendor around brand perception and/or laptop under discussion, a more dedicated conversation to the product.

> $H21_0$ How important the laptop owner sees the use of a recommendation from friends, family member or neighbors as an information source for laptop purchasing is independent of his / her age.
>
> $H22_0$ How important the laptop owner sees the use of a recommendation from friends, family member or neighbors as an information source for laptop purchasing is independent of his / her education level.
>
> $H23_0$ How important the laptop owner sees the use of a recommendation from friends, family member or neighbors as an information source for laptop purchasing is independent of his / her gender.
>
> $H24_0$ How important the laptop owner sees the use of a recommendation from friends, family member or neighbors as an information source for laptop purchasing is independent of his / her technical competence.

Magazine and website review refer to unbiased, third party reviews from recognized institutions such as Consumer Reports, PC World, and InfoWorld.

> $H25_0$ How important the laptop owner sees the use of magazine or website reviews as an information source for laptop purchasing is independent of his / her age.
>
> $H26_0$ How important the laptop owner sees the use of magazine or website reviews as an information source for laptop purchasing is independent of his / her education level.
>
> $H27_0$ How important the laptop owner sees the use of magazine or website reviews as an information source for laptop purchasing is independent of his / her A relationship between gender.
>
> $H28_0$ How important the laptop owner sees the use of magazine or website reviews as an information source for laptop purchasing is independent of his / her technical competence.

A technology or IT expert, used as an information source, can be identified as an individual in a position demonstrating expertise, such as a help desk, or retail store in addition to an IT department at the respondent's place of employment.

> $H29_0$ How important the laptop owner sees the recommendation of a technology or IT expert as an information source for laptop purchasing is independent of his / her age.

$H30_0$ How important the laptop owner sees the recommendation of a technology or IT expert as an information source for laptop purchasing is independent of his / her education level.

$H31_0$ How important the laptop owner sees the recommendation of a technology or IT expert as an information source for laptop purchasing is independent of his / her gender.

$H32_0$ How important the laptop owner sees the recommendation of a technology or IT expert as an information source for laptop purchasing is independent of his / her technology competence.

Research question 4. Does a relationship exist between the between the demographics of a laptop user and the tangible, product-like attributes considered in the purchase decision?

Product reliability directly addresses the quality of the system and its uptime. The importance of this attribute is rated on a 5-point scale from "not at all important" to "most important."

$H33_0$ The importance of perceived product reliability in purchasing a laptop is independent of the laptop owner's age.

$H34_0$ The importance of perceived product reliability in purchasing a laptop is independent of the laptop owner's education level.

$H35_0$ The importance of perceived product reliability in purchasing a laptop is independent of the laptop owner's gender.

$H36_0$ The importance of perceived product reliability in purchasing a laptop is independent of the laptop owner's technical competence.

Performance and capacity directly addresses the product features of the laptop, including processor speed, disk space and memory. Performance relates to how fast the system responds to commands, and capacity represents the real estate available for hard disk and memory storage. Other features are also considered in this set, like graphics cards, wireless functionality and weight/size of the product. The importance of this attribute is rated on a 5-point scale from "not at all important" to "most important."

$H37_0$ The importance of performance and capacity in purchasing a laptop is independent of the laptop owner's age.

$H38_0$ The importance of performance and capacity in purchasing a laptop is independent of the laptop owner's education level.

$H39_0$ The importance of performance and capacity in purchasing a laptop is independent of the laptop owner's gender.

$H40_0$ The importance of performance and capacity in purchasing a laptop is independent of the laptop owner's technical competence.

Research question 5. Does a relationship exist between the between the demographics of a laptop user and the soft, intangible attributes considered in the purchase decision?

Not all consumers purchase based on tangible facts. Having the insight to better understand the relationship of the demographic sub-segment with these variables better positions a laptop vendor to efficiently market and influence the purchase of their product. Several of these attributes are subjective, like a recommendation of a friend, and challenging to use as a lever to shift behavior. That said, others in this category do exist, like advertising or manufacturer/retailer websites that would be in the laptop vendor's control to affect positive purchasing trends. The variable of past vendor experience does not limit itself to a previous purchase, as it can not. It relates to any and all experience a consumer has with that particular brand. Regardless of any attempt on the vendor's part to partition bad experiences, all experiences lend themselves as contributors to the decision of the consumer to engage again. If a recent purchase of an HP printer was superior, and follow support service to the digital camera that was purchase 18 months ago, the positive experience may lend itself to an advantage for HP. Likewise, unpleasant experiences would result in a disadvantage.

$H41_0$ The importance of past vendor experience in purchasing a laptop is independent of the laptop owner's age.

$H42_0$ The importance of past vendor experience in purchasing a laptop is independent of the laptop owner's education level.

$H43_0$ The importance of past vendor experience in purchasing a laptop is independent of the laptop owner's gender.

$H44_0$ The importance of past vendor experience in purchasing a laptop is independent of the laptop owner's technical competence.

Brand

Research question 6. Is there a relationship between the laptop brand purchased and the relative importance of various information sources used by the consumer?

$H45_0$ The brand of laptop purchased is independent of how important the laptop owner sees the use of direct mail, catalogs or email from the Manufacturer as an information source.

$H46_0$ The brand of laptop purchased is independent of how important the laptop owner sees the use of Manufacturer or retail websites as an information source for laptop purchasing.

$H47_0$ The brand of laptop purchased is independent of how important the laptop owner sees the use of retail store visits as an information source for laptop purchasing.

$H48_0$ The brand of laptop purchased is independent of how important the laptop owner sees the use of friends, family member or neighbors as an information source for laptop purchasing.

$H49_0$ The brand of laptop purchased is independent of how important the laptop owner sees the use of magazine or website reviews as an information source for laptop purchasing.

$H50_0$ The brand of laptop purchased is independent of how important the laptop owner sees the use of a technology or IT expert as an information source for laptop purchasing.

Research question 7. Does a relationship exist between the tangible, product-like attributes considered in the purchase decision and the laptop brand selected?

$H51_0$ The brand of laptop purchased is independent of the importance of perceived product reliability of the laptop purchased.

$H52_0$ The brand of laptop purchased is independent of the importance of performance and capacity of the laptop purchased.

Research question 8: Does a relationship exist between the soft, intangible attributes considered in the purchase decision and the laptop brand selected?

$H53_0$ The brand of laptop purchased is independent of past vendor experience.

Note that the information sources hypotheses will also be considered as soft attributes for the purpose of this study.

Research question 9. Is there a relationship between the laptop brand purchased and the most important evaluative buying criteria identified by the consumer in contributing to the purchase decision?

$H54_0$ The brand of laptop purchased is independent of a laptop owner's most important evaluative criteria for purchasing the laptop.

Data Analysis Procedures

A descriptive analysis of all variables was performed to include the review of frequencies and distributions. A consumer profile purchasing the five highlighted brands is introduced. All hypotheses were tested using the Chi Square Test of Independence to evaluate the existence of a relationship between the variables identified. The raw data was provided by SSI in an SPSS file. The statistical analysis will be conducted using SPSS version 13.0 for Windows.

Assumptions and Limitations

It is assumed that the respondents were able to answer the questions honestly and accurately despite the length of time since the purchase was made. It is also assumed that the panelist used by Survey Sampling International was representative of the US population of non-corporate laptop purchasers.

CHAPTER 4. DATA COLLECTION AND ANALYSIS

The purpose of this study was to determine if a relationship existed between the brand of laptop consumers select and a variety of demographic and evaluative buying criteria considered in the process. The demographic variables tested included age, education level and the degree of technical. The result will provide laptop vendors a unique perspective on the consideration and selection phase. The results will further enable useful segmentation of the population to better target messaging and promotions that will resonate with the appropriate audience.

This study answered a series of nine research questions within two categories through the development of relevant hypotheses and use of statistical techniques to either prove or disprove them.

Demographics

1. Is there a relationship between the demographics of a laptop user and the brand purchased?

2. Does a relationship exist between the demographics of a laptop user and the most important evaluative buying criteria identified by the consumer in contributing to the purchase decision?

3. Is there a relationship between the relative importance of various information sources and the demographics of a laptop user?

4. Does a relationship exist between the between the demographics of a laptop user and the tangible, product-like attributes considered in the purchase decision?

5. Does a relationship exist between the between the demographics of a laptop user and the soft, intangible attributes considered in the purchase decision?

Brand

1. Is there a relationship between the laptop brand purchased and the relative importance of various information sources used by the consumer?

2. Does a relationship exist between the tangible, product-like attributes considered in the purchase decision and the laptop brand selected?

3. Does a relationship exist between the soft, intangible attributes considered in the purchase decision and the laptop brand selected?

4. Is there a relationship between the laptop brand purchased and the most important evaluative buying criteria identified by the consumer in contributing to the purchase decision?

The results and detailed analyses in the quest to answer these questions are systematically represented in this chapter. Prior to hypotheses testing, the respondent characteristics within the sample are presented. The results of the hypotheses testing are then introduced beginning with cross referencing the collection instrument questions that addressed the particular hypothesis followed by an analysis of the results.

The chi-square test for independence was conducted to determine the statistical significance of these hypotheses. Chi-square is based on the observed versus expected frequencies when data is compared with a large value indicating that a statistically significant relationship exists between two variables and the sig. value/p-value is less than .05.

Respondent Characteristics

Of the total 775 respondents, 595 were included, having purchased one of the five laptop brands that were the focus of this study. Within that sample existed a fairly even breakdown of demographics, as requested by HP during the design phase of the survey and do not include missing data.

Table 2. Gender Descriptive Statistics

Q. S4 Are you?				
Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Male	291	48.9	48.9	48.9
Female	304	51.1	51.1	100.0
Total	595	100.0	100.0	

The distribution of male and female participants was normal. Males represented 48.9% (n=291) of the sample size while females represented 51.1% (n=304).

Table 3. Age Group Descriptive Statistics

Q. S6 In Which of the Following Age Groups Do You Belong?				
Valid	Frequency	Percent	Valid Percent	Cumulative Percent
18-24	134	22.5	22.5	22.5
25-34	149	25.0	25.0	47.6
35-44	162	27.2	27.2	74.8
45-plus	150	25.2	25.2	100.0
Total	595	100.0	100.0	

Similar in normal distribution, the age groups of the participants was also relatively even. The youngest group of respondents, ranging in age from 18-24 represented 22.5% of the sample, while 25% was made up from the second youngest group with an age range of 25-34. The largest

segment, 27.2% of the sample was the age group of 35-44, and the oldest category, 45 and older contributed 25.2% of the entire sample.

Table 4. Education Level Descriptive Statistics

Q. S8 What Is The Highest Grade Of School You Completed?				
Valid	Frequency	Percent	Valid Percent	Cumulative Percent
No College Degree	96	16.1	16.1	16.1
AA	235	39.5	39.5	55.6
BS	121	20.3	20.3	76.0
Some Grade Courses	50	8.4	8.4	84.4
MS	93	15.6	15.6	100.0
Total	595	100.0	100.0	

Where the sample began to diverge in terms of distribution at the demographic level was with education. The most highly educated group (MS) represented the second smallest segment with just 15.5%, and the smallest group of respondents (8.4%) was those having taken some graduate courses. The largest representation was 39.5% of the sample and described those participants with an Associates degree. Respondents with a Bachelors degree was 20.3% and the group with the lowest level of education and not college degree represented 16.1%.

Table 5. Technical Competence Level Descriptive Statistics

Q. 15a Which Of The Following Statements Best Describes Your Level of Technology Competency?				
Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Others frequently seek my advice and assistance	190	31.9	31.9	31.9
I'm no expert, but I can generally get by on my own	375	63.0	63.0	95.0
I need to ask a lot of questions	30	5.0	5.0	100.0
Total	595	100.0	100.0	

The level of technical competency among the sample of 595 laptop owners was heavily weighted toward "average". 63% felt as though they were self-sufficient while 31.9% were self-ascribed experts. Only 5% felt as though they were novices.

Results

Research question 1. Is there a relationship between the demographics of a laptop user and the brand of laptop purchased?

To support this question in answering the existence of relationship between a series of demographic variables and brand, four hypotheses were developed, representing each of the four demographics against the constant variable of brand.

$H1_0$ The brand of laptop purchased is independent of the age of the laptop owner.

This hypothesis was evaluated by comparing responses to question 3 and question S6 on the survey. Question 3 queried on the brand of laptop purchased; question S6 probed on age.

Table 6. Crosstabulation for H1

Q. S6 In Which One of the Following Age Groups Do You Belong?							
		Considering Your Most Recently Purchased Laptop/Notebook Computer, What Is the Brand?					
		Apple	Compaq	Dell	Hewlett-Packard (HP)	Toshiba	Total
18–24	Count	15	20	57	32	10	134
	%	27.3	30.3	22.5	24.1	11.4	22.5
25–34	Count	11	11	72	35	20	149
	%	20.0	16.7	28.5	26.3	22.7	25.0
35–44	Count	15	21	66	31	29	162
	%	27.3	31.8	26.1	23.3	33.0	27.2
45+	Count	14	14	58	35	29	150
	%	25.5	21.2	22.9	26.3	33.0	25.2
Total	Count	55	66	253	133	88	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 7. Chi Square Test for H1

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.735(a)	12	.160
Likelihood Ratio	17.660	12	.126
Linear-by-Linear Association	6.891	1	.009
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 12.39.

Since the p-value is 0.160, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the brand of laptop purchased by a consumer was related to the consumer's age.

$H2_0$ The brand of laptop purchased is independent of the education level of the laptop owner.

This hypothesis was evaluated by comparing responses to question 3 and question S8 on the survey. Question 3 queried on the brand of laptop purchased; question S8 probed on level of education of the consumer.

Table 8. Crosstabulation for H2

Q. 8 What Is The Highest Grade of School You Completed?							
		Considering Your Most Recently Purchased Laptop/Notebook Computer, What Is the Brand?					
		Apple	Compaq	Dell	Hewlett-Packard (HP)	Toshiba	Total
No College Degree	Count	5	15	36	26	14	96
	%	9.1	22.7	14.2	19.5	15.9	16.1
AA	Count	16	36	99	50	34	235
	%	29.1	54.5	39.1	37.6	38.6	39.5
BS	Count	16	6	46	37	16	121
	%	29.1	9.1	18.2	27.8	18.2	20.3
Some Graduate Course	Count	8	4	26	57	35	50
	%	14.5	6.1	10.3	3.8	8.0	8.4
MS	Count	10	5	46	15	17	93
	%	18.2	7.6	18.2	11.3	19.3	15.6
Total	Count	55	66	253	133	88	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 9. Chi Square Test for H2

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	34.850(a)	16	.004
Likelihood Ratio	36.290	16	.003
Linear-by-Linear Association	.124	1	.725
N of Valid Cases	595		

Note. 1 cell (4%) has expected count less than 5. The minimum expected count is 4.62.

Since the p-value is 0.004, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the brand of laptop purchased by a consumer is dependent on the consumer's education level. It appears as though consumers with the least amount of education choose Compaq; those with the highest level of education choose Dell or Toshiba, and Apple is brand of choice for the segments in between.

$H3_0$ The brand of laptop purchased is independent of the gender of the laptop owner. Gender is categorized as "male" or "female".

This hypothesis was evaluated by comparing responses to question 3 and question S4 on the survey. Question 3 queried on the brand of laptop purchased; question S4 asked the gender of the consumer.

Table 10. Crosstabulation for H3

Q. S4 Are You?							
		Considering Your Most Recently Purchased Laptop/Notebook Computer, What Is the Brand?					
		Apple	Compaq	Dell	Hewlett-Packard (HP)	Toshiba	Total
Male	Count	27	37	112	69	46	291
	%	49.1	26.1	44.3	51.9	52.3	48.9
Female	Count	26	29	141	64	42	304
	%	50.9	43.9	55.7	48.1	17.7	51.1
Total	Count	55	66	253	133	88	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 11. Chi Square Test for H3

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.400(a)	4	.355
Likelihood Ratio	4.408	4	.354
Linear-by-Linear Association	.663	1	.415
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 26.90.

Since the p-value is 0.355, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the brand of laptop purchased by a consumer was related to the consumer's gender.

$H4_0$ The brand of laptop purchased is independent of the technical competence of the laptop owner.

This hypothesis was evaluated by comparing responses to question 3 and question 15a on the survey. Question 3 queried on the brand of laptop purchased; question 15a probed the consumer to self-select their perceived level of technical competence.

Table 12. Crosstabulation for H4

Q. 15a Which Of The Following Best Describes Your Level Of Technology Competency?							
		Considering Your Most Recently Purchased Laptop/Notebook Computer, What Is the Brand?					
		Apple	Compaq	Dell	Hewlett-Packard (HP)	Toshiba	Total
Others frequently seek my advice and assistance	Count	14	20	79	47	30	190
	%	25.5	30.3	31.2	35.3	34.1	31.9
I'm no expert, but I can generally get by on my own	Count	38	42	159	80	56	375
	%	69.1	63.6	62.8	60.2	63.6	63.0
I need to ask a lot of questions	Count	3	4	15	6	2	30
	%	5.5	6.1	5.9	4.5	2.3	5.0
Total	Count	55	66	253	133	88	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 13. Chi Square Test for H4

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.897(a)	8	.866
Likelihood Ratio	4.247	8	.834
Linear-by-Linear Association	2.233	1	.135
N of Valid Cases	595		

Note. 3 cells (20%) have expected count less than 5. The minimum expected count is 2.77.

Since the p-value is 0.866, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the brand of laptop purchased by a consumer was related to the consumer's level of technical competence.

Research question 2. Does a relationship exist between the demographics of a laptop user and the most important evaluative buying criteria identified by the consumer in contributing to the purchase decision?

In support of this question examining the same demographic variables against a different constant, the most important evaluative buying criteria, four more hypotheses were developed.

$H5_0$ A laptop owner's most important evaluative criterion for purchasing the laptop is independent of his/ her age.

This hypothesis was evaluated by comparing responses to question 11 and question S6 on the survey. Question 11 queried on the most important buying criteria considered by the consumer in their laptop consumer; question S6 probed on age.

Table 14. Crosstabulation for H5

Q. S6 In Which One of the Following Age Groups Do You Belong?							
		Most Important Criteria In Final Purchase Decision?					
		Price	Quality/Features/ Design	Brand Image	Recommendations (Personal or Media)	Ease of Purchase	Total
18–24	Count	47	44	14	16	13	134
	%	24.4	18.3	25.9	23.2	33.3	22.5
25–34	Count	55	53	15	16	10	149
	%	28.5	22.1	27.8	23.2	25.6	25.0
35–44	Count	57	61	14	21	9	162
	%	29.5	25.4	25.9	30.4	23.1	27.2
45+	Count	34	82	11	16	7	150
	%	17.6	34.2	20.4	23.2	17.9	25.2
Total	Count	193	240	54	69	39	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 15. Chi Square Test for H5

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.181(a)	12	.048
Likelihood Ratio	20.902	12	.052
Linear-by-Linear Association	.206	1	.650
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 12.39.

Since the p-value is 0.048, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the most important buying criteria identified by a consumer is dependent on the consumer's age. It appears as though price is the most importance criteria to the age group of 35-44 and the least important to those 45 and older. Product quality and features appeal the most to the oldest crowd while ease of purchase appealed to the youngest.

$H6_0$ A laptop owner's most important evaluative criterion for purchasing the laptop is independent of his/ her education level.

This hypothesis was evaluated by comparing responses to question 11 and question S8 on the survey. Question 11 queried on the most important buying criteria considered by the consumer in their laptop consumer; question S8 probed on level of education of the consumer.

Table 16. Crosstabulation for H6

Q. 8 What Is The Highest Grade of School You Completed?							
		Most Important Criteria In Final Purchase Decision?					
		Price	Quality/ Features/ Design	Brand Image	Recommendations (Personal or Media)	Ease of Purchase	Total
No College Degree	Count	39	27	11	11	8	96
	%	20.2	11.3	20.4	15.9	20.5	16.1
AA	Count	82	94	16	29	14	235
	%	42.5	93.2	29.6	42.0	35.9	39.5
BS	Count	39	50	15	8	9	121
	%	20.2	20.8	27.8	11.6	23.1	20.3
Some Graduate Course	Count	9	28	2	6	5	50
	%	4.7	11.7	3.7	8.7	12.8	8.4
MS	Count	24	41	10	15	3	93
	%	12.4	17.1	18.5	21.7	7.7	15.6
Total	Count	193	240	54	59	39	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 17. Chi Square Test for H6

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	26.530(a)	16	.047
Likelihood Ratio	27.962	16	.032
Linear-by-Linear Association	.987	1	.320
N of Valid Cases	595		

Note. 2 cells (8%) have expected count less than 5. The minimum expected count is 3.28.

Since the p-value is 0.004, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the most important buying criteria identified by a consumer is dependent of the consumer's education level. It appears as though price is the most important buying criteria for those respondents with an Associates degree while ease of purchase is the most important for those with no college and those who have taken some graduate courses. Bachelor's degree recipients acknowledge brand image as most important while the most highly educated look to recommendations either personal or through the media as the most important criteria in contributing to the purchase.

$H7_0$ A laptop owner's most important evaluative criterion for purchasing the laptop is independent of his/ her gender.

This hypothesis was evaluated by comparing responses to question 11 and question S4 on the survey. Question 11 queried on the most important buying criteria considered by the consumer in their laptop consumer; question S4 asked the gender of the consumer.

Table 18. Crosstabulation for H7

		Q. S4 Are You?					
		Most Important Criteria In Final Purchase Decision?					
		Price	Quality/Features/ Design	Brand Image	Recommendations (Personal or Media)	Ease of Purchase	Total
Male	Count	83	119	33	34	22	291
	%	43.0	49.6	61.1	49.3	56.4	48.9
Female	Count	110	121	21	35	17	304
	%	57.0	50.4	38.9	50.7	43.6	51.1
Total	Count	193	240	54	69	39	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 19. Chi Square Test for H7

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.835(a)	4	.145
Likelihood Ratio	6.869	4	.143
Linear-by-Linear Association	3.489	1	.062
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 19.07.

Since the p-value is 0.145, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the most important evaluative buying criterion identified by the laptop consumer was related to the consumer's gender.

$H8_0$ A laptop owner's most important evaluative criterion for purchasing the laptop is independent of his/ her technical competence.

This hypothesis was evaluated by comparing responses to question 11 and question 15a on the survey. Question 11 queried on the most important buying criteria considered by the consumer in their laptop consumer; question 15a probed the consumer to self-select their perceived level of technical competence.

Table 20. Crosstabulation for H8

Q. 15a Which Of The Following Best Describes Your Level Of Technology Competency?							
		Most Important Criteria In Final Purchase Decision?					
		Price	Quality/Features/ Design	Brand Image	Recommendations (Personal or Media)	Ease of Purchase	Total
Others frequently seek my advice and assistance	Count	54	84	17	22	13	190
	%	28.0	35.0	31.5	31.9	33.3	31.9
I'm no expert, but I can generally get by on my own	Count	128	149	31	41	24	375
	%	66.31	52.1	57.4	62.3	61.5	63.0
I need to ask a lot of questions	Count	11	7	6	4	2	30
	%	5.7	2.9	11.1	5.8	5.1	5.0
Total	Count	193	240	54	59	39	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 21. Chi Square Test for H8

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.674(a)	8	.371
Likelihood Ratio	8.057	8	.428
Linear-by-Linear Association	.133	1	.715
N of Valid Cases	595		

Note. 3 cells (20%) have expected count less than 5. The minimum expected count is 1.97.

Since the p-value is 0.371, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the most important evaluative buying criterion identified by the consumer was related to the consumer's level of technical competence.

Research question 3. Is there a relationship between the relative importance of various information sources and the demographics of a laptop user?

Continuing to examine the demographics of the laptop user in detail, a series of information sources were introduced to detect if a relationship existed. To support this question a total of 24 hypotheses were developed, studying each of the four demographic variables against each of the six information sources.

> $H9_0$ How important the laptop owner sees the use of direct mail, catalogs or email from the Manufacturer as an information source for laptop purchasing is independent of his / her age.

This hypothesis was evaluated by comparing responses to question 10a and question S6 on the survey. Question 10a queried on how important direct mail, catalogs or email serve as an information source contributing to the laptop purchase; question S6 probed on age.

Table 22. Crosstabulation for H9

Q. S6 In Which One of the Following Age Groups Do You Belong?							
		Importance Rating Of Information Sources: Direct Mail					
		Apple	Compaq	Dell	Hewlett-Packard (HP)	Toshiba	Total
18–24	Count	61	26	29	15	3	134
	%	24.1	24.1	23.4	17.6	12.0	22.5
25–34	Count	57	29	37	18	8	149
	%	22.5	26.9	29.8	21.1	32.0	25.0
35–44	Count	66	27	37	24	8	162
	%	26.1	25.0	29.8	28.2	32.0	27.2
45+	Count	69	26	21	28	6	150
	%	27.3	24.1	16.9	32.9	24.0	25.2
Total	Count	253	108	124	85	25	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 23. Chi Square Test for H9

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.224(a)	12	.428
Likelihood Ratio	12.724	12	.389
Linear-by-Linear Association	.422	1	.516
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 5.63.

Since the p-value is 0.428, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of direct mail, catalogs or email from the Manufacturer as an information source to contribute to the purchasing decision was related to the consumer's age.

> $H10_0$ How important the laptop owner sees the use of direct mail, catalogs or email from the Manufacturer as an information source for laptop purchasing is independent of his / her education level.

This hypothesis was evaluated by comparing responses to question 10a and question S8 on the survey. Question 10a queried on how important direct mail, catalogs or email serve as an information source to the consumer contributing to their laptop purchase; question S8 probed the consumer for their highest level of education.

Table 24. Crosstabulation for H10

Q. 8 What Is The Highest Grade of School You Completed?							
		Importance Rating Of Information Sources: Direct Mail					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
No College Degree	Count	41	15	27	11	2	96
	%	16.2	13.9	21.8	12.9	8.0	16.1
AA	Count	100	38	50	38	9	235
	%	39.5	35.2	10.3	44.7	36.0	39.5
BS	Count	53	31	21	12	4	121
	%	20.9	28.7	16.9	14.1	16.0	20.3
Some Graduate Course	Count	20	8	12	8	2	50
	%	7.9	7.4	9.7	9.4	8.0	8.4
MS	Count	39	16	14	16	8	93
	%	15.4	14.8	11.3	18.8	32.0	15.6
Total	Count	253	108	124	85	25	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 25. Chi Square Test for H10

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.792(a)	16	.280
Likelihood Ratio	17.783	16	.337
Linear-by-Linear Association	.695	1	.408
N of Valid Cases	595		

Note. 3 cells (12%) have expected count less than 5. The minimum expected count is 2.10.

Since the p-value is 0.280, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of direct mail, catalogs or email from the Manufacturer as an information source to contribute to the purchasing decision was related to the consumer's education level.

> $H11_0$ How important the laptop owner sees the use of direct mail, catalogs or email from the Manufacturer as an information source for laptop purchasing is independent of his / her gender.

This hypothesis was evaluated by comparing responses to question 10a and question S4 on the survey. Question 10a queried on how important direct mail, catalogs or email serve as an information source to the consumer contributing to their laptop purchase; question S4 asked for the consumer's gender.

Table 26. Crosstabulation for H11

		Q. S4 Are You?					
		Importance Rating Of Information Sources: Direct Mail					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
Male	Count	114	56	66	44	11	291
	%	45.1	51.9	53.2	51.8	44.0	48.9
Female	Count	139	52	58	41	14	304
	%	54.9	48.1	46.8	48.2	56.0	51.1
Total	Count	253	108	124	85	25	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 27. Chi Square Test for H11

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.318(a)	4	.506
Likelihood Ratio	3.322	4	.505
Linear-by-Linear Association	1.150	1	.284
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 12.23.

Since the p-value is 0.506, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of direct mail, catalogs or email from the Manufacturer as an information source to contribute to the purchasing decision was related to the consumer's gender.

> $H12_0$ How important the laptop owner sees the use of direct mail, catalogs or email from the Manufacturer as an information source for laptop purchasing is independent of his / her technical competence.

This hypothesis was evaluated by comparing responses to question 10a and question 15a on the survey. Question 10a queried on how important direct mail, catalogs or email serve as an information source to the consumer contributing to their laptop purchase; question 15a probed the consumer to self-select their perceived level of technical competence.

Table 28. Crosstabulation for H12

Q. 15a Which Of The Following Best Describes Your Level Of Technology Competency?							
		Importance Rating Of Information Sources: Direct Mail					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
Others frequently seek my advice and assistance	Count	75	41	33	27	14	190
	%	29.5	38.0	26.6	31.8	56.0	31.9
I'm no expert, but I can generally get by on my own	Count	167	65	80	53	10	375
	%	66.0	60.2	64.5	62.4	40.0	63.0
I need to ask a lot of questions	Count	11	2	11	5	1	30
	%	4.3	1.9	8.9	5.9	4.0	5.0
Total	Count	253	108	124	85	25	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 29. Chi Square Test for H12

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.128(a)	8	.041
Likelihood Ratio	15.649	8	.048
Linear-by-Linear Association	.351	1	.553
N of Valid Cases	595		

Since the p-value is 0.041, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the relative importance of direct mail, catalogs and email contributing to the purchase decision is dependent of the technical competence of the consumer. It appears as though direct mail, catalogs and email are not at all important to consumers with average technical competence and most important to the experts.

$H13_0$ How important the laptop owner sees the use of manufacturer or retail websites as an information source for laptop purchasing is independent of his / her age.

This hypothesis was evaluated by comparing responses to question 10b and question S6 on the survey. Question 10b queried on how Manufacturer or Retail websites serve as an information source to the consumer contributing to their laptop purchase; question S6 probed the consumer about their age.

Table 30. Crosstabulation for H13

Q. S6 In Which One of the Following Age Groups Do You Belong?							
		Importance Rating Of Information Sources: Websites					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
18–24	Count	19	11	37	33	37	134
	%	20.9	24.4	25.7	18.0	25.8	22.5
25–34	Count	18	9	36	46	40	149
	%	19.8	20.0	25.0	25.1	30.3	25.0
35–44	Count	24	12	34	57	35	162
	%	26.4	26.7	23.6	31.1	26.5	27.2
45+	Count	30	13	37	47	23	150
	%	33.0	28.9	25.7	25.7	17.4	25.2
Total	Count	91	45	144	183	132	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 31. Chi Square Test for H13

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.396(a)	45	.341
Likelihood Ratio	13.654	12	.323
Linear-by-Linear Association	3.872	1	.049
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 10.13.

Since the p-value is 0.341, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of Manufacturer or Retail websites as an information source to contribute to the purchasing decision was related to the consumer's age.

$H14_0$ How important the laptop owner sees the use of manufacturer or retail websites as an information source for laptop purchasing is independent of his / her education level.

This hypothesis was evaluated by comparing responses to question 10b and question S8 on the survey. Question 10b queried on how Manufacturer or Retail websites serve as an information source to the consumer contributing to their laptop purchase; question S8 probed the consumer about their level of education.

Table 32. Crosstabulation for H14

Q. 8 What Is The Highest Grade of School You Completed?							
		Importance Rating Of Information Sources: Websites					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
No College Degree	Count	16	10	29	24	17	96
	%	17.6	22.2	20.1	13.1	12.9	16.1
AA	Count	37	17	59	70	52	235
	%	40.7	37.8	41.0	38.3	39.4	39.5
BS	Count	15	10	22	43	31	121
	%	16.5	22.2	15.3	23.5	23.5	20.3
Some Graduate Course	Count	5	3	13	14	15	50
	%	5.5	6.7	9.0	7.7	11.4	8.4
MS	Count	18	5	21	32	17	93
	%	19.8	11.1	14.6	17.5	12.9	15.6
Total	Count	91	45	144	183	132	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 33. Chi Square Test for H14

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.177(a)	16	.586
Likelihood Ratio	14.259	16	.579
Linear-by-Linear Association	.783	1	.376
N of Valid Cases	595		

Note. 1 cell (4.0%) has expected count less than 5. The minimum expected count is 3.78.

Since the p-value is 0.586, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of Manufacturer or Retail websites as an information source to contribute to the purchasing decision was related to the consumer's education level.

$H15_0$ How important the laptop owner sees the use of manufacturer or retail websites as an information source for laptop purchasing is independent of his / her gender.

This hypothesis was evaluated by comparing responses to question 10b and question S4 on the survey. Question 10b queried on how Manufacturer or Retail websites serve as an information source to the consumer contributing to their laptop purchase; question S4 asked the gender of the consumer.

Table 34. Crosstabulation for H15

		Q. S4 Are You?					
		Importance Rating Of Information Sources: Websites					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
Male	Count	39	27	74	93	58	291
	%	42.9	60.0	51.4	50.8	43.9	48.9
Female	Count	52	18	70	90	74	304
	%	57.1	40.0	48.6	49.2	56.1	51.1
Total	Count	91	45	144	183	132	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 35. Chi Square Test for H15

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.475(a)	4	.242
Likelihood Ratio	5.496	4	.240
Linear-by-Linear Association	.050	1	.823
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 22.01.

Since the p-value is 0.242, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of Manufacturer or Retail websites as an information source to contribute to the purchasing decision was related to the consumer's gender.

> $H16_0$ How important the laptop owner sees the use of manufacturer or retail websites as an information source for laptop purchasing is independent of his / her technical competence.

This hypothesis was evaluated by comparing responses to question 10b and question 15a on the survey. Question 10b queried on how Manufacturer or Retail websites serve as an information source to the consumer contributing to their laptop purchase; question 15a probed the consumer to self-select their perceived level of technical competence.

Table 36. Crosstabulation for H16

Q. 15a Which Of The Following Best Describes Your Level Of Technology Competency?							
		Importance Rating Of Information Sources: Websites					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
Others frequently seek my advice and assistance	Count	23	11	41	58	57	190
	%	25.3	24.4	28.5	31.7	43.2	31.9
I'm no expert, but I can generally get by on my own	Count	60	32	91	121	71	375
	%	65.9	71.1	63.2	66.1	53.8	63.0
I need to ask a lot of questions	Count	8	2	12	4	4	30
	%	8.8	4.4	8.3	2.2	3.0	5.0
Total	Count	91	45	144	183	132	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 37. Chi Square Test for H16

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	20.166(a)	8	.010
Likelihood Ratio	19.906	8	.011
Linear-by-Linear Association	12.358	1	.000
N of Valid Cases	595		

Note. 2 cells (13.3%) have expected count less than 5. The minimum expected count is 2.27.

Since the p-value is 0.010, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the relative importance of Manufacturer and Retailer websites contributing to the purchase decision is dependent of the technical competence of the consumer. It appears the higher level of technical competence of the consumer the less importance Manufacturer websites contribute to the purchase decision. Websites are the most important to the novice while not at all important to the expert.

$H17_0$ How important the laptop owner sees the use of retail store visits as an information source for laptop purchasing is independent of his / her age.

This hypothesis was evaluated by comparing responses to question 10c and question S6 on the survey. Question 10c queried on how important Retail store visits serve as an information source to the consumer contributing to their laptop purchase; question S6 probed the consumer about their age.

Table 38. Crosstabulation for H17

Q. S6 In Which One of the Following Age Groups Do You Belong?							
		Importance Rating Of Information Sources: Retail Store Visit					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
18–24	Count	34	15	31	31	23	134
	%	23.6	23.1	22.8	20.9	22.5	22.5
25–34	Count	35	12	43	40	19	149
	%	24.3	18.5	31.6	27.0	18.6	25.0
35–44	Count	38	20	31	41	32	162
	%	26.4	30.8	22.8	27.7	31.4	27.2
45+	Count	37	18	31	36	28	150
	%	25.7	27.7	22.8	24.3	27.5	25.2
Total	Count	144	65	136	148	102	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 39. Chi Square Test for H17

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.375(a)	12	.755
Likelihood Ratio	8.485	12	.746
Linear-by-Linear Association	.158	1	.691
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 14.64.

Since the p-value is 0.755, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of retail store visits as an information source to contribute to the purchasing decision was related to the consumer's age.

$H18_0$ How important the laptop owner sees the use of retail store visits as an information source for laptop purchasing is independent of his / her education level.

This hypothesis was evaluated by comparing responses to question 10c and question S8 on the survey. Question 10c queried on how important Retail store visits serve as an information source to the consumer contributing to their laptop purchase; question S8 probed the consumer about their education level.

Table 40. Crosstabulation for H18

Q. 8 What Is The Highest Grade of School You Completed?							
		Importance Rating Of Information Sources: Retail Store Visit					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
No College Degree	Count	22	7	27	28	12	96
	%	15.3	10.8	19.9	18.9	11.8	16.1
AA	Count	61	32	51	53	38	235
	%	42.4	49.2	37.5	35.8	37.3	39.5
BS	Count	29	11	25	33	23	121
	%	20.1	16.9	18.4	22.3	22.5	20.3
Some Graduate Course	Count	12	4	12	10	12	50
	%	8.3	6.2	8.8	6.8	11.8	8.4
MS	Count	20	11	21	24	17	93
	%	13.9	16.9	15.4	16.2	16.7	15.6
Total	Count	144	65	136	148	102	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 41. Chi Square Test for H18

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.824(a)	16	.820
Likelihood Ratio	10.832	16	.820
Linear-by-Linear Association	.923	1	.337
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 5.46.

Since the p-value is 0.820, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of retail store visits as an information source to contribute to the purchasing decision was related to the consumer's education level.

$H19_0$ How important the laptop owner sees the use of retail store visits as an information source for laptop purchasing is independent of his / her gender.

This hypothesis was evaluated by comparing responses to question 10c and question S4 on the survey. Question 10c queried on how important Retail store visits serve as an information source to the consumer contributing to their laptop purchase; question S4 asked the gender of the consumer.

Table 42. Crosstabulation for H19

		Q. S4 Are You?					
		Importance Rating Of Information Sources: Retail Store Visits					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
Male	Count	64	35	71	82	39	291
	%	44.4	53.8	52.2	55.4	38.2	48.9
Female	Count	80	30	65	66	63	304
	%	55.6	46.2	47.8	44.6	61.8	51.1
Total	Count	144	65	136	148	102	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 43. Chi Square Test for H19

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.524(a)	4	.049
Likelihood Ratio	9.581	4	.048
Linear-by-Linear Association	.021	1	.885
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 31.79.

Since the p-value is 0.049, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the relative importance of retail visits contributing to the purchase decision is dependent of the technical competence of the consumer. While no conclusive pattern surfaced, there is a distinctly different rating of importance of retail store visits between gender.

> $H20_0$ How important the laptop owner sees the use of retail store visits as an information source for laptop purchasing is independent of his / her technical competence.

This hypothesis was evaluated by comparing responses to question 10c and question 15a on the survey. Question 10c queried on how important Retail store visits serve as an information source to the consumer contributing to their laptop purchase; question 15a probed the consumer to self-select their perceived level of technical competence.

Table 44. Crosstabulation for H20

Q. 15a Which Of The Following Best Describes Your Level Of Technology Competency?							
		Importance Rating Of Information Sources: Websites					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
Others frequently seek my advice and assistance	Count	40	28	40	45	37	190
	%	27.8	43.1	29.4	30.4	36.3	31.9
I'm no expert, but I can generally get by on my own	Count	99	36	86	93	61	375
	%	38.8	55.4	63.2	62.8	59.8	63.0
I need to ask a lot of questions	Count	5	1	10	10	4	30
	%	3.5	1.5	7.4	6.8	3.9	5.0
Total	Count	144	65	136	148	102	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 45. Chi Square Test for H20

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.652(a)	8	.222
Likelihood Ratio	10.869	8	.209
Linear-by-Linear Association	.051	1	.821
N of Valid Cases	595		

Note. 1 cell (6.7%) has expected count less than 5. The minimum expected count is 3.28.

Since the p-value is 0.222, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of retail store visits as an information source to contribute to the purchasing decision was related to the consumer's technical competence.

> $H21_0$ How important the laptop owner sees the use of a recommendation from friends, family member or neighbors as an information source for laptop purchasing is independent of his / her age.

This hypothesis was evaluated by comparing responses to question 10d and question S6 on the survey. Question 10d queried on how important information from friends, family and neighbors serve as an information source to the consumer contributing to their laptop purchase; question S6 probed the consumer about their age.

Table 46. Crosstabulation for H21

Q. S6 In Which One of the Following Age Groups Do You Belong?							
		Importance Rating Of Information Sources: Friends, Family or Neighbors					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
18–24	Count	16	18	32	51	17	134
	%	12.4	20.2	20.3	31.1	30.9	22.5
25–34	Count	28	16	53	38	14	149
	%	21.7	18.0	33.5	23.2	25.5	25.0
35–44	Count	45	20	42	37	18	162
	%	34.9	22.5	26.6	22.6	32.7	27.2
45+	Count	40	35	31	38	6	150
	%	31.0	39.3	19.6	23.2	10.9	25.2
Total	Count	129	89	158	164	55	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 47. Chi Square Test for H21

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	41.558(a)	12	.000
Likelihood Ratio	41.858	12	.000
Linear-by-Linear Association	21.902	1	.000
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 12.39.

Since the p-value is 0.000, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the relative importance of recommendations from friends, family and neighbors contributing to the purchase decision is dependent of the age of the consumer. It appears as the older a consumer gets, the less important recommendations from friends and family are to aid in the purchase decision.

> $H22_0$ How important the laptop owner sees the use of a recommendation from friends, family member or neighbors as an information source for laptop purchasing is independent of his / her education level.

This hypothesis was evaluated by comparing responses to question 10d and question S8 on the survey. Question 10d queried on how important information from friends, family and neighbors serve as an information source to the consumer contributing to their laptop purchase; question S8 probed the consumer about their education level.

Table 48. Crosstabulation for H22

Q. 8 What Is The Highest Grade of School You Completed?							
		Importance Rating Of Information Sources: Friends, Family or Neighbors					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
No College Degree	Count	19	16	27	25	9	96
	%	14.7	18.0	17.1	15.2	16.4	16.1
AA	Count	53	32	65	66	19	235
	%	41.1	36.0	14.1	40.2	34.5	39.5
BS	Count	26	21	33	34	7	121
	%	20.2	23.6	20.9	20.7	12.7	20.3
Some Graduate Course	Count	10	5	13	15	7	50
	%	7.8	5.6	8.2	9.1	12.7	8.4
MS	Count	21	15	20	24	13	93
	%	16.3	16.9	12.7	14.6	23.6	15.6
Total	Count	129	69	158	164	55	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 49. Chi Square Test for H22

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.020(a)	16	.913
Likelihood Ratio	8.952	16	.915
Linear-by-Linear Association	.315	1	.575
N of Valid Cases	595		

Note. 1 cell (4.0%) has expected count less than 5. The minimum expected count is 4.62.

Since the p-value is 0.913, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of a recommendation from friends, family or neighbors as an information source to contribute to the purchasing decision was related to the consumer's education level.

> $H23_0$ How important the laptop owner sees the use of a recommendation from friends, family member or neighbors as an information source for laptop purchasing is independent of his / her gender.

This hypothesis was evaluated by comparing responses to question 10d and question S4 on the survey. Question 10d queried on how important information from friends, family and neighbors serve as an information source to the consumer contributing to their laptop purchase; question S4 asked the gender of the consumer.

Table 50. Crosstabulation for H23

		Q. S4 Are You?					
		Importance Rating Of Information Sources: Friends, Family or Neighbors					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
Male	Count	76	61	70	66	18	291
	%	58.9	68.5	44.3	40.2	32.7	48.9
Female	Count	53	28	88	98	37	304
	%	41.1	31.5	55.7	59.8	67.3	51.1
Total	Count	129	89	158	164	55	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 51. Chi Square Test for H23

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.926(a)	4	.000
Likelihood Ratio	31.412	4	.000
Linear-by-Linear Association	23.113	1	.000
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 26.90.

Since the p-value is 0.000, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the relative importance of retail visits contributing to the purchase decision is dependent of the age of the consumer. It appears that females find using friends, family or neighbors as information sources to aid in the purchase decision very important while males do not.

> $H24_0$ How important the laptop owner sees the use of a recommendation from friends, family member or neighbors as an information source for laptop purchasing is independent of his / her technical competence.

This hypothesis was evaluated by comparing responses to question 10d and question 15a on the survey. Question 10d queried on how important information from friends, family and neighbors serve as an information source to the consumer contributing to their laptop purchase; question 15a probed the consumer to self-select their perceived level of technical competence.

Table 52. Crosstabulation for H24

Q. 15a Which Of The Following Best Describes Your Level Of Technology Competency?							
		Importance Rating Of Information Sources: Friends, Family or Neighbors					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
Others frequently seek my advice and assistance	Count	54	29	40	44	23	190
	%	41.9	32.6	25.3	26.8	41.8	31.9
I'm no expert, but I can generally get by on my own	Count	71	53	108	113	30	375
	%	55.0	59.6	68.4	68.9	54.5	63.0
I need to ask a lot of questions	Count	4	7	10	7	2	30
	%	3.1	7.9	6.3	4.3	3.6	5.0
Total	Count	129	89	158	164	55	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 53. Chi Square Test for H24

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.195(a)	8	.040
Likelihood Ratio	15.919	8	.044
Linear-by-Linear Association	1.870	1	.171
N of Valid Cases	595		

Note. 2 cells (13.3%) have expected count less than 5. The minimum expected count is 2.77.

Since the p-value is 0.040, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the recommendations of friends, family and neighbors in contributing to the purchase decision is dependent of the technical competence of the consumer. It appears as though experts do not consider the use of friends, family or neighbors an important information source during their purchasing process.

$H25_0$ How important the laptop owner sees the use of magazine or website reviews as an information source for laptop purchasing is independent of his / her age.

This hypothesis was evaluated by comparing responses to question 10e and question S6 on the survey. Question 10e queried on how important the use of magazines and website reviews serve as an information source to the consumer contributing to their laptop purchase; question S6 probed the consumer about their age.

Table 54. Crosstabulation for H25

Q. S6 In Which One of the Following Age Groups Do You Belong?							
		Importance Rating Of Information Sources: Magazine or Website Reviews					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
18–24	Count	36	23	38	33	7	134
	%	21.6	21.9	24.5	26.0	9.8	22.5
25–34	Count	38	20	41	40	10	149
	%	22.8	19.0	26.5	31.5	24.4	25.0
35–44	Count	48	30	42	24	18	162
	%	28.7	28.6	27.1	18.9	43.9	27.2
45+	Count	45	32	34	30	9	150
	%	26.9	30.5	21.9	23.6	22.0	25.2
Total	Count	167	105	155	127	41	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 55. Chi Square Test for H25

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.050(a)	12	.114
Likelihood Ratio	18.495	12	.101
Linear-by-Linear Association	1.062	1	.303
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 9.23.

Since the p-value is 0.114, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of magazine or website reviews as an information source to contribute to the purchasing decision was related to the consumer's education level.

$H26_0$ How important the laptop owner sees the use of magazine or website reviews as an information source for laptop purchasing is independent of his / her education level.

This hypothesis was evaluated by comparing responses to question 10e and question S8 on the survey. Question 10e queried on how important the use of magazines and website reviews serve as an information source to the consumer contributing to their laptop purchase; question S8 probed the consumer about their education level.

Table 56. Crosstabulation for H26

Q. 8 What Is The Highest Grade of School You Completed?							
		Importance Rating Of Information Sources: Magazine or Website Reviews					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
No College Degree	Count	33	13	26	14	10	96
	%	19.8	12.4	16.8	11.0	24.4	16.1
AA	Count	67	42	59	53	14	235
	%	40.1	40.0	28.1	14.7	34.1	39.5
BS	Count	32	26	32	27	4	121
	%	19.2	24.8	20.6	21.3	9.8	20.3
Some Graduate Course	Count	10	4	20	15	1	50
	%	6.0	3.8	12.9	11.8	2.4	8.4
MS	Count	25	20	18	18	12	93
	%	15.0	19.0	11.6	14.2	29.3	15.6
Total	Count	167	105	155	127	41	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 57. Chi Square Test for H26

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	28.613(a)	16	.027
Likelihood Ratio	28.984	16	.024
Linear-by-Linear Association	1.443	1	.230
N of Valid Cases	595		

Note. 1 cell (4.0%) has expected count less than 5. The minimum expected count is 3.45.

Since the p-value is 0.027, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the relative importance of magazine and website reviews contributing to the purchase decision is dependent of the education level of the consumer. While no conclusive pattern surfaced, there is a distinctly different rating of importance of magazine and website reviews across the different education levels of the consumer.

> $H27_0$ How important the laptop owner sees the use of magazine or website reviews as an information source for laptop purchasing is independent of his/her relationship between gender.

This hypothesis was evaluated by comparing responses to question 10e and question S46 on the survey. Question 10e queried on how important the use of magazines and website reviews serve as an information source to the consumer contributing to their laptop purchase; question S6 probed asked for the gender of the consumer.

Table 58. Crosstabulation for H27

Q. S4 Are You?							
		Importance Rating Of Information Sources: Magazine or Website Reviews					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
Male	Count	82	56	76	59	18	291
	%	49.1	53.3	49.0	46.5	43.9	48.9
Female	Count	85	49	79	68	23	304
	%	50.9	46.7	51.0	53.5	56.1	51.1
Total	Count	167	105	155	127	41	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 59. Chi Square Test for H27

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.543(a)	4	.819
Likelihood Ratio	1.545	4	.819
Linear-by-Linear Association	.641	1	.423
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 20.05.

Since the p-value is 0.819, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of magazine or website reviews as an information source to contribute to the purchasing decision was related to the consumer's gender.

> $H28_0$ How important the laptop owner sees the use of magazine or website reviews as an information source for laptop purchasing is independent of his / her technical competence.

This hypothesis was evaluated by comparing responses to question 10e and question 15a on the survey. Question 10e queried on how important the use of magazines and website reviews serve as an information source to the consumer contributing to their laptop purchase; question 15a probed the consumer to self-select their perceived level of technical competence.

Table 60. Crosstabulation for H28

Q. 15a Which Of The Following Best Describes Your Level Of Technology Competency?							
		Importance Rating Of Information Sources: Magazine or Website Reviews					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
Others frequently seek my advice and assistance	Count	55	22	45	47	21	190
	%	32.9	21.0	29.0	37.0	51.2	31.9
I'm no expert, but I can generally get by on my own	Count	103	75	102	76	19	375
	%	61.7	71.4	65.8	59.8	46.3	63.0
I need to ask a lot of questions	Count	9	8	8	4	1	30
	%	5.4	7.6	5.2	3.1	2.4	5.0
Total	Count	157	105	155	127	41	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 61. Chi Square Test for H28

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.536(a)	8	.035
Likelihood Ratio	16.523	8	.035
Linear-by-Linear Association	5.195	1	.023
N of Valid Cases	595		

Note. 1 cell (6.7%) has expected count less than 5. The minimum expected count is 2.07.

Since the p-value is 0.035, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that magazine and website reviews contributing to the purchase decision is dependent of the technical competence of the consumer. It appears as though the higher the level of technical competence the more value is placed on magazine reviews and articles as an information source.

$H29_0$ How important the laptop owner sees the recommendation of a technology or IT expert as an information source for laptop purchasing is independent of his / her age.

This hypothesis was evaluated by comparing responses to question 10i and question S6 on the survey. Question 10i queried on how important the recommendation of a technology or IT expert serves as an information source to the consumer contributing to their laptop purchase; question S6 probed the consumer about their age.

Table 62. Crosstabulation for H29

Q. S6 In Which One of the Following Age Groups Do You Belong?							
		Importance Rating Of Information Sources: Technology or IT Expert					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
18–24	Count	40	11	36	30	17	134
	%	21.6	18.0	27.9	20.3	23.6	22.5
25–34	Count	38	12	41	41	17	149
	%	20.5	19.7	31.8	27.7	23.6	25.0
35–44	Count	56	21	27	28	20	162
	%	30.3	34.4	20.9	25.7	27.8	27.2
45+	Count	51	17	25	39	18	150
	%	27.6	27.9	19.4	26.4	25.0	25.2
Total	Count	185	61	129	148	72	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 63. Chi Square Test for H29

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.866(a)	12	.309
Likelihood Ratio	13.943	12	.304
Linear-by-Linear Association	1.119	1	.290
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 13.74.

Since the p-value is 0.309, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of a recommendation from a technology or IT expert as an information source to contribute to the purchasing decision was related to the consumer's age.

> $H30_0$ How important the laptop owner sees the recommendation of a technology or IT expert as an information source for laptop purchasing is independent of his / her education level.

This hypothesis was evaluated by comparing responses to question 10i and question S8 on the survey. Question 10i queried on how important the recommendation of a technology or IT expert serves as an information source to the consumer contributing to their laptop purchase; question S8 probed the consumer about their education level.

Table 64. Crosstabulation for H30

Q. 8 What Is The Highest Grade of School You Completed?							
		Importance Rating Of Information Sources: Technology or IT Expert					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
No College Degree	Count	31	11	25	17	12	96
	%	16.8	18.0	19.4	11.5	16.7	16.1
AA	Count	75	26	51	56	27	235
	%	40.5	42.6	39.5	37.8	37.5	39.5
BS	Count	34	18	27	34	8	121
	%	18.4	29.5	20.9	23.0	11.1	20.3
Some Graduate Course	Count	15	2	12	13	8	50
	%	8.1	3.3	9.3	8.8	11.1	8.4
MS	Count	30	4	14	28	17	93
	%	16.2	6.6	10.9	18.9	23.6	15.6
Total	Count	185	61	129	148	72	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 65. Chi Square Test for H30

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.607(a)	16	.156
Likelihood Ratio	23.238	16	.108
Linear-by-Linear Association	3.092	1	.079
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 5.13.

Since the p-value is 0.156, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of a recommendation from a technology or IT expert as an information source to contribute to the purchasing decision was related to the consumer's education level.

$H31_0$ How important the laptop owner sees the recommendation of a technology or IT expert as an information source for laptop purchasing is independent of his / her gender.

This hypothesis was evaluated by comparing responses to question 10i and question S4 on the survey. Question 10i queried on how important the recommendation of a technology or IT expert serves as an information source to the consumer contributing to their laptop purchase; question S4 asked the gender of the consumer.

Table 66. Crosstabulation for H31

		Q. S4 Are You?					
		Importance Rating Of Information Sources: Technology or IT Expert					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
Male	Count	100	27	63	71	30	291
	%	54.1	44.3	48.8	48.0	41.7	48.9
Female	Count	85	34	66	77	42	304
	%	45.9	55.7	51.2	52.0	58.3	51.1
Total	Count	185	61	129	148	72	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 67. Chi Square Test for H31

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.050(a)	4	.399
Likelihood Ratio	4.061	4	.398
Linear-by-Linear Association	2.604	1	.107
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 29.83.

Since the p-value is 0.399, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of a recommendation from a technology or IT expert as an information source to contribute to the purchasing decision was related to the consumer's gender.

> $H32_0$ How important the laptop owner sees the recommendation of a technology or IT expert as an information source for laptop purchasing is independent of his / her technology competence.

This hypothesis was evaluated by comparing responses to question 10i and question 15a on the survey. Question 10i queried on how important the recommendation of a technology or IT expert serves as an information source to the consumer contributing to their laptop purchase; question 15a probed the consumer to self-select their perceived level of technical competence.

Table 68. Crosstabulation for H32

Q. 15a Which Of The Following Best Describes Your Level Of Technology Competency?							
		Importance Rating Of Information Sources: Technology or IT Expert					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
Others frequently seek my advice and assistance	Count	55	11	38	56	30	190
	%	29.7	18.0	29.5	37.8	41.7	31.9
I'm no expert, but I can generally get by on my own	Count	121	46	82	86	40	375
	%	65.4	75.4	63.6	85.1	55.6	63.0
I need to ask a lot of questions	Count	9	4	9	6	2	30
	%	4.9	6.6	7.0	4.1	2.8	5.0
Total	Count	185	61	129	148	72	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 69. Chi Square Test for H32

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.100(a)	8	.108
Likelihood Ratio	13.517	8	.095
Linear-by-Linear Association	5.488	1	.019
N of Valid Cases	595		

Note. 2 cells (13.3%) have expected count less than 5. The minimum expected count is 3.08.

Since the p-value is 0.108, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of a recommendation from a technology or IT expert as an information source to contribute to the purchasing decision was related to the consumer's level of technical competence.

Research question 4. Does a relationship exist between the between the demographics of a laptop user and the tangible, product-like attributes considered in the purchase decision?

This fourth research question examined the same 4 demographic variables but was searching for the answer if any of these demographic variables were related to the particular attributes the consumer used when considering their purchase. The attributes discussed here were tangible, product attributes: reliability and performance and capacity. This view translated into 8 hypotheses.

$H33_0$ The importance of perceived product reliability in purchasing a laptop is independent of the laptop owner's age.

This hypothesis was evaluated by comparing responses to question 12a and question S6 on the survey. Question 12a queried on how important the product reliability contributes to the consumer's laptop purchase; question S6 probed the consumer about their age.

Table 70. Crosstabulation for H33

Q. S6 In Which One of the Following Age Groups Do You Belong?					
		Importance Rating On Purchase: Product Reliability			
		Not Important/ Somewhat Important	Important	Most Important	Total
18–24	Count	24	56	54	134
	%	38.7	25.0	17.5	22.5
25–34	Count	24	45	80	149
	%	38.7	20.1	25.9	25.0
35–44	Count	8	68	86	162
	%	12.9	30.4	27.8	27.2
45+	Count	6	55	89	150
	%	9.7	24.6	28.8	25.2
Total	Count	62	224	309	595
	%	100.0	100.0	100.0	100.0

Table 71. Chi Square Test for H33

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	31.300(a)	6	.000
Likelihood Ratio	32.656	6	.000
Linear-by-Linear Association	18.408	1	.000
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 13.96.

Since the p-value is 0.000, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the perceived importance of product reliability in contributing to the purchase decision is dependent of the age of the consumer. It appears as though the older the consumer the more important the product reliability is in purchasing a laptop.

$H34_0$ The importance of perceived product reliability in purchasing a laptop is independent of the laptop owner's education level.

This hypothesis was evaluated by comparing responses to question 12a and question S8 on the survey. Question 12a queried on how important the product reliability contributes to the consumer's laptop purchase; question S8 probed the consumer about their education level.

Table 72. Crosstabulation for H34

Q. 8 What Is The Highest Grade of School You Completed?					
		Importance Rating On Purchase: Product Reliability			
		Not Important/ Somewhat Important	Important	Most Important	Total
No College Degree	Count	14	45	37	96
	%	22.6	20.1	12.0	16.1
AA	Count	24	88	123	235
	%	38.7	39.3	39.8	39.5
BS	Count	13	45	63	121
	%	21.0	20.1	20.4	20.3
Some Graduate Course	Count	6	12	32	50
	%	9.7	5.4	10.4	8.4
MS	Count	5	34	54	93
	%	8.1	15.2	17.5	15.6
Total	Count	62	224	309	595
	%	100.0	100.0	100.0	100.0

Table 73. Chi Square Test for H34

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.090(a)	8	.079
Likelihood Ratio	14.817	8	.063
Linear-by-Linear Association	7.673	1	.006
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 5.21.

Since the p-value is 0.079, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the perceived importance that product reliability contributes to the purchase decision was related to the consumer's education level.

$H35_0$ The importance of perceived product reliability in purchasing a laptop is independent of the laptop owner's gender.

This hypothesis was evaluated by comparing responses to question 12a and question S4 on the survey. Question 12a queried on how important the product reliability contributes to the consumer's laptop purchase; question S4 asked the consumer's gender.

Table 74. Crosstabulation for H35

		Q. S4 Are You?			
		Importance Rating On Purchase: Product Reliability			
		Not Important/Somewhat Important	Important	Most Important	Total
Male	Count	34	119	138	291
	%	54.8	53.3	44.7	48.9
Female	Count	28	105	171	304
	%	45.2	16.9	55.3	51.1
Total	Count	62	224	309	595
	%	100.0	100.0	100.0	100.0

Table 75. Chi Square Test for H35

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.698(a)	2	.095
Likelihood Ratio	4.704	2	.095
Linear-by-Linear Association	4.201	1	.040
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 30.32.

Since the p-value is 0.095, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the perceived importance that product reliability contributes to the purchase decision was related to the consumer's gender.

$H36_0$ The importance of perceived product reliability in purchasing a laptop is independent of the laptop owner's technical competence.

This hypothesis was evaluated by comparing responses to question 12a and question 15a on the survey. Question 12a queried on how important the product reliability contributes to the consumer's laptop purchase; question 15a probed the consumer to self-select their perceived level of technical competence.

Table 76. Crosstabulation for H36

Q. 15a Which Of The Following Best Describes Your Level Of Technology Competency?					
		Importance Rating On Purchase: Product Reliability			
		Not Important/Somewhat Important	Important	Most Important	Total
Others frequently seek my advice and assistance	Count	20	67	103	190
	%	23.3	29.9	33.3	31.9
I'm no expert, but I can generally get by on my own	Count	38	143	194	375
	%	61.3	63.8	62.8	63.0
I need to ask a lot of questions	Count	4	14	12	30
	%	6.5	6.3	3.9	5.0
Total	Count	62	224	309	595
	%	100.0	100.0	100.0	100.0

Table 77. Chi Square Test for H36

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.250(a)	4	.690
Likelihood Ratio	2.259	4	.688
Linear-by-Linear Association	.920	1	.337
N of Valid Cases	595		

Note. 1 cell (11.1%) has expected count less than 5. The minimum expected count is 3.13.

Since the p-value is 0.690, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the perceived importance that product reliability contributes to the purchase decision was related to the consumer's level of technical competence.

$H37_0$ The importance of performance and capacity in purchasing a laptop is independent of the laptop owner's age.

This hypothesis was evaluated by comparing responses to question 12a and question S6 on the survey. Question 12f queried on how important the product performance and capacity contribute to the consumer's laptop purchase; question S6 probed the consumer about their age.

Table 78. Crosstabulation for H37

Q. S6 In Which One of the Following Age Groups Do You Belong?					
		Importance Rating On Purchase: Product Performance And Features			
		Somewhat Important	Important	Most Important	Total
18–24	Count	27	51	56	134
	%	20.1	38.1	41.8	22.5
25–34	Count	24	55	70	149
	%	16.1	36.9	47.0	25.0
35–44	Count	16	61	85	162
	%	9.9	37.7	52.5	27.2
45+	Count	17	62	71	150
	%	11.3	41.3	47.3	25.2
Total	Count	84	229	282	595
	%	100.0	100.0	100.0	100.0

Table 79. Chi Square Test for H37

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.979(a)	6	.175
Likelihood Ratio	8.860	6	.182
Linear-by-Linear Association	3.943	1	.047
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 18.92.

Since the p-value is 0.175, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the perceived importance that product performance and capacity contribute to the purchase decision was related to the consumer's age.

$H38_0$ The importance of performance and capacity in purchasing a laptop is independent of the laptop owner's education level.

This hypothesis was evaluated by comparing responses to question 12a and question S8on the survey. Question 12f queried on how important the product performance and capacity contribute to the consumer's laptop purchase; question S8 probed the consumer about their education level.

Table 80. Crosstabulation for H38

Q. 8 What Is The Highest Grade of School You Completed?					
		Importance Rating On Purchase: Product Performance And Features			
		Somewhat Important	Important	Most Important	Total
No College Degree	Count	21	31	44	96
	%	21.9	32.3	45.8	16.1
AA	Count	34	90	111	235
	%	14.5	38.3	47.2	39.5
BS	Count	13	53	55	121
	%	10.7	43.8	45.5	20.3
Some Graduate Course	Count	3	20	27	50
	%	6.0	40.0	54.0	8.4
MS	Count	13	35	45	93
	%	14.0	37.6	48.4	15.6
Total	Count	84	229	282	595
	%	100.0	100.0	100.0	100.0

Table 81. Chi Square Test for H38

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.944(a)	8	.269
Likelihood Ratio	10.088	8	.259
Linear-by-Linear Association	1.648	1	.199
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 7.06.

Since the p-value is 0.269, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the perceived importance that product performance and capacity contribute to the purchase decision was related to the consumer's education level.

$H39_0$ The importance of performance and capacity in purchasing a laptop is independent of the laptop owner's gender.

This hypothesis was evaluated by comparing responses to question 12a and question S4 on the survey. Question 12f queried on how important the product performance and capacity contribute to the consumer's laptop purchase; question S4 asked for the gender of the consumer.

Table 82. Crosstabulation for H39

		Q. S4 Are You?			
		Importance Rating On Purchase: Product Performance And Features			
		Somewhat Important	Important	Most Important	Total
Male	Count	50	120	121	291
	%	17.2	14.2	14.6	48.9
Female	Count	34	109	161	304
	%	11.2	35.9	53.0	51.1
Total	Count	84	229	282	595
	%	100.0	100.0	100.0	100.0

Table 83. Chi Square Test for H39

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.970(a)	2	.011
Likelihood Ratio	9.004	2	.011
Linear-by-Linear Association	8.887	1	.003
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 41.08.

Since the p-value is 0.011, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the relative importance of performance and capacity in contributing to the purchase decision is dependent of the gender of the consumer. It appears as though females rate the relative importance of laptop performance and capacity higher than do males.

> $H40_0$ The importance of performance and capacity in purchasing a laptop is independent of the laptop owner's technical competence.

This hypothesis was evaluated by comparing responses to question 12f and question 15a on the survey. Question 12f queried on how important the product performance and capacity contribute to the consumer's laptop purchase; question 15f probed the consumer to self-select their perceived level of technical competence.

Table 84. Crosstabulation for H40

Q. 15a Which Of The Following Best Describes Your Level Of Technology Competency?					
		Importance Rating On Purchase: Product Performance And Features			
		Somewhat Important	Important	Most Important	Total
Others frequently seek my advice and assistance	Count	22	66	102	190
	%	11.6	34.7	53.7	31.9
I'm no expert, but I can generally get by on my own	Count	55	150	170	375
	%	14.7	40.0	45.3	63.0
I need to ask a lot of questions	Count	7	13	10	30
	%	23.3	43.3	33.3	5.0
Total	Count	84	229	282	595
	%	100.0	100.0	100.0	100.0

Table 85. Chi Square Test for H40

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.026(a)	4	.135
Likelihood Ratio	6.882	4	.142
Linear-by-Linear Association	6.312	1	.012
N of Valid Cases	595		

Note. 1 cell (11.1%) has expected count less than 5. The minimum expected count is 4.24.

Since the p-value is 0.135, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the perceived importance that product performance and capacity contribute to the purchase decision was related to the consumer's technical competence.

Research question 5. Does a relationship exist between the between the demographics of a laptop user and the soft, intangible attributes considered in the purchase decision?

Continuing with the demographic segmentation, four more hypotheses were developed to examine the intangible, soft attribute considered during purchase, past vendor/brand experience.

$H41_0$ The importance of past vendor experience in purchasing a laptop is independent of the laptop owner's age.

This hypothesis was evaluated by comparing responses to question 13 and question S6 on the survey. Question 13 queried on how important past experience with the brand and vendor contributes to the consumer's laptop purchase; question S6 probed the consumer about their age.

Table 86. Crosstabulation for H41

Q. S6 In Which One of the Following Age Groups Do You Belong?							
		Importance Rating On Purchase: Past Experience With Brand					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
18–24	Count	14	10	26	40	18	134
	%	13.0	9.3	24.1	37.0	16.7	22.5
25–34	Count	6	9	26	42	42	149
	%	4.8	7.2	20.8	33.6	33.6	25.0
35–44	Count	10	10	16	50	55	162
	%	7.1	7.1	11.3	36.5	39.0	27.2
45+	Count	20	6	13	49	42	150
	%	15.4	4.6	10.0	37.7	32.3	25.2
Total	Count	50	35	81	181	157	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 87. Chi Square Test for H41

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	32.919(a)	12	.001
Likelihood Ratio	34.482	12	.001
Linear-by-Linear Association	2.878	1	.090
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 7.50.

Since the p-value is 0.001, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the relative importance of past brand and vendor experience in contributing to the purchase decision is dependent of the age of the consumer. It appears as though older consumers place more importance on past experience with a brand and vendor when considering a purchase.

$H42_0$ The importance of past vendor experience in purchasing a laptop is independent of the laptop owner's education level.

This hypothesis was evaluated by comparing responses to question 13 and question S8 on the survey. Question 13 queried on how important past experience with the brand and vendor contributes to the consumer's laptop purchase; question S8probed the consumer about their education level.

Table 88. Crosstabulation for H42

Q. 8 What Is The Highest Grade of School You Completed?							
		Importance Rating On Purchase: Past Experience With Brand					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
No College Degree	Count	14	5	18	27	14	96
	%	17.9	6.	23.1	34.6	17.9	16.1
AA	Count	21	11	30	77	54	235
	%	10.9	5.7	15.5	39.9	28.0	39.5
BS	Count	7	10	14	40	37	121
	%	6.5	9.3	13.0	37.0	34.3	20.3
Some Graduate Course	Count	1	3	6	10	20	50
	%	2.5	7.5	15.0	25.0	50.0	8.4
MS	Count	7	6	13	27	32	93
	%	8.2	7.1	15.3	31.8	23.6	15.6
Total	Count	50	35	81	181	157	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 89. Chi Square Test for H42

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	27.136(a)	16	.040
Likelihood Ratio	27.173	16	.040
Linear-by-Linear Association	9.183	1	.002
N of Valid Cases	595		

Note. 2 cells (8.0%) have expected count less than 5. The minimum expected count is 2.78.

Since the p-value is 0.040, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the relative importance of past brand or vendor experience in contributing to the purchase decision is dependent of the education level of the consumer. It appears as though the more educated a consumer, the more importance is placed on past vendor and brand experience toward the next purchase decision.

$H43_0$ The importance of past vendor experience in purchasing a laptop is independent of the laptop owner's gender.

This hypothesis was evaluated by comparing responses to question 13 and question S4 on the survey. Question 13 queried on how important past experience with the brand and vendor contributes to the consumer's laptop purchase; question S4 asked for the gender of the consumer.

Table 90. Crosstabulation for H43

Q. S4 Are You?							
		Importance Rating On Purchase: Past Experience With Brand					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
Male	Count	33	16	39	94	72	291
	%	13.0	6.3	15.4	37.0	28.3	48.9
Female	Count	17	19	42	87	85	304
	%	6.8	7.6	16.8	34.8	34.0	51.1
Total	Count	50	35	81	181	157	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 91. Chi Square Test for H43

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.804(a)	4	.147
Likelihood Ratio	6.896	4	.141
Linear-by-Linear Association	3.281	1	.070
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 17.36.

Since the p-value is 0.147, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the perceived importance that past brand or vendor experience contributes to the purchase decision was related to the consumer's gender.

$H44_0$ The importance of past vendor experience in purchasing a laptop is independent of the laptop owner's technical competence.

This hypothesis was evaluated by comparing responses to question 13 and question 15a on the survey. Question 13 queried on how important past experience with the brand and vendor contributes to the consumer's laptop purchase; question 15a asked the consumer to self-select their perceived level of technical competence.

Table 92. Crosstabulation for H44

Q. 15a Which Of The Following Best Describes Your Level Of Technology Competency?							
		Importance Rating On Purchase: Past Experience With Brand					
		Not at all Important	Minimally Important	Somewhat Important	Important	Most Important	Total
Others frequently seek my advice and assistance	Count	15	9	22	61	60	167
	%	9.0	504	13.2	36.5	35.9	100.0
I'm no expert, but I can generally get by on my own	Count	34	25	49	116	90	314
	%	10.8	8.0	15.6	36.9	28.7	100.0
I need to ask a lot of questions	Count	1	1	10	4	7	23
	%	4.3	4.3	43.5	17.4	30.4	100.0
Total	Count	50	35	81	181	157	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 93. Chi Square Test for H44

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.225(a)	8	.020
Likelihood Ratio	15.564	8	.049
Linear-by-Linear Association	2.503	1	.114
N of Valid Cases	504		

Note. 3 cells (20.0%) have expected count less than 5. The minimum expected count is 1.60.

Since the p-value is 0.020, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the relative importance of past brand and vendor experience in contributing to the purchase decision is dependent of the technical competence of the consumer. It appears as though technical experts place more importance on past experience than others when considering their next purchase decision.

Research question 6. Is there a relationship between the laptop brand purchased and the relative importance of various information sources used by the consumer?

Having exhausted the demographic view, the laptop brand purchased by the consumer was examined against a set of 6 information sources and their relative importance in contributing to that purchase decision.

> $H45_0$ The brand of laptop purchased is independent of how important the laptop owner sees the use of direct mail, catalogs or email from the Manufacturer as an information source.

This hypothesis was evaluated by comparing responses to question 3 and question 10a on the survey. Question 3 queried on the brand of laptop purchased; question 10a queried on how important direct mail, catalogs or email serve as an information source to the consumer contributing to their laptop purchase.

Table 94. Crosstabulation for H45

Q. 10a What Is The Relative Importance Of The Following Information Source: Direct Mail?							
		Considering Your Most Recently Purchased Laptop/Notebook Computer, What Is the Brand?					
		Apple	Compaq	Dell	Hewlett-Packard (HP)	Toshiba	Total
Not At All Important	Count	32	33	81	64	43	253
	%	12.8	13.0	32.0	25.3	17.0	100.0
Minimally Important	Count	9	13	41	25	18	108
	%	803	12.0	39.8	23.1	16.7	100.0
Somewhat Important	Count	7	14	63	25	15	124
	%	5.8	11.3	50.8	20.2	12.1	100.0
Important	Count	7	4	55	11	8	85
	%	8.2	4.7	64.7	12.9	9.4	100.0
Most Important	Count	0	2	11	8	4	25
	%	0	8.0	44.0	32.0	16.0	100.0
Total	Count	55	66	253	133	88	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 95. Chi Square Test for H45

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	39.389(a)	16	.001
Likelihood Ratio	42.334	16	.000
Linear-by-Linear Association	1.878	1	.171
N of Valid Cases	595		

Note. 3 cells (12.0%) have expected count less than 5. The minimum expected count is 2.31.

Since the p-value is 0.001, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the brand of laptop purchased is dependent of the relative importance of direct mail, catalogs or email as an information source contributing to the buying decision. It appears as though Dell, Apple and Toshiba laptop owners view direct mail, catalogs and email as the least important information source contributing to the purchase decision. HP users found more importance than any other brand.

> $H46_0$ The brand of laptop purchased is independent of how important the laptop owner sees the use of Manufacturer or retail websites as an information source for laptop purchasing.

This hypothesis was evaluated by comparing responses to question 3 and question 10b on the survey. Question 3 queried on the brand of laptop purchased; question 10b queried on how important the use of Manufacturer and Retail websites serve as an information source to the consumer contributing to their laptop purchase.

Table 96. Crosstabulation for H46

Q. 10a What Is The Relative Importance Of The Following Information Source: Websites?							
		Considering Your Most Recently Purchased Laptop/Notebook Computer, What Is the Brand?					
		Apple	Compaq	Dell	Hewlett-Packard (HP)	Toshiba	Total
Not At All Important	Count	6	14	25	27	19	91
	%	6.6	15.4	27.5	29.7	20.9	100.0
Minimally Important	Count	2	10	14	10	9	45
	%	4.4	22.2	31.1	22.2	20.0	100.0
Somewhat Important	Count	17	21	55	23	28	144
	%	11.8	14.6	38.2	16.0	19.4	100.0
Important	Count	20	11	88	45	19	85
	%	10.9	6.0	48.1	24.6	10.4	100.0
Most Important	Count	10	10	71	28	13	132
	%	7.6	7.6	53.8	21..2	9.8	100.0
Total	Count	55	66	253	133	88	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 97. Chi Square Test for H46

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	44.866(a)	16	.000
Likelihood Ratio	45.337	16	.000
Linear-by-Linear Association	8.268	1	.004
N of Valid Cases	595		

Note. 2 cells (8.0%) have expected count less than 5. The minimum expected count is 4.16.

Since the p-value is 0.000, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the brand of laptop purchased is dependent of the relative importance of Manufacturer and Retailer websites as an information source contributing to the buying decision. It appears as though Dell and HP users consider their websites to be the important or most important as an information source. Apple users rank the importance slightly less.

$H47_0$ The brand of laptop purchased is independent of how important the laptop owner sees the use of retail store visits as an information source for laptop purchasing.

This hypothesis was evaluated by comparing responses to question 3 and question 10c on the survey. Question 3 queried on the brand of laptop purchased; question 10c queried on how important retail visits serve as an information source to the consumer contributing to their laptop purchase.

Table 98. Crosstabulation for H47

Q. 10a What Is The Relative Importance Of The Following Information Source: Retail Store Visits?							
		Considering Your Most Recently Purchased Laptop/Notebook Computer, What Is the Brand?					
		Apple	Compaq	Dell	Hewlett-Packard (HP)	Toshiba	Total
Not At All Important	Count	10	8	100	14	12	144
	%	6.9	5.6	69.4	9.7	8.3	100.0
Minimally Important	Count	2	5	42	10	6	65
	%	3.1	7.7	64.6	15.4	9.2	100.0
Somewhat Important	Count	17	17	54	28	20	136
	%	12.5	12.5	39.7	20.6	14.7	100.0
Important	Count	10	19	43	46	30	148
	%	6.8	12.8	29.1	31.1	20.3	100.0
Most Important	Count	16	17	14	35	20	102
	%	15.7	16.7	13.7	34.3	19.6	100.0
Total	Count	55	66	253	133	88	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 99. Chi Square Test for H47

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	110.734(a)	16	.000
Likelihood Ratio	116.453	16	.000
Linear-by-Linear Association	21.55	1	.004
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 6.01.

Since the p-value is 0.000, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the brand of laptop purchased is dependent of the relative importance of retail visits as an information source contributing to the buying decision. It appears as though Dell users do not perceive retail store visits as an important information source that contributes toward their purchasing decision.

> $H48_0$ The brand of laptop purchased is independent of how important the laptop owner sees the use of friends, family member or neighbors as an information source for laptop purchasing.

This hypothesis was evaluated by comparing responses to question 3 and question 10d on the survey. Question 3 queried on the brand of laptop purchased; question 10d queried on how important the use of friends, family member or neighbors serve as an information source to the consumer contributing to their laptop purchase.

Table 100. Crosstabulation for H48

Q. 10a What Is The Relative Importance Of The Following Information Source: Friends, Family or Neighbors?							
		Considering Your Most Recently Purchased Laptop/Notebook Computer, What Is the Brand?					
		Apple	Compaq	Dell	Hewlett-Packard (HP)	Toshiba	Total
Not At All Important	Count	14	13	54	26	22	129
	%	10.9	10.1	41.9	20.2	17.1	100.0
Minimally Important	Count	8	10	31	24	16	89
	%	9.0	11.2	34.8	27.0	18.0	100.0
Somewhat Important	Count	11	19	78	34	16	158
	%	7.0	12.0	49.4	21.5	10.1	100.0
Important	Count	13	19	69	38	25	164
	%	739	11.6	42.1	23.2	15.2	100.0
Most Important	Count	9	5	21	11	9	55
	%	16.4	9.1	38.2	20.0	16.4	100.0
Total	Count	55	66	253	133	88	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 101. Chi Square Test for H48

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.162(a)	16	.661
Likelihood Ratio	12.882	16	.681
Linear-by-Linear Association	.291	1	.590
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 5.08.

Since the p-value is 0.661, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the brand of laptop purchased was related to the consumer's perceived importance of the use of friends, family or neighbors as an information source contributing toward the purchase decision.

> $H49_0$ The brand of laptop purchased is independent of how important the laptop owner sees the use of magazine or website reviews as an information source for laptop purchasing.

This hypothesis was evaluated by comparing responses to question 3 and question 10e on the survey. Question 3 queried on the brand of laptop purchased; question 10e queried on how important the use of magazine or website reviews serves as an information source to the consumer contributing to their laptop purchase.

Table 102. Crosstabulation for H49

Q. 10a What Is The Relative Importance Of The Following Information Source: Magazine or Website Reviews?							
		Considering Your Most Recently Purchased Laptop/Notebook Computer, What Is the Brand?					
		Apple	Compaq	Dell	Hewlett-Packard (HP)	Toshiba	Total
Not At All Important	Count	14	19	68	42	24	167
	%	25.5	28.8	26.9	31.6	27.3	28.1
Minimally Important	Count	6	15	46	19	19	105
	%	10.9	22.7	18.2	14.3	21.6	17.6
Somewhat Important	Count	10	17	72	41	15	155
	%	18.2	25.8	28.5	30.8	17.0	26.1
Important	Count	23	10	54	22	18	127
	%	41.8	15.2	21.3	16.5	20.5	21.3
Most Important	Count	2	5	13	9	12	41
	%	3.6	7.6	5.1	6.8	13.6	6.9
Total	Count	55	66	253	133	88	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 103. Chi Square Test for H49

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	31.992(a)	16	.010
Likelihood Ratio	29.442	16	.021
Linear-by-Linear Association	.007	1	.933
N of Valid Cases	595		

Note. 2 cells (8.0%) have expected count less than 5. The minimum expected count is 3.79.

Since the p-value is 0.001, which is less than 0.010, the null hypothesis was rejected. As a result, it can be concluded that the brand of laptop purchased is dependent of the relative importance of magazines and website reviews as an information source contributing to the buying decision. It appears as though Apple laptop owners believe magazines and website reviews are more important as an information source than other brands.

$H50_0$ The brand of laptop purchased is independent of how important the laptop owner sees the use of a technology or IT expert as an information source for laptop purchasing.

This hypothesis was evaluated by comparing responses to question 3 and question 10i on the survey. Question 3 queried on the brand of laptop purchased; question 10i queried on how important the use of a technology or IT expert serves as an information source to the consumer contributing to their laptop purchase.

Table 104. Crosstabulation for H50

Q. 10a What Is The Relative Importance Of The Following Information Source: Technology or IT Expert?							
		Considering Your Most Recently Purchased Laptop/Notebook Computer, What Is the Brand?					
		Apple	Compaq	Dell	Hewlett-Packard (HP)	Toshiba	Total
Not At All Important	Count	18	19	74	44	30	185
	%	9.7	10.3	40.0	23.8	16.2	100.0
Minimally Important	Count	5	5	34	10	7	61
	%	8.2	8.2	55.7	16.4	11.5	100.0
Somewhat Important	Count	12	19	51	31	16	129
	%	9.3	14.9	39.5	24.0	12.4	100.0
Important	Count	11	16	63	35	23	148
	%	7.4	10.8	42.6	23.6	15.5	100.0
Most Important	Count	9	7	31	13	12	72
	%	12.5	9.7	43.1	18.1	16.7	100.0
Total	Count	55	66	253	133	88	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 105. Chi Square Test for H50

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.213(a)	16	.855
Likelihood Ratio	10.051	16	.864
Linear-by-Linear Association	.035	1	.852
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 5.64.

Since the p-value is 0.855, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the brand of laptop purchased was related to the consumer's perceived importance of the use of a technology or IT expert as an information source contributing toward the purchase decision.

Research question 7. Does a relationship exist between the tangible, product-like attributes considered in the purchase decision and the laptop brand selected?

$H51_0$ The brand of laptop purchased is independent of the importance of perceived product reliability of the laptop purchased.

Similar to the review of demographics against tangible product attributes, brand became the focal point, resulting in 2 hypotheses to support this question.

This hypothesis was evaluated by comparing responses to question 3 and question 12a on the survey. Question 3 queried on the brand of laptop purchased; question 12a queried on how important product reliability is to the consumer contributing to their laptop purchase.

Table 106. Crosstabulation for H51

Q. 10a What Is The Relative Importance On the Purchase: Product Reliability?							
		Considering Your Most Recently Purchased Laptop/Notebook Computer, What Is the Brand?					
		Apple	Compaq	Dell	Hewlett-Packard (HP)	Toshiba	Total
Not Important/ Somewhat Important	Count	1	10	27	15	9	62
	%	1.6	13.4	43.5	24.2	14.5	100.0
Important	Count	13	28	98	51	34	224
	%	5.8	12.5	43.8	22.8	15.2	100.0
Most Important	Count	41	28	128	67	45	309
	%	13.3	9.1	41.4	21.7	14.6	100.0
Total	Count	55	66	253	133	88	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 107. Chi Square Test for H51

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.548(a)	8	.049
Likelihood Ratio	17.288	8	.027
Linear-by-Linear Association	.703	1	.402
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 5.73.

Since the p-value is 0.049, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the brand of laptop purchased is dependent the consumer's perceived level of product reliability. While no conclusive pattern surfaced, there is a distinctly different rating of importance of the consumer's perceived level of product reliability and the brand of laptop purchased.

$H52_0$ The brand of laptop purchased is independent of the importance of performance and capacity of the laptop purchased.

This hypothesis was evaluated by comparing responses to question 3 and question 12f on the survey. Question 3 queried on the brand of laptop purchased; question 12f queried on how important product performance and capacity is to the consumer contributing to their laptop purchase.

Table 108. Crosstabulation for H52

Q. 10a What Is The Relative Importance On the Purchase: Product Performance And Features?							
		Considering Your Most Recently Purchased Laptop/Notebook Computer, What Is the Brand?					
		Apple	Compaq	Dell	Hewlett-Packard (HP)	Toshiba	Total
Not Important/ Somewhat Important	Count	4	9	38	17	16	84
	%	4.8	10.7	45.2	20.2	19.0	0
Important	Count	22	32	109	34	32	229
	%	9.6	14.0	47.6	14.8	14.0	0
Most Important	Count	29	25	106	81	40	282
	%	10.3	8.9	37.6	29.1	14.2	0
Total	Count	55	66	253	133	88	595
	%	9.2	11.1	42.5	22.4	14.8	0

Table 109. Chi Square Test for H52

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.169(a)	8	.007
Likelihood Ratio	21.734	8	.005
Linear-by-Linear Association	.136	1	.712
N of Valid Cases	595		

Note. 0 cells (0%) have expected count less than 5. The minimum expected count is 7.76.

Since the p-value is 0.007, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the brand of laptop purchased is dependent the consumer's perceived level of performance and capacity. It appears as though Apple users perceive laptop performance and capacity as more important than other brands.

Research question 8. Does a relationship exist between the soft, intangible attributes considered in the purchase decision and the laptop brand selected?

Focusing now on vendor experience, a soft, intangible attribute, one hypothesis was developed to support this research question.

$H53_0$ The brand of laptop purchased is independent of past vendor experience.

This hypothesis was evaluated by comparing responses to question 3 and question 13a on the survey. Question 3 queried on the brand of laptop purchased; question 13a queried on how

important past performance with the brand and vendor is to the consumer contributing to their laptop purchase.

Table 110. Crosstabulation for H53

Q. 10a What Is The Relative Importance On The Purchase: Past Experience With Brand?							
		Considering Your Most Recently Purchased Laptop/Notebook Computer, What Is the Brand?					
		Apple	Compaq	Dell	Hewlett-Packard (HP)	Toshiba	Total
Not At All Important	Count	2	7	16	15	10	50
	%	4.2	13.2	7.4	12.8	14.3	9.9
Minimally Important	Count	1	5	12	6	11	35
	%	2.1	9.4	5.5	5.1	15.7	6.9
Somewhat Important	Count	1	11	34	21	14	81
	%	2.1	20.8	15.7	17.9	20.0	16.4
Important	Count	17	20	80	45	19	181
	%	35.4	37.7	37.0	38.5	27.1	35.9
Most Important	Count	27	10	74	30	16	157
	%	56.3	18.9	34.3	25.6	22.9	31.2
Total	Count	48	53	216	117	70	504
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 111. Chi Square Test for H53

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	41.885(a)	16	.000
Likelihood Ratio	43.040	16	.000
Linear-by-Linear Association	15.258	1	.000
N of Valid Cases	504		

Note. 4 cells (16.0%) have expected count less than 5. The minimum expected count is 3.33.

Since the p-value is 0.000, which is less than 0.05, the null hypothesis was rejected. As a result, it can be concluded that the brand of laptop purchased is dependent on the consumer's past experience with the brand and vendor. It appears as though Apple users consider the past experience with the Apple brand to be more important to their selection of Apple than any other brand.

Research question 9. Is there a relationship between the laptop brand purchased and the most important evaluative buying criterion identified by the consumer in contributing to the purchase decision?

One hypothesis was developed to answer this last research question, interested in determining if a relationship exists between the brand and the most important criteria consumers identified in contributing to their purchase decision.

$H54_0$ The brand of laptop purchased is independent of a laptop owner's most important evaluative criterion for purchasing the laptop.

This hypothesis was evaluated by comparing responses to question 3 and question 11f on the survey. Question 3 queried on the brand of laptop purchased; question 11 queried on the most important buying criteria to the consumer that contributed to their laptop purchase.

Table 112. Crosstabulation for H54

Q. 10a What Is The Important Criteria In Your Final Purchase Decision?							
		Considering Your Most Recently Purchased Laptop/Notebook Computer, What Is the Brand?					
		Apple	Compaq	Dell	Hewlett-Packard (HP)	Toshiba	Total
Price	Count	10	29	82	45	27	193
	%	5.2	15.0	42.5	23.3	14.0	100.0
Product Quality/Features	Count	31	21	97	52	39	240
	%	12.9	8.8	40.4	21.7	16.3	100.0
Brand Image	Count	3	5	22	15	9	54
	%	5.6	9.3	40.7	27.8	16.7	100.0
Recommendations	Count	6	7	33	13	10	69
	%	8.7	10.1	47.8	18.8	14.5	100.0
Ease Of Purchase	Count	5	4	19	8	3	39
	%	12.8	10.3	48.7	20.5	7.7	100.0
Total	Count	55	66	253	133	88	595
	%	100.0	100.0	100.0	100.0	100.0	100.0

Table 113. Chi Square Test for H54

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.700(a)	16	.405
Likelihood Ratio	17.091	16	.380
Linear-by-Linear Association	.711	1	.399
N of Valid Cases	595		

Since the p-value is 0.405, which is greater than 0.05, the null hypothesis was not rejected. Insufficient evidence existed to conclude that the brand of laptop purchased was related to the consumer's most important buying criterion contributing to the purchase decision.

CHAPTER 5. RESULTS, CONCLUSIONS, AND RECOMMENDATIONS

This chapter explores the results, conclusions and recommendations of a research study to determine if the brand of laptop consumers select is related to a variety of demographic and evaluative buying criteria considered in the process. Twenty three of the fifty-four null hypotheses were rejected. The results of the analysis and research suggest that certain demographic variables of consumers are related to the relative importance of certain information sources and the use same information sources are also related to the brand of laptop purchased. Presented first within this chapter are the research questions and supporting hypotheses followed by the summarized conclusions based on the results of the study. Recommendations for future research by the researcher will complete the presentation of this chapter.

The Research Questions

This research study sought to answer a series of nine research questions within two categories focused on the existence of relationships within them. The first category and set of five questions dealt with demographics of the consumer in relation to (a) the brand of laptop they selected, (b) the most important evaluative buying criteria considered in the selection process, (c) the relative importance various information sources contributed to their purchase decision, (d) the tangible, product-like attributes of the laptop, and (e) the soft, intangible product/brand-like attributes of the laptop vendor.

The final four questions and remaining category examined the laptop brand in relation to the same criteria above, (a) the most important evaluative buying criteria considered in the

selection process, (b) the relative importance various information sources contributed to their purchase decision, (c) the tangible, product-like attributes of the laptop, and (d) the soft, intangible product/brand-like attributes of the laptop vendor.

The Hypotheses

A total of 54 hypotheses were tested to answer the nine research questions examining the existence of a relationship between brand and demographic variables in consideration with buying criteria and information sources contributing to the consumer laptop purchase decision.

Demographics:H1-H44

Research question 1. Is there a relationship between the demographics of a laptop user and the brand of laptop purchased?

To support this question in answering the existence of relationship between a series of demographic variables and brand, four hypotheses were developed, representing each of the four demographics against the constant variable of brand.

$H1_0$ The brand of laptop purchased is independent of the age of the laptop owner.

Insufficient evidence existed to conclude that the brand of laptop purchased by a consumer is related to the consumer's age. An early expectation in this study was that a relationship may have existed with at least the Apple brand, attracting a younger crowd.

$H2_0$ The brand of laptop purchased is independent of the education level of the laptop owner.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the brand of laptop purchased by a consumer is dependent on the consumer's education level.

$H3_0$ The brand of laptop purchased is independent of the gender of the laptop owner.

Insufficient evidence existed to conclude that the brand of laptop purchased by a consumer is related to the consumer's gender.

$H4_0$ The brand of laptop purchased is independent of the technical competence of the laptop owner.

Insufficient evidence existed to conclude that the brand of laptop purchased by a consumer is related to the consumer's level of technical competence.

Among the four hypotheses tested to answer this question, only one proved statistically significant leading to the conclusion that education level can be a predictor of laptop brand. Age, gender and technical competence can not predict with any statistical significance the laptop brand a consumer is likely to purchase. Realistically the results here are within reason. While a silver bullet would have been to find more demographic variables related to particular brands to pin point the right audience and laser focus on them with the right message, the results indicate no such silver bullet exists.

Research question 2. Does a relationship exist between the demographics of a laptop user and the most important evaluative buying criteria identified by the consumer in contributing to the purchase decision?

To support this question in answering the existence of relationship between a series of demographic variables and evaluative buying criteria, four hypotheses were developed, representing each of the four demographics against the constant variable of most important evaluative criterion.

$H5_0$ A laptop owner's most important evaluative criterion for purchasing the laptop is independent of the laptop consumer's age.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis, concluding that the most important buying criterion identified by a consumer is dependent on the consumer's age.

$H6_0$ A laptop owner's most important evaluative criterion for purchasing the laptop is independent of the laptop consumer's education level.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis, concluding that the most important buying criterion identified by a consumer is dependent of the consumer's education level.

$H7_0$ A laptop owner's most important evaluative criterion for purchasing the laptop is independent of his/ her gender.

Insufficient evidence existed to conclude that the most important evaluative buying criterion identified by the laptop consumer is related to the consumer's gender.

$H8_0$ A laptop owner's most important evaluative criterion for purchasing the laptop is independent of his/ her technical competence.

Insufficient evidence existed to conclude that the most important evaluative buying criterion identified by the consumer is related to the consumer's level of technical competence.

Two of the four null hypotheses were rejected to indicate the existence of a relationship between age and education level with the most important evaluative buying criterion considered by the laptop consumer during the purchase cycle. Consumers within certain age brackets and education levels value specific buying criteria over others. The age and education level are related to the most important buying criterion identified by that consumer. The results here serve a strong purpose for vendors to develop a demographic make-up of the laptop consumer to target the appropriate message.

Research question 3. Is there a relationship between the relative importance of various information sources and the demographics of a laptop user?

To support this question in answering the existence of a relationship between a series of demographic variables and the relative importance of information sources contributing to the purchase decision, 24 hypotheses were developed, representing each of the four demographics against each of the six information sources.

> $H9_0$ How important the laptop owner sees the use of direct mail, catalogs or email from the Manufacturer as an information source for laptop purchasing is independent of his / her age.

Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of direct mail, catalogs or email from the Manufacturer as an information source to contribute to the purchasing decision is related to the consumer's age.

> $H10_0$ How important the laptop owner sees the use of direct mail, catalogs or email from the Manufacturer as an information source for laptop purchasing is independent of his / her education level.

Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of direct mail, catalogs or email from the Manufacturer as an information source to contribute to the purchasing decision is related to the consumer's education level.

> $H11_0$ How important the laptop owner sees the use of direct mail, catalogs or email from the Manufacturer as an information source for laptop purchasing is independent of his / her gender.

Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of direct mail, catalogs or email from the Manufacturer as an information source to contribute to the purchasing decision is related to the consumer's gender.

> $H12_0$ How important the laptop owner sees the use of direct mail, catalogs or email from the Manufacturer as an information source for laptop purchasing is independent of the laptop consumer's technical competence.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the relative importance of direct mail, catalogs and email contributing to the purchase decision is dependent of the technical competence of the consumer.

Of the first four hypotheses tested, examining each demographic variable against the use of direct mail, catalogs or email from the Manufacturer as an information source used by the consumer to aid in the purchase decision, only one was statistically significant. The level of the consumer's technical competence does dictate the degree of importance this medium has on the purchase decision.

> $H13_0$ How important the laptop owner sees the use of manufacturer or retail websites as an information source for laptop purchasing is independent of his / her age.

Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of Manufacturer or Retail websites as an information source to contribute to the purchasing decision is related to the consumer's age.

> $H14_0$ How important the laptop owner sees the use of manufacturer or retail websites as an information source for laptop purchasing is independent of his/her education level.

Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of Manufacturer or Retail websites as an information source to contribute to the purchasing decision is related to the consumer's education level.

> $H15_0$ How important the laptop owner sees the use of manufacturer or retail websites as an information source for laptop purchasing is independent of his / her gender.

Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of Manufacturer or Retail websites as an information source to contribute to the purchasing decision is related to the consumer's gender.

> $H16_0$ How important the laptop owner sees the use of manufacturer or retail websites as an information source for laptop purchasing is independent of the laptop consumer's technical competence.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the relative importance of Manufacturer and Retailer websites contributing to the purchase decision is dependent of the technical competence of the consumer.

Similar in testing the use of direct mail, an identical result occurred when testing the same demographic variables against the use of manufacturer or retailer websites as a contributive resource in the decision process. The level of technical competence proved to be statistically significant in identifying the existence of a relationship with the perceived importance of websites in the decision process.

> $H17_0$ How important the laptop owner sees the use of retail store visits as an information source for laptop purchasing is independent of his / her age.

Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of retail store visits as an information source to contribute to the purchasing decision is related to the consumer's age.

> $H18_0$ How important the laptop owner sees the use of retail store visits as an information source for laptop purchasing is independent of his / her education level.

Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of retail store visits as an information source to contribute to the purchasing decision is related to the consumer's education level.

> $H19_0$ How important the laptop owner sees the use of retail store visits as an information source for laptop purchasing is independent of his / her gender.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the relative importance of retail visits contributing to the purchase decision is dependent of the technical competence of the consumer.

> $H20_0$ How important the laptop owner sees the use of retail store visits as an information source for laptop purchasing is independent of his / her technical competence.

Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of retail store visits as an information source to contribute to the purchasing decision is related to the consumer's technical competence.

Among the four hypotheses tested to examine the existence of a relationship between the demographic variables and the use of retail store visits as an information source in the decision making process, only one was statistically significant, yet no conclusive pattern was revealed. Despite that a distinctly different rating of importance of retail store visits between gender occurred.

> $H21_0$ How important the laptop owner sees the use of a recommendation from friends, family member or neighbors as an information source for laptop purchasing is independent of his / her age.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the relative importance of recommendations from friends, family and neighbors contributing to the purchase decision is dependent of the age of the consumer.

> $H22_0$ How important the laptop owner sees the use of a recommendation from friends, family member or neighbors as an information source for laptop purchasing is independent of his / her education level.

Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of a recommendation from friends, family or neighbors as an information source to contribute to the purchasing decision is related to the consumer's education level.

> $H23_0$ How important the laptop owner sees the use of a recommendation from friends, family member or neighbors as an information source for laptop purchasing is independent of the laptop consumer's gender.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the relative importance of retail visits contributing to the purchase decision is dependent of the age of the consumer.

$H24_0$ How important the laptop owner sees the use of a recommendation from friends, family member or neighbors as an information source for laptop purchasing is independent of the laptop consumer's technical competence.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the recommendations of friends, family and neighbors in contributing to the purchase decision is dependent of the technical competence of the consumer.

One of the strongest results, three of the four hypotheses proved the existence of a relationship. The use of recommendations from friends, family member or neighbors was related to age, gender and technical competence. All three of these demographic variables showed strong relationships.

$H25_0$ How important the laptop owner sees the use of magazine or website reviews as an information source for laptop purchasing is independent of his / her age.

Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of magazine or website reviews as an information source to contribute to the purchasing decision is related to the consumer's education level.

$H26_0$ How important the laptop owner sees the use of magazine or website reviews as an information source for laptop purchasing is independent of his / her education level.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the relative importance of magazine and website reviews contributing to the purchase decision is dependent of the education level of the consumer.

$H27_0$ How important the laptop owner sees the use of magazine or website reviews as an information source for laptop purchasing is independent of the laptop consumer's gender.

Insufficient evidence exists to conclude that the relative importance a laptop owner sees in the use of magazine or website reviews as an information source to contribute to the purchasing decision is related to the consumer's gender.

$H28_0$ How important the laptop owner sees the use of magazine or website reviews as an information source for laptop purchasing is independent of his / her technical competence.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that magazine and website reviews contributing to the purchase decision is dependent of the technical competence of the consumer.

Magazine or website reviews showed a relationship with the level of technical competence, one of the three hypotheses tested in this area. All other demographic variables indicated no statistically significant relationship.

$H29_0$ How important the laptop owner sees the recommendation of a technology or IT expert as an information source for laptop purchasing is independent of his / her age.

Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of a recommendation from a technology or IT expert as an information source to contribute to the purchasing decision is related to the consumer's age.

$H30_0$ How important the laptop owner sees the recommendation of a technology or IT expert as an information source for laptop purchasing is independent of his / her education level.

Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of a recommendation from a technology or IT expert as an information source to contribute to the purchasing decision is related to the consumer's education level.

$H31_0$ How important the laptop owner sees the recommendation of a technology or IT expert as an information source for laptop purchasing is independent of his / her gender.

Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of a recommendation from a technology or IT expert as an information source to contribute to the purchasing decision is related to the consumer's gender.

$H32_0$ How important the laptop owner sees the recommendation of a technology or IT expert as an information source for laptop purchasing is independent of his / her technology competence.

Insufficient evidence existed to conclude that the relative importance a laptop owner sees in the use of a recommendation from a technology or IT expert as an information source to contribute to the purchasing decision is related to the consumer's level of technical competence.

Of the remaining four hypotheses tested to determine the existence of a relationship between the four demographic variables and the use of a technology or IT expert as an information source, none proved statistically significant.

In summary, with regards to research question three that examined demographic variables and the relationship with six different information sources, the most common link occurred with the variable of technical competence. Four of the six information sources indicated a relationship with the level and the relative importance of those sources. The demographic serves as a key indicator for appropriate message delivery. The higher the level of technical competence, the more important direct mail and magazine/website reviews become and the less important retailer and recommendations from non-technical people become.

Research question 4. Does a relationship exist between the between the demographics of a laptop user and the tangible, product-like attributes considered in the purchase decision?

To support this question in answering the existence of a relationship between a series of demographic variables and the tangible, product-like attributes considered in the purchase decision, eight hypotheses were developed, representing each of the four demographics against each of the two attributes.

$H33_0$ The importance of perceived product reliability in purchasing a laptop is independent of the laptop owner's age.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the perceived importance of product reliability in contributing to the purchase decision is dependent of the age of the consumer.

$H34_0$ The importance of perceived product reliability in purchasing a laptop is independent of the laptop owner's education level.

Insufficient evidence existed to conclude that the perceived importance that product reliability contributes to the purchase decision is related to the consumer's education level.

$H35_0$ The importance of perceived product reliability in purchasing a laptop is independent of the laptop owner's gender.

Insufficient evidence existed to conclude that the perceived importance that product reliability contributes to the purchase decision is related to the consumer's gender.

$H36_0$ The importance of perceived product reliability in purchasing a laptop is independent of the laptop owner's technical competence.

Insufficient evidence existed to conclude that the perceived importance that product reliability contributes to the purchase decision is related to the consumer's level of technical competence.

$H37_0$ The importance of performance and capacity in purchasing a laptop is independent of the laptop owner's age.

Insufficient evidence existed to conclude that the perceived importance that product performance and capacity contribute to the purchase decision is related to the consumer's age.

$H38_0$ The importance of performance and capacity in purchasing a laptop is independent of the laptop owner's education level.

Insufficient evidence existed to conclude that the perceived importance that product performance and capacity contribute to the purchase decision is related to the consumer's education level.

$H39_0$ The importance of performance and capacity in purchasing a laptop is independent of the laptop owner's gender.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the relative importance of performance and capacity in contributing to the purchase decision is dependent of the gender of the consumer.

$H40_0$ The importance of performance and capacity in purchasing a laptop is independent of the laptop owner's technical competence.

Insufficient evidence existed to conclude that the perceived importance that product performance and capacity contribute to the purchase decision is related to the consumer's technical competence.

Among the eight null hypotheses, two were rejected, with demographic variables proved statistically significant, each with a different product attribute. The laptop owner's age can predict the relative importance of product reliability as can gender to laptop performance and capacity. The older the consumer the more important product reliability becomes in the consideration of a laptop purchase, and females rate performance and capacity as very important while males do not.

Research question 5. Does a relationship exist between the between the demographics of a laptop user and the soft, intangible attributes considered in the purchase decision?

To support this question in answering the existence of a relationship between a series of demographic variables and the soft, intangible, attributes considered in the purchase decision, four hypotheses were developed, representing each of the four demographics against the constant of the intangible attribute, past vendor experience.

$H41_0$ The importance of past vendor experience in purchasing a laptop is independent of the laptop owner's age.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the relative importance of past brand and vendor experience in contributing to the purchase decision is dependent of the age of the consumer.

$H42_0$ The importance of past vendor experience in purchasing a laptop is independent of the laptop owner's education level.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the relative importance of past brand or vendor experience in contributing to the purchase decision is dependent of the education level of the consumer.

$H43_0$ The importance of past vendor experience in purchasing a laptop is independent of the laptop owner's gender.

Insufficient evidence existed to conclude that the perceived importance that past brand or vendor experience contributes to the purchase decision is related to the consumer's gender.

$H44_0$ The importance of past vendor experience in purchasing a laptop is independent of the laptop owner's technical competence.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the relative importance of past brand and vendor experience in contributing to the purchase decision is dependent of the technical competence of the consumer.

Does a relationship exist? One of the strongest statistical results in three of the four tested hypotheses indicating positive, the answer would be yes. Three of the four null hypotheses were rejected. A relationship does exist between the soft, intangible attribute of past vendor/brand experience and age, education level and technical competence. Older consumers place more value on past experience than do younger consumers. The more educated the consumer, the more importance is placed on past experience. The higher the level of technical competence, the higher the value is placed on past experience.

Brand: H45-H54

Research question 6. Is there a relationship between the laptop brand purchased and the relative importance of various information sources used by the consumer?

To support this question in answering the existence of a relationship between a series of information resources and considered in the purchase decision and the brand selected, six hypotheses were developed, representing each of the six sources against the constant of the laptop brand purchased.

> $H45_0$ The brand of laptop purchased is independent of how important the laptop owner sees the use of direct mail, catalogs or email from the Manufacturer as an information source.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the brand of laptop purchased is dependent of the relative importance of direct mail, catalogs or email as an information source contributing to the buying decision.

> $H46_0$ The brand of laptop purchased is independent of how important the laptop owner sees the use of Manufacturer or retail websites as an information source for laptop purchasing.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the brand of laptop purchased is dependent of the relative importance of Manufacturer and Retailer websites as an information source contributing to the buying decision.

> $H47_0$ The brand of laptop purchased is independent of how important the laptop owner sees the use of retail store visits as an information source for laptop purchasing.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the brand of laptop purchased is dependent of the relative importance of retail visits as an information source contributing to the buying decision.

$H48_0$ The brand of laptop purchased is independent of how important the laptop owner sees the use of friends, family member or neighbors as an information source for laptop purchasing.

Insufficient evidence existed to conclude that the brand of laptop purchased is related to the consumer's perceived importance of the use of friends, family or neighbors as an information source contributing toward the purchase decision.

$H49_0$ The brand of laptop purchased is independent of how important the laptop owner sees the use of magazine or website reviews as an information source for laptop purchasing.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the brand of laptop purchased is dependent of the relative importance of magazines and website reviews as an information source contributing to the buying decision.

$H50_0$ The brand of laptop purchased is independent of how important the laptop owner sees the use of a technology or IT expert as an information source for laptop purchasing.

Insufficient evidence existed to conclude that the brand of laptop purchased is related to the consumer's perceived importance of the use of a technology or IT expert as an information source contributing toward the purchase decision.

In reviewing the six hypotheses developed to examine all six information sources against the laptop brand purchased, a significant relationship was identified among four of the sources. Four of the null hypotheses were rejected concluding that direct mail, retailer websites, retail store visits and magazine/website reviews all showed a dependence on the brand.

Research question 7. Does a relationship exist between the tangible, product-like attributes considered in the purchase decision and the laptop brand selected?

To support this question in answering the existence of a relationship between tangible, product-like attributes and the laptop brand selected, two hypotheses were developed, representing each of the two attributes against the constant of the laptop brand purchased.

$H51_0$ The brand of laptop purchased is independent of the importance of perceived product reliability of the laptop purchased.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the brand of laptop purchased is dependent the consumer's perceived level of product reliability.

$H52_0$ The brand of laptop purchased is independent of the importance of performance and capacity of the laptop purchased.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the brand of laptop purchased is dependent the consumer's perceived level of performance and capacity.

While both of these null hypotheses were rejected, only one showed a conclusive pattern. It was found that the importance of performance and capacity is related to laptop brand. Apple users viewed this attribute as the most important.

Research question 8. Does a relationship exist between the soft, intangible attributes considered in the purchase decision and the laptop brand selected?

To support this question in answering the existence of a relationship between soft, intangible, attributes and the laptop brand selected, one hypothesis was developed, representing the one attribute against the constant of the laptop brand purchased.

$H53_0$ The brand of laptop purchased is independent of past vendor experience.

Using the Chi-Square test of Independence, the researcher was able to reject the null hypothesis concluding that the brand of laptop purchased is dependent on the consumer's past experience with the brand and vendor. It was found that past experience with the vendor/brand can be a predictor of the laptop brand chosen. Apple users in particular showed the strongest concentration of highest value within this attribute. A relationship does exist. The result here was

anticipated. Repeat purchase most often occur because of good past vendor/brand experience. Alternately, leaving a brand often has to do with a poor experience.

Research question 9. Is there a relationship between the laptop brand purchased and the most important evaluative buying criterion identified by the consumer in contributing to the purchase decision?

To support this question in answering the existence of a relationship between the most important evaluative buying criterion and the laptop brand selected, one hypothesis was developed, representing the single most important criterion against the constant of the laptop brand purchased.

> $H54_0$ The brand of laptop purchased is independent of a laptop owner's most important evaluative criterion for purchasing the laptop.

Insufficient evidence existed to conclude that the brand of laptop purchased is related to the consumer's most important buying criteria contributing to the purchase decision.

Because the null hypothesis designed to support this question was not rejected, no relationship exists between brand and the most important evaluative buying criterion considered by laptop consumers. This was surprising. The researcher had expected to see some linkage between brand and such criterion. For example, Dell users buy for price, and HP consumers buy for product quality. The insight this provides is invaluable, meaning that despite efforts of vendors to differentiate themselves in the market with one value proposition over another, it is often irrelevant in that consumers do not purchase a brand for one element only.

Conclusions

Specific information sources yield specific results with a specific set of consumers. Simply put, consumers seek out information in a variety of ways and a relationship exists with

how the consumer does that and who the consumer is. Different consumers purchase different laptops for different reasons. Table 1 presents all of the statistically significant relationships found in this study between demographic variables of the consumer and the information sources they valued in contributing to their purchase decision. The level of technical competence of the consumer plays a key role in the determination of what sources are sought, as does gender and age to a certain degree. This knowledge enables to creation of a rudimentary profile to properly launch the appropriate message to the right audience. In being able to answer just a few of these research questions regarding the relationships between demographics and information sources and attributes, the efficiency of the marketing machine with these laptop vendors will increase. For example, understanding that the audience who seeks out information on Manufacturer or Retail websites is non-technical, the kind of detail that resides their can de developed for that audience - less technical, more educational and informative thereby alleviating some of the assumed anxiety of the novice.

Table 114. Relationships Between Demographics and Information Sources and Attributes

	Age	Education	Gender	Technical Competence
Direct Mail				The higher, the more important
Websites				The higher, the least important
Retail Store Visits				
Recommendations From Friends	The younger, the more important		Females: yes Males: no	The higher, the less important
Magazine Reviews				The higher, the more important
Recommendations From Experts				
Reliability	The older, the more important		Females: yes Males: no	
Performance and Features				
Past Experience With Brand			The higher education, the more important	The higher, the more important

As vendors search to deliver the right information to the right audience in the right medium, research will continue to be done to answer these questions. Table 2 begins to paint the picture of the consumer profile, not by brand unfortunately, rather by the most important evaluative criterion used in determining which laptop to purchase. While no relationship existed with gender or technical competence, data is revealed with age groups and education level. The

youngest bracket of consumers and least educated are interested in the ease of purchase while the oldest want the best quality.

Table 115. Relationship Between Demographics and Most Important Evaluative Criterion

	Age	Education	Gender	Technical Competence
Price	35–44	Associates		
Product Quality	45+			
Ease of Purchase	18–24	No college		
Brand Image	The younger, the more important	Bachelors		
Recommendations		Graduate		

Several more relationships exist between the laptop brand and the value of information sources and attributes perceived by consumers. As shown in Table 2, Apple users value a variety of sources and relate the availability and value of that source as contributing to their purchase decision. The data revealed the most significant relationships with Apple consumers, then Dell, HP, Toshiba, and lastly Compaq.

Table 116. Relationships Between Brand and Information Sources and Attributes

	Dell	Apple	Compaq	HP	Toshiba
Direct Mail	Least important	Least important		Most important	Least important
Websites	Most important	Least important		Most important	
Retail Store Visits	Least important				
Recommendations From Friends					
Magazine Reviews		More important than others			
Recommendations From Experts					
Reliability	Inconclusive pattern	Inconclusive pattern	Inconclusive pattern	Inconclusive pattern	Inconclusive pattern
Performance and Features		More important than others			
Past Experience With Brand		More important than others			
Education Level	Highest	Middle	Lowest		Lowest

What this data reveals to the vendor is the appreciation of the brand and the methods by which the brand's consumers seek and capture information as well as value attributes related to the product and brand itself. Some brands are more successful than others, which is not

surprising. Apple as a brand attracts a highly loyal user base, showing that the value placed on the source of information and the product/brand features are related to the purchase decision.

A profile is forming to help vendors develop that right message for the right audience at the right time with the right vehicle.

Recommendations for Laptop Vendors

As stated, a profile is forming. Knowing the relationships that exist better enables the development of that profile. Several recommendations are presented here for laptop vendors to more efficiently target to whom vendors are sending the message and how vendors are delivering it.

Message Audience and Information Sources

The recipients of the marketing message can best be described as multi-dimensional. While the consumers themselves can be broken down into four categories: age, education level, gender and technical competence, the use in segmentation with these categories occurs in three ways: (a) by information source (b) by the most important evaluative buying criterion and (c) by brand.

Getting the right message to the right audience is the number one critical success factor in the development of any marketing strategy. Knowing how the audience internalizes messages and what kind of messages they need to be is invaluable. This study was able to reveal details on four of the six information sources specific to the appropriate demographic; some sources are more granular than others. Direct mail for instance, should be aimed at the technical audience while manufacturer websites should be for the non-technical, novice. Young females who are novices in relation to technical competence seek out recommendations from their friends as an

information source. Because the study did not probe further on this question inconclusive evidence exists to make any recommendations on pursuit of this profile. However, results did show that magazine reviews are also geared toward the technical crowd. Leave the "speeds and feeds" and technical track content to a minimum on the mass-produced and accessible websites while turning up that dial for any direct mail campaigns and magazine reviews of the product.

Older females value the reliability of the laptop high. Push that reliability message in venues that are more prone to females, such as female targeted magazines and television shows. Keeping also in mind that this same demographic of females at the novice technical level seek out recommendations as information sources leads to another opportunity for exposure. The more mass produced and blanketed the reliability message is to the population the more likely vendors will hit on one of those two targets.

Past experience with a vendor and brand is also an opportunity. Highly educated, technical experts value this experience as important, and to exploit it would be beneficial. While a total customer experience is sought after by all laptop vendors, doing what is possible to nurture the Installed Base with loyalty programs and strong conflict resolution and escalation processes will better position a vendor for long-term business from their customers.

What is the most important thing that drives a consumer to purchase one laptop over another? The most important evaluative buying criterion that was exposed in this study as each one relates to the set of demographics was eye opening. The youngest set of respondents, ages 18-24 with the least amount of education were most interested in buying what was the easiest. Brand appeared to be of no issue. The study did not probe further into method of purchase, on line or in the store, which is unfortunate, because it could have shed some much needed light on specifically addressed either experience. Without that detail, the recommendation would be to

focus on both. Considerable user testing online and in the store may yield some inefficiencies and time synchs in the process that, if improved, could also improve the overall experience.

Middle age (35-44) consumers with some college focus on price. More than likely these are families on a budget with little to no attention on the latest technological advances. This demographic is broad and difficult to bound. However the oldest group, 45 and older, focus on product quality. Targeting that audience is slightly more realistic, by honing in on vehicles of communication geared toward the older population, like hobby magazines, airports and newspapers.

Brand and Information Sources

Are certain brands more effective in their communication of their message than others? Is it based on the message itself or the choice of communication vehicle? This researcher would argue that it is a combination of both. Looking at the three brands that showed some statistically significant relationships in this arena, recommendations on using the right information sources by brand follow.

Dell

The most highly educated consumers appreciate Dell's brand. Dell's users in total find Dell's website to be the most important source of information to help contribute to the purchasing decision of a laptop. Direct mail and retail store visits are the least important. Continue focus on the direct channel by enhancing websites for the novice and areas of the website that include reviews and recommendations for the technical experts. Make the purchasing process painless for the youngest and least educated.

Apple

Apple presented the highest number of relationships with its users. The loyalty is apparent. To continue to maintain that installed base follow the recommendations presented earlier regarding past experience and nurture that base while hunting for new ones. Apple users do not value direct mail or websites. They appreciate magazine reviews as well as the performance of the Apple laptop and the past experience with the brand. Focus the energy on customer retention and brand loyalty.

Hewlett-Packard

For HP, the two most important information sources that surfaced were direct mail and websites. These appealed to the HP base the most. To continue in this front, move forward with direct mail, targeting the message slightly more based on the demographic: push price for middle age, quality for older, and ease of purchase for youngest. Focus on brand image for those college crowds and make the message resonate with them that HP is hip and cool. Technical audiences appreciate direct mail. Tighten up that message as well. Take a less technical view on the websites to appeal to the novice crowd.

Recommendations for Future Research

This study focused on five laptop brands and a vast set of demographic profiles. Future studies delving deeper into one set of consumer demographics would yield critical information to the marketing field to better understand the customer base. Further research to answer the question if a relationship exists between the purchasing method and brand of laptop purchased would also contribute useful information into the go-to-market strategy for these vendors. The more customer insight that can be gained through research into the profile of a consumer and

whether or not that profile can predict the purchase of one brand over another the better the ability of the vendor's to customize and tailor a message and experience for a user.

REFERENCES

Aaker, D. A. (1991). *Managing brand equity: Capitalizing on the value of a brand name*. New York: Free Press.

Aaker, D. A. (1996, Spring). Measuring brand equity across products and markets. *California Management Review, 38*, 102–120.

Abelson, R. P., & Levi, A. (1985). Decision making and decision theory (3rd ed.). In G. Lindzey & E. Aronson (Eds.), *The handbook of psychology* (pp. 230–310). New York: Random House.

Ajzen, I. (1991). The theory of planned behavior. *Organization Behavior and Human Decision Processes, 50*(2), 179–211.

Ajzen, I., & Madden, T. J. (1986). Prediction of goal-oriented behavior from attitudinal and normative variables, *Journal of Experimental Social Psychology, 22*(8), 453–474.

Alba, J. W. (1983). The effects of product knowledge on the comprehension, retention and evaluation of product information. In R. P. Bogozzi & A. M. Tybout (Eds.), *Advances in consumer research* (pp. 577–580). Ann Arbor, MI: Association for Consumer Research.

Alba, J. W. & Hutchinson, J. W. (1987). Dimensions of consumer expertise. *Journal of Consumer Research, 13*(3), 411–454.

Babbie, E. (2001). *The practice of social research* (9th ed). Stamford, CT: Wadsworth.

Bandura, A. (1982). Self-efficacy mechanism in human agency, *American Psychologist, 37*(2), 122–147.

Barwise, P. (1993, March). Brand equity: Snark or boojum? *International Journal of Research in Marketing, 10*, 93–104.

Bettman, J. R. (1979). *An information processing theory of consumer choice*. Reading, MA: Addison-Wesley.

Bettman, J. R., & Kakkar, P. (1977). Effects of information presentation format on consumer information acquisition strategies. *Journal of Consumer Research, 3*(3), 233–240.

Bettman, J. R., Luce, M. F. & Payne, J. W. (1998). Constructive consumer processes. *Journal of Consumer Research, 25*(12), 187–217.

Bettman, J. R., & Park, W. (1980). Effects of prior knowledge and experience and phase of the choice process on consumer decision process. *Journal of Consumer Research, 7*(12), 234–248.

Brucks, M. (1985). The effects of product class knowledge on information search behavior. *Journal of Consumer Research, 12*(6), 1–16.

Capon, N. & Burke, M. (1977). Information seeking in consumer durable purchases. Contemporary marketing thought. *Proceedings of the American Marketing Association*. (pp. 75–88) Chicago: American Marketing Association.

Chernev, A. (1997, March). The effect of common features on brand choice: Moderating role of attribute importance. *Journal of Consumer Research, 23*, 304–310.

Childers, T. L., Christopher, L. C., Peck, J. & Carson, S. (2001). Hedonic and utilitarian motivations for online retail shopping behavior. *Journal of Retailing, 77*(4), 511–536.

Cooper, D. R., & Schindler, P. S. (2003). *Business research method* (8th ed). New York: McGraw-Hill.

Dabholkar, P. A. & Bagozzi, R. (2002). An attitudinal model of technology-based self-service: moderating effects of consumer traits and situational factors. *Journal of the Academy of Marketing Science, 30*(3), 184–202.

Daoud, D., & Shim, R. (2005, July). *IDC's 2005 consumer PC survey, part 1*. IDC # 33599. Retrieved October 14, 2006, from http://www.idc.com

Davis, F. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly, 13(3),* 318–341.

Davis, F., Bagozzi, R., & Warshaw, P. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science, 35*(8), 982–1004.

Dawes, R. M., & Corrigan, B. (1974). Linear models in decision making. *Psychology Bulletin*, *81*(2), 95–106.

Dhar, R., Nowlis, S. M., & Sherman, S. J. (1999). Comparison effects on preference construction. *Journal of Consumer Research, 26*(12), 293–306.

Engel, J. F. (1983). *Consumer behavior* (4th ed). Chicago: Dreyden Press.

Erdem, T., & Swait, J. (2004). Brand credibility, brand consideration and choice. *Journal of Consumer Research, 31*(6), 191–197.

Farquhar, P. H. (1989). Managing brand equity. *Marketing Research, 1*(9), 24–33.

Finnigan, H. (2003). *Attention blocking in consumer choice: Experimental analysis with implications for advertising.* Master's thesis, University of Calgary, AAT No. MQ93303.

Fishbein, M., & Ajzen, I. (1975). *Belief, intention, attitude, intention and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.

Kolko, J. (2004). *Why technographics still works*. Retrieved September 30, 2006, from http://www.forrester.com/Research/Document/Excerpt/0,7211,36030,00.html

Gentry, L., & Calantone, R. (2002). A comparison of three models to explain shop-bots use on the web. *Psychology and Marketing, 19*(11), 945–957.

Greenbaum, M. (2006). Creating dynamic brand awareness. *Franchising World*, *2*(1), 46–48.

Harrison, J., & Dwight, A. (2006). Assessing the power of acquired brands. *Mergers and Acquisitions: The Dealmaker's Journal, 41*(1), 25–29.

Hauser, J., & Wernerfelt, B. (1990). An evaluation cost model of consideration sets. *Journal of Consumer Research, 16*(12), 393–408.

Hu, P., Chau, P., Sheng, O.U., & Tam, K.Y. (1999). Examining the technology acceptance model using physician acceptance of telemedicine technology. *Journal of Information Management Systems, 16*(2), 91–113.

Hung, K. (2004). *Consumer decision-making, perceived product value and purchasing behavior in the Taipei digital camera market.* Unpublished doctoral dissertation, San Antonio, Texas.

Hutchinson, J. W. (1983). Expertise and the structure of free recall In R. P. Bogozzi & A. M. Tybout (Eds.), *Advances in consumer research* (pp. 585–589). Ann Arbor, MI: Association for Consumer Research.

Johnson, E. J., & Payne, J. W. (1985). Effort and accuracy in choice. *Management Science, 31*(2), 395–414.

Johnson, E. J., & Russo, J. E. (1984, Summer). Product familiarity and learning new information. *Marketing Science, 3*, 227–246.

Karahanna, E., Straub, D., & Chervany, A. (1999). Information technology adoption across time: A cross-sectional comparison of pre-adoption and post-adoption beliefs. *MIS Quarterly, 23*(2), 183–214.

Keller, K. L. (1993). Conceptualizing, measuring and managing customer-based brand equity. *Journal of Marketing, 57*(1), 1–22.

Kotler, P. H. (1991). *Marketing management: Analysis, planning and control* (8th ed.). Englewood Cliffs, NJ: Prentice-Hall.

Kurniawan, S. H. (2004). *Consumer decision-making in product selection and product configuration processes.* Doctoral dissertation, The Hong Kong University of Science and Technology, UMI No. 3139164.

Lane, V., & Jacobsen, R. (1995). Stock market reactions to brand extension announcements: The effects of brand attitude and familiarity. *Journal of Marketing, 59*(1), 63–77.

Latham, J. (2005). *The research prospectus: Getting the DNA of your research design right*. Retrieved on February 4, 2006, from www.drjohnlatham.com

Lau, R. R. (1995). Information search during an election campaign: introducing a process tracing methodology to political science. In M. Lodge & K. McGraw (Eds.), *Political judgment: Structure and process*. Ann Arbor: University of Michigan Press.

Lau, R. R., & Rediawsk, D. P. (2001). Advantages and disadvantages of cognitive heuristics in political decision making. *American Journal of Political Science, 45*(4), 951–971.

Leedy, P. D., & Ormrod, J. E. (2005). *Practical research : Planning and design* (8th ed.). Upper Saddle River, NJ: Merrill Prentice Hall.

Leuthesser, L. (1988, May). Defining, measuring and managing brand equity: A conference summary. *Marketing Science Institute*, Report No. 88-104.

Lindsay, P. H., & Norman, D. A. (1972). *Human information processing*. New York: Academic.

Mahajan V., Rao, R. R., & Srivastava, R. K. (1994). An approach to assess the importance of brand equity in acquisition decisions. *Journal of Product Innovation Management, 11*(1), 221–235.

Malhotra, N. K. (1982). Information load and consumer decision making. *Journal of Consumer Research*, *8*(3), 419–430.

Mellers, B. A., & Biagini, K. (1994, July). Similarity and choice. *Psychological Review, 101*, 505–518.

Meyer, R. J., & Eagle, T. C. (1982). Context-induced parameter instability in a disaggregate-stochastic model of store choice. *Journal of Marketing Research, 19*(2), 62–71.

Moore, G., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research, 2*(3), 192–223.

Moorthy, S., Ratchford, B. T., & Talukdar, D. (1997). Consumer information search revisited: Theory and empirical analysis. *Journal of Consumer Research, 23*(3), 263–277.

Norman, D.A., & Bobrow, D.G. (1975). On data-limited and resource-limited processes. *Cognitive Psychology, 7*(1), 44–46.

O'Cass, A., & Fenech, T. (2003). Web retailing adoption: Exploring the nature of internet users web retailing behavior. *Journal of Retailing and Consumer Services. 10*(2), 81–95.

Park, C. S., & Srinivasan, V. (1994). A survey based method for measuring and understanding brand equity and its extendibility. *Journal of Marketing Research, 31*(5), 271–288.

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.

Payne, J. W. (1982). Contingent decision behavior. *Pyschological Bulletin, 92*(2), 382–402.

Petty, R. E., & Cacioppo, J. T. (1986). *Communication and persuasion*. New York: Springer-Verlag.

Rangaswamy, A., Burke, B., & Oliva, A. O. (1993, March). Brand equity and the extendibility of brand names. *International Journal of Marketing Research, 10*, 61–75.

Robson, C. R. (2002). *Real world research* (2nd ed). Malden, MA: Blackwell.

Rogers, E. M. (1983). *Diffusion of innovations* (3rd ed.). New York: The Free Press.

Russo, J. E., & LeClerc, F. (1994). An eye fixation analysis of choice processes for consumer nondurables. *Journal of Consumer Research, 21*(9), 274–290.

Schadler, T., & Golvin, S. (2005). *The state of consumers and technology: Benchmark 2005.* Retrieved September 30, 2006, from http://www.forrester.com/Research/Document/Excerpt/0,7211,36987,00.html

Schocker, A. D., & Weitz, B. (1988). A perspective on brand equity principles and issues. In L. Leuthesser (Ed.), *Defining, measuring and managing brand equity.* Cambridge, MA: Marketing Science Institute.

Simon, C. J., & Sullivan, M. W. (1993, Winter). The measurement and determinants of brand equity: A financial approach. *Marketing Science, 12*, 28–52.

Simon, H. A. (1975). Human nature in politics: The dialogue of psychology with political science. *American Political Science Review*, *69*(2), 293–304.

Slovic, P. (1972). From Shakespeare to Simon: Speculations and some evidence about man's ability to process information. *Oregon Institute Research Bulletin, 12*(12), 2–18.

Sujan, M. (1985). Consumer knowledge: Effects on evaluation strategies mediating consumer judgments. *Journal of Consumer Research, 12*(6), 31–46.

Survey Sampling International homepage (n.d.). Retrieved October 15, 2006, from http://www.surveysampling.com

Svenson, O. (1979). Process descriptions of decision making. *Organization Behavior and Human Performance, 23*(3), 86–112.

Szajna, B. (1996). Empirical evaluation of the revised technology acceptance model. *Management Science, 42*(1), 85–93.

Taylor, S., & Todd, P. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research, 6*(2), 144–176.

Teas, R. K., & Grapentine, T. H. (1996). Demystifying brand equity. *Marketing Research, 8*(2), 25–29.

Thaler, R. (1985, Summer). Mental accounting and consumer choice. *Marketing Science, 4*, 199–214.

Thompson, R. L., Higgins, C. A., & Howell, J. M. (1991). Influence of experience on personal computer utilization: Testing a conceptual model. *Journal of Information Management Systems, 11*(1), 167–187.

Thorngate, W. (1980). Efficient decision heuristics. *Behavioral Science, 25*(2), 219–225.

Tversky, A. (1969). Intransitivity of preferences. *Psychology Review*, *76*(1), 31–48.

Tversky, A. (1972). Elimination by aspects: A theory of choice. *Psychological Review, 84*(7), 327–352.

Tversky, A., & Shafir, E. (1969).Choice under conflict: The dynamics of decisions. *Psychological Science, 6*(11), 358–361.

Tversky, A., Sattath, S., & Slovic, P. (1988). Contingent weighting in judgment and choice. *Psychological Science, 6*(11), 358–361.

Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation and emotion into the technology acceptance model. *Information Systems Research, 11*(4), 342–365.

Venkatesh, V., & Davis, F. (1996). A model of the antecedents of perceived ease of use: Development and test. *Decision Sciences. 27*(3), 451–482.

Warner, M. (Ed.). (1997). *The concise international encyclopedia of business and management* (3rd ed., Vol. 1). Boston: International Business Press.

Wernerfelt, B. (1988, Autumn). Umbrella brandings as a signal of new product quality: An example of signaling by posting a bond. *Rand Journal of Economics, 19*, 458–66.

West, P. M., Brown, C. L., & Hoch, S. J. (1996). Consumption vocabulary and preference formation. *Journal of Consumer Research, 23*(9), 120–135.

Whatis.com definition pages. (n.d.). Retrieved October 14, 2006, from http://whatis.techtarget.com/

Yoo, B., Donthu, N., & Lee, S. (2000). An examination of selected marketing mix elements and brand equity. *Academy of Marketing Science Journal, 28*(2), 195–211.

Zinkhan, G. M. (1992). Managing brand equity: Capitalizing on the value of a brand name [Review]. *Journal of Marketing, 56*(2), 125–128.

APPENDIX
SURVEY

(Rotate all multiple select answers)

S1 Do you currently own a laptop/notebook computer?
Yes
No **(Terminate)**
Don't know **(Terminate)**

S2 Did you purchase your laptop/notebook computer?
Yes
No **(Terminate)**
Don't know **(Terminate)**

S2A Approximately when did you purchase your laptop/notebook computer?
More than 2 years ago **(Terminate)**
More than 1 year ago but less than 2 years ago **(Terminate)**
6 to 12 months ago
3 months to less than 6 months ago
Less than 3 months ago
Don't know/refused **(Terminate)**

S3 Are you or any member of your family currently employed in any of the following industries? (*Please check as many as apply*)

[ROTATE]

Market Research or consulting	**TERMINATE**
Computer manufacturing	**TERMINATE**
Manufacturing, distribution or sales of alcoholic beverages	CONTINUE
Banking or Finance	CONTINUE
Insurance	CONTINUE
Manufacturing, distribution or sales of automobiles	CONTINUE
None of the above **[ANCHOR LAST)**	CONTINUE

S4 Are you?
Male **(50% quota)**
Female **(50% quota)**
Prefer not to say **(Terminate)**

S5 Which of the following best describes your household's total annual income before taxes, including income from jobs, pensions, Social Security, and other government sources?
Under $30,000 **(25% quota)**
$30,000 to under $50,000 **(25% quota)**
$50,000 to under $75,000 **(25% quota)**

$75,000 or more **(25% quota)**
Prefer not to say

S6 In which one of the following age groups do you belong?
18 – 24 **(25% quota)**
25 – 34 **(25% quota)**
35 – 44 **(25% quota)**
45-plus **(25% quota)**

S7 Which of the following best describes the area where you live?
Urban
Suburban
Rural

S8 What is the highest grade of school you completed?
1. Some high school
2. Graduated high school or GED
3. Some college/Associate degree
4. Graduated college/Bachelor's degree
5. Graduate degree course(s)
6. Graduate degree (e.g., Masters or Doctorate)
7. Other (e.g., vocational school)

S9 How many adults (18 years of age or older) live in your household?
1
2
3
4
5
More than 5

S10 How many children (17 years of age or younger) live in your household?
1
2
3
4
5
More than 5

Q1 How many laptop/notebook computers are in your household currently?
1
2
3
4
5 or more
Don't know

Q2 Which of the following brands of laptop/notebook computers are in your household currently? Please check all that apply.

Apple
Compaq
Dell
E-machines
Gateway
Hewlett-Packard (HP)
IBM
Lenovo
Sony
Toshiba
Clone (no brand)
Other

Q3 Considering your most recently purchased laptop/notebook computer, what is the brand? Please select only one.

Apple
Compaq
Dell
E-machines
Gateway
Hewlett-Packard (HP)
IBM
Lenovo
Sony
Toshiba
Clone (no brand)
Other **(Skip to Q6)**
Not Sure **(Skip to Q6)**

Q3A Thinking about **(Insert Q3 brand)** do you agree or disagree that the following statements apply to **(Insert Q3 brand)**? Please rate the statements on a 1 to 5 scale in which "1" means "disagree strongly" and "5" means "agree strongly."

(Insert Q3 brand for beginning of statements "a" through "h")

a) is reliable 1 (disagree strongly). 2 (disagree). 3 (neither agree or disagree). 4 (agree). 5 (agree strongly) **(Programmer: please provide labels for each scale point for each attribute).**

b) provides high quality products (1 – 5)
c) is hip and stylish (1 – 5)
d) is easy to use (1 – 5)
e) is honest and hides nothing from me (1 – 5)
f) is friendly and approachable (1 – 5)
g) is a leader in its category (1 – 5)
h) offers a wide variety of features (1 – 5)
i) I frequently tell others good things about **(insert Q3 brand)** (1 – 5)
j) My life would not be as good without **(insert Q3 brand)** (1 – 5)

Q4 Was this your first purchase of a **(Insert Q3 brand)** laptop/notebook computer?

Yes **(Skip to Q6)**
No
Not sure **(Skip to Q6)**

Q5 Prior to your most recent laptop/notebook purchase, how many other **(Insert Q3 brand)** laptop/notebook computers have you previously purchased?

1
2
3
4
5
6 to 8
9 – 10
More than 10

Q6 Which of the following statements best describes the primary reason you purchased your most recent laptop/notebook computer? Please select only one.

a) Needed to replace an older, worn-out or broken model
b) Needed the convenience and mobility of a laptop/notebook
c) Needed new technology features
d) Needed to replace bigger/heavier laptop/notebook with smaller/lighter model
e) Other, specify

Q7 Which of the following statements best describes the laptop-notebook brands you initially had in mind and purchased? Please select only one.

a) I knew exactly which brand I wanted to purchase, did not consider any others and purchased that brand **(Ask Q8 then skip to Q10)**
b) I had a preference initially for a particular brand but purchased a different brand
c) I had some preference for several different brands and purchased one of them **(Ask Q8 then skip to Q10)**
d) I had some preference for several different brands but purchased a different brand
e) I had no preference for any brands **(Skip to Q10)**

Q8 Which brand(s) started as your preferred brand(s)?

Apple
Compaq
Dell
E-machines
Gateway
Hewlett-Packard (HP)
IBM
Lenovo
Sony
Toshiba
Clone (no brand)
Other
Not Sure

Q9 Why did you not end up purchasing your preferred brand? Please select all that apply.

a) Features and/or form factor of a particular model from a different brand met my needs better
b) Found a product of an alternative brand at a better price

c) Found a product of an alternative brand with better warranty and post-purchase support

d) Took advice/recommendation from friends, family, or co-workers favoring a different brand

e) Took advice/recommendation from sales representative favoring a different brand

f) Took advantage of a special offer/promotion on another brand

g) Read unfavorable reviews/comments on my preferred brand

h) Lack of availability of preferred brand

Q10 Please rate the following information sources on how important they were in making your most recent laptop/notebook computer purchase decision? Please rate their importance on a scale of 1 to 5 in which 1 means "not at all important" and 5 means "most important".

a) Direct Mail, catalogs or email from the manufacturer or retailer 1 (not at all important). 2 (minimally important). 3 (somewhat important). 4 (important). 5 (most important). **(Programmer: please provide labels for each scale point for each attribute).**

b) Manufacturer or retailer websites (1 – 5)

c) Retail store visits (1 – 5)

d) Friends, family members or neighbors (1 – 5)

e) Magazine or website reviews or articles (1 – 5)

f) TV advertising (1 – 5)

g) Radio advertising (1 – 5)

h) Newspapers (1 – 5)

i) Technology or IT expert you know (1 – 5)

j) Blogs (1 – 5)

k) Other, specify (1 – 5)

Q11 Considering the following five factors, please rank each one according to its importance in your final purchase decision. Please rank the most important factor a "1," the second-most important factor a "2," and so on.

a) Price

b) Product quality/features/design

c) Brand image

d) Recommendations (personal and/or from media sources)

e) Ease of purchase

Q12 For each of the following product-related factors, please indicate how important each one was in purchasing your laptop/notebook computer. Please rate their importance on a scale of 1 to 5 in which 1 means "not at all important" and 5 means "most important".

a) Product reliability 1 (not at all important). 2 (minimally important). 3 (somewhat important). 4 (important). 5 (most important). **(Programmer: please provide labels for each scale point for each attribute).**

b) Audio/video capabilities, such as big screen (1 – 5)

c) Product availability (1 – 5)

d) Ease and quality of post-sale service and repair (1 – 5)

e) Innovations and product features such as wireless capabilities or number of USB ports (1 – 5)

f) Performance and capacity such as processor speed, disk space or memory (1 – 5)

g) Rebates and/or promotions (1 – 5)

h) Weight/size of product (1 – 5)

i) Compatibility with your existing hardware devices and software(1 – 5)
j) Battery life (1 – 5)
k) Product manufacturer's warranty (1 – 5)

Q13 Considering your overall purchase decision, please indicate how important each of the following factors was in the purchase of your laptop/notebook computer. . Please rate their importance on a scale of 1 to 5 in which 1 means "not at all important" and 5 means "most important". **(Programmer: please include NA as option to scale)**

a) Past experience with brand 1 (not at all important). 2 (minimally important). 3 (somewhat important). 4 (important). 5 (most important). **(Programmer: please provide labels for each scale point for each attribute).**
b) Ability to touch/handle the product prior to purchase (1 – 5)
c) Retailer knowledge/advice and/or in-store displays (1 – 5)
d) Recommendation of friend, family member, neighbor or IT expert (1 – 5)
e) Advertising (1 – 5)
f) Coolness or design of product (1 – 5)
g) Availability of different purchase sources such as Web, in-store, catalogue (1 – 5)
h) Magazine or website review or rating (1 – 5)
i) Product ease of use (1 – 5)
j) Purchase process convenience and overall experience (1 – 5)

Q14 Which of the following sources did you use to purchase your laptop/notebook. Please select only one

a) Computer specialty retail store such as CompUSA
b) Consumer electronics retail store such as Best Buy
c) General retailer such as Wal-Mart
d) Manufacturer web site such as Dell.com or HP.com
e) Retailer web site such as Wal-Mart.com or CompUSA.com or Best Buy.com
f) Auction or liquidator web site such as e-bay.com
g) Phone or mail order

Q15 Which of the following statements best describes your ideas about new technology? Please select only one.

a) I find it exciting and I use it as much as I can
b) It must be mastered if one is to remain up-to-date
c) It is a bit beyond me
d) It scares me
e) Don't know/not sure

Q15A Which of the following statements best describes your level of technology competency? Please select only one.

a) Others frequently seek my advice on and assistance with technical topics
b) I'm no expert, but I can generally get by on my own technology know-how
c) I need to ask a lot of questions to cope with technology
d) I have trouble finding the "on" switch

Q16 Which of the following technology products and services do you own or subscribe to? Please check all that apply.

a) Satellite radio (e.g. XM, Sirius)

b) Home wireless computer network
c) In-car video system
d) Ink-jet or laser jet printer
e) CD burner
f) Portable MP3 player (e.g. iPod)
g) DVD player
h) DVD recorder
i) High-speed Internet at home (e.g. cable, DSL)
j) HDTV
k) DVR (digital video recorder)
l) Landline phone service
m) PDA
n) Videogame console (Playstation, Xbox, etc.)
o) Digital Camera
p) Digital camcorder
q) VOIP
None of the above **(ANCHOR LAST)**

Q17 Considering the technology products and services you own or subscribe to, approximately what percentage of these were purchased online?

0 – 10%
11 – 20%
21 – 30%
31 – 40%
41 – 50%
51 – 60%
61 – 70%
71 – 80%
81 – 90%
91 – 100%