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Paradoxes and consumer decision-making

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PARADOXES AND CONSUMER DECISION-MAKING

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor in Philosophy

in

The Interdepartmental Program in Business Administration (Marketing)

by
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ABSTRACT

Consumers often find themselves faced with conflicting evaluations in which they identify both positive and negative aspects of a purchase or consumption experience. A paradox occurs when the individual is aware of the conflicting evaluations and experiences tension as a result. While there are strong potential implications of paradox, marketing research has been slow to study consumption paradoxes. As a result, many deficiencies exist in the literature, including no consensus as to the definition of consumer paradox, insufficient quantitative measurement, and limited knowledge of the antecedents and consequences of paradox. This dissertation was conducted to address these shortcomings.

Essay one was conducted to develop a basic understanding of consumer paradox and examine the similarities and differences between paradox, ambivalence and mixed emotions. As such, it integrated divergent literature streams and developed a new definition of paradox, distinct from ambivalence and mixed emotions. Furthermore, a hermeneutical interpretive approach was used to interpret in-depth interviews that replicated existing paradox research and identified a new technology paradox.

Essay two was conducted to develop a measurement technique for capturing the presence of paradox in consumption situations. Four pretests and two studies were conducted to develop and test this new measurement technique that captured the two conditions for paradox: the recognition of two opposing, irreconcilable evaluations and the feeling of tension brought about by the opposing evaluations. Additionally, factor analysis was employed to determine the overall structure of the various types of paradoxes.

Essay three was conducted to delineate and test a theoretical framework of consumption paradox. It was the first to empirically test antecedents and outcomes of paradox, and found that antecedents and outcomes exhibited different relationships under different technology paradoxes. The research failed to find any evidence that coping mediates the proposed model.

This research offers contributions by defining paradox as distinct from ambivalence and mixed emotions, developing a comprehensive measurement protocol for assessing paradoxes, and delineating and empirically testing a conceptual framework of paradox. It offers managers insight into the underlying causes of paradox, the associations between paradoxes, and possible strategies to reduce the occurrence of paradox.
ESSAY ONE: THE SIMILARITIES, DIFFERENCES, RELEVANCE AND IMPORTANCE OF CONSUMER PARADOX, AMBIVALENCE, AND MIXED EMOTIONS

INTRODUCTION

Consumption experiences can be ripe with conflicting emotions where consumers view both the positive and negative aspects of a purchase or consumption experience. Sometimes these conflicting thoughts occur sequentially, but sometimes they occur concurrently, which is termed a paradox. A common example may be a cell phone user's experience with the device when it creates both experiences of freedom and feelings of enslavement. The ability to take calls anywhere and at any time gives the user great latitude in how (and where) to employ the technology. At the same time, "being away from your desk" is no longer an excuse not to be available, rather the expectation is that users will carry the cell phone with them, and return the call in a relatively short time, creating the necessity of "always being on call." As a result, the user experiences both events concurrently, thus causing introspection and perhaps indecision when confronting both factors.

The notion of paradox is not a new concept, having fascinated philosophers, psychologists, and logicians over the centuries. Among the earliest were Greek philosophers, known to contemplate paradoxes, inclusive of the paradox of origin and the liar's paradox. In trying to develop a theory of formal systems, mathematicians and logicians revived the study of paradoxes in the early 20th century. Economists followed this trend as they studied the contradictions between human behavior and economic theory.

More recent research in this field built on Quine's (1966) three classes of paradoxes. The first two classes of paradox—veridical paradox and falsidical paradox—represent arguments that appear to be absurd, yet are only paradoxical due to of faulty reasoning or false assumptions. The third class of paradox, antinomy, represents true paradoxes, in which one discovers a self-contradictory result by applying logical reasoning. It is this third class of paradox that is remains focus of most current work on paradox. Recent work has focused on a fourth type of paradox (dialetheism), acknowledged by Eastern cultures, which involves accepting an argument as both true and false at the same time (Priest, 2002). For example, if someone is standing precisely halfway through a doorway, that person is both in the room and not in the room.

Most research in the business disciplines is found in organizational management and marketing and builds on antinomy paradoxes. Lewis (2000) reviews the application of paradox in the organizational management arena, focusing on how managers can exploit tensions generated by a situational paradox to develop a multi-paradigm solution to organizational problems (Lewis, 2000; Lewis & Kelemen, 2002; Poole & Van de Ven, 1989).

The study of paradox in Marketing focuses on three areas: (1) the service recovery paradox (i.e., McCollough, 2009; Michel & Meuter, 2008; De Matos, Henrique, & Vargas Rossi, 2007); (2) the conflicts between authenticity and advertising and reality TV (Stern, 1994; Zinkhan & Ford, 2005; Rose & Wood, 2005); and (3) the paradoxes consumers experience in consuming technology (Johnson, Bardhi, & Dunn, 2008; Mick & Fournier, 1998). In addition to identifying the existence of situations giving rise to paradox, the coping literature is presented to
comprehend possible implications of paradox for consumers, yet it remains to be answered whether certain paradoxes tend to implement various coping techniques. Some research has proposed that people apply avoidance or confrontation strategies (Johnson et al., 2008; Mick & Fournier, 1998; Moos & Holahan, 2003), yet for the most part, these coping strategies are not shown to spring from an internal recognition of paradox. This research also has extended solely to the application of various coping techniques. As such, the research has failed to examine the impact of the paradox on a consumer's perception of products and companies.

As this paper will discuss in subsequent sections, there are four, fundamental deficiencies present in the current state of paradox research in consumer settings. First, the concept of paradox is ill defined, particularly across both the marketing and management disciplines. Second, as a result of poor conceptualizations, there are problematic measures of the construct. Third, there are several unresolved issues regarding the antecedents of paradoxes, including an examination of the extent to which personal characteristics are associated with experiencing paradox. Finally, there is a lack of consensus regarding the consequences of paradox on the consumption process. As a result, this research proposes to address these issues and address significant gaps in the consumer-decision-making literature through four research questions:

1. What is a conceptually sound definition of paradox in a consumption setting?
2. How is paradox differentiated from ambivalence and mixed emotions?
3. Can people recognize paradox in their consumption activities?
4. What are the implications of paradox in a consumption experience?

Overview of Essay One

Essay One focuses on developing a basic understanding of paradox as experienced by consumers. The goal of this research is to develop a better understanding of paradoxes, their antecedents and consequences, and the implications of these tensions in consumption situations. This essay serves three purposes: (1) introduces and defines paradoxes present in consumer choices; (2) differentiates and details the relevance of paradox as a construct distinct from ambivalence and mixed emotion; and (3) employs qualitative research to develop a conceptual model of consumer paradox.

Although paradox has been studied in the context of consumer behavior (Baron, Patterson, & Harris, 2006; Jarvenpaa & Lang, 2005; Johnson et al., 2008; Mick & Fournier, 1998), this work has done little to prove that consumers are aware of the paradox, or that individual consumers experience conflict. To fully understand paradox, this essay delineates the similarities and differences between definitions of paradox, ambivalence, and mixed emotions as experienced by consumers. It is important to understand how these concepts are similar and how they differ, and to date, no work has examined the relationship between these concepts in order to develop a conceptually distinct construct definition of paradox.

This essay investigates paradoxes in consumption experiences that are a result of consumers interacting with service providers. This essay is the first to fully examine the relationships between paradox, mixed emotions, and ambivalence, thus extending knowledge concerning their underlying similarities and differences. In addition, this essay develops a framework for a better
understanding of consumer paradoxes as an intrapersonal event, measured in a way that identifies the recognition of tensions in paradoxical situations. Current consumer literature has ignored the presence of these tensions, which present the defining characteristic of paradoxes, and help to differentiate them from other concepts.

Issues To Be Addressed

1. What is paradox?
   a. How have paradoxes been studied in the marketing context?
   b. How have paradoxes been studied in other contexts?
   c. How should consumer paradoxes be defined?
   d. Can consumers identify a paradox in their past consumption experience?
2. How does paradox differ from related research streams?
   a. Mixed emotions
   b. Ambivalence
3. Development of a conceptual model of consumer paradox

In order to fully address these issues, this essay first highlights the results of an in-depth literature review to delineate current study of paradox, mixed emotions, and ambivalence. This review focuses on how paradoxes have been studied in marketing, management, sociology, and psychology. It also develops a better understanding of paradox from an intrapersonal perspective. In addition, it delineates how paradoxes are unique from mixed emotions and ambivalence. Finally, it explains how these items have been measured.

Secondly, this essay develops a deeper understanding of consumer experiences with paradox by conducting a content analysis of qualitative interviews. These interviews focus on gaining a better understanding of the situations likely to lead to paradox in a consumption setting. The interviews also seek to delineate the participant's responses when confronting paradox in consumption settings.

THEORETICAL BACKGROUND

Paradox

As a concept, the paradox has interested philosophers, psychologists, and logicians over the centuries. For example, ancient Greek philosophers were known for contemplating paradox. In the 6th century B.C., Anaximander noted the paradox of origin—anything that has a beginning must have been created by something previously existing, thus creating an infinite regress (Lukowski, 2011). Another well-known paradox that concerned the Greeks was the liar's paradox, attributed to the Philosopher Eubulides of Miletus who lived in the 4th century B.C. (Brèhier, 1969). The liar's paradox is contained in the sentence, "This sentence is false." If it's false, then it's true; but if it's true, then it is false. For Greek philosophers, paradoxes involved antinomic reasoning, i.e., reasoning that was logically correct would lead to a contradiction that an item was both true and not true (Lukowski, 2011).
The next era in the study of paradox was the early modern period (early 20th century), when mathematicians and logicians were developing a theory of formal systems in logic and mathematics (Internet Encyclopedia of Philosophy). The earliest modern paradoxes in this era concerned the notions of ordinal and cardinal number, including Burali-Forti contradiction and Cantor's Naive Set Theory (Stanford Encyclopedia of Philosophy). These notions were later extended into Russell's Paradox, which struggled to understand the outcome of considering a set of all sets that are not members of themselves. In such a case, a set appears to be a member of itself, if and only if it is not a member of itself. A common example in nonmathematical terms would be a small town with only one barber. In this case, the barber would be defined as the man who shaves all men who do not shave themselves and only men who do not shave themselves. The logical question and the root of the paradox is: Who then shaves the barber? Does he fall into the set of men who do not shave themselves or does he fall into the set of men who do shave themselves and therefore are not shaved by the barber?

Economists have also been fascinated by the paradoxes between actual human behavior and economic theory. The best known economic paradoxes include Simpson's paradox, Allais paradox, Ellsberg paradox, and Scitovsky paradox (EconPort, 2011). Simpson's paradox occurs when there are correlations present in different groups that become reversed when the groups are combined (Blyth, 1972). Both the Allais paradox and the Ellsberg paradox demonstrate inconsistencies between people's actual choices and predictions of expected utility theory. The Scitovsky paradox describes a situation in which it appears that switching from allocation A to allocation B will cause an improvement in social welfare, when at the same time switching back from allocation B to allocation A seems to create a similar improvement.

Since the notion of paradox is not a new concept and has been examined in many disciplines, it is surprising that there has been no strong consensus as to a definition of paradox. The word itself derives from the two Greek words, para (beyond) and doxa (belief) (Rescher, 2001). Ancient Greeks viewed paradoxes as antinomy, as when logic was antinomic, i.e., although the reason is logically correct, it justifies the opposite: so an item is a member of a set if and only if that item is not a member of a set or a statement is true if and only if it is not true (Lukowski, 2011). More modern philosophers definite paradox as the situation that "arises when a set of individually plausible propositions is collectively inconsistent" (Rescher, 2001, p. 6). Sociologists define paradox as "a self-referential statement in two parts; each of which is unremarkable when taken separately, but irreconcilable in combination" (Arnold, 2003, paraphrasing Smith & Berg, 1987). The German philosopher Hegel argued that paradoxical situations derive from interaction with the environment, such that paradoxes are simply the reflection of reality in our minds (Mick & Fournier, 1998). Building on these and other conceptualizations of paradox, this paper proposes a working definition for paradox that has two fundamental elements:

Paradox represents an intrapsychic conflict (existing or taking place within the mind or psyche) brought about by conflicting outside factors.
Paradoxes from a Business Perspective

Given the wide range of research areas included in business research, one would expect that paradoxes might occur in many different disciplines. However, little research in the business disciplines has focused on paradoxes. Within these disciplines, the strongest interest in paradox has been driven by scholars in the domains of strategic management and organizational studies (O'Driscoll, 2008), although this research has lacked conceptual and theoretical coherence (Smith & Lewis, 2011). Management theorists define paradoxes as oppositions or contradictions between theories that create tensions (Poole & Van de Ven, 1989); for paradoxes, there is no fixed equilibrium—rather, they shift due to situational factors (Handy, 1994). As a result, management strategists believe that "paradoxes do not have a single solution, and there is no logical means to integrate these opposite solutions" (De Wit & Meyer, 2004, p. 13); rather that "they are cognitively or socially constructed and become known through reflection or interaction (Lewis, 2000)." This stream of research supports the idea that recognizing paradox requires one to look inward to uncover the internal tension (Little, 1984); thus, paradox becomes experienced on an individual level.

Lewis (2000) breaks down the application of paradox in management literature into three classes: paradoxes of learning, paradoxes of organizing, and paradoxes of belonging. Recently these categories have been expanded to include paradoxes of performing (Smith & Lewis, 2011). Paradoxes of learning present the paradox of old versus new modes of operation. This literature stream seeks to understand how organization members break down past accepted understandings and construct new processes and frames of reference. Literature related to paradoxes of learning includes Sensemaking (Luscher & Lewis, 2008; Westenholz, 1993; Weick & Quinn, 1999), Innovation (Leonard-Barton, 1992; Ropo & Hunt, 1995), and Transformation (Davis, Maranville, & Obloj, 1997; Vince & Broussine, 1996). Paradoxes of organizing represent the conflict between control and flexibility in organization. This literature considers the processes of balancing conflicting forces within organizations and can be found in research on Performance (Denison, Hooijberg, & Quinn, 1995; Quinn, 1988; Siggelkow & Levinthal, 2003) and Empowerment (Eisenhardt & Westcott, 1988; O'Connor, 1995). In addition, there are paradoxes of belonging that represent the conflict between self and others. This area focuses on understanding the conflicting roles and values between the individual and the collective. These paradoxes may be found in literature on Individuality (Amason, 1996; Smith & Berg, 1987) and Group Boundaries (Leonard-Barton, 1992; O'Connor, 1995; Pratt & Foreman, 2000). Finally, there remains the set of paradoxes related to performance, which considers the plurality between the goals of various stakeholders. These paradoxes focus on the tensions that surface between the differing, and often conflicting, expectations of the various internal and external stakeholders, which are evident in the research on Stakeholders (Denis, Langley, & Rouleau, 2007; Donaldson & Preston, 1995).

A criticism of paradox research in management literature is the failure to identify antecedents, choosing to view only the tensions between individuals, managers, groups, organizations, and markets "as inherently paradoxical" reinforcing cycles (Lewis, 2000, p. 760). The majority of these scholars consider how paradoxes or contradictions can both hamper and encourage decision-making and organizational development, but they don't seek to understand the root causes of these tensions. Another criticism of this literature is ongoing debate as to whether
paradox is an inherent feature of a system or if it stems from social constructions (Smith & Lewis, 2011). To help counter this debate, Smith and Lewis (2011) propose a new theory of paradox, the dynamic equilibrium model of organizing, which views paradoxes both inherent to the situation and created by actors' social cognitions. The core of this new model seeks to explain how purposeful and cyclical responses to paradox will improve organizational performance. While this new theory doesn't address the antecedents of paradox, it does support the idea that paradox may be driven both by individual and situational factors.

Paradoxes in Marketing

Although management literature displayed an increasing interest in paradoxes as a promising research area, marketing literature of paradoxes is more limited. The areas that received attention include advertising and media, customer service, and technology adoption. With regard to advertising and media, researchers provided a limited attention to the paradoxes involved in advertising's attempt to create authenticity (Stern, 1994). This was further examined by Zinkhan and Ford (2005), who delineated the four underlying paradoxes related to authenticity in marketing messages as (a) information versus entertainment; (b) information versus meaning-enhancement; (c) decisions based on price versus decisions based on other attributes; and (d) too much information versus just enough (p. 544). Similarly, the paradox of reality television and authenticity has also been studied (Rose & Wood, 2005).

Another area that has received attention is the service recovery paradox. This paradox describes a situation where a customer's satisfaction is increased after a service failure due to the follow-up that occurred as a result of the failure (McCollough & Bharadwaj, 1992). Researchers have determined that service recovery can build more goodwill than if there wasn't a service problem (Hart, Heskett, & Sasser, 1990). Similar examples of context-specific paradoxes include the privacy paradox (Barnes, 2006; Norberg, Norberg, Horne, & Horne, 2007) and the existential consumption paradox (Smith, 2007).

Finally, research has shown that at times consumers can fluctuate between opposing positive and negative experiences (Johnson et al., 2008). When these opposing experiences create intrapersonal tensions, they represent a paradoxical situation. These conflicting experiences can lead to ambivalence or indifference due to conflicting attitudinal elements (Thompson, Zanna, & Griffin, 1995; Ruth, Brunel, & Ottes, 2002). The most thorough and well accepted research on paradox in marketing is Mick and Fournier's (1998) qualitative work in technology adoption. Mick and Fournier (1998) define paradox as "both X and not-X at the same time" (p. 125). They studied how consumers related to technological products and delineated a set of eight paradoxes including: assimilation/isolation; control/chaos; efficiency/inefficiency; fulfills/creates needs; engaging/disengaging; competence/incompetence; freedom/enslavement; new/obsolete:

**Assimilation/isolation** refers to the ability of technology to facilitate human togetherness versus its ability to lead to human separation. For example, a company can offer discussion boards on its website that allow customers to interact with one another and thereby create a brand community. Technology may also lead to isolation by removing face-to-face interaction with employees, like
banks providing incentives to customers to use on-line banking rather than meeting with tellers in the bank.

**Control/chaos** considers the ability of technology to facilitate regulation or order versus its ability to lead to upheaval or disorder. For example, ATMs gives customers control by allowing them to obtain money at any time from numerous locations. The lack of control often comes from fears of making mistakes or having problems when insufficient employee oversight over the situation emerges, as with an consumer entering the wrong stock symbol on an on-line stock order.

**Efficiency/inefficiency** addresses the ability of technology to facilitate less effort or time spent in certain activities versus the ability to require greater effort or time involvement. For example, technology can allow a customer to save time by bypassing lines, such as the self-service option at the post office. At the same time, new technologies can be time consuming to learn or use; for example, it is rare for customer to be as fast at the self-service grocery checkout as store cashiers, since cashiers have all the codes memorized for produce and other items.

**Fulfills/creates needs** as a tension represents the ability of technology to facilitate the fulfillment of needs or desires versus its ability to lead to the development or awareness of needs or desires previously unrealized. Often technology can help fulfill needs related to time constraints or location convenience, like the ability to shop on-line instead of going to the mall. On the other hand, to fully utilize technology, there is often a need for additional purchases. For example, when customers of on-line investing services may find they need additional software to make good investment decisions.

**Engaging/disengaging** paradox considers the ability of technology to facilitate involvement, flow, or activity versus its ability to lead to disconnection, disruption, or passivity. Technology can help with the flow of activity by allowing people to take care of mundane tasks quickly in order to get on with life—the way that automated bill paying allows people to save personal time in paying bills. Yet technology can also cause people to become less involved in activities, becoming more passive in general; for example, the use of a travel agent allows customers more opportunity to learn about unique, local hotels, rather than on-line travel sites, where potential customers typically choose brand name hotel chains.

**Competence/incompetence** tension looks at the ability of technology to facilitate feelings of intelligence or efficacy versus its ability to lead to feelings of ignorance or ineptitude. For example, the wealth of information available to on-line investors can lead to illusions of knowledge, or the sheer amounts of information can be overwhelming, creating feelings of ignorance.

**Freedom/enslavement** seeks to delineate how technology can facilitate independence or fewer restrictions, and yet technology can lead to dependence or
more restrictions. This may be referenced in similarity to cell phones, which allow individuals to be in contact with the world virtually any time or anywhere. The same cell phones, however, can cause an expectation that the same individual must be in contact, regardless of the situation.

*New/obsolete* paradox considers that while new technologies provide the user with the most recently developed benefits of scientific knowledge, at the same time these new technologies are already outmoded or soon to be so as they reach the marketplace. Best Buy recognized the negative side of this paradox when they instituted their "buy back" program, promising to give credit for old purchases if a newer and better model comes out.

Building on these varying perspectives of paradox in marketing, this paper proposes a working definition of consumer paradox as:

An individual's recognition of an intrapersonal conflict that stems from simultaneously conflicting experiences related to marketplace elements with ramifications on consumption outcomes. A marketplace element can include products, services, brands, events, ideas or beliefs.

**Paradoxes in the Technology Context**

Technology is an area in which consumers are likely to experience the tensions associated with paradox, with extant work utilizing technology as a meaningful context in which to study consumer paradoxes. One reason is that the positive and negative attributes of technology, as well as the change of pace in technological markets, drives paradoxes. Researchers have studied how consumers deal with the tensions that arise in this setting. For example, Jarvenpaa and Lang (2005) studied the paradoxes experienced by mobile phone users through focus group research. Although there was overlap with Mick and Fournier's paradox sets, the researchers did discover some differences, including Independence/Dependence, Planning/Improvisation, Public/Private, and Illusion/Disillusion paradoxes. Another example of paradox and technology is the Johnson et al. (2008) study of customer satisfaction with self-service technology. This article found evidence for three sets of paradoxes operating in an online banking context, inclusive of control/chaos, fulfill needs/create needs, and freedom/enslavement. Although this is the sole research to empirically support the presence of consumer paradoxes, its procedure follows a process similar to the formula-based measure of ambivalence, wherein the dissatisfiers and satisfiers are measured separately. This means that participants respond to scale items that measure the negative aspects of an object, as well as scale items that measure the positive aspects of an item. Based on these measures, researchers combine these scale items into opposing constructs of positive aspects and negative aspects, which are then used as separate constructs in modeling. Due to the manner in which they are measured, respondents may be unaware of the conflict, yet be inclined to acknowledge that there are both good and bad aspects to any situation. Thus, this approach does not include the second condition of paradox—that the responder must also be aware of the tensions between the positive and negative evaluations.
Outcomes of Consumer Paradox

In addition to identifying the existence of paradox and examining several contexts, notably technology where paradoxes occur, researchers in marketing have also examined the implications of paradox on the consumption experience. Individuals experiencing paradox are cognizant that evaluative elements are in conflict and thus experience feelings of tensions and stress. Research on the consequences of paradox historically focused on the coping techniques that consumers apply to reduce uncomfortable tensions when confronted by paradox (Festinger, 1957; Elliot & Devine, 1994). Handy (1994) argues that paradox creates a situation that must be "accepted, coped with, and made sense of" (p. 13). Paradoxes create uncertainty and stress (Richins, 2004), which in turn elicit coping behaviors in order to reduce tensions (Johnson et al., 2008; Mick & Fournier, 1998). Much of this coping builds on psychology literature, which defines coping as "the person's constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the person's resources" (Lazarus, Folkman, Dunkel-Schetter, DeLongis, and Gruen, 1986, p. 993). This stream of research delineates eight different coping approaches, including (a) confrontative coping, (b) distancing, (c) exhibiting self-control, (d) seeking social support, (e) accepting responsibility, (f) escape or avoidance, (g) painful problem-solving, and (h) positive reappraisal. Confrontative coping involves taking aggressive steps to alter the situation, usually with some degree of hostility. Distancing involves trying to separate oneself from the situation or looking for the positive side of the current situation. Practicing self-control involves regulating one's own feelings and/or actions. Seeking social support can apply to seeking emotional support from social groups or seeking informational or tangible probable-solving support from someone else. Accepting responsibility involves seeking to correct the problem by acknowledging the role that one played in creating the problem. Escape-avoidance describes activities that people do to run away from the problem through outside actions. Planful problem-solving assumes an analytic approach to solve the problem by creating a solution. Finally, positive reappraisal describes a coping technique wherein the individual strives for self-growth by determining the meaning behind the problem.

Marketing researchers have expanded this research to consider responses specific to consumer paradox. Baron et al. (2006) argue that the most relevant coping strategies for consumer paradox include both consumption avoidance coping strategies and consumption confrontative strategies. The first group of coping strategies, avoidance coping, refers to those strategies that minimize interaction with technology, and include refusal to purchase, delay in purchasing, ignoring the technology, neglecting the technology, suspending use of the technology, distancing oneself from the technology or abandoning the technology (Baron et al., 2006; Cui, Bao, & Chan, 2009; Jarvenpaa & Lang, 2005; Mick & Fournier, 1998). Avoidance is more likely to occur when the technology is confusing or highly demanding, or when users are under stress or pressure. The second group, confrontation strategies, refers to those that focus on understanding and adapting to the technology, and include conducting pre-test or trial, utilizing buying heuristics, engaging in extended decision-making, requiring extended warranties, accommodating the technology, partnering with the technology, and striving to master the technology (Baron et al., 2006; Mick & Fournier, 1998). It has also been shown that avoidance strategies are more likely to lead to negative beliefs, while confrontation strategies are more likely to lead to positive beliefs (Cui et al., 2009; Mick & Fournier, 1998). This research stops at coping techniques and fails to
understand the implications of paradox on the consumer's perspective on the consumption experience.

Developing a better understanding of paradox has important implications for the study of consumer decision-making. Although researchers have prepared the groundwork for understanding the basic coping strategies consumers employ when encountering a paradox, there are still many shortcomings. First, research has not yet identified the antecedents that might lead to consumer paradox. By a better understanding of who is likely to experience paradox and in what situations, marketers can prepare consumers to reduce the stress associated with paradox. Secondly, researchers are uncertain as to the consequences of consumer paradox. It could be that, similar to the service recovery paradox, the coping techniques employed when confronted by paradox might lead to greater satisfaction with a consumer experience. This would indicate that consumers might benefit from experiencing a paradox, together with the associated processing to resolve the tension. Thirdly, there is a lack of understanding as to the interrelationships between various types of consumption paradoxes. For example, if consumers experience one paradox are they more likely to experience a related paradox or does any inherent difficulty in processing multiple paradoxes tend to favor a single paradox emergent? A final shortcoming, further examined in Essay 2, is that current measurement techniques do not measure what consumers feel in paradoxical situations as intrapersonal tensions.

**Related Literature Streams**

Limited research on paradox has left no strong theoretical basis. However, two streams of research, ambivalence and mixed emotions, can provide additional insights into paradoxes. As these concepts overlap, conceptual confusion emerges and the ability to distinguish paradoxes from within these related constructs might highlight the core characteristics of paradox. In other words, paradox represents an intrapersonal conflict brought on by outside factors; therefore, paradox is the experience of conflict.

Ambivalence represents an attitude that results when an individual experiences conflicting evaluations of an object and is not able to reconcile these evaluations. Since paradox carries a potential for ambivalence, the constructs are used interchangeably in literature. For example, Thompson, Zanna, and Griffin (1995) argued that paradox may be classified as a subset of research on ambivalence, because an individual may experience conflicting positive and negative feelings regarding an object. In reality, paradox is the experience or acknowledgement of conflicting elements, while ambivalence poses a possible attitudinal response to the experiencing conflict. As such, paradox is pre-attitudinal, and represents an internal conflict arising from paradox that leads to an attitude formation or change.

Ambivalence is often the attitudinal consequence of the experience of paradox, because ambivalence is marked by conflicting positive and negative evaluations (Richins, 2004). Another key difference is that ambivalence does not require that an individual be aware of the conflict, whereas awareness is a core element of paradox (Lewis, 2000). The difference between paradox and ambivalence can also be seen in descriptions of the experience. Paradox is often referred to as a "cutting edge sword;" whereas ambivalence is viewed as "sitting on a fence." The first refers to something with which people must deal; the latter refers to an evaluation that a person must
consider. Researchers traditionally were more attentive to measuring ambivalence quantitatively; yet the dual nature of ambivalence is a good starting point for developing methods to quantitatively measure the conflicting tensions that create paradox.

Another stream of literature overlapping paradox and ambivalence involves mixed emotions. Mixed emotions exist when an individual simultaneously experiences conflicting emotions. Like ambivalence, mixed emotions involve holding both positive and negative emotional evaluations simultaneously. Since ambivalence is an attitude, it can have cognitive, emotional, and behavioral aspects. Emotions, on the other hand, are separate from cognition (Lazarus, 1991a) and are "psychological and physiological episodes experienced toward an object, person, or event that create a state of readiness (McShane, 2009, p. 104)." When an individual experiences mixed emotions, conflicting emotions do exist, but one emotion is often dominant, thus an individual is able to resolve the conflict. When one emotion does not dominate, then mixed emotions can lead to an attitude that is emotionally ambivalent. Mixed emotions represent an ambivalence of an attitude where the emotions underlining the attitudes are conflicted (Jonas & Ziegler 2007).

Researchers have also shown confusion over the relationship between mixed emotions and paradox. For example, Lowrey and Ottes (1994) imply that mixed emotions are an outcome of experiencing paradox, while Williams and Aaker (2002) use the terms interchangeably. This research argues that like ambivalence, mixed emotions represent a potential outcome for experiencing a paradox. When the intrapsychic conflict of a paradox results in opposing emotional judgments, the result becomes mixed emotions.

Understanding how researchers have studied the emotional or affective inconsistency of mixed emotions, as well as ambivalence, will provide insight and understanding in the duality of paradoxical situations. The following sections will highlight the theoretical basis for both literature streams, as well as implications for the study of paradox. Measurement techniques will also be noted, as well as the relative strengths and weaknesses of applying the common measurement practices to develop a better understanding of paradox.

Ambivalence

As previously discussed, ambivalence is a construct closely related to paradox. Ambivalence has been defined as "The simultaneous co-existence of contradictory tendencies, attitudes or feelings in the relationship to a single object" (Laplanche & Pontalis, 1974, p. 26), and often is characterized by contrasting ambivalence to related concepts. For example, Baek (2010) distinguished ambivalence from indifference, uncertainty, and ambiguity. Although both ambivalence and indifference may lead to the same behavior, indifference doesn't require psychological involvement (Cacioppo & Berntson, 1994). Uncertainty is distinct from ambivalence. Rather than create tension, uncertainty reflects ignorance related to the topic (Baek, 2010). Along the same lines, ambiguity is also distinct: It constitutes a sense of acknowledging that one is lacking the proper information to make a decision (Frisch & Baron, 1988). In addition, researchers distinguished between neutrality, which represents a midway point between positive and negative evaluations, versus the simultaneous positive and negative evaluation that occurs in ambivalence (Jonas & Ziegler, 2007). Along this same line, it is useful to differentiate
between ambivalence and paradox. As mentioned before, a paradox stems from experiencing conflict in the environment that is internal, recognized as contradictory, whereas ambivalence is an evaluative judgment. In order for paradox to exist, the individual must be aware of conflicting tensions (Lewis, 2000), while ambivalence does not require that individuals recognize that their evaluations are in conflict (Breckler, 1994). Richins (2004) contended that ambivalence is a potential outcome of experiencing paradox, but yet paradox is not the only antecedent of ambivalence.

In other streams of research, scholars have identified several types of ambivalence. Cognitive ambivalence describes a tension in which an individual has beliefs about an attitude or object that are associated with inconsistent evaluations, such as positive and negative beliefs towards an object (Thompson et al., 1995). Affective ambivalence exists when positive and negative emotions are harbored at the same time, such as love and hate (Jonas, Broemer, & Diehl, 2000). Another type of ambivalence that has been described in literature is the affective-cognitive ambivalence, which occurs when there is conflict between the affect and cognitions (Lavine, Thomsen, Zanna, & Borgida, 1998). Another type of ambivalence as described by Priester and Petty (1996) is subjective ambivalence, which develops when there is a discrepancy between one's personal attitudes and those held by important others. This is similar to sociologists' studies of ambivalence: looking at how external forces create mixed evaluations leading to ambivalence (Otnes, Lowrey, & Shrum, 1997). Finally, evaluative ambivalence is the holistic assessment of an issue in which one sees both positive and negative aspects (Plambeck & Weber, 2009). The implication of scholars identifying these various types of ambivalence implies that paradoxes may lead to cognitive tensions, affective tensions, or subjective or situational tensions.

Finally, consumer ambivalence has been identified by marketing scholars (i.e., Otnes et al., 1997; Roster & Richins, 2009; Thompson et al., 1995). It is defined as "the simultaneous or sequential experience of multiple emotional states, as a result of the interaction between internal factors and external objects, people, institutions, and/or cultural phenomena in market-oriented contexts that can have direct and/or indirect ramifications on pre-purchase, purchase or post-purchase attitudes and behavior" (Otnes et al., 1997, p. 82). In this context, ambivalence has been studied from a consumer point of view, seeking to understand the tensions between internal expectations and desires, versus the external reality that consumers face. The identification of this duality helps support consumer paradox as a useful avenue for research.

Otnes et al. (1997) studied wedding planning situations to determine the antecedents and coping techniques for consumer ambivalence. They discovered four antecedents of consumer ambivalence: expectation versus reality, overload, role conflict with purchase influencers, and custom and value conflict. Expectations could be product-based or retailer-based; tension developed when expectations did not match reality. Ambivalence could also come from overload, either overload from product overabundance or cognitive overload caused by a large number of tasks or decisions. Another source of conflict is role conflict with purchase influencers, which can include family, peers, and reference groups. Finally, the researchers considered ambivalence created by the conflict between customs, or the norms that govern specific cultural events, and the more enduring values held by the research subjects. This article posits that paradox may be an antecedent to ambivalence.
The article by Otnes et al (1997), also considered the coping techniques applied to deal with ambivalence. The coping techniques for dealing with ambivalence, resulting when expectations were not met, included returning merchandise, changing the venue in which purchases were made, "toughing it out," or asserting control over the situation. The article also recognizes coping techniques for ambivalence driven by overload, which include simplifying by minimizing the choice set, seeking assistance from an expert, or launching an extensive information search. Another source of conflict is role conflict with purchase influencers inclusive of family, peers and reference groups. Coping techniques for role conflict include resignation in order to please others, or compromise. Finally, when faced with a conflict between customs and values, coping techniques involve resigning to the customary expectation, modifications in which the consumer includes the custom, yet in a self-expressive way, and defiance non-purchase through an outright refusal of customary expectations. These coping techniques support other research that shows that people have motivational drive to reduce internal conflict (Festinger, 1957; Elliot & Devine, 1994). If these are valid coping techniques for ambivalence, it stands to reason that since ambivalence leads to coping behavior, a natural outcome of paradox would also include coping strategies.

Ambivalence's influence on decision-making is better understood in a marketing context than in the influence of paradox on decision-making. For example, Roster and Richins (2009) considered ambivalence and attitudes in consumer replacement decisions. In this work, they studied the decision process involved in the choice to replace incumbent possessions and what to do with goods when they are replaced. They determined that ambivalence plays a role both pre- and post-purchase, and can increase the chance that a decision is delayed or satisfaction with a purchase is reduced. Similarly, Olsen, Wilcox, and Olsson (2005) studied the consequences of ambivalence on satisfaction and loyalty. They determined that ambivalence is negatively related to satisfaction and moderates the satisfaction-loyalty relationship. Although it is better understood than paradox, there are still many unresolved questions related to how consumers respond to ambivalence and uncertainty. For example, Taylor (2009) argued that marketers must develop a better understanding of how ambivalence influences the relationship between satisfaction, attitudes, and decision-making.

There are several implications to be taken from this research. Since ambivalence is often confused with paradox, the relationship between these concepts has not been fully defined. Since the antecedents of ambivalence can be situational or individual, one would expect that the antecedents of paradox could be both situational and individual. In addition, it is expected that like ambivalence, paradoxes can occur both pre- and post-purchase and could be driven by contextual factors as well. Also, because researchers have suggested that ambivalence may be an outcome of experiencing paradox (Richins, 2004), one might conclude that when consumers experience paradox, they experience similar coping techniques, such as ambivalence, and that there should be repercussions in terms of satisfaction and loyalty. At the same time, there could be different outcomes besides ambivalence, which is not yet fully understood.

**Mixed Emotions**

Another area of research related to paradox is mixed emotions, since there is the element of both simultaneous positive and negative evaluations of an object or situation. Historically, research in
this area has been broken into two camps. Some researchers believed that consumers have a limited ability to experience conflicting emotions; researchers placed positive and negative emotions as opposite dimensions on a bipolar scale (Green, Goldman, & Salovey, 1993). Viewing emotions this way implies that as consumers become more happy, they become less sad. For example, two well accepted models in psychology, the Watson and Tellegen's (1985) Positive Activations-Negative Activation (PA-NA) model and the Russell’s (1980) Valence-Arousal Model, view emotions as opposite ends of a continuum, and therefore are either negatively correlated or mutually exclusive.

More recently, scholars feel that emotional valence can be better represented as two independent dimensions, so that one individual can simultaneously experience conflicting emotions (Cacioppo, Gardner, & Berntson, 1997). Scholars have shown those positive and negative effects are independent constructs, rather than diametric opposites (Brehm & Miron, 2006). In addition, psychologists have shown that positive affect and negative affect activate different sections of the brain (Henriques & Davidson, 1990).

This line of research has led to different ways of conceptualizing affect. Cacioppo and Berntson (1994) developed their evaluative space model (ESM), which conceptualizes both positive and negative aspects of emotion. This model argues that an individual's affect system is not limited to bipolar processing, but rather has a flexible structure that includes separate systems for processing positivity and negativity, each with different operating characteristics (Norris, Gollan, Berntson, & Cacioppo, 2011). This dual processing model has been supported in different settings, including studies in meaningful endings or life transitions (Ersner-Hershfield, Mikels, Sullivan, & Carstensen, 2008), responses to mixed emotion advertising appeals (Williams & Aaker, 2002), and responses to certain types of music (Hunter, Schellenberg, & Schimmack, 2008).

In an attempt to bridge the discrepancies between these two camps, some researchers have attempted to find other factors that might influence the findings of both. For example, Larsen McGraw and Cacioppo (2001) found that mixed emotions are more likely to occur in bittersweet situations, or those situations containing both pleasant and unpleasant aspects, and only for a small subgroup of the populations. Similarly, Williams and Aaker (2002) found cultural differences in discomfort with associated mixed emotional appeals, with some cultures having a greater tolerance for accepting duality. Finally, Schimmack (2005) argues in support of the idea that mixed emotions can exist at moderate levels, but not at intense levels of affect.

This research leads to several implications for studying paradoxes. Since scholars have confused the constructs of mixed emotions and paradox, the relationship between the two has not been clearly delineated. While researchers have shown that the antecedents of mixed emotions can include situations, culture and context, the role of paradox as an antecedent has not been studied. This paper also proposed that paradoxes stem from situational, individual, and contextual factors. Another implication for paradox is the applicability of using scales from mixed emotion literature as a measure for paradox. While work on paradox has borrowed scales from mixed emotions, applying these scales to a paradox neglects the acknowledgement of individuals being aware of the tensions between conflicting evaluations. Without the actors being aware of the duality of the situation, it is not possible to say that they are experiencing paradox.
**Research Questions**

Based on this overview of paradox literature, as well as insights into the current research related to consumer ambivalence and mixed emotions, a set of research questions were developed to guide the development of qualitative research, especially an interpretation of informants' responses. The first set of questions are concerned with establishing the existence of paradoxes in everyday life. Of particular interest is the tension due to these conflicting perceptions, since that is a critical element in the definition of paradox. In addition, literature suggests that the experience of paradox and the resulting tension creates a situation where people take active steps to try to resolve the tension. Thus, two fundamental research questions examine the existence and nature of paradox:

**R1:** Do people experience paradoxes in their everyday life?

**R2:** When people experience paradox, what steps do they take to reduce the tensions felt?

Research on the existence of paradox in consumption experiences is limited, particularly when considering the differing conceptual definitions used in past research. Therefore, it is imperative to investigate whether consumers can identify when they experience paradox in consumption. The paradox should include not only the positive and negative aspects of a purchase or consumption experience, but also the conflicting emotions arising from these differing evaluations. Since paradox is contextually bound, it is necessary to specify the consumption context as well. Technology represents a fruitful area for studying paradox, because of the positive and negative attributes of technology and the pace of change in technological markets. These issues give rise to three additional research questions regarding paradox as experienced with technology:

**R3:** Can people identify paradoxes in consumption of technology?

**R4:** What types of paradoxes are identified?

**R5:** What types of responses do consumers have in technology paradoxes?

**R5a:** Do these responses vary by paradox type?

**METHOD**

In order to better understand the paradoxes experienced in consumption settings, a qualitative research plan was developed. One advantage of a qualitative approach is that it can produce a deeper understanding of consumer experiences with paradoxes. This approach also allows for the richer insights that can come from multiple perspectives (Ozanne & Saaticioglu, 2008). Data was gathered using in-depth interviews (McCracken, 1989; Thompson, Locander, & Pollio, 1989), which allowed subjects to more easily describe their experiences and facilitated additional inquiry for understanding the experiences more fully. The data was analyzed and interpreted using content analysis and categories were selected based on research in social psychology and
marketing literature. The procedures used to collect and analyze the data are described in detail below.

Research in social psychology and marketing provided a foundation for developing appropriate and meaningful questions. The primary objective of the interviews was to gain in-depth accounts from the informants about their experiences with paradoxes, both in general terms and as consumers of technology. These accounts could then be used to examine the set of research questions.

Sample

Judgmental, or purposive, sampling was used to select the subjects. In judgmental sampling, researchers use their own subjective judgment to choose a sample suitable for a study. Subjects are selected according to specific criteria determined by the research topic (McCracken, 1989). As advocated in the literature, the subjects chosen for this study were representative of the population and differed in terms of age, gender, education, and occupation (Thompson & Haytko, 1997).

Initially, a pool of potential subjects was formed from personal acquaintances and personal referrals. Out of that pool of 30 potential subjects, 10 were selected based on judgment sampling criteria, in which participants were selected to provide greater diversity. To increase generalizability, the researchers selected informants that varied in age and residency.

Table 1: Overview of Informants

<table>
<thead>
<tr>
<th>Name</th>
<th>Gender</th>
<th>Age</th>
<th>Occupation</th>
<th>Home State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ralph</td>
<td>M</td>
<td>78</td>
<td>Retired executive</td>
<td>OH</td>
</tr>
<tr>
<td>Rebecca W.</td>
<td>F</td>
<td>50</td>
<td>Lawyer</td>
<td>VA</td>
</tr>
<tr>
<td>Rebecca H.</td>
<td>F</td>
<td>26</td>
<td>Teacher</td>
<td>LA</td>
</tr>
<tr>
<td>Ross</td>
<td>M</td>
<td>25</td>
<td>Nurse</td>
<td>CO</td>
</tr>
<tr>
<td>Brian</td>
<td>M</td>
<td>35</td>
<td>Full-time Student</td>
<td>LA</td>
</tr>
<tr>
<td>Mike</td>
<td>M</td>
<td>40</td>
<td>B2B salesperson</td>
<td>KY</td>
</tr>
<tr>
<td>Patricia</td>
<td>F</td>
<td>41</td>
<td>Mortgage Broker</td>
<td>AL</td>
</tr>
<tr>
<td>Dayna</td>
<td>F</td>
<td>35</td>
<td>Cardiac Sonographer</td>
<td>MI</td>
</tr>
<tr>
<td>Susan</td>
<td>F</td>
<td>45</td>
<td>Public Defender</td>
<td>TN</td>
</tr>
<tr>
<td>Christina</td>
<td>F</td>
<td>39</td>
<td>Stay at home mom</td>
<td>MD</td>
</tr>
</tbody>
</table>

Interview Guide

After the informants were selected, the format of the interview guide was developed. Consistent with Rubin and Rubin (1995), the guide followed a fixed questioning structure (see Appendix A). If a question listed in the interview guide had been answered previously, it was not repeated. In addition, questions were added as needed to delve into previously unconsidered issues raised by subject responses. Finally, probing questions were used when respondents had difficulty answering the interview guide questions.
Once the interview guide was finalized, the interviews were conducted. In the pre-interview process, a comfortable setting for each subject was identified and consent was obtained. All interviews were conducted in either the subject's home or the interviewer's home. At the beginning of the interview, the subject was assured of anonymity and given an overview of the interview process. Informants were then asked if they had any questions about the process. If any questions were raised, further clarifications and explanations were given. Finally, informants were asked for permission to tape record the interview.

The interviews were structured to first address what the word paradox meant to the informants. Then the informants were asked to describe general situations in which they had experienced a paradox. If the respondents were unable to describe a situation, probing questions were used to help them uncover a relevant situation. Follow-up questions were asked to obtain a sense of the emotions created by the paradox as well as the actions taken in response. The interviews then moved to a discussion of paradoxes specifically related to technology. Informants were asked about situations in which they had experienced paradoxes related to technology. Again, follow-up questions delved into their emotional and behavioral responses. Then subjects were asked to identify situations in which they did not experience conflicting tensions related to technology and situations in which they could identify both positive and negative aspects of technology but did not experience paradox. Finally, subjects were given an opportunity to provide additional relevant information, as well as to ask follow-up questions of the researcher.

Each of the 10 interviews lasted between 20 and 35 minutes and took place between February and March of 2012. Interviews were recorded and transcribed, yielding over 48 pages of single-spaced textual data. The transcribed interviews served as the data to be examined. Content analysis was chosen to analyze the interviews because the goal was to better understand the phenomena related to paradox.

**Textual Analysis**

The data was coded using by two coders, both of whom were PhD candidates at a large southeastern state university, following the guidelines recommended by Kolbe and Burnett (1991). These guidelines included providing a written codebook with detailed operational definitions of each variable and category (See Appendix B); training the coders in a formal training session; and having the coders code the comments independently for the purposes of reliability testing. All of the 10 qualitative interviews were transcribed, which served as the data to be examined. Content analysis was chosen to analyze the interviews, because the goals sought a better understanding of the phenomena related to paradox.

The first set of responses coded focused on the type of general paradox encountered and the actions taken to deal with it. These general paradoxes could be related to a major life decision, the purchase of a product, or the use of a product, or were inherent in the situation. Responses to these paradoxes were coded according to Mick and Fournier (1998) coping techniques:

*Ignoring*—avoiding information about the characteristics or availability of certain objects
Refusing—declining the opportunity to own a specific object

Delaying decision—postponing, but eventually acquiring a specific object

Pretesting—using someone else's object temporarily or acquiring an object, but not assuming definitive ownership until the return policy or warranty expires

Employing heuristics—utilizing a known "rule of thumb" to guide a decision

Extended decision-making—taking stock of one's needs, searching diligently for detailed information, and then choosing the most appropriate alternative in a careful, calculating manner

Seeking additional assurance—seeking outside sources that can help reinforce a decision

Neglecting—showing temporary indifference toward an object

Abandoning—declining or discontinuing the use of an object or leaving an object unrepairs if it has malfunctioned

Distancing—developing restrictive rules for when or how an object will or will not be used or physically placing an object in an unobservable or remote site

Accommodation—changing tendencies, preferences, routines, etc., according to the perceived requirements, abilities, or inabilities of an object

Partnering—establishing with an object or company a close, committed relationship or heartfelt attachment

Mastering—dominating an object by thoroughly learning its operations, strengths, and weaknesses.

The second set of responses coded focused on paradoxes specifically related to technology, as well as the behavioral and emotional responses to them. Specifically, results were coded to the extent that they represented the technology paradoxes identified by Mick and Fournier (1998): Assimilation/isolation, Control/chaos, Efficiency/inefficiency, Fulfills/creates needs, Engaging/disengaging, Competence/incompetence, Freedom/dependence, and New/obsolete. An additional component was added to this list of paradoxes: the technology paradox related to Enjoyment/Task orientated (X%).

After the types of technology-related paradoxes were coded, the emotional and behavioral responses were coded. The emotions were coded using the consumption emotions defined by Richins (1997):

Anger—feeling or expressing annoyance, animosity, or resentment
Discontent—feelings of disappointment or lack of fulfillment

Worry—feeling the need to be prudent or wary

Sadness—drained of strength or energy

Fear—worried and tense because of possible misfortune or danger

Shame—feeling unwise or silly, less than competent

Envy—longing to possess something awarded to or achieved by another

Loneliness—distress that results from discrepancies between ideal and perceived social relationships

Romantic Love—sexy, romantic, passionate

Love—to have a strong liking for

Peacefulness—lack of strife or agitation

Contentment—The state of being satisfied with the ways things are

Optimism—general feeling that there will be a positive outcome

Joy—great delight or happiness caused by something exceptionally good

Excitement—the state of being roused into action

Surprise—arousal of curiosity or interest, and

Guilt—feelings of culpability especially for imagined offenses or from a sense of inadequacy.

Finally, the behavioral responses to technology were also coded according to Mick and Fournier’s (1998) coping techniques. The responses given included Ignoring, Refusing, Delaying decision, Pretesting, Employing heuristics, Extended decision-making, Seeking additional assurance, Neglecting, Abandoning, Distancing, Accommodation, Partnering, Mastering (see discussion of general paradoxes for descriptions).

Reliability was computed using Cohen's Kappa index of reliability. The overall coefficient of reliability was 84.5%, and ranged from 100% (for "general paradoxes type") to 71.4% (for "behavioral responses to general paradox"). Other measures of construct reliability measures included "technology paradox" (81.7%), "behavioral response to technology paradox" (93.0%), and "emotional response to technology paradox" (78.1%). All of these variables meet accepted standards for content analysis (Perrault & Leigh, 1989; Rust & Cooil, 1994). The two coders resolved all disagreements and 100% agreement was achieved.
RESULTS

One critique of the qualitative research that has been done on paradoxes is that, in most cases, the paradoxes evolved from the data analysis instead of from the respondents' demonstrable knowledge of a paradox. One of the goals of this research was to show that consumers can recognize paradoxes and feel tension as a result. This goal was achieved, as the research did show that informants were aware of and able to identify paradoxes that they had encountered.

General Paradoxes

Paradoxes related to major life decisions were mentioned by more than one-third of the respondents. These major decisions included whether to change careers, quit jobs, or move to a new city. The consumption process also was likely to generate paradoxes. Over one-third of the responses indicated that the decision-making process regarding the acquisition of a new product sometimes generated a paradox. In addition, responses indicated that the use of a product could cause a paradox (9.1%). Finally, informants sometimes felt that paradox was simply inherent in some situations (18.2%), as summed up in the phrase, "It is what it is." A specific situational paradox mentioned was problems that arise living in a city the size of Baton Rouge—it is too small to offer all of the advantages of a large city, but too large to offer the advantages of a small town.

Responses to General Paradoxes

The interviewees also discussed their behavioral responses to general paradoxes. When confronted with a paradox, the majority of informants engaged in extended decision-making (54.5%). Extended decision-making involves seeking out additional information to help resolve a paradox. This finding supports previous research that indicates that extended decision-making is the most common coping strategy used when adopting new technology (Cui et al., 2009). The other common behavioral response used by informants was accommodation (18.2%), in which they described how they changed their preferences or routines when confronting a paradox. Examples of accommodation include re-arranging daily routines to minimize problems or focusing on the positive aspects of a situation. Other responses included delaying a decision (9.1%), seeking additional assurance (9.1%), neglecting the source of the paradox (9.1%), and distancing oneself from the source of the paradox (9.1%). Delaying a decision involves actively choosing not to make a choice until circumstances change, such as putting off a decision until the next time one visits a store. Seeking additional assurance entails searching for outside information or opinions that support the decision that has been made. Neglecting the source of a paradox involves demonstrating a temporary indifference towards the source of the paradox, such as deliberately avoiding calls from a potential employer. Finally, distancing oneself from the source of the paradox entails developing restrictive rules for when or how an object will or will not be used or physically placing an object in an unobservable or remote site. Examples of distancing include storing a product out of sight with the knowledge that something will be done with it at a later time or deciding to use a cell phone for work related calls only.
Table 2: General Paradox Findings

<table>
<thead>
<tr>
<th>Type of Paradox</th>
<th># Times Mentioned</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Life Decision</td>
<td>4</td>
<td>36.40%</td>
</tr>
<tr>
<td>Product-purchase related</td>
<td>4</td>
<td>36.40%</td>
</tr>
<tr>
<td>Product-use related</td>
<td>1</td>
<td>9.10%</td>
</tr>
<tr>
<td>Inherent in a situation</td>
<td>2</td>
<td>18.20%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Behavioral Response</th>
<th># Times Mentioned</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extending DM</td>
<td>6</td>
<td>54.50%</td>
</tr>
<tr>
<td>Mastering</td>
<td>4</td>
<td>36.40%</td>
</tr>
<tr>
<td>Accommodation</td>
<td>2</td>
<td>18.20%</td>
</tr>
<tr>
<td>Delay Decision</td>
<td>1</td>
<td>9.10%</td>
</tr>
<tr>
<td>Seek additional assurance</td>
<td>1</td>
<td>9.10%</td>
</tr>
<tr>
<td>Neglect</td>
<td>1</td>
<td>9.10%</td>
</tr>
<tr>
<td>Distancing</td>
<td>1</td>
<td>9.10%</td>
</tr>
<tr>
<td>Ignore</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td>Refuse</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td>Pretest</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td>Heuristics</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td>Abandonment</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td>Partnering</td>
<td>0</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

Technology Paradoxes

Technology also proved to be a useful context in which to help informants explore paradox. Respondents identified all but one of Mick and Fournier's (1998) eight technology paradoxes. The control-chaos technology paradox was the most often discussed (20%). This paradox refers to the ability of people to recognize that a technology can both facilitate regulation or order and lead to upheaval or disorder. An example is online banking, which provides control but also leaves one vulnerable to problems such as identity theft. Fifteen percent of responses were categorized as engage-disengage paradoxes and another 15% were classified as freedom-dependence paradoxes. Engaging-disengaging refers to the capacity of technology to facilitate involvement versus its capacity to lead to disconnection, disruption, or passivity—for example, a husband tunes out his wife when focusing on his iPad. Freedom-dependence refers to the capacity of technology to both facilitate independence and impose restrictions or obligations—for example, the freedom of a cell phone coincides with an obligation to commit to a long-term contract.

Each of the remaining technology paradoxes—assimilation-isolation, efficiency-inefficiency, fulfills needs-creates needs, new-obsolete—accounted for 10% of the responses. Assimilation-isolation refers to the capacity of technology to facilitate human togetherness versus its capacity to lead to human separation—such as an individual ignoring his or her companion to text message someone who isn't present. Fulfills needs-creates needs refers to the capacity of technology to facilitate the fulfillment of needs versus its capacity to lead to the development or awareness of new needs—such as needing to replace old DVD movies because you have switched to BlueRay technology to improve the movie watching experience. Finally, the new-obsolete paradox focuses on the rate at which improvements are introduced to existing products,
which creates a perception that as soon as a new technology makes it to market it is already obsolete.

In addition to replicating Mick and Fournier's (1998) technology paradoxes, this research also uncovered a new technology paradox, which indicates that recent advances in technology are creating a privacy-customization paradox (10%). This paradox centers on the advances in data-mining capabilities and its negative repercussion, which is that companies now have greater access to personal information. The ability to collect data has been bolstered by the proliferation of electronic commerce on the world wide web and by advances in hardware technology for storing and accessing data, which have enabled companies to track information about individuals' everyday lives (Aggarwal & Yu, 2004). Because it is now affordable for companies to collect and use data, they can provide unprecedented customization of their offerings. This mass-customization offers both benefits and hindrances to consumers. The benefits are that customization allows companies to tailor offerings and promotional messages to consumer needs and interests, helps create active relationships between marketers and consumers, and allows marketers to better respond to unarticulated/unrecognized consumer needs (Wind & Rangaswamy, 2001). While consumers benefit from this level of customization, it also creates privacy concerns. Examples of these concerns were shared in detail by Christina:

Google's new privacy laws are paradoxical! They're supposed to help us, right, they're supposed to connect you to better searches. When you search something on Google, it's supposed to be even better, it's going to cache all the information you put in before, and when you pull up Google it's going to direct even better. And if you use Gmail, it's going to spell check your friends' names. It's going more and more into your privacy. So is it better for connecting us and probably helping us to get the things we want, absolutely. Is it delving into things that are starting to make me very uncomfortable, yes. Because now it's getting very … Big Brother is much more efficient than he used to be, and I feel that's very dangerous. This road is very dangerous.

This new paradox is becoming more and more relevant as companies seek to create competitive advantages by providing more personalized messages and products (Rygielski, Wang, & Yen, 2002).

Behavioral Responses to Technology Paradoxes

As with the general paradoxes, extended decision-making was the most common behavioral response to technology paradoxes, accounting for 21.7% of all responses. Other duplicate responses included distancing (17.4%), neglect (13.0%), delay (8.7%), accommodation (8.7%), and mastering (4.3%). Responses to technology paradoxes that were not discussed for general paradoxes included partnering (8.7%), abandoning (8.7%), and pre-test (4.3%). Partnering refers to establishing a close attachment to or committed relationship with a technology object or object producer, such as relying on a credit card to protect against internet fraud. Abandoning involves discontinuing the use of a technology or refusing to repair an object that breaks, such as removing email from a cell phone to avoid receiving work emails at any time. Finally, pretesting entails temporarily using someone else's technology or making some type of short-term
commitment to a technology with the goal of evaluating it, such as testing alternatives before discontinuing a cable service.

**Emotional Responses to Technology Paradoxes**

The last set of items that were coded was the emotional responses to technology paradoxes. While the majority of these emotions were negative, there were some unexpectedly positive emotions as well. Since paradox creates tensions that cannot be easily resolved, it would be expected that a paradox could lead to anger (23.1%), worry (23.1%), and discontent (15.4%). Other negative feelings that were mentioned included fear (7.7%) and shame (7.7%). At the same time, almost one quarter of the responses indicated positive emotions. These positive emotions included contentment (15.4%) and surprise (7.7%), and tended to occur when consumption confrontative strategies were employed. Positive outcomes resulting from employing confrontative approaches support past literature on paradoxes and coping (Cui et al., 2009; Mick & Fournier, 1998). This finding also substantiates previous work by Jarvenpaa and Lang (2005), who argue that consumers who deal more productively with technology paradoxes are more likely to develop positive outcomes.

The interviews also supported the concept that paradox is pre-attitudinal, with participants viewing paradox as based in a situation. In addition, participants acknowledged the tensions involved in paradoxes and identified their responses to such tensions. More specifically, participants found technology to be an easy area to identify paradox, replicating the typology of technology paradoxes identified by Mick and Fournier (1998).

**IMPLICATIONS AND THEORETICAL CONTRIBUTION**

This study validates that the construct of consumer paradox is distinct from ambivalence and mixed emotions, and as such it offers both theoretical and managerial implications for many areas of marketing. This paper shows that the concept of paradox can serve as a worthwhile lens or framework for studying issues in marketing theory and practice. Furthermore, this essay is the first to systematically examine the conceptualization of paradox, extending the knowledge concerning the underlying similarities and differences to the related and often confused constructs of ambivalence and mixed emotion. By clarifying the conceptualizations of these constructs, this essay makes a valuable contribution applicable to any discipline studying them. The specific implications for research and practice within marketing strategy and consumer behavior are detailed below.

Paradox appears to be a powerful concept for exploring consumption, and the lived experience of paradox in different consumption contexts offers a potentially fruitful research avenue. To build on this potential, this essay further examined how paradoxes develop in consumption experiences. Included in this research was the development of a new construct of consumer paradox.
Table 3: Technology Paradox Findings

<table>
<thead>
<tr>
<th>Technology Paradox</th>
<th># times mentioned</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control/Chaos</td>
<td>4</td>
<td>20.0%</td>
</tr>
<tr>
<td>Engaging/Disengaging</td>
<td>3</td>
<td>15.0%</td>
</tr>
<tr>
<td>Freedom/dependence</td>
<td>3</td>
<td>15.0%</td>
</tr>
<tr>
<td>Assimilation/Isolation</td>
<td>2</td>
<td>10.0%</td>
</tr>
<tr>
<td>Efficiency/Inefficiency</td>
<td>2</td>
<td>10.0%</td>
</tr>
<tr>
<td>Fulfills/creates needs</td>
<td>2</td>
<td>10.0%</td>
</tr>
<tr>
<td>New/Obsolete</td>
<td>2</td>
<td>10.0%</td>
</tr>
<tr>
<td>Privacy/Customization*</td>
<td>2</td>
<td>10.0%</td>
</tr>
<tr>
<td>Competence/Incompetence</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Enjoyment/Task</td>
<td>0</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

* Proposed additions to Mick and Fournier (1998) Technology Paradoxes

<table>
<thead>
<tr>
<th>Behavioral Response</th>
<th># times mentioned</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extending DM</td>
<td>5</td>
<td>21.7%</td>
</tr>
<tr>
<td>Distancing</td>
<td>4</td>
<td>17.4%</td>
</tr>
<tr>
<td>Neglect</td>
<td>3</td>
<td>13.0%</td>
</tr>
<tr>
<td>Delay decision</td>
<td>2</td>
<td>8.7%</td>
</tr>
<tr>
<td>Abandonment</td>
<td>2</td>
<td>8.7%</td>
</tr>
<tr>
<td>Accommodation</td>
<td>2</td>
<td>8.7%</td>
</tr>
<tr>
<td>Partnering</td>
<td>2</td>
<td>8.7%</td>
</tr>
<tr>
<td>Pretest*</td>
<td>1</td>
<td>4.3%</td>
</tr>
<tr>
<td>Seek additional assurance</td>
<td>1</td>
<td>4.3%</td>
</tr>
<tr>
<td>Mastering</td>
<td>1</td>
<td>4.3%</td>
</tr>
<tr>
<td>Ignore</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Refuse</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Heuristics</td>
<td>0</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

* Responses not utilized in general paradox.

<table>
<thead>
<tr>
<th>Emotional response</th>
<th># times mentioned</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anger †</td>
<td>3</td>
<td>23.1%</td>
</tr>
<tr>
<td>Worry †</td>
<td>3</td>
<td>23.1%</td>
</tr>
<tr>
<td>Discontent†</td>
<td>2</td>
<td>15.4%</td>
</tr>
<tr>
<td>Contentment‡</td>
<td>2</td>
<td>15.4%</td>
</tr>
<tr>
<td>Fear †</td>
<td>1</td>
<td>7.7%</td>
</tr>
<tr>
<td>Shame †</td>
<td>1</td>
<td>7.7%</td>
</tr>
<tr>
<td>Surprise‡</td>
<td>1</td>
<td>7.7%</td>
</tr>
<tr>
<td>Sadness</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Envy †</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Loneliness</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Romantic Love‡</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Love ‡</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Peacefulness‡</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Optimism†</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Joy ‡</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Excitement†</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Guilt ‡</td>
<td>0</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

† Negative consumption emotions
‡ Positive consumption emotions
Table 4: Contributions

<table>
<thead>
<tr>
<th>Contributions to literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrates divergent literature streams to develop a new definition of paradox</td>
</tr>
<tr>
<td>Distinguishes paradox from ambivalence and mixed emotions</td>
</tr>
<tr>
<td>Delineates consumer paradox as a new construct</td>
</tr>
<tr>
<td>Replicates Mick and Fournier's (1998) taxonomy of technology paradoxes and coping responses</td>
</tr>
<tr>
<td>Ties consumption emotions to specific technology paradoxes</td>
</tr>
<tr>
<td>Builds on previous qualitative analyses, setting a framework for developing quantitative approaches to measuring paradox</td>
</tr>
<tr>
<td>Indicates potential negative repercussions of paradox and consumer's need for information for processing and outside assurance when confronting paradox</td>
</tr>
<tr>
<td>Lays the groundwork to better understand strategies consumers use to manage consumption paradoxes</td>
</tr>
</tbody>
</table>

In this essay, the author surveyed the diverse literature dealing with paradox in philosophy, sociology, logic, economics, management, and marketing. Although different social scientific fields investigate paradox using different perspectives, this essay integrated the perspectives and offers a meaningful description of paradox. One of the biggest shortcomings of the above literature streams is that current research has failed to demonstrate that people feel internal tensions, which this paper argues is necessary to create paradox.

This essay also sought to distinguish paradox from ambivalence and mixed emotions. Ambivalence and mixed emotions have often been confused with paradox, because the relationship between these concepts has not been fully defined. It is important to understand how these concepts are similar and how they differ, and this work is the first to examine the relationship between these concepts.

This essay also sought to replicate and extend Mick and Fournier's typology of technology paradoxes. The interviews showed that individuals are cognizant of these paradoxes, as well as corroborated that people recognize both the positive and negative aspects of paradoxes on an intrapersonal level. In addition, this research illustrated that Mick and Fournier's set of paradoxes is not complete, and adds a new privacy-personalization paradox. Because technology constantly changes and those changes create new challenges for individuals to process, one could expect other paradoxes to become more commonplace as consumers interact with technology.

Another contribution of this essay is the mapping of consumption emotions to the different technology paradoxes. As the first research to establish the link between different types of paradoxes and these emotions, it lays the groundwork for a better understanding of the strategies consumers use to manage consumption paradoxes. It also illustrates that paradoxes are often tied to negative emotions such as worry, fear and frustration, yet also may lead to feelings of surprise and contentment. While this essay makes an initial attempt to establish these connections, it also suggests that there is more work to be done in researching these connections.

Finally, this essay lays the groundwork for developing quantitative measures to identify consumer paradoxes. Most of the research related to consumers and paradoxes has been qualitative (Baron et al., 2006; Jarvenpaa & Lang, 2005; Mick & Fournier, 1998). While this work has uncovered some common paradoxes, it has shortcomings. These qualitative studies initially relied on themes emerging from research, yet opposing themes are not always reported
from the same respondent, which means that consumers are not experiencing the paradox. Instead, the researchers acknowledge that paradoxes may be viewed in varying ways. The exception to this tendency is found in the work of Mick and Fournier (1998), in which some participants expressed feelings of paradoxes related to technology, using terms such as "double-edged sword" or "both good and bad."
ESSAY TWO: MEASURING TECHNOLOGY PARADOX

INTRODUCTION

As defined in Essay 1, a technology paradox is an individual's recognition of an intrapersonal conflict that stems from simultaneously conflicting experiences related to marketplace elements with ramifications on consumption outcomes. For example, social networking increases the social circles of users; at the same time, spending too much time online may decrease face-to-face connections and consequently reduce the number of offline relationships a person has. So a person may have a large number of friends on a social network but no one to call on a Friday night. This contradiction only becomes a paradox if a person views these two elements as irreconcilable and experiences tension.

Although paradoxes have been studied in many different disciplines, researchers have failed to establish an accepted method of measurement. Most research has been qualitative in nature, and the limited empirical research has not dealt directly with the unique conditions of paradox, especially the recognition of the positive and negative aspects and the resulting emotional conflict. Instead, efforts to empirically measure paradox have drawn primarily from research in the areas of ambivalence and mixed emotions, leaving some fundamental issues unresolved.

Issues To Be Addressed

This work seeks to address these concerns by considering the following questions:

1. What are the characteristics of the different types of technology paradox?
   a. What are the different types of paradoxes related to technology-based self-service?
   b. What items best describe the different dimensions of each paradox?

2. What is the best method for measuring paradox?
   a. Which methods can be employed to capture the two conditions of paradox?
   b. Which method has the highest construct validity?

Building on the results of Essay 1, this essay develops a new comprehensive method for measuring technology paradox. First, extant research on ambivalence and mixed emotions, along with the content analysis of the in-depth interviews from Essay 1, is used to develop a set of potential positive and negative aspects of the consumption experience. Of particular interest are those positive and negative aspects that are "paired" in a consumer's evaluation of an experience, a necessary pre-condition for the emergence of conflicting emotions. The second step is the evaluation of alternative formats incorporating these two conditions. I assess several approaches to operationalizing the "paired" positive and negative evaluations, the first necessary condition of paradox. Then I integrate the feeling of tension due to the inability to reconcile the opposing evaluations, the second necessary condition. The result is a two-stage method for measuring the presence of paradox, each stage explicitly addressing a unique condition.

This essay is organized into three sections. The first describes issues inherent in current approaches to measuring paradox. The next section provides details of the methodology developed to answer the research questions, as well as the results of the studies conducted. The final section addresses the outcomes of this research.
MEASUREMENT CONCERNS IN PAST RESEARCH

As the measurement of paradoxes has challenged scholars, most of the research related to consumers and paradox has been qualitative (Baron et al., 2006; Jarvenpaa & Lang, 2005; Mick & Fournier, 1998). While the qualitative work has uncovered common types of paradox, there are substantive shortcomings. First, most of this research has relied on themes that could generate paradox, but no attempt was made to specifically measure paradox at the respondent level. Therefore, these studies derived frameworks for the existence of paradox, but no substantive measures of paradox that could be ascribed to a specific individual. The exception is Mick and Fournier's research (1998), which attempted to quantify the existence of paradox by classifying participants' expressed feelings of paradox based on terms such as "double-edge sword" or "both good and bad." Second, an exclusive reliance on qualitative data makes it difficult to expand findings to other settings. No consistent approach to classifying feelings related to paradox has been developed, nor are the results generalized across contexts. These shortcomings make developing an empirical approach to measuring paradoxes paramount.

To date, the only study available that has attempted to measure paradoxes quantitatively was conducted by Johnson et al. (2008). Following research on measuring ambivalence, they separated the aspects of the consumption experience into satisfiers and dissatisfiers, measuring them separately. While their approach is similar to the formula-based measurements used in research on ambivalence and mixed emotions, a key deficiency is their failure to demonstrate any sense of the conflicting tensions between the satisfiers and dissatisfiers, a required condition for the recognition of paradox. Although this deficiency presents a serious shortcoming, their approach suggests that research on ambivalence might be a valuable starting point for developing quantitative methods of measuring paradox.

While the limited empirical research on paradox has highlighted the lack of a strong theoretical basis for developing measurements, two streams of research closely related to the study of paradox, those of ambivalence and mixed emotions, can provide insight. Confusion emerges, however, as the concepts overlap. Distinguishing paradox from the constructs of ambivalence and mixed emotions could highlight the core conditions of paradox. Essay 1 sought to explain the theoretical relationships between the three constructs. This essay builds on the interconnections to develop a method for quantitatively measuring technology paradoxes. Understanding how researchers have studied the emotional or affective inconsistency of mixed emotions, as well as ambivalence, will provide insight into the duality of paradoxical situations. The following discussion examines the methodologies from each of these research areas as a basis for the measurement of paradox. Measurement techniques are discussed, as well as the relative strengths and weaknesses of applying common measurement practices to develop a better understanding of paradox.

Mixed Emotions Measurement

Mixed emotions exist when an individual simultaneously experiences conflicting emotions. Like ambivalence, mixed emotions involve holding both positive and negative emotional evaluations simultaneously. However, ambivalence is an attitude, which can be comprised of cognitive, emotional and behavioral aspects, while emotions are separate from cognition (Lazarus, 1991b).
Emotions are "psychological and physiological episodes experienced toward an object, person, or event that create a state of readiness" (McShane, 2009, p. 104). When an individual experiences mixed emotions, conflicting emotions do exist, but one emotion is often dominant. Thus the individual is able to resolve the conflict. When one emotion does not dominate, mixed emotions can lead to an attitude that is emotionally ambivalent. Mixed emotions represent an ambivalence in which the emotions underlining the attitude are conflicted (Jonas & Ziegler, 2007).

Mixed emotions have been measured much like ambivalence, in that researchers tend to measure emotions separately and then look for conflicting responses (Hunter et al., 2008; Larson, McGraw, & Cacioppo, 2001; Williams & Aaker, 2002). This approach is more appropriate for demonstrating the co-existence of conflicting emotions than for conceptualizing emotions as diametric opposites. While mixed emotions involve holding both positive and negative emotional evaluations simultaneously, often one emotion is dominant, making it possible to resolve the conflict.

In some cases of mixed emotion, one of the emotions does not dominate. If an individual is aware of these contradictory emotions, is unable to resolve the inconsistency, and feels a sense of anxiety related to the inconsistency, then the mixed emotions represent a paradox. In other words, to experience a paradox, the actors must be aware of the duality of the situation in which no dominant evaluation exists, and they must feel internal friction and stress. It is this recognition of an intrapsychic conflict that results in paradox, so measurements of paradox must capture the sense of internal tension or conflict. Thus, the literature on mixed emotions provides a good starting point for developing items that capture the conflicting evaluations, which is the first condition of paradox. It is necessary to refer to the literature on ambivalence for assistance in capturing the second condition of paradox, or the internal tensions arising from the conflict.

Ambivalence Measurement

Ambivalence is an attitude that results when an individual experiences opposing evaluations of an object and cannot reconcile them. Because paradox may lead to ambivalence, the constructs have often been used interchangeably in the literature and measurements of paradox have relied heavily on those of ambivalence. In reality, paradox is the experience or acknowledgement of contradictory elements, while ambivalence is a possible attitudinal response to experiencing conflict. As such, paradox is pre-attitudinal, and it is the internal conflict arising from paradox that leads to attitude formation or change.

Another key difference between the two concepts is that ambivalence does not require that an individual be aware of the conflict, whereas awareness is a critical element of paradox (Lewis, 2000). This difference between paradox and ambivalence is reflected in the descriptions of each. For example, paradox is often referred to as a "cutting edge sword"; ambivalence is viewed as "sitting on a fence." The first refers to something a person must confront; the latter refers to an evaluation a person must make. Although they are distinct constructs, researchers have paid more attention to quantitatively measuring ambivalence. Thus, the dual nature of ambivalence provides a good starting point for developing methods to quantitatively measure the conflicting tensions of a paradox.
Researchers have relied on one of two approaches for measuring ambivalence: formula-based measures and experience-based measures. Formula-based measures, first applied by Scott (1966) and then later by Kaplan (1972), require respondents to first evaluate positive qualities while ignoring negative ones, and then evaluate negative qualities while ignoring positive ones. The responses are then entered into a formula to calculate the level of ambivalence. The most common formula is Ambivalence = \((A_w + A_s)/2 - |A_w - A_s|\), where \(A_w\) represents the weaker score and \(A_s\) the stronger (Breckler, 1994; Kaplan, 1972). The biggest disadvantage of this method is that it does not require people to be aware of their state of conflict.

Experience-based measures, on the other hand, ask participants about the tension that they feel, thus allowing for reports of acknowledged ambivalence. A popular experience-based ambivalence measurement tool is the Bivariate Evaluations and Ambivalence Measures (BEAMs) from Cacioppo et al. (1997). This measure uses a 5-point Likert scale (1-very slightly or not at all to 5-extremely) and consists of five questions that reflect the extent to which participants feel: 1. Muddled, 2. Divided, 3. Tense, 4. Jumbled, and 5. Conflicted. Other measures directly ask how participants feel regarding a topic or choice they have made such as:

- I have strong mixed emotions both for and against X, all at the same time.
- When I think of X, I feel torn in my feelings.
- I can understand the pros and the cons of X.
- I have many reasons and arguments in favor of X.
- I have many reasons and arguments opposed to X.
- How conflicted/ambivalent are your feelings and/or beliefs towards…?
- When it comes to X, my mind tells me one thing but my heart tells me another.
- I can't make up my mind one way or another about what is the best course of action for me to take.

Because they measure acknowledged ambivalence, the experience-based measures are considered a better measure of ambivalence (Jonas et al., 2000) as well as the preferred method for validating formula measurements (Thompson et al., 1995).

As mentioned previously, there has only been one study that has quantitatively measured paradox, and that was the work by Johnson et al. (2008). Their work relied heavily on measuring paradox utilizing an adapted formula-based measure. In addition to the shortcomings of this work discussed previously, research in ambivalence implies that an experienced-based measure of paradox might be more appropriate for capturing its true nature.

**Summary**

Past research in these two areas indicates that the measurement of paradox should capture two conditions, similar to the experience-based measures of ambivalence and mixed emotion. Borrowing from these related constructs, it is necessary to first discover situations in which respondents have contradictory evaluations of an object, and then apply a measure that captures the level of tension or conflict related to the opposing evaluations. It is clear that paradox and consumers' reactions to it cannot be measured in a conventional manner or placed on a bipolar continuum. Paradoxes cannot be understood using an either-or approach because they involve a
situation in which people experience both sides of the scale. Implementing a scale with a neutral point does not correct the problem because the neutral point can indicate ambivalence or indifference (Baek, 2010). The current method of measuring paradox, ambiguity or mixed emotion using a bipolar scale creates an "either-or fallacy" (Bobko, 1985). Bobko (1985) argues that applying bipolar constructs to self-referential statements leads to a lack of consistency, but removing the bipolarity can enhance the understanding of consumer experiences. This research shows that a new and more accurate method is needed to measure tensions that consumers feel in paradoxical situations.

RESEARCH METHOD AND STUDY RESULTS

As mentioned earlier, a technology paradox is an individual's recognition of an intrapersonal conflict stemming from simultaneous conflicting experiences related to the marketplace. For example, many people dislike Wal-Mart because of its business practices but feel compelled to shop there because of its lower prices. This contradiction only becomes a paradox if a person views these two evaluations as irreconcilable and experiences related tension. A new, comprehensive method for measuring a technology paradox must capture the two conditions for paradox: the recognition of two opposing, irreconcilable evaluations and the feeling of tension brought about by the opposing evaluations. To capture these two conditions, my research addressed two intertwined objectives. First, questions for identifying various types of technology paradoxes had to be properly formulated. Second, a method had to be developed that allowed for the identification of the two distinct conditions for paradox.

To fulfill these objectives, the following steps were taken:

1. Determine study context
2. Generate scale items
3. Review items using expert judges
4. Conduct pretests
   a. Capture different types of paradoxes
   b. Develop technique to properly measure two conditions of paradox
5. Conduct Study 2
   a. Validate scale
   b. Test additional technology paradoxes
   c. Analyze paradox patterns

Study Context

To develop this scale, it was important to identify a context in which consumers are likely to experience a paradox. Technology-based self-service was identified as one area likely to generate paradox. Studies of paradox in marketing, although limited, indicate that technology is a context in which consumers are likely to experience paradox. For example, Mick and Fournier (1998) examined technology related to household goods to identify paradoxes and Munene, Pettigrew, and Mizerski (2002) identified a number of paradoxes by studying technology related to service encounters. Researchers have shown that consumers frequently experience negative emotions in purchase situations (Richins, 1997) and that the adoption of new products or services
can cause internal distress. Therefore, technology appears to be a productive area for studying paradox because, as Ekici (2004) points out, personal technology use involves dual experiences of both efficacy and ineptitude. In addition, Baron et al. argue that it is common for consumers to have “mixed feelings regarding technological products or services” (2006, p. 118). Mick and Fournier (1998) and Otnes et al. (1997) argue that the pace of change and the overabundance of choice create a situation marked by paradox. They also posit that technology purchases lead to situations in which consumers can often see both the good and the bad and are forced to make appropriate tradeoffs. However, sometimes consumers are unable to reconcile the tradeoffs, which results in a paradoxical situation.

Thus, technology seems to be an area in which consumers are more likely to experience paradoxes based on opposing good and bad aspects. Consider many consumers’ experiences with the new smart phone technologies. While it may be easy to master some aspects of these devices, thereby creating feelings of competence, there are often aspects that people do not understand, which may create feelings of incompetence. This essay proposes that customers often take a paradoxical viewpoint of technology in which they can be trapped between appreciating the positive aspects of a new technology and still being daunted by the negative aspects (Best & Kellner, 2001; Mick & Fournier, 1998; Thompson, 2004).

As a specific area of technology adoption, technology-based self-services (TBSSs)\(^1\) are especially likely to engender tensions and paradoxes. This propensity is due to the ambiguity of services, which makes the evaluation of performance difficult (Parasuraman & Zeithaml, 1985). Tensions also may be caused by consumers’ different levels of technology readiness (Parasuraman, 2000) and the self-learning and motivation necessary for using these technologies (Johnson et al., 2008). The positive and negative attributes of technology and the pace of change in technological markets also seem to drive paradoxes. Utilizing TBSSs as a lens for studying technology paradox allows for the creation of opposing statements and scales that can be used in the future to measure antecedents and outcomes of paradoxes.

Research in the area of technology has implications for both the study of paradoxes in general and this particular paper. The first implication is that technology may be useful for studying paradoxes, as it provides a context in which consumers are likely to experience them. In addition, marketing research has failed to demonstrate that individual consumers acknowledge the internal tensions associated with paradoxes. Technology adoption may provide a context in which those internal conflicts can be demonstrated, thus contributing to the field. Another reason that technology provides a good context for studying paradox is that the vast majority of marketing research presumes that consumers view new technologies as inherently positive (Cui et al., 2009). Recently, a few researchers have sought to understand the stresses imposed by technology in an attempt to better understand the positive and negative outcomes of technology adoption (Cui et al., 2009).

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\(^1\) Technology-based self-service, also known as self-service technology, describes those technologies that customers independently use without any interaction with, or assistance from, employees. Examples include the use of on-line banking, ATM’s, on-line airline ticket reservations, pay-at-the-pump gas pumps, on-line package tracking, and fully automated phone systems.
Overview of Research Studies

Several studies and pretests were conducted to address the two research objectives. As discussed in the first section below, the Literature Review, Study 1, and Pretests 1 and 2A focused on the first objective: identify technology paradoxes and develop items that capture different types of TBSS evaluations. As discussed in the second section, Pretests 2B, 3, and 4 and Study 2 primarily focused on the second objective: test alternate methods for identifying the two conditions of paradox and create validation checks to verify that the methods capture paradox. Given that there has been little quantitative research conducted on paradox, the validation checks compare scale measures with direct answers from respondents and ambivalence measures. The latter comparison should show that greater levels of conflict exist when paradox is present as well as identify patterns of paradox. Table 5 provides a graphical overview of the studies covered in the following sections.

Table 5: Overview of Research Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Objective 1: Paradox Types and Item Generation</th>
<th>Objective 2: Identification of Method to Capture Paradox</th>
<th>Validation methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literature review</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study 1</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest 1</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest 2A²</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest 2B</td>
<td>Ø</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest 3</td>
<td>✗</td>
<td>☒</td>
<td>Ambivalence</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Direct question</td>
</tr>
<tr>
<td>Pretest 4</td>
<td>☒</td>
<td>☒</td>
<td>Direct question</td>
</tr>
<tr>
<td>Study 2</td>
<td>☒</td>
<td>☒</td>
<td>Direct question</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pattern identification</td>
</tr>
</tbody>
</table>

Table 5 provides an overview of how the studies and pretests correspond to the research objectives, and Figure 1 highlights the main focus of the analysis at each step. These overviews can be used as guides for the remainder of the essay. Additional information about the specific studies and their results can be found in Table 6: Overview of Research Addressing Objective 1, Table 11: Overview of Research Addressing Objective 2, and Table 23: Overview of Analyses by Section in Study 2.

Objective 1: Paradox Types and Item Generation

In this section, I address the first research objective: the identification of types of technology paradoxes and the development of items that capture the different aspects. Correspondingly, the first step consisted of a review of research on technology paradoxes, which then was used to develop a set of statements or scale items. The second step consisted of a study in which expert

² Data for pretests 2A and 2B were collected at the same time. The distinction between the two write ups is the focus of the different sections of the test. To fit in with the logical objectives of the study, it was determined that it these write ups would be easier to follow if the pretest was matched to the two objectives of the essay.
judges reviewed the statements. The final step consisted of a series of pretests, which were used to determine the reliability of the statements and further refine the items.

Figure 1: Overview of Studies

Table 6: Overview of Research Addressing Objective 1

<table>
<thead>
<tr>
<th>Study name</th>
<th>Short description</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study 1</td>
<td>Expert judging of items</td>
<td>Reduction of initial scale items</td>
</tr>
<tr>
<td>Pretest 1</td>
<td>Initial Test of Paired Statements</td>
<td>Satisfactory internal reliability and support for inconsistent evaluations of opposing statements</td>
</tr>
<tr>
<td>Pretest2A</td>
<td>Test of Opposing Constructs</td>
<td>Open-ended questions provided support that opposing items reflect opposite of positive statement</td>
</tr>
</tbody>
</table>

Literature Review

The first step in the development of the scale consisted of a literature review. Given that most of the prior research on paradox has been qualitative, the development of the scale relied on established scales that measure the related concepts of mixed emotions and ambivalence. Based on the extant research on paradox, ambivalence and mixed emotions and the findings in Essay 1, statements that capture contradictory evaluations were developed.
Prior qualitative research has identified several paradoxes related to technology consumption. The most widely cited study is one by Mick and Fournier (1998), in which they examine technology paradoxes including Assimilation-Isolation, Control-Chaos, Efficiency-Inefficiency, Fulfills-Creates needs, Engaging-Disengaging and Competence-Incompetence (see Table 7 for a definition of each paradox). While Mick and Fournier studied technology products in general, many of these paradoxes have been found in other technology domains, including mobile phones (Jarvenpaa & Lang, 2005), text messaging (Baron et al., 2006), and online banking (Johnson et al., 2008).

The qualitative research conducted in Essay 1 supported the use of technology as a context for studying paradox. In Essay 1, all of Mick and Fournier’s (1998) eight technology paradoxes were identified, with the exception of competence-incompetence. However, the competence-incompetence paradox has been supported by the literature (Jarvenpaa & Lang, 2005; Baron et al., 2006; Johnson et al., 2008). Therefore, although my informants did not discuss this paradox related to technology in general, I anticipate that it will play a role in decisions to utilize technology based self-service offerings.

In addition to replicating Mick and Fournier's (1998) technology paradoxes, the qualitative research conducted in Essay 1 uncovered a new technology paradox: Customization-Privacy. This paradox derives from new data storage and mining advances that allow marketers to customize products on a mass scale. At the same time, these advances concern some people, who view the vast amount of personal information that companies can access as a threat to personal privacy.

Finally, anecdotal evidence suggests that task-enjoyment might be another paradox related to technology consumption. Technology is often viewed as a tool for accomplishing specific tasks, and many new technologies are brought to market with this goal in mind. At other times, technology is valued for its ability to bring enjoyment to a user. A comparison of LinkedIn and Facebook demonstrates this paradox with respect to social media. Both are social networking sites. However, LinkedIn is viewed as a useful tool for professional networking, finding a job and building a career, while Facebook is viewed as a fun way to connect with friends and maintain contact with past acquaintances.

Statements that define the technology paradoxes listed in Table 7 were developed to capture the opposing aspects of each paradox. Three primary sources were employed. First, qualitative studies of technology paradoxes in general provided useful illustrative descriptions (Mick & Fournier, 1998; Jarvenpaa & Lang, 2005; Baron et al., 2006). The second source was Johnson et al.’s (2008) study of online banking, which specifically focused on technology-based self-services. The third source consisted of the in-depth interviews described in detail in Essay 1, in which the informants discussed knowledge of and experience with self-service technology. In addition to supporting the use of technology as a context, the interviews reinforced the technology paradoxes listed above. Based on these sources, eighty-two items were generated to

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3 Since consumers do not own self-service technology offerings, two of the technology paradoxes identified by Mick and Fournier (1998) were omitted. Lack of ownership reduced the likelihood that participants would experience empowerment/enslavement or new/obsolete paradoxes.
measure different aspects of paradox related to technology. These items are presented in Appendix C.

**Table 7: Anticipated Technology Paradoxes**

<table>
<thead>
<tr>
<th>Paradox Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assimilation/Isolation</td>
<td>Technology's capacity to facilitate human togetherness vs. its capacity to lead to human separation</td>
</tr>
<tr>
<td>Control/Chaos</td>
<td>Technology's capacity to facilitate regulation or order vs. its capacity to lead to upheaval or disorder</td>
</tr>
<tr>
<td>Efficiency/Inefficiency</td>
<td>Technology's capacity to facilitate less effort or time spent in certain activities vs. its capacity to lead to more effort or time in certain activities</td>
</tr>
<tr>
<td>Fulfills/Creates needs</td>
<td>Technology's capacity to facilitate the fulfillment of needs or desires vs. its capacity to lead to the development or awareness of needs or desires previously unrealized</td>
</tr>
<tr>
<td>Engaging/Disengaging</td>
<td>Technology's capacity to facilitate involvement, flow, or activity vs. its capacity to lead to disconnection, disruption, or passivity</td>
</tr>
<tr>
<td>Competence/Incompetence</td>
<td>Technology's capacity to facilitate feelings of intelligence or efficacy vs. its capacity to lead to feelings of ignorance or ineptitude in solving specific tasks</td>
</tr>
<tr>
<td>Enjoyment/Task specific</td>
<td>Technology's capacity to be &quot;fun&quot; vs. its capacity to solve specific tasks</td>
</tr>
</tbody>
</table>

**Study 1: Expert Judging of Items**

After the initial items were generated, expert judges reviewed the eighty-two items using techniques recommended by Hardesty and Bearden (2004). The judges, who were all Ph.D. candidates in marketing and management, were given descriptions of seven different types of paradoxes that could be present in the use of a self-service technology (see Appendix D), and then asked to assign each statement to a paradox type. Then the judges assessed the degree to which each item represented its corresponding dimension. Judges categorized each item by assigning it to one of the paradox categories on a scale from 1 (doesn't describe the paradox very well) to 10 (describes the paradox perfectly). Judges were also asked to generate new items and assess item wording, content, clarity, ease of use, proper reading level, and wording. Items that judges failed to place in the same category were removed from the analysis and other items were revised, leaving 56 items for further analysis (see Appendix E for remaining items).

**Pretest 1: Initial Test of Paired Statements**

The goal of Pretest 1 was to test the quality and internal consistency of the opposing statements. Utilizing the items generated or retained by the expert judges, an initial pretest was conducted using adult subjects. Respondents measured items using a choice scale, indicating if they "Strongly Agree with Statement A," "Strongly Agree with both Statements," or "Strongly Agree with Statement B." Figure 2 shows the format of the questionnaire format and provides an example of a question.
Please use your experience with and feeling towards this technology in general to answer the following questions. Please indicate your agreement with the following pairs of statements.

<table>
<thead>
<tr>
<th>Statement A</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBSSs give me the power to be in control</td>
<td>Strongly agree with Statement A</td>
<td>Strongly agree with both statements</td>
<td>Strongly agree with Statement B</td>
<td>TBSSs take control away from me</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 2: Sample Survey Question from Pretest 1**

Two approaches were used to assess the individual items: an analysis of the reliability of the scale items within each construct and an analysis of the average number of opposing evaluations the scale items produced. The first analysis measured the internal consistency of the items within each proposed paradox using coefficient alpha, which indicates the degree to which the individual items are unidimensional. A set of indicators is unidimensional if they have only one underlying construct. The second analysis measured the average opposing evaluations, which establish that respondents agree that a pair of items is both true and contradictory. Average opposing evaluations were measured by calculating the number of scale items each respondent marked as "Strongly Agree with Both Statements." If respondents did not view any scale items as contradictory, the scale would fail the first condition of paradox. Thus, it was essential that respondents agreed with both sides of some of the statements for each type of paradox.

**Results.** Pretest 1 used a snowball sample of 141 adult respondents, 44% male and 52% female, with an average age of 43. The list of items was reduced to 36 pairs of statements, measuring 7 technology paradoxes. As can be seen in Table 8, the reliability of the items ranged from .912 (enjoyment-task specific) to .805 (competent-incompetent). This result indicates that the pairs of opposing statements had strong levels of internal consistency and therefore were addressing the same construct. The last column shows the average number of items that were viewed as conflicting across each scale. These results demonstrate that, on average, the respondents viewed at least one pair of statements as being contradictory, which indicates that the scales have the potential to capture respondents' feelings of paradox.

**Table 8: Reliabilities of Paradox Pair Scale Items**

<table>
<thead>
<tr>
<th>Paradox</th>
<th># of items</th>
<th>Reliability</th>
<th>Average opposing evaluations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assimilation-isolation</td>
<td>5</td>
<td>.812</td>
<td>1.04</td>
</tr>
<tr>
<td>Competent-incompetent</td>
<td>6</td>
<td>.805</td>
<td>1.01</td>
</tr>
<tr>
<td>Control-chaos</td>
<td>7</td>
<td>.862</td>
<td>1.35</td>
</tr>
<tr>
<td>Efficiency-inefficiency</td>
<td>6</td>
<td>.840</td>
<td>1.14</td>
</tr>
<tr>
<td>Enjoyment-task specific</td>
<td>6</td>
<td>.912</td>
<td>1.20</td>
</tr>
<tr>
<td>Engaging-disengaging</td>
<td>6</td>
<td>.848</td>
<td>1.19</td>
</tr>
<tr>
<td>Fulfills needs-creates needs</td>
<td>6</td>
<td>.856</td>
<td>1.40</td>
</tr>
</tbody>
</table>

Pretest 2A: Test of Opposing Constructs

The goal of Pretest 2A was to explore how consumers understood the base statements and their corresponding opposites. More specifically, the survey sought to confirm that respondents viewed the opposing constructs as statements at odds with each other. Respondents were
instructed to complete an open-ended statement that described a paradox people might experience when using technology-based self-services, for example,

"Some users say that TBSS give them the power to be in control, but other users…"

Respondents were free to fill in any response they felt appropriate.

Data was collected for the Control-Chaos, Efficiency-Inefficiency, Competence-Incompetence, Enjoyment-Functional, and Fulfill needs-Create needs paradoxes. The paradoxes were divided into their positive and negative aspects, resulting in ten different aspects, to which the responses were then matched. Additional classifications were added if the responses did not fit within a paradox.

**Results.** This study was conducted with a sample of 136 college-age students at a large southern university. The sample was collected from an undergraduate marketing research participant pool. The average age of the participants was 21; 58.1% were male and 41.9% were female. Table 9 provides an overview of the responses and the rate of occurrence for each response across the top.

The majority of the responses indicated the expected opposing paradox item, as shown in Table 9. The two Enjoyment statements did not perform as anticipated, although task-specific responses were indicated in a fair number of cases (11.0% for Enjoyment1 and 14.7% for Enjoyment2). The majority of the responses for Enjoyment1 indicated a lack of control as the opposite of fun; the majority of responses for Enjoyment2 indicated unpleasant as the opposite of pleasant. Upon further consideration, it was decided that the Enjoyment-Task paradox is unique, because the two items are not truly opposites. Although task-specific is not the opposite of enjoyment, it is still possible that people can view these aspects of technology as paradoxical. Therefore, these items were retained for further analysis, although they will be considered for elimination at a later stage. Table 10 provides representative comments.

Overall the majority of the items performed as expected, which confirms that the opposing statements were viewed as true opposites for all but the Enjoyment items. An additional strength of this pretest is that the open-ended responses served to further refine the measurement instrument. Specifically, to better capture the contradictory aspects of the statements, the actual terminology of the respondents was used to refine the scale items.

**Summary.** In conjunction, the study and pretests described in this section achieved the first research objective—identify the types of technology paradoxes and develop items that capture the different aspects of each type. This work becomes the foundation for achieving the second research objective—develop methods to capture the experience of paradox. Achieving the second research objective requires two main steps. First, a method that captures the opposing evaluations of technology must be developed. Then a method must be derived to measure the conflict experienced as a result.
Table 9: Frequency of Open Ended Responses

<table>
<thead>
<tr>
<th>Coding Categories</th>
<th>Creates needs</th>
<th>Efficiency</th>
<th>Competence</th>
<th>Control1</th>
<th>Control2</th>
<th>Enjoyment1</th>
<th>Enjoyment2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fulfills needs</td>
<td>34.6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creates needs</td>
<td>1.5%</td>
<td>0.7%</td>
<td>2.2%</td>
<td>4.4%</td>
<td>4.4%</td>
<td>0.7%</td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td>22.8%</td>
<td>1.5%</td>
<td>0.7%</td>
<td>0.7%</td>
<td>8.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inefficiency</td>
<td>61.0%</td>
<td>6.6%</td>
<td>2.2%</td>
<td>13.2%</td>
<td>14.7%</td>
<td>4.4%</td>
<td></td>
</tr>
<tr>
<td>Competence</td>
<td>1.5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incompetence</td>
<td>0.7%</td>
<td>10.3%</td>
<td>63.5%</td>
<td>8.8%</td>
<td>16.2%</td>
<td>20.6%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Control</td>
<td>16.9%</td>
<td>0.7%</td>
<td></td>
<td>1.5%</td>
<td>0.7%</td>
<td></td>
<td>5.2%</td>
</tr>
<tr>
<td>Chaos</td>
<td>0.7%</td>
<td>16.9%</td>
<td>17.5%</td>
<td>60.3%</td>
<td>44.1%</td>
<td>27.9%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Enjoyment</td>
<td>2.9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task Specific</td>
<td>0.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11.0%</td>
<td>14.7%</td>
</tr>
<tr>
<td>Assimilation</td>
<td>4.4%</td>
<td>8.1%</td>
<td></td>
<td>2.2%</td>
<td>4.4%</td>
<td>8.1%</td>
<td></td>
</tr>
<tr>
<td>Engaging</td>
<td>0.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disengaging</td>
<td>0.7%</td>
<td>3.7%</td>
<td>0.7%</td>
<td>9.6%</td>
<td>2.9%</td>
<td>5.9%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Pleasant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.7%</td>
</tr>
<tr>
<td>Unpleasant</td>
<td>1.5%</td>
<td>0.7%</td>
<td></td>
<td></td>
<td>0.7%</td>
<td>10.3%</td>
<td>22.8%</td>
</tr>
<tr>
<td>Dependence</td>
<td>0.7%</td>
<td></td>
<td></td>
<td>4.4%</td>
<td>0.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harmful</td>
<td>1.5%</td>
<td></td>
<td></td>
<td>1.5%</td>
<td>14.7%</td>
<td>1.5%</td>
<td>18.4%</td>
</tr>
<tr>
<td>Inconvenient</td>
<td>0.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freedom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beneficial</td>
<td>8.8%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>2.9%</td>
<td>1.5%</td>
<td>2.2%</td>
<td>2.2%</td>
<td>3.7%</td>
<td>2.9%</td>
<td>3.7%</td>
</tr>
</tbody>
</table>

*Columns do not add up to 100% due to rounding

Objective 2: Identification of Method to Capture Paradox

Literature Review, Study 1, and Pretest 1 focused on developing individual statements that represented opposing sides of paradoxes. Multiple positive and negative statements were designed for each proposed paradox. The next step is to better understand how to position these statements in such a way as to capture the two conditions of paradox: the recognition of opposing evaluations and the resulting feeling of tension. Thus identifying a method for capturing paradox consists of two issues. First, a method for capturing the opposing evaluations must be identified. Second, a method for measuring the internal tensions caused by the opposing evaluations must be identified. This section delineates the challenges associated with addressing each of these issues and briefly describes the related pretests, while the following section highlights the individual pretests and their outcomes.
Table 10: Examples of Representative Comments

<table>
<thead>
<tr>
<th>Coding categories</th>
<th>Respondent quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fulfills needs</td>
<td>&quot;Believe that it simplifies their life and creates shopping convenience.&quot;</td>
</tr>
<tr>
<td>Creates needs</td>
<td>&quot;That a lot of work is required to use TBSS effectively.&quot;</td>
</tr>
<tr>
<td>Efficiency</td>
<td>&quot;(People) find that technology is easier and quicker so they have more time for themselves.&quot;</td>
</tr>
<tr>
<td>Inefficiency</td>
<td>&quot;It takes more time to figure out how to use a TBSS than it would to do it the old school way.&quot;</td>
</tr>
<tr>
<td>Competence</td>
<td>&quot;(People) believe that they are worth using and that they will only get better as we continue to refine them.&quot;</td>
</tr>
<tr>
<td>Incompetence</td>
<td>&quot;People aren't familiar with up to date technology (such as the older generation) and have a difficult time.&quot;</td>
</tr>
<tr>
<td>Control</td>
<td>&quot;(People) feel like they allow them to have more control.&quot;</td>
</tr>
<tr>
<td>Chaos</td>
<td>&quot;They have malfunctions or their systems are down.&quot;</td>
</tr>
<tr>
<td>Enjoyment</td>
<td>&quot;(People) say they are fun and simple to use.&quot;</td>
</tr>
<tr>
<td>Task Specific</td>
<td>&quot;They are functional, so if fun is short for functional then yes they are.&quot;</td>
</tr>
<tr>
<td>Assimilation</td>
<td>&quot;People want to talk to real people, not machines.&quot;</td>
</tr>
<tr>
<td>Engaging</td>
<td>&quot;It's just an easier way to do a chore that must be done.&quot;</td>
</tr>
<tr>
<td>Disengaging</td>
<td>&quot;It takes away the experience of actually shopping.&quot;</td>
</tr>
<tr>
<td>Pleasant</td>
<td>&quot;(People) feel they help create a better shopping environment.&quot;</td>
</tr>
<tr>
<td>Unpleasant</td>
<td>&quot;That TBSS causes stress and is not enjoyable.&quot;</td>
</tr>
<tr>
<td>Dependence</td>
<td>&quot;The customer feels that they are reliant on the TBSS for daily tasks.&quot;</td>
</tr>
<tr>
<td>Harmful</td>
<td>&quot;That they more often than not provide pain/frustration instead.&quot;</td>
</tr>
<tr>
<td>Inconvenient</td>
<td>&quot;They are inconvenient.&quot;</td>
</tr>
<tr>
<td>Beneficial</td>
<td>&quot;(People) say that TBSSs are responsible for the organization of their lives.&quot;</td>
</tr>
<tr>
<td>Other</td>
<td>&quot;I don't know.&quot;</td>
</tr>
</tbody>
</table>

The first issue, measuring the opposing evaluations associated with paradox, was addressed using two basic techniques. The first technique involved pairs of paradoxical statements, for which participants expressed their agreement with one of or both sides of the paradox. Agreement with both statements indicated a pair of opposing evaluations. The second technique involved individual statements, with which respondents expressed agreement or disagreement. The individual statements were then paired to see if there were opposing evaluations.

The second issue involves capturing the tensions consumers experience as a result of identifying opposing evaluations. This issue was addressed by adding follow-up questions to the above techniques for identifying opposing evaluations. The goal of the follow-up questions was to measure the levels of tension associated with opposing evaluations. For the paired-statements technique, respondents indicating agreement with both sides were chosen for follow-up questions. For the independent-statements technique, respondents indicating agreement with pre-identified opposing pairs were selected for follow-up questions. In addition to this two-step method, respondents were also asked directly about the presence of paradox in the paired-statements technique. For example, respondents indicated agreement or disagreement with the statement "Do the following pairs of statements reflect a paradox that you have experienced?"

Finally, the pretests were also designed to assess the nomological network related to paradoxes. Traditional ambivalence measures were tested using non-opposing statements to demonstrate that paradox is distinct from ambivalence. It is expected that when evaluations are not viewed as
contradictory, the levels of conflict will be lower. So this test could serve as proof that the evaluations were in opposition.

### Table 11: Overview of Research Addressing Objective 2

<table>
<thead>
<tr>
<th>Study name</th>
<th>Short description</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest 2B-Analysis 1: Reliability of Competing Measures</td>
<td>Comparison of paired item method to individual item method</td>
<td>Overall reliabilities were in acceptable range. Cronbach's alpha for paired items ranged from .839 to .625. Cronbach's alpha for individual items ranged from .897 to .702.</td>
</tr>
<tr>
<td>Pretest 2B-Analysis 2: Comparison of 7-point versus 3-point scale for Paired Items</td>
<td>Compared the measures of paired items using a 7-point response scale and a 3-point response scale</td>
<td>Support provided for the 3-point scale for paired items. 3 of the 4 measures had strong reliabilities and showed a significant increase in number of items viewed as contradictory. Thus, the 3-point scale for paired items will be used going forward.</td>
</tr>
<tr>
<td>Pretest 3-Analysis 1: Evaluation of Neutral Point on Paired Statement Scale</td>
<td>Analysis of impact of adding &quot;Don't know&quot; choice to paired statement scale</td>
<td>Substantive reduction in percentage of paired statements viewed as paradox provided strong support that the mid-point on previous 3-point scale did not necessarily indicate paired statements were viewed as contradictory. Thus, the revised 4-point response scale for paired statement measure will be used going forward.</td>
</tr>
<tr>
<td>Pretest 3-Analysis 2: Two-Step Method for Capturing Internal Tensions Across Indicators</td>
<td>Established a Two-step Method for capturing internal tensions associated with condition two of paradox</td>
<td>Indicated that the Two-Step Method for paradox identification was more stringent than the Direct Questioning approach at the indicator level. Future studies will continue to refine the Two-Step Method.</td>
</tr>
<tr>
<td>Pretest 3-Analysis 3: Comparison of Scales Between Two-Step Method and Direct Questioning</td>
<td>Tested validity of Two-Step Method against Direct Question approach</td>
<td>Two-Step Method was found to be more stringent than the Direct Question approach at the paradox level, while still producing strong accuracy. Future studies will continue to refine the Two-Step Method.</td>
</tr>
<tr>
<td>Pretest 3-Analysis 4: Comparison of Measured Internal Tensions between Opposing and Non-opposing Evaluations</td>
<td>Analyzed felt tensions when statements were viewed as contradictory versus when respondents indicated agreement with only one side of the opposing statements</td>
<td>Results indicate that internal tensions were significantly lower when evaluations were not in opposition. This provides support that the Two-Step Method is properly measuring the internal tensions associated with paradox. Future studies will continue to refine the Two-Step Method.</td>
</tr>
<tr>
<td>Pretest 4-Analysis 1: Two-Step Method, Comparison of Paired Items versus Individual Items Across Indicators</td>
<td>Compared paired statement method to individual item method across indicators</td>
<td>Provided support that the range of paradox occurrence was better for the individual statement method. Future studies will continue with individual statements.</td>
</tr>
<tr>
<td>Pretest 4-Analysis 2: Two-Step Method, Comparison of Paired Items versus Individual Items Across Scales</td>
<td>Compared paired statement method to individual item method at the paradox level, requiring either 1 or more items to indicate presence of a specific paradox versus 2 or more items to indicate presence of a specific paradox</td>
<td>Provided support that the range of paradox occurrence was better for the individual statement method when 2 or more paradoxes were required to be present. Future studies will continue with individual statements.</td>
</tr>
</tbody>
</table>
Pretest 2B: Comparison of Paired Statements to Individual Statements in Capturing Opposing Evaluations

Pretest 2B had two goals. First, it compared the individual statements with the paired statements to determine which better captured the presence of opposing evaluations. Correspondingly, the paradoxical statements were separated into two individual statements and respondents indicated the extent to which they agreed with each statement on a 7-point scale (Strongly Agree to Strongly Disagree). The second goal was to simplify the measurement procedure for the paired statements by reducing the 7-point scale previously used (Figure 3) to a 3-item scale (Strongly agree with statement A, Strongly agree with statement B, Strongly agree with both statements; see Figure 4).

Please answer the following questions based on your experiences with TBSSs.

<table>
<thead>
<tr>
<th>Statement A</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Somewhat Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Somewhat Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Statement B</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBSSs always seem to take longer than I expected</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Using TBSSs help me save time</td>
</tr>
</tbody>
</table>

Figure 3: Pair Statement Question Format

Please answer the following questions based on your experiences with TBSSs.

<table>
<thead>
<tr>
<th>Statement A</th>
<th>Strongly Agree</th>
<th>Strongly Agree with both statements</th>
<th>Strongly Disagree</th>
<th>Statement B</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBSSs always seem to take longer than I expected</td>
<td></td>
<td></td>
<td></td>
<td>Using TBSSs help me save time</td>
</tr>
</tbody>
</table>

Figure 4: Three-Item Measure for Paired Statements

As stated above, the first goal of this pretest was to consider alternative methods for identifying items that respondents viewed as contradictory. Prior to this pretest, opposing items were placed in pairs and respondents indicated if they agreed with either one statement or both statements. But the marketplace rarely presents consumers with opposing viewpoints and then asks them how much conflict they feel as a result; therefore, individual statements featuring only one side of the paradox were tested. Respondents first indicated their agreement with individual statements. If the respondent agreed with both sides of an opposing set of statements, the first condition of paradox was fulfilled. (See Figure 3 and Figure 5 for sample question formats.) The assumption is that posing one-sided questions, and then asking follow-up questions that highlight opposing evaluations, more closely represents how consumers process information in the marketplace.

Reliabilities were calculated to test the internal consistency of both approaches. Then the number of opposing evaluations for both types of statements, paired or individual, was evaluated to determine which technique captured a larger number of contradictory evaluations (Pretest 2B-Analysis 1). This number was calculated by comparing the responses indicating high levels of agreement ("Agree" or "Strongly Agree") for both statements of a pre-identified pair. So, for
example, if a respondent indicated agreement ("Agreed" or "Strongly agreed") with both Efficiency1 and Inefficiency1, then the response was contradictory for that respondent. The average number of opposing evaluations by type was then calculated.

<table>
<thead>
<tr>
<th>Please answer the following questions based on your experiences with TBSSs.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Statement A</strong></td>
</tr>
<tr>
<td>Using TBSSs help me save time</td>
</tr>
<tr>
<td>TBSSs always seem to take longer than I expected</td>
</tr>
</tbody>
</table>

**Figure 5: Individual Statement Format**

The second goal of this pretest was to reduce the 7-point scale to a 3-point scale. Earlier measures used to capture opposing evaluations of statements in paradoxical pairs appeared to be somewhat taxing on respondents. As a result, the previous 7-point scale was reduced to a 3-point scale (see Figure 4), by which respondents indicate the extent to which they agree with Statement A (Completely agree with statement A), agree with Statement B (Completely agree with statement B) or agree with both statements (Agree with Statements A and B). The third response category represents a situation in which a respondent believes equally in both opposing statements. By selected the middle point on the scale, respondents indicated that they were equally divided between the two statements and thus had opposing evaluations. Reliability was calculated to compare the internal consistency of these approaches (Pretest 2B-Analysis 2). These statements were also examined for their ability to capturing opposing evaluations.

To further reduce respondent fatigue, this pretest focused on a sub-group of only four technology paradoxes: Control-Chaos, Competence-Incompetence, Enjoy-Task and Efficiency-Inefficiency. Responding to the paired items is a fairly complex task; therefore, utilizing a reduced number of paradoxes eased the burden on the respondents. This reduction was designed to keep respondents focused on the task at hand and engaged in the survey.

**Results.** Like Pretest 2A, this pretest, Pretest 2B, used a between-subjects design and was conducted with a sample of 136 college age students at a large southern university. The sample was collected from an undergraduate marketing research participant pool. The average age of participants was 21; 58.1% were male and 41.9% were female.

**Pretest 2B-Analysis 1: Reliability of Competing Measures.** The first goal of this study was to compare two approaches (individual versus paired statements) to determine which format was better suited for capturing opposing evaluations. First, the reliabilities were calculated to compare the internal consistency of the approaches. For both approaches, reliabilities of the differing paradoxes were generally above the acceptable limit. For the individual statements, reliabilities ranged from a high of .897 to a low of .702 (see Table 12 for a complete list of reliabilities). As mentioned previously, for the paired-statements approach, one scale (Competence-Incompetence) fell below the .700 cut-off for reliability.
Table 12: Reliabilities of Individual Statements and Pair Statements

<table>
<thead>
<tr>
<th>Individual statements</th>
<th># of statements</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>9</td>
<td>.878</td>
</tr>
<tr>
<td>Chaos</td>
<td>7</td>
<td>.743</td>
</tr>
<tr>
<td>Competence</td>
<td>4</td>
<td>.785</td>
</tr>
<tr>
<td>Incompetence</td>
<td>3</td>
<td>.734</td>
</tr>
<tr>
<td>Enjoy</td>
<td>5</td>
<td>.897</td>
</tr>
<tr>
<td>Task</td>
<td>3</td>
<td>.702</td>
</tr>
<tr>
<td>Efficiency</td>
<td>7</td>
<td>.753</td>
</tr>
<tr>
<td>Inefficiency</td>
<td>6</td>
<td>.742</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Paired Items</th>
<th># of statements</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control-Chaos</td>
<td>6</td>
<td>.799</td>
</tr>
<tr>
<td>Competence-Incompetence</td>
<td>3</td>
<td>.625</td>
</tr>
<tr>
<td>Enjoy-Task</td>
<td>6</td>
<td>.839</td>
</tr>
<tr>
<td>Efficiency-Inefficiency</td>
<td>5</td>
<td>.815</td>
</tr>
</tbody>
</table>

Second, the incidences of opposing evaluations for each approach were compared. For the individual statements, the statements were paired into pre-identified sets (i.e., Efficiency1 and Inefficiency1). If respondents indicated agreement ("Agree" or "Strongly Agree") for both statements in the pair, the statements were classified as opposing evaluations. The number of opposing evaluations was averaged across the paradox types. For the paired statements, respondents who choose B ("Strongly Agree with both Statements") indicated opposing evaluations for that indicator. Again, the number of opposing evaluations was averaged across the paradox types. Table 13 shows that neither technique is superior in identifying opposing evaluations.

Table 13: Opposing Evaluations for Individual Statements vs. Paired Statements

<table>
<thead>
<tr>
<th>Individual statements</th>
<th># of statements</th>
<th>Average # opposing evaluations listed</th>
<th>Paired Items</th>
<th># of statements</th>
<th>Average # opposing evaluations listed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control-Chaos</td>
<td>7</td>
<td>1.73</td>
<td>6</td>
<td>1.80</td>
<td></td>
</tr>
<tr>
<td>Competence-Incompetence</td>
<td>3</td>
<td>0.99</td>
<td>3</td>
<td>0.99</td>
<td></td>
</tr>
<tr>
<td>Enjoy-Task</td>
<td>5</td>
<td>2.50</td>
<td>6</td>
<td>2.15</td>
<td></td>
</tr>
<tr>
<td>Efficiency-Inefficiency</td>
<td>6</td>
<td>1.42</td>
<td>5</td>
<td>1.71</td>
<td></td>
</tr>
</tbody>
</table>

This pretest indicates the need for additional tests. While both individual statements and paired statements seem appropriate for measuring opposing evaluations, this pretest did not clearly identify a superior approach. In addition, up to this point, the pretests have been designed to capture only the first condition of paradox: opposing evaluations. An obvious next step is to add a method for capturing the second condition: feelings of tension. This additional requirement is addressed by Pretests 3 and 4.

Pretest 2B-Analysis 2: Comparison of 7-point versus 3-point scale for Paired Items. The comparison of the 3- and 7-point scales for measuring paired items demonstrated that the simpler 3-point scale was nearly as effective as the 7-point scale. As shown in Table 14, all reliabilities were above the cut-off point of .7, except for Competence-Incompetence, which fell slightly below at .625. This finding indicates that further refinement of the competence-incompetence
statements is needed. In addition, as shown in Table 13, the average number of statements that were viewed as conflicting increased for three of the scales and remained constant for one. Thus, there is a greater likelihood of identifying a paradox if it is present. These two findings strongly support the use of the 3-point scale.

One obvious problem that emerged in the comparison of the 3- and 7-point scales is that the meaning of the middle point of the scale can cause confusion. The assumption was that this midpoint would represent agreement with both statements; however, it could also represent a lack of agreement with either statement. As a result, Pretest 3 corrects this shortcoming.

Table 14: Comparison of 7-point Scale and 3-point Scale

<table>
<thead>
<tr>
<th>Paradox</th>
<th>7-point Scale</th>
<th></th>
<th>3-point Scale</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of items</td>
<td>Reliability</td>
<td>Average opposing evaluations</td>
<td># of items</td>
</tr>
<tr>
<td>Control-chaos</td>
<td>6</td>
<td>.862</td>
<td>1.35</td>
<td>6</td>
</tr>
<tr>
<td>Competent-incompetent</td>
<td>3</td>
<td>.805</td>
<td>1.01</td>
<td>3</td>
</tr>
<tr>
<td>Enjoyment-task specific</td>
<td>6</td>
<td>.912</td>
<td>1.20</td>
<td>6</td>
</tr>
<tr>
<td>Efficiency-inefficiency</td>
<td>5</td>
<td>.840</td>
<td>1.14</td>
<td>5</td>
</tr>
</tbody>
</table>

Pretest 3: Adding a Neutral Option to Paired Statements and Capturing Conflicting Tensions

The results from the earlier pretests indicated several issues with the paired items, two of which this pretest attempts to address. First, as identified in Pretest 2B, a neutral category has to be added to the scale. Second, the paired statements do not capture the tension associated with opposing evaluations, which could serve as validation for this new Two-step Method.

In regard to the first issue, the assumption in earlier sections was that the mid-point of the paired-items scale indicated a paradox. Upon further consideration, it became clear that the midpoint could represent equal agreement with both statements, or it could indicate neutrality or a lack of agreement with either statement. To correct this shortcoming, this pretest asked respondents to rate their agreement with the paired statements, but provided four choices: "Strongly agree with Statement A", "Strongly Agree with Statement B", "Strongly Agree with Both Statements", and "Not sure". This modification allowed the pretest to differentiate between those who agreed with both statements and those who did not agree with either statement or were not sure how they felt. To determine how often respondents chose the middle option when they did not agree with both statements, the results from this pretest were compared with the results from Pretest 2B. Specifically, the change in the percentage of times the middle option was chosen when there was a neutral option available versus when one was not was calculated (see Pretest 3-Analysis 1).

The second issue involves extending the method to explicitly recognize the second condition of paradox—given opposing evaluations, did internal tensions arise. Pretest 3 is the first to measure this tension. To capture this second condition, respondents who indicated agreement with both statements were then asked to rate the level of conflict they felt with regard to the statements on a 2-point scale ("Highly conflicted about how to reconcile these statements," "Not at all conflicted about these statements"). The presence of paradox was calculated based on those respondents who indicated conflict about the statements (see Pretest 3-Analysis 2).
As there is very little prior research reporting the expected rate of paradox, this Two-Step Method was compared with two different measurements. First, as a possible alternative, a Direct Question approach was developed. The Direct Question approach presented respondents with two opposing statements and directly asked if the statements represented a paradox (see Figure 6) using a 2-point scale ("Yes, it represents a paradox related to TBSS," "No, it does not represent a paradox related to TBSS"). The number of paradoxes identified by each approach was compared to determine which approach was most useful in capturing paradox. In addition, it was anticipated that there would be some consistency between the approaches in terms of which items were viewed as paradox. Cross-tabulations were used to compare those items that indicated paradox and those that did not (see Pretest 3-Analysis 3).

| Please indicate which of the following pairs of statements you feel represent paradoxes related to TBSS | Yes | No |
| I find using TBSSs exciting…The strength of TBSSs is that they are very task specific | ○ | ○ |

**Figure 6: Direct Question Survey Format**

As the purpose of this measure is to capture the tensions caused by paradox, it seemed prudent to include a measure of tension when paradox is not present as well. In order to establish a baseline for comparison, this pretest examined the level of tension when items were not contradictory or when evaluations of statements were unidirectional. This examination required identifying pairs for which one agreement dominated, and then measuring the tension felt using four ambivalence measures (see Figure 7). Tension levels were compared between situations in which a paradox was identified and situations in which there was no paradox. Lower tensions in the no-paradox situations imply that the Two-Step Method represents the second condition of paradox (see Pretest 3-Analysis 4).

| In an earlier section, when looking at the following choices "I find using TBSSs fun" VS. "I choose to use TBSSs based on their ability to solve problems" you chose "I find using TBSSs fun". Please explain how answering that question made you feel. |
|---|---|---|---|---|---|---|---|
| not at all conflicted | 1 | 2 | 3 | 4 | 5 | 6 | 7 | completely conflicted |
| not at all indecisive | 1 | 2 | 3 | 4 | 5 | 6 | 7 | completely indecisive |
| not at all tense | 1 | 2 | 3 | 4 | 5 | 6 | 7 | completely tense |
| not at all ambivalent | 1 | 2 | 3 | 4 | 5 | 6 | 7 | completely ambivalent |

**Figure 7: Unidirectional Question Survey Format**

**Results.** This study was conducted with a sample of 425 college age students at a large southern university. The sample was collected from an undergraduate marketing research participant pool. The average age of participants was 21.1; 42.4% were male and 56.9% were female.

**Pretest 3-Analysis 1: Evaluation of Neutral Point on Paired Statement Scale.** As explained above, the first step for Pretest 3 was to analyze how respondents reacted to the availability of a fourth choice, "Don't know". As shown in Table 15, respondents selected "Agree with both statements" for 12.7% to 24.8% of the responses, whereas in the previous pretest the range was 20.8% to 50.7%. Thus the earlier pretest forced respondents to choose a non-neutral option, and agreeing with both statements seemed to be the favored choice.
Table 15: Respondents Selecting Neutral Option When Available

<table>
<thead>
<tr>
<th>Paired Statements</th>
<th>% who chose &quot;Not sure&quot;</th>
<th>% who chose &quot;I agree with both statements&quot;</th>
<th>% who chose &quot;I agree with both statements&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competence-Incompetence 1</td>
<td>14.6%</td>
<td>15.1%</td>
<td>28.5%</td>
</tr>
<tr>
<td>Competence-Incompetence 2</td>
<td>16.2%</td>
<td>16.9%</td>
<td>31.9%</td>
</tr>
<tr>
<td>Competence-Incompetence 3</td>
<td>10.9%</td>
<td>8.5%</td>
<td>38.9%</td>
</tr>
<tr>
<td>Control-Chaos 1</td>
<td>16.5%</td>
<td>14.1%</td>
<td>27.1%</td>
</tr>
<tr>
<td>Control-Chaos 2</td>
<td>16.3%</td>
<td>15.5%</td>
<td>22.9%</td>
</tr>
<tr>
<td>Control-Chaos 3</td>
<td>21.1%</td>
<td>19.6%</td>
<td>39.6%</td>
</tr>
<tr>
<td>Control-Chaos 4</td>
<td>17.9%</td>
<td>17.1%</td>
<td>27.1%</td>
</tr>
<tr>
<td>Control-Chaos 5</td>
<td>16.9%</td>
<td>15.5%</td>
<td>32.6%</td>
</tr>
<tr>
<td>Control-Chaos 6</td>
<td>22.4%</td>
<td>21.4%</td>
<td>N/A</td>
</tr>
<tr>
<td>Control-Chaos 7</td>
<td>19.8%</td>
<td>16.2%</td>
<td>30.6%</td>
</tr>
<tr>
<td>Efficiency-Inefficiency 1</td>
<td>12.7%</td>
<td>11.5%</td>
<td>25.7%</td>
</tr>
<tr>
<td>Efficiency-Inefficiency 2</td>
<td>15.3%</td>
<td>19.4%</td>
<td>36.8%</td>
</tr>
<tr>
<td>Efficiency-Inefficiency 3</td>
<td>14.3%</td>
<td>14.0%</td>
<td>32.6%</td>
</tr>
<tr>
<td>Efficiency-Inefficiency 4</td>
<td>13.8%</td>
<td>12.6%</td>
<td>29.9%</td>
</tr>
<tr>
<td>Efficiency-Inefficiency 5</td>
<td>15.8%</td>
<td>11.0%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Efficiency-Inefficiency 6</td>
<td>13.7%</td>
<td>14.0%</td>
<td>20.8%</td>
</tr>
<tr>
<td>Enjoyment-Task Specific 1</td>
<td>13.8%</td>
<td>31.1%</td>
<td>50.7%</td>
</tr>
<tr>
<td>Enjoyment-Task Specific 2</td>
<td>21.1%</td>
<td>19.7%</td>
<td>40.3%</td>
</tr>
<tr>
<td>Enjoyment-Task Specific 3</td>
<td>24.8%</td>
<td>21.2%</td>
<td>42.4%</td>
</tr>
<tr>
<td>Enjoyment-Task Specific 4</td>
<td>21.7%</td>
<td>21.5%</td>
<td>37.5%</td>
</tr>
<tr>
<td>Enjoyment-Task Specific 5</td>
<td>14.1%</td>
<td>30.6%</td>
<td>43.8%</td>
</tr>
</tbody>
</table>

This finding is further supported by the results presented in Table 16, which show a substantial drop in the average number of opposing evaluations from Pretest 2A to Pretest 3. For this group of respondents, the middle option did not represent opposing evaluations, but rather a lack of agreement with either extreme. It appears that the addition of the neutral "Don't know" choice strengthens the measure and clarifies which statements are viewed as truly contradictory.

Table 16: Average Number of Opposing Evaluations

<table>
<thead>
<tr>
<th>Paradox</th>
<th>Average # of opposing evaluations listed</th>
<th>Pretest 2B</th>
<th>Pretest 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control-Chaos**</td>
<td>2.06</td>
<td></td>
<td>1.21</td>
</tr>
<tr>
<td>Competence-Incompetence**</td>
<td>0.99</td>
<td></td>
<td>0.41</td>
</tr>
<tr>
<td>Enjoy-Task**</td>
<td>2.10</td>
<td></td>
<td>1.24</td>
</tr>
<tr>
<td>Efficiency-Inefficiency*</td>
<td>1.70</td>
<td></td>
<td>.82</td>
</tr>
</tbody>
</table>

*Significant at the .05 level
**Significant at the .001 level

Pretest 3-Analysis 2: Two-Step Method for Capturing Internal Tensions Across Indicators. The second goal of Pretest 3 was to attempt to capture the second condition of paradox: internal tensions resulting from contradictory evaluations. In addition to addressing the second condition, integrating this measure provides a means of validating the Two-Step Method. As paradox has not previously been measured quantitatively, this validation is difficult. However, qualitative research has shown that when asked about technology, respondents use words that indicate a paradoxical experience about 8% of the time. These responses occur
without specific probing; therefore, that percentage can be viewed as a rough lower estimate of the number of technology paradoxes one can expect to be identified. At the same time, this phenomenon is not well documented; therefore, the assumption is that it is not so common that views of technology would be dominated by it.

In comparing the two approaches for measuring paradox discussed earlier, the Two-Step Method advocated by this essay and the 1-step Direct Question approach, the former seems to uncover paradoxes as expected given the current literature (see Table 17). For individual statements, respondents using the Two-Step Method indicated that any given statement was a paradox, on average, 7.28% of the time (individual statements ranged from 5% to 10%). In contrast, respondents using the Direct Question approach seemed to overstate the presence of paradox, indicating that any given statement was a paradox, on average, 55.48% of the time (individual statements ranged from 42.6% to 68.2%).

**Table 17: Occurrence of Paradox**

<table>
<thead>
<tr>
<th></th>
<th>2 step method</th>
<th>Direct Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competence-Incompetence 1</td>
<td>7.4%</td>
<td>68.2%</td>
</tr>
<tr>
<td>Competence-Incompetence 2</td>
<td>8.6%</td>
<td>53.2%</td>
</tr>
<tr>
<td>Competence-Incompetence 3</td>
<td>8.6%</td>
<td>58.1%</td>
</tr>
<tr>
<td>Competence-Incompetence 4</td>
<td>5.0%</td>
<td>56.2%</td>
</tr>
<tr>
<td>Control-Chaos 1</td>
<td>7.9%</td>
<td>52.5%</td>
</tr>
<tr>
<td>Control-Chaos 2</td>
<td>7.9%</td>
<td>53.2%</td>
</tr>
<tr>
<td>Control-Chaos 3</td>
<td>10.0%</td>
<td>54.6%</td>
</tr>
<tr>
<td>Control-Chaos 4</td>
<td>6.0%</td>
<td>49.2%</td>
</tr>
<tr>
<td>Control-Chaos 5</td>
<td>8.8%</td>
<td>61.4%</td>
</tr>
<tr>
<td>Control-Chaos 6</td>
<td>9.9%</td>
<td>62.6%</td>
</tr>
<tr>
<td>Control-Chaos 7</td>
<td>8.4%</td>
<td>61.6%</td>
</tr>
<tr>
<td>Efficiency-Inefficiency 1</td>
<td>6.5%</td>
<td>58.6%</td>
</tr>
<tr>
<td>Efficiency-Inefficiency 2</td>
<td>6.0%</td>
<td>50.4%</td>
</tr>
<tr>
<td>Efficiency-Inefficiency 3</td>
<td>6.7%</td>
<td>63.1%</td>
</tr>
<tr>
<td>Efficiency-Inefficiency 4</td>
<td>8.1%</td>
<td>61.6%</td>
</tr>
<tr>
<td>Efficiency-Inefficiency 5</td>
<td>5.3%</td>
<td>59.3%</td>
</tr>
<tr>
<td>Efficiency-Inefficiency 6</td>
<td>6.5%</td>
<td>61.4%</td>
</tr>
<tr>
<td>Enjoyment-Task Specific 1</td>
<td>5.7%</td>
<td>48.5%</td>
</tr>
<tr>
<td>Enjoyment-Task Specific 2</td>
<td>5.9%</td>
<td>43.1%</td>
</tr>
<tr>
<td>Enjoyment-Task Specific 3</td>
<td>6.0%</td>
<td>45.6%</td>
</tr>
<tr>
<td>Enjoyment-Task Specific 4</td>
<td>7.6%</td>
<td>42.6%</td>
</tr>
</tbody>
</table>

Pretest 3-Analysis 3: Comparison of Scales Between Two-Step Method and Direct Questioning. While the numbers in the previous analysis seemed high for any individual item, these items should be considered as part of a scale. The least restrictive requirement, which would be to require only one item on the scale were required to indicate a specific paradox, would represent the least conservative approach to capturing paradox and classify the greatest number of respondents as experiencing paradox. Thus, the upper boundaries of the scales were calculated by determining the number of respondents who identified at least one item as a paradox within each set of items. The upper boundary for the Direct Question approach indicated that respondents identified at least one or more items as a paradox nearly 90% of the time or more (see Table 18), a result so high that it seems to imply that consumers were paralyzed with
indecision when confronted with technology. The Two-Step Method, while still requiring additional refinement, seems to offer better results. When the same approach was employed (at least one item indicates a paradox), the incidence of paradox ranged from 17.8% to 32.3% of the time.

Table 18: Paradox Across The Two Approaches

<table>
<thead>
<tr>
<th></th>
<th>1 or more indicators per construct</th>
<th>Two-Step Method</th>
<th>Direct Question</th>
<th>True Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control-Chaos</td>
<td></td>
<td>148 (32.3%)</td>
<td>374 (94.2%)</td>
<td>95.83%</td>
</tr>
<tr>
<td>Competence-Incompetence</td>
<td></td>
<td>73 (17.8%)</td>
<td>357 (87.1%)</td>
<td>88.34%</td>
</tr>
<tr>
<td>Enjoy-Task</td>
<td></td>
<td>103 (25.3%)</td>
<td>361 (88.7%)</td>
<td>90.41%</td>
</tr>
<tr>
<td>Efficiency-Inefficiency</td>
<td></td>
<td>96 (24.4%)</td>
<td>359 (91.1%)</td>
<td>95.95%</td>
</tr>
</tbody>
</table>

To verify the correspondence between the two approaches, the "True Positive" rate also was calculated, indicating the percentage of responses classified as experiencing paradox by both methods. This rate was calculated by dividing the number of true positives by the sum of true positives and false positives. As Table 18 shows, the Two-Step Method correctly identified statements as representing a paradox 88.34% to 95.85% of the time. This lends further support to the validity of the Two-Step Method.

Pretest 3-Analysis 4: Comparison of Measured Internal Tensions between Opposing and Non-opposing Evaluations. To further corroborate the validity of the Two-Step Method, a fourth analysis of Pretest 3 compared the levels of conflict associated with paradoxical evaluations and the levels of conflict associated with non-opposing, or unidirectional, evaluations. The levels of conflict for non-opposing evaluations were assessed by asking follow-up questions when respondents agreed with only one statement in a pair of statements. As to be expected, the 4-item ambivalence scale averaged 3.04, which is well below the neutral point of 4, ranging from a low of 1.93 to a high of 3.84 (see Table 19). This finding indicates that respondents did not feel tension when they did not hold opposing evaluations of a given aspect of technology.

To directly compare the tension experienced for opposing and non-opposing evaluations, the ambivalence scales were condensed to match the two-point conflict measures used in the paradox measure, such that evaluations at the mid-point and below were coded as not conflicting and those above the mid-point were coded as conflicting. The average level of felt tensions was significantly lower in the condition with non-opposing evaluations versus the condition with opposing evaluations on all four scales (see Table 20).

Pretest 3 sought to correct several issues from previous studies. First, it improved the paired-statement measurements by adding a neutral choice. The addition of the choice allowed respondents to indicate a lack of agreement, neutrality or uncertainty with the paired statements, which significantly reduced the chance that those who did not feel conflicted about their technology evaluations would be included in the paradox measure. Second, this pretest extended the method to include a measurement of the second condition of paradox, the internal tension associated with conflicting emotions. This second modification was validated against the Direct Questions method of measuring paradox, which produced percentages that were much higher than the literature would indicate. The method was also validated against a condition in which
evaluations were not in conflict, supporting the assumption that opposing evaluations lead to greater internal conflict.

Table 19: Internal Tensions Related to Unidirectional Technology Evaluations

<table>
<thead>
<tr>
<th></th>
<th>Average ambivalence</th>
<th>Average ambivalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competence 1</td>
<td>3.14</td>
<td>Incompetence 1</td>
</tr>
<tr>
<td>Competence 2</td>
<td>2.98</td>
<td>Incompetence 2</td>
</tr>
<tr>
<td>Competence 3</td>
<td>2.81</td>
<td>Incompetence 3</td>
</tr>
<tr>
<td>Control 1</td>
<td>3.01</td>
<td>Chaos 1</td>
</tr>
<tr>
<td>Control 2</td>
<td>2.56</td>
<td>Chaos 2</td>
</tr>
<tr>
<td>Control 3</td>
<td>3.59</td>
<td>Chaos 3</td>
</tr>
<tr>
<td>Control 4</td>
<td>2.96</td>
<td>Chaos 4</td>
</tr>
<tr>
<td>Control 5</td>
<td>3.06</td>
<td>Chaos 5</td>
</tr>
<tr>
<td>Control 6</td>
<td>2.92</td>
<td>Chaos 6</td>
</tr>
<tr>
<td>Control 7</td>
<td>2.47</td>
<td>Chaos 7</td>
</tr>
<tr>
<td>Efficiency 1</td>
<td>2.60</td>
<td>Inefficiency 1</td>
</tr>
<tr>
<td>Efficiency 2</td>
<td>3.11</td>
<td>Inefficiency 2</td>
</tr>
<tr>
<td>Efficiency 3</td>
<td>3.01</td>
<td>Inefficiency 3</td>
</tr>
<tr>
<td>Efficiency 4</td>
<td>2.87</td>
<td>Inefficiency 4</td>
</tr>
<tr>
<td>Efficiency 5</td>
<td>2.63</td>
<td>Inefficiency 5</td>
</tr>
<tr>
<td>Efficiency 6</td>
<td>3.13</td>
<td>Inefficiency 6</td>
</tr>
<tr>
<td>Enjoyment 1</td>
<td>3.04</td>
<td>Task Specific 1</td>
</tr>
<tr>
<td>Enjoyment 2</td>
<td>3.52</td>
<td>Task Specific 2</td>
</tr>
<tr>
<td>Enjoyment 3</td>
<td>3.05</td>
<td>Task Specific 3</td>
</tr>
<tr>
<td>Enjoyment 4</td>
<td>3.01</td>
<td>Task Specific 4</td>
</tr>
<tr>
<td>Enjoyment 5</td>
<td>2.85</td>
<td>Task Specific 5</td>
</tr>
</tbody>
</table>

Table 20: Tensions Resulting from Opposing Condition vs. Non-opposing Condition

<table>
<thead>
<tr>
<th></th>
<th>Average levels of felt tensions (2-point scale)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Opposing evaluations</td>
</tr>
<tr>
<td>Control-Chaos**</td>
<td>1.52</td>
</tr>
<tr>
<td>Competence-Incompetence**</td>
<td>1.60</td>
</tr>
<tr>
<td>Enjoyment-Task**</td>
<td>1.65</td>
</tr>
<tr>
<td>Efficiency-Inefficiency**</td>
<td>1.53</td>
</tr>
</tbody>
</table>

**Significant at the .0001 level

Pretest 4: Comparison of Individual Statements and Pair Statements in Capturing Paradox

Although the Two-Step Method has been established as a superior technique for capturing paradox, the question of whether statements should be paired in the survey or presented individually and then subsequently paired remains unanswered. While the paired statements have the advantage of highlighting the opposing aspects of technology-based self-service, the marketplace typically does not lay out opposing statements for consumers to consider. Instead, marketers tend to extol the positive aspects, leaving the development of opposing arguments up to the consumer. This approach rarely results in a direct side-by-side comparison; instead consumers must process the information and resolve opposing evaluations. Thus, individual
statements may better parallel real-life market situations by forcing participants to evaluate each statement individually, then evaluate conflicting statements to determine if they can be resolved.

The two techniques, paired versus individual statements, were operationalized in a manner similar to that used in Pretest 2B. For paired statements, respondents were shown a pair of opposing statements about an aspect of technology-based self-service and responded using the 4-point scale tested in Pretest 3 ("Strongly agree with Statement A," "Strongly Agree with Statement B," "Strongly Agree with Both Statements," and "Not sure"). If a respondent answered "Agree with Both Statements" for any statement, a follow-up question was asked to determine the level of felt tension on a 2-point scale ("Highly conflicted about how to reconcile these statements," "Not at all conflicted about how to reconcile these statements").

For individual statements, respondents were asked to indicate their agreement with each individual statement on a 2-point scale ("Agree," "Disagree"), which was reduced from a 7-point scale anchored by "Strongly Agree" and "Strongly Disagree." Follow-up questions were asked if a respondent agreed with both items in a pre-identified pair. The follow-up questions listed the two statements with which the respondent had agreed and then asked the respondent to indicate the resulting tension on a 2-point scale ("Highly conflicted about how to reconcile these statements," "Not at all conflicted about how to reconcile these statements").

The revised pairs of items and the set of individual items were compared to determine the more effective method of capturing paradox. Items were compared on an indicator-by-indicator basis to determine how often the paradox occurred (Pretest 4-Analysis 1). In addition, the items were consolidated into the respective scales and the occurrence of paradox by scale was also compared (Pretest 4-Analysis 2).

This pretest also sought to re-expand the number of paradoxes measured to the original seven technology paradoxes from Pretest 1. Statements were further refined so that opposing statements had an equal number of items and pairs were established using the literature and the researcher's judgment as guides. This refinement resulted in 28 pairs of items for measuring the 7 technology paradoxes, each represented by 3-5 items.

Results. This pretest was conducted with a sample of 351 college age students at a large southern university. The sample was collected from an undergraduate marketing research participant pool. The average age of participants was 21.5; approximately 50.0% were male and 50.0% were female. This pretest used a between-subject design, with 151 participants assigned to condition 1 (Paired statements) and 201 to condition 2 (Individual statements).

Pretest 4-Analysis 1: Two-Step Method, Comparison of Paired Items versus Individual Items Across Indicators. The results of this pretest indicate a higher occurrence of paradoxes when the individual statements were used. The occurrence of paradoxes using the paired statements was similar to that found in Pretest 2B, averaging 8.4% and ranging from 3.3% to 12.4%. The occurrence of paradox using the individual statements was greater, averaging 17.5% and ranging from 7.0% to 37.8% (see Table 21).
At first glance, it would appear that the paired questions better match the 8% incidence rate found in the literature (Mick & Fournier, 1998). However, this percentage was most likely a conservative estimate, as it was derived from the number of respondents who specifically used terms related to paradox or conflict. It is anticipated that the number of people who experience paradox would be higher than just those who clearly articulate paradoxical feelings. Thus, the incidence level achieved using individual statements would seem to be better supported by past research.

Table 21: Comparison on Paired vs. Individual Statements

<table>
<thead>
<tr>
<th>Occurrence of Paradox</th>
<th>Paired statements</th>
<th>Individual statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assimilation-Isolation1</td>
<td>11.1% (17)</td>
<td>23.8% (44)</td>
</tr>
<tr>
<td>Assimilation-Isolation2</td>
<td>9.8% (15)</td>
<td>15.5% (28)</td>
</tr>
<tr>
<td>Assimilation-Isolation3</td>
<td>4.6% (7)</td>
<td>9.2% (17)</td>
</tr>
<tr>
<td>Assimilation-Isolation4</td>
<td>7.8% (12)</td>
<td>14.1% (26)</td>
</tr>
<tr>
<td>Competence-Incompetence1</td>
<td>9.8% (15)</td>
<td>16.8% (31)</td>
</tr>
<tr>
<td>Competence-Incompetence2</td>
<td>8.5% (13)</td>
<td>37.8% (70)</td>
</tr>
<tr>
<td>Competence-Incompetence3</td>
<td>12.4% (19)</td>
<td>10.8% (20)</td>
</tr>
<tr>
<td>Competence-Incompetence4</td>
<td>10.5% (16)</td>
<td>37.4% (41)</td>
</tr>
<tr>
<td>Control-Chaos1</td>
<td>7.2% (11)</td>
<td>16.8% (31)</td>
</tr>
<tr>
<td>Control-Chaos2</td>
<td>8.5% (13)</td>
<td>7.0% (13)</td>
</tr>
<tr>
<td>Control-Chaos3</td>
<td>6.5% (20)</td>
<td>24.3% (47)</td>
</tr>
<tr>
<td>Control-Chaos4</td>
<td>11.1% (17)</td>
<td>22.7% (42)</td>
</tr>
<tr>
<td>Control-Chaos5</td>
<td>9.8% (15)</td>
<td>17.8% (33)</td>
</tr>
<tr>
<td>Efficiency-Inefficiency1</td>
<td>9.2% (14)</td>
<td>20.0% (37)</td>
</tr>
<tr>
<td>Efficiency-Inefficiency2</td>
<td>6.5% (10)</td>
<td>16.8% (31)</td>
</tr>
<tr>
<td>Efficiency-Inefficiency3</td>
<td>7.8% (12)</td>
<td>10.8% (20)</td>
</tr>
<tr>
<td>Efficiency-Inefficiency4</td>
<td>5.9% (9)</td>
<td>16.8% (31)</td>
</tr>
<tr>
<td>Engaging-Disengaging1</td>
<td>6.5% (10)</td>
<td>14.1% (26)</td>
</tr>
<tr>
<td>Engaging-Disengaging2</td>
<td>9.8% (15)</td>
<td>19.5% (36)</td>
</tr>
<tr>
<td>Engaging-Disengaging3</td>
<td>5.9% (9)</td>
<td>16.8% (31)</td>
</tr>
<tr>
<td>Fulfill needs-creates needs1</td>
<td>9.8% (15)</td>
<td>15.7% (31)</td>
</tr>
<tr>
<td>Fulfill needs-creates needs2</td>
<td>19.6 (18)</td>
<td>20.0% (37)</td>
</tr>
<tr>
<td>Fulfill needs-creates needs3</td>
<td>7.8% (12)</td>
<td>18.9% (35)</td>
</tr>
<tr>
<td>Enjoyment-Task specific1</td>
<td>10.5% (16)</td>
<td>13.0% (24)</td>
</tr>
<tr>
<td>Enjoyment-Task specific2</td>
<td>5.2% (8)</td>
<td>13.0% (24)</td>
</tr>
<tr>
<td>Enjoyment-Task specific3</td>
<td>3.3% (5)</td>
<td>12.4% (23)</td>
</tr>
<tr>
<td>Enjoyment-Task specific4</td>
<td>4.6% (7)</td>
<td>10.8% (20)</td>
</tr>
<tr>
<td>Enjoyment-Task specific5</td>
<td>5.9% (9)</td>
<td>17.8% (33)</td>
</tr>
</tbody>
</table>

Pretest 4-Analysis 2: Two-Step Method, Comparison of Paired Items versus Individual Items Across Scales. As in Pretest 2B, the statements were consolidated by paradox and the paired statements were analyzed to determine if any item in the scale was viewed as paradoxical. The upper bounds for occurrences of paradox were 24.3% for paired statements and 43.3% for individual statements. Realistically, identifying a paradox requires a conflict between at least two statements for any aspect of technology. Table 22 shows the expected occurrence of paradoxes based on this cut-off point (the lower portion of the table). Using this stricter requirement, the occurrence of paradox ranged from 9.0% to 25.9% for individual statements but only 3.3% to 7.9% for paired statements.
In addition to facilitating the identification of paradox, individual statements better mimic how consumers process information in the marketplace. Instead of assessing balanced pairs of arguments, consumers evaluate individual statements and then acknowledge opposing evaluations separately. Therefore, individual statements were used in Study 2 to validate the measurement instruments.

Table 22: Comparison of Respondents’ Paired Statements to Individual Statements

<table>
<thead>
<tr>
<th>Construct</th>
<th>Paired statements</th>
<th>Individual statements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1 or more indicator per construct</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assimilation-Isolation</td>
<td>40 (26.3%)</td>
<td>75 (40.5%)</td>
</tr>
<tr>
<td>Competence-Incompetence**</td>
<td>49 (32.2%)</td>
<td>110 (59.5%)</td>
</tr>
<tr>
<td>Control-Chaos**</td>
<td>45 (29.6%)</td>
<td>92 (49.7%)</td>
</tr>
<tr>
<td>Efficiency-Inefficiency**</td>
<td>25 (16.4%)</td>
<td>74 (40.0%)</td>
</tr>
<tr>
<td>Engaging-Disengaging**</td>
<td>29 (19.1%)</td>
<td>61 (33.0%)</td>
</tr>
<tr>
<td>Fulfill needs-creates needs**</td>
<td>35 (23.0%)</td>
<td>76 (41.1%)</td>
</tr>
<tr>
<td>Enjoyment-Task**</td>
<td>35 (23.0%)</td>
<td>73 (39.5%)</td>
</tr>
<tr>
<td><strong>2 or more indicators per construct</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isolation-Isolation</td>
<td>8 (5.3%)</td>
<td>27 (13.5%)</td>
</tr>
<tr>
<td>Competence-Incompetence**</td>
<td>12 (7.9%)</td>
<td>39 (19.4%)</td>
</tr>
<tr>
<td>Control-Chaos**</td>
<td>16 (10.5%)</td>
<td>52 (25.9%)</td>
</tr>
<tr>
<td>Efficiency-Inefficiency**</td>
<td>5 (3.3%)</td>
<td>31 (15.5%)</td>
</tr>
<tr>
<td>Engaging-Disengaging**</td>
<td>5 (3.3%)</td>
<td>25 (12.5%)</td>
</tr>
<tr>
<td>Fulfill needs-creates needs**</td>
<td>9 (5.9%)</td>
<td>18 (9.0%)</td>
</tr>
<tr>
<td>Enjoyment-Task**</td>
<td>7 (4.6%)</td>
<td>31 (15.5%)</td>
</tr>
</tbody>
</table>

**Significant at the .001 level

Summary. In combination, the pretests described in this section constitute a strong approach to the quantitative measurement of paradox. Yet the approach has a few shortcomings that should be addressed. One limitation of the Direct Question approach is its accuracy. To improve accuracy, the yes/no scales should be expanded to include a neutral option so that respondents can indicate if a statement is referencing a paradox that they have experienced. This modification may reduce the high occurrence of paradoxes indicated by the Direct Question approach. In addition, although the Two-Step Method using individual statements appears to be an effective method for measuring paradox, one limitation is that the researcher, not the respondents, determines which pairs of statements are considered opposite. To correct this limitation, a three-step method that presents all opposing choices, allowing the respondents to indicate which are most contradictory, should be employed. Finally, the proposed measurement needs to be tested for construct validity.

Study 2: Final Test of Paradox Measures

The primary focus of Study 2 was the proposal and validation of a three-step methodology for measuring paradox, which involved three basic issues. First, the proposed method must be refined and compared to an alternative approach, the Direct Question approach. Second, the conceptualization of the three-step method as either a reflective or formative construct must be examined. Finally, the proposed method must be verified by examining relationships between the types of paradoxes and the patterns of paradoxes across individuals.
In the course of this study, a series of empirical analyses were performed. Table 23 provides an overview of the analyses for each section, including a brief description of each analysis and its findings.

**Table 23: Overview of Analyses by Section in Study 2**

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Description</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Issue 1: Proposed Multi-Step Methodology</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analysis 1: Expansion of Response Scale to Test Direct Question Approach</td>
<td>Assess impact of adding &quot;Maybe, I could see this being a paradox to some&quot; choice to the responses for the Direct Question.</td>
<td>Substantive reduction in percentage of respondents indicating a paradox supports use of 3-point scale for Direct Question approach</td>
</tr>
<tr>
<td>Analysis 2: Incidence of Paradox with the Three-Step Method</td>
<td>Test of the proposed Three-Step Method for capturing paradox.</td>
<td>Provided discriminating indication of paradox on both indicator (individual item) and paradox level.</td>
</tr>
<tr>
<td>Analysis 3: Comparison of Three-Step Method to Direct Question approach</td>
<td>Assess validity of Three-Step Method against the Direct Question approach.</td>
<td>Three-Step Method provided more refined, but consistent, measurement of paradox when compared to Direct Question approach.</td>
</tr>
<tr>
<td><strong>Issue 2: Measurement Conceptualization as Formative versus Reflective</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analysis 4: Assess Construct Validity of Three-Step Method</td>
<td>Conceptualization of Three-Step Method as formative construct requires test of collinearity of items</td>
<td>Low collinearity indicated by VIF scores for all items demonstrates that multicollinearity was at acceptable levels.</td>
</tr>
<tr>
<td><strong>Issue 3: Patterns of Paradox</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analysis 5: Frequency and Structure of Paradox</td>
<td>Determine the frequency of each paradox and the number of paradoxes experienced by each respondent. In addition, examine patterns across paradoxes.</td>
<td>Paradoxes were found to occur in frequencies consistent with past research. Additional analysis found a substantial number of individuals experience more than one paradox. Patterns of paradoxes were examined by identifying most common pairs of paradox along with factor analysis indicating two dimensions of paradox.</td>
</tr>
<tr>
<td>Analysis 6: Identify Patterns of Paradox Across Individuals</td>
<td>Cluster analysis employed to identify groups of respondents experiencing similar patterns of multiple paradoxes.</td>
<td>Analysis suggests 5 clusters of respondents with varied patterns of paradox.</td>
</tr>
</tbody>
</table>

**Issue 1: Proposed Multi-Step Methodology**

Due to the shortcomings previously discussed, three notable revisions were made to the methodology. First, the two-step process was extended to a three-step process with the introduction of a step in which respondents determine the most appropriate contradictory statement. Second, both the response scales for capturing internal tensions and the Direct Question approach to identifying paradox were expanded to 3-item scales. These changes were designed to better appraise respondents' true evaluations and refine the assessment of the presence of a paradox. Finally, a new type of paradox identified in the pretests—the Privacy-Customization paradox—was introduced and operationalized using a set of five items.

**Moving to a Three-Step Method.** Three revisions to the Two-Step Method resulted in a 3-step approach for capturing paradox. The first revision expanded the response scales for the individual statements to 3-point scales ("Disagree," "Agree somewhat," "Strongly Agree"). This
modification facilitated the identification of respondents who strongly agreed with the opposing constructs, as opposed to the previous 2-category scale (Agree or Disagree). The impetus for this change was to allow participants to better classify their feelings, thereby ensuring that opposing evaluations in later stages represented strongly held judgments that better reflect paradox.

The second revision involved the provision of all possible opposing statements to respondents, instead of assuming that the pairs pre-identified by the researcher represented the greatest level of conflict. Drawing from the pool of statements with which a respondent agreed, all opposing statements were shown for each "positive" statement. The respondent was then asked to indicate which opposing statement was "most in conflict" with the positive statement. For example, if a respondent strongly agreed with Control item 1 and also strongly agreed with Chaos items 2, 3, and 4, the follow-up question would indicate that the respondent strongly agreed with Control item 1, and then list only the opposing items (Chaos 2, 3 and 4) with which he or she had also strongly agreed. The respondent would then select from those three items the single item representing the greatest level of conflict. This pair of items would constitute the statement pair used to assess the second condition—the level of tension that resulted from holding opposing evaluations. An example of this series of questions is shown in Figure 8.

```
Step 1
TBSSs many times make me unsure of what exactly I am getting
  o  Disagree
  o  Agree somewhat
  o  Strongly agree
TBSSs make it easy to get exactly what I want when I want
  o  Disagree
  o  Agree somewhat
  o  Strongly agree
...(this measurement repeated for all statements)

Step 2
In an earlier section, you agreed that TBSSs
...many times make me unsure of what exactly I am getting
But you also agreed with the conflicting statements below.
Please indicated the item that you feel is in most in conflict with your acceptance of TBSSs
...many times make me unsure of what exactly I am getting
  o  ...make it easy to get exactly what I want when I want
  o  ...let me choose where and when to accomplish tasks
  o  ...allow me to have considerable control as a customer
  o  ...simplify the process I have to go through

Step 3
When you think about BOTH TBSSs
...many times make me unsure of what exactly I am getting
and TBSSs [Choice from above is inserted here] how conflicted do you feel?
  o  I don't see any real conflict
  o  Sometimes I see this conflict, sometimes I don't
  o  I see no way to reconcile these conflicting aspects of TBSSs
```

Figure 8: Example of 3-Step Method
The third revision was the addition of a final question assessing the level of conflict felt when respondents considered their agreement with both a target item (e.g., Assimilation 1 in the example above) and the opposing item selected in step 2. This assessment of conflict was also expanded to a 3-point scale ("I don't see any real conflict," "Sometimes I see this conflict, sometimes I don't," "I see no way to reconcile these conflicting aspects of TBSSs"). This change was made to better differentiate the respondents' feelings about the resulting conflict and to strengthen the requirements for classifying a conflict as a paradox. The occurrence of paradox using the revised 3-step method was analyzed extensively to ensure that it matched expected ranges for the sample (see Analysis 2).

**Direct question approach.** One change was also made to the Direct Question approach. Because of the large percentage of respondents who indicated a paradox using this method in prior pretests, it was felt that participants were either (a) indicating low to moderate agreement with both statements and/or low to moderate conflict as a paradox or (b) projecting how others would experience the statements as a reason for indicating a paradox. Based on this observation, a decision was made to change this scale to 3 points as well ("Yes, this is a paradox that I have experienced," "Maybe I can see this being a paradox to some," "No, I don't think this would be a likely paradox"). Analysis 1, discussed in the following section, examined the implications of this modification by comparison with the incidence of paradox found in the most recent pretest (Pretest 4) using the 2-category response scale ("Yes," "No").

**Privacy-Customization Paradox.** The final issue concerned the emergence of a new paradox—the Customization-Privacy paradox. As stated earlier, this paradox has received a great deal of attention from the popular press and academic practitioners (for a sampling, see Barnes, 2006; Stone, 2008; Greenberg, 2008; Tene & Polonetsky, 2012; Utz & Kramer, 2009). It results from new data storage and data mining techniques that allow firms to provide extensive customization, while requiring vast amounts of personal information to be effective. Many view this level of access to personal information as a potential threat to privacy. Five items (see Table 24) reflecting this paradox were added, each addressing the benefits of having access to TBSSs that have customized features while still requiring the protection of private information. This new scale was validated with the other paradox scales throughout the study. The final survey instrument reflecting this and other changes can be found in Appendix F.

Table 24: Privacy-Customization Items

<table>
<thead>
<tr>
<th>Privacy</th>
<th>Customization</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBSSs allow firms to gather too much information about me.</td>
<td>TBSSs greatly improve my online experience by using personal information about me.</td>
</tr>
<tr>
<td>I trust TBSSs to protect my privacy.</td>
<td>It is valuable to me when TBSSs use information about me to make my online experience better.</td>
</tr>
<tr>
<td>TBSSs help me feel connected to the firm so that I am not just another number or customer.</td>
<td>TBSSs give me the ability to do more tasks than before.</td>
</tr>
<tr>
<td>TBSSs create a false sense of anonymity.</td>
<td>TBSSs allow my experiences to be customized to my needs.</td>
</tr>
<tr>
<td>TBSSs make me concerned about the amount of personal data collected.</td>
<td>TBSSs are appealing because of their ability to create experiences tailored just for me.</td>
</tr>
</tbody>
</table>
Analyses. This study was conducted using a national panel survey of 347 adults across the U.S. The range of ages was 18 to 65, with an average age of 34.6 years. It was determined that this final study needed to extend beyond the college student samples used extensively in the pretests to a broader sample of the population. Because today's college students have been brought up with technology (Lamb, Hair, & McDonald, 2009), students might not accurately represent the broader population's experience with technology paradoxes. In addition, panel data was used to reach a more representative sample of the population. Overall, the sample was 41.5% male and 58.5% female. Ethnically, the respondents were 71.0% Caucasian, 11.0% African-American, 6.6% Asian American, and 7.8% Hispanic or Latino.

Analysis 1: Expansion of Response Scale to Test Direct Question Approach. This first analysis focused on the result of introducing a third response category to the Direct Question approach. Prior pretests required respondents to either agree or disagree that a pair of statements represented a paradox. With the addition of a third choice, it was possible to differentiate between respondents (a) who could view a pair of statements as paradoxical in general and (b) who actually thought that the pair represented a paradox to them. Thus, responses could be classified as representing a paradox that was personally experienced versus acknowledgment that a paradox existed in general. As shown in Table 25, the addition of the third choice drastically reduced the percentage of responses that indicated paradox compared with those that indicated paradox in Pretest 2. While the percentage was still higher than that found in the existing literature, the 3-point scale appears to be a better representation for a single-question format than the 2-point scale.

<table>
<thead>
<tr>
<th></th>
<th># who Indicated Paradox when asked Direct Question (% of total)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3-point Scale&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Control-Chaos**</td>
<td>67 (19.3%)</td>
</tr>
<tr>
<td>Competence-Incompetence**</td>
<td>102 (29.4%)</td>
</tr>
<tr>
<td>Enjoy-Task**</td>
<td>140 (40.3%)</td>
</tr>
<tr>
<td>Efficiency-Inefficiency**</td>
<td>79 (22.8%)</td>
</tr>
</tbody>
</table>

<sup>a</sup> Classified as exhibiting paradox if responding "Yes, this is a paradox that I have experienced" on 3-point scale  
<sup>b</sup> Classified as exhibiting paradox if responding "Yes" on 2-point scale  

**Significant at the .001 level

Analysis 2: Incidence of Paradox with the Three-Step Method. This second analysis focused on evaluating the Three-Step Method. First, the incidence of individual statements was examined as an indicator of paradox. Then multiple statements defining each paradox were combined to designate a response as indicating paradox.

As discussed in the prior section, a pair of statements was considered indicative of a paradox in Study 2 only when responses (a) first strongly agreed with a positive statement and one or more corresponding negative statements and (b) then indicated a high degree of personal conflict resulting from the paired statements. Changes to the three-point response scales for agreement with both the paired statements and the resulting conflict improved refinement and added flexibility to the designation of paradox (e.g., distinguishing between moderate levels of agreement and strong levels of agreement or conflict).
The incidence of paradox identified by each positive statement using the Three-Step Method is shown in Table 26. As anticipated, the use of 3-point response scales and a more restrictive requirement (i.e., strong agreement with both paired statements or no reconciliation of the paired statements) reduced the number of statements classified as indicative of a paradox. This adjustment resulted in a decrease in the occurrences of paradox similar to past studies of technology paradox (Mick & Fournier, 1998), with 1.7% to 19.5% of the responses indicating that a statement was a paradox. For any given statement, an average of 6.6% of the responses identified it as a paradox. Compared with Pretest 4 (Table 21), the three-step process reduced the incidence of paradox for individual statements, but still produced greater incidence than the paired statements.

Table 26: Occurrence of Paradox by Statement Pair with Three-Step Process

<table>
<thead>
<tr>
<th>Paradox Statement Paira</th>
<th>% of responses indicating paradox Statement (# of occurrences)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assimilation1-Isolation</td>
<td>1.2% (4)</td>
</tr>
<tr>
<td>Assimilation-Isolation2</td>
<td>15.3% (53)</td>
</tr>
<tr>
<td>Assimilation-Isolation3</td>
<td>12.4% (43)</td>
</tr>
<tr>
<td>Assimilation-Isolation4</td>
<td>3.7% (13)</td>
</tr>
<tr>
<td>Competence-Incompetence1</td>
<td>1.7% (6)</td>
</tr>
<tr>
<td>Competence-Incompetence2</td>
<td>2.0% (7)</td>
</tr>
<tr>
<td>Competence-Incompetence3</td>
<td>12.4% (19)</td>
</tr>
<tr>
<td>Competence-Incompetence4</td>
<td>1.7% (6)</td>
</tr>
<tr>
<td>Control-Chaos1</td>
<td>0.6% (2)</td>
</tr>
<tr>
<td>Control-Chaos2</td>
<td>6.3% (22)</td>
</tr>
<tr>
<td>Control-Chaos3</td>
<td>10.1% (35)</td>
</tr>
<tr>
<td>Control-Chaos4</td>
<td>10.4% (36)</td>
</tr>
<tr>
<td>Efficiency-Inefficiency1</td>
<td>2.6% (9)</td>
</tr>
<tr>
<td>Efficiency-Inefficiency2</td>
<td>8.9% (31)</td>
</tr>
<tr>
<td>Efficiency-Inefficiency3</td>
<td>8.6% (30)</td>
</tr>
<tr>
<td>Efficiency-Inefficiency4</td>
<td>2.0% (7)</td>
</tr>
<tr>
<td>Engaging-Disengaging1</td>
<td>7.8% (27)</td>
</tr>
<tr>
<td>Engaging-Disengaging2</td>
<td>8.4% (29)</td>
</tr>
<tr>
<td>Engaging-Disengaging3</td>
<td>9.8% (34)</td>
</tr>
<tr>
<td>Engaging-Disengaging4</td>
<td>8.9% (31)</td>
</tr>
<tr>
<td>Fulfill needs-creates needs1</td>
<td>2.0% (7)</td>
</tr>
<tr>
<td>Fulfill needs-creates needs2</td>
<td>1.2% (4)</td>
</tr>
<tr>
<td>Fulfill needs-creates needs3</td>
<td>8.9% (31)</td>
</tr>
<tr>
<td>Enjoyment-Task specific1</td>
<td>2.0% (7)</td>
</tr>
<tr>
<td>Enjoyment-Task specific2</td>
<td>7.2% (25)</td>
</tr>
<tr>
<td>Enjoyment-Task specific3</td>
<td>4.6% (16)</td>
</tr>
<tr>
<td>Enjoyment-Task specific4</td>
<td>2.9% (10)</td>
</tr>
<tr>
<td>Privacy-Customization1</td>
<td>2.6% (9)</td>
</tr>
<tr>
<td>Privacy-Customization2</td>
<td>19.5% (68)</td>
</tr>
<tr>
<td>Privacy-Customization3</td>
<td>16.1% (56)</td>
</tr>
<tr>
<td>Privacy-Customization4</td>
<td>4.9% (17)</td>
</tr>
<tr>
<td>Privacy-Customization5</td>
<td>3.5% (12)</td>
</tr>
</tbody>
</table>

a Positive item paired with item from opposing type

After the individual statements were classified as indicative of a paradox or not using the Three-Step Method, all statements representative of a single paradox were combined into an overall
The measure of that paradox for a respondent. Given that the overall measure of paradox was conceptualized as an index and of the formative type (see the following section for a discussion of this issue), the next step was to assess how many individual statements within a paradox were needed to classify that respondent as experiencing the paradox. Obviously, this assessment can range from classifying a respondent as experiencing a paradox if a single statement indicates paradox to the other extreme, classifying a respondent as experiencing a paradox only if all statements indicate paradox. While the latter classification was considered too restrictive, especially because an index is intended to be additive, two implementations were considered. The first was the least restrictive, classifying a respondent as exhibiting a paradox if just one or more statements representing that paradox were classified as a paradox using the Three-Step Method. The second implementation required that at least two statements representing a paradox were classified as a paradox.

A shown in Table 27, the two implementations resulted in markedly different levels of incidence of paradox. The least restrictive implementation, requiring only a single statement to indicate paradox, resulted in incidence levels ranging from 4.0% (Competence-Incompetence) to 27.6% (Customization-Privacy). When examining all paradoxes, almost 50% were classified as containing at least one paradoxical pair of statements. These ranges were substantially higher than those found in prior research (Mick & Fournier, 1998). Therefore, the second implementation, requiring that at least two statements be defined as indicating a paradox, was also considered. By requiring that at least two statements for any aspect of technology meet the two conditions for paradox, the occurrence of any classification of paradox ranged from 1.4% for Competence-Incompetence to 13.8% for Privacy-Customization. These levels are quite comparable to past research, and the incidence of responses exhibiting at least one paradox (27.7%) was comparable to the 24.8% that experienced paradox before the measurement technique was refined.

Table 27: Alternative Approaches to Defining a Paradox

<table>
<thead>
<tr>
<th>Paradox</th>
<th>Paradox Defined By Number of Statements Representing Paradoxa</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 or more items per paradox</td>
</tr>
<tr>
<td>Isolation-Isolation**</td>
<td>79 (22.8%)</td>
</tr>
<tr>
<td>Competence-Incompetence**</td>
<td>14 (4.0%)</td>
</tr>
<tr>
<td>Control-Chaos**</td>
<td>64 (18.4%)</td>
</tr>
<tr>
<td>Efficiency-Inefficiency**</td>
<td>54 (15.5%)</td>
</tr>
<tr>
<td>Engaging-Disengaging**</td>
<td>74 (21.3%)</td>
</tr>
<tr>
<td>Fulfill needs-creates needs**</td>
<td>37 (10.7%)</td>
</tr>
<tr>
<td>Enjoyment-Task**</td>
<td>37 (10.7%)</td>
</tr>
<tr>
<td>Customization-Privacy**</td>
<td>96 (27.6%)</td>
</tr>
<tr>
<td>Experienced at least one paradox**</td>
<td>173 (49.9%)</td>
</tr>
</tbody>
</table>

*Values represent the frequency of paradox and the percentage of the sample.
**Difference significant at the .001 level

Analysis 3: Comparison of Three-Step Method to Direct Question approach. In any type of scale development, providing support for construct validity is vital. Since a primary goal of this study was to develop an empirical measure of paradox not found in prior research, few measures exist that can be used to assess the proposed method. In this case, concurrent validity was demonstrated by comparing the proposed Three-Step Method with the Direct Question approach.
The Direct Question approach represents the approach most comparable to past studies that use qualitative approaches. Even though the Direct Question approach results in levels of paradox higher than those found in existing research (see Table 25), it is a useful measure for validating the proposed Three-Step Method because it represents some degree of paradox, albeit a rather expansive one. This expansiveness is illustrated by the fact that the Three-Step Method classifies 27.7% of the sample as exhibiting a paradox, a percentage that increases to 49.9% using the Direct Question approach.

A better comparison can be made between the two approaches by using paradox incidence for each respondent rather than overall rates of incidence. The result across all respondents is a cross-tabulation table showing the instances in which the two measures agreed on the existence of paradox (both indicated it did not occur or both indicated it did occur) and in which they disagreed. The cross-tabulations give rise to several empirical measures of correspondence. The first is accuracy, which is the overall classification similarity between the two measures (i.e., the total percentage of respondents for which the two measures agreed). A more direct comparison of the efficacy of the Three-Step Method is the True Positive rate, which is the percentage of respondents classified as exhibiting a paradox by the Three-Step approach that are also identified as exhibiting a paradox by the Direct Question approach. As this value increases, it indicates greater similarity of the paradox designation between the two measures and is reflective of concurrent validity.

The comparison of the Three-Step Method with two forms of the Direct Question approach is shown in Table 28. The first form of the Direct Question approach, which was used previously, classifies a respondent as exhibiting a paradox if he or she responds to the most restrictive category ("Yes, this is a paradox that I have experienced"). This form is felt to be the most reflective of a paradox, even though it results in a higher incidence of paradox than that found in the literature. A second form of the Direct Question approach, in which a second category is added to the definition of paradox ("Maybe I can see this being a paradox to some"), establishes an "upper boundary" for paradox definitions and represents the most encompassing definition of paradox possible.

Comparison of the Three-Step Method with the more restrictive form of the Direct Question approach exhibited acceptable levels of accuracy, ranging from 27.5% to 76.9%. Accuracy levels were impacted, however, by the quite higher levels of paradox found using the second form of the Direct Question approach. Because of this issue, the second measure of correspondence, the True Positive rate, was also employed. When compared to the restrictive Direct Question approach, the True Positive rates all exceeded 50 percent, ranging from 55% to 75%. When compared to the less restrictive Direct Question approach, the True Positive scores ranged from 80% to 100%.

The comparison to the more restrictive form of Direct Question approach demonstrated a high degree of correspondence with the Three-Step Method. When the less restrictive form of the Direct Question approach was used, the True Positive rate always exceeded 80%, reaching 100% in two instances. These levels of correspondence provide substantial support for concurrent validity between the two empirical measures of paradox. Additional forms of construct validity are addressed in subsequent sections.
Summary. The preceding discussion and analyses demonstrated the efficacy of the proposed Three-Step Method for capturing technology paradoxes. Results confirmed that this approach is superior to direct questioning of respondents about paradox. In addition, a new technology paradox that is becoming more prevalent with improvements in storage capacity and data mining, customization-privacy, was introduced. The remainder of Study 2 considers how this method is operationalized as well as provides insights into how people experience paradox.

Table 28: Comparison of Three-Step Method Against Direct Question Approach

<table>
<thead>
<tr>
<th>Paradox</th>
<th>Three-Step Method</th>
<th>Direct Question (Most Restrictive Form)</th>
<th>Direct Question (Less Restrictive Form)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number (Percent)</td>
<td>Accuracy^c</td>
<td>True Positive^d</td>
</tr>
<tr>
<td>Assimilation-Isolation</td>
<td>30 (8.5%)</td>
<td>64.2%</td>
<td>63.3%</td>
</tr>
<tr>
<td>Competence-Incompetence</td>
<td>5 (1.4%)</td>
<td>76.9%</td>
<td>60.0%</td>
</tr>
<tr>
<td>Control-Chaos</td>
<td>27 (7.8%)</td>
<td>62.2%</td>
<td>62.9%</td>
</tr>
<tr>
<td>Efficiency-Inefficiency</td>
<td>14 (4.0%)</td>
<td>68.3%</td>
<td>64.2%</td>
</tr>
<tr>
<td>Engaging-Disengaging</td>
<td>29 (8.4%)</td>
<td>64.5%</td>
<td>55.1%</td>
</tr>
<tr>
<td>Fulfill needs-creates needs</td>
<td>5 (1.4%)</td>
<td>73.2%</td>
<td>75.0%</td>
</tr>
<tr>
<td>Enjoyment-Task</td>
<td>16 (4.6%)</td>
<td>73.4%</td>
<td>60.0%</td>
</tr>
<tr>
<td>Customization-Privacy</td>
<td>48 (13.8%)</td>
<td>52.4%</td>
<td>75.0%</td>
</tr>
<tr>
<td>Experienced at least one paradox</td>
<td>96 (27.7%)</td>
<td>27.6%</td>
<td>63.5%</td>
</tr>
</tbody>
</table>

^a Defined as response of only Strongly Agree with Direct Question statement.
^b Defined as response of either Strongly Agree or Agree with Direct Question statement.
^c Overall classification accuracy rate: percentage of agreement classifying respondents exhibiting paradox and non-paradox (total classified similarly divided by total sample).
^d True Positive Rate: percentage of respondents classified as exhibiting paradox by Three-Step Method and also classified as exhibiting paradox by Direct Question approach.

Issue 2: Measurement Conceptualization as Formative versus Reflective

As the previous discussion of paradox measurement indicated, the proposed Three-Step Method must be conceptualized as either reflective or formative to justify measures of construct validity. The distinction between reflective and formative conceptualization of a construct has generated considerable debate since research proposed that there are a considerable number of instances in which constructs have been incorrectly characterized as reflective when they should have been formative (Jarvis, MacKenzie, & Podsakoff, 2003). Numerous subsequent research efforts have debated the merits of each approach and examined the implications using empirical analyses. A recent overview of this research (Bagozzi, 2011) identified the relative merits of the two alternative conceptualizations and, while favoring the reflective approach, identified situations in
which formative measures are appropriate. But, most importantly, Bagozzi (2011) argued for conceptual support of the approach taken rather than any empirical analysis.

Perhaps the primary distinction between a reflective and formative construct is the source of the construct meaning. For reflective constructs, the meaning is totally self-contained. In other words, the item loadings on the construct are largely unaffected by its relationships with other constructs. For formative constructs, the items define the content, but the relative importance of specific items (i.e., item loadings) is based on relationships with other constructs. So in some sense the content is global (Bagozzi, 2011) in the context being studied.

The proposed Three-Step Method has elements of both conceptual forms. The statements have some degree of relatedness, as evidenced by the pretest analyses that examined scale reliabilities as measures of consistency with the construct domain. But when the statements are specifically used by the proposed method, they take on the form of an index, which is known to be a formative form of construct. The operationalization proposed here is consistent with a formative approach, because the opposing evaluations and resulting tensions being measured are theorized to cause paradox, rather than be caused by paradox. It is this relationship between cause and effect that is a key requirement of formative measures (MacCallum & Browne, 1993; Bollen, 1989). Use of the formative conceptualization is further supported by the fact that an increase in the number of items indicating paradox would increase the likelihood that consumers would become aware of the conflict and thus experience paradox. As operationalized in this essay, paradox is conceptualized as formative because it is defined by its measurements (Diamantopoulos, 2006).

Given that the proposed method is considered formative, a different set of guidelines for assessing construct validity were used as compared to reflective constructs. Diamantopoulos and Winklhofer (2001) recommend four guidelines specific to a formative measure: content specification, indicator specification, indicator collinearity and external validity. Note that the more "conventional" criteria used in reflective measures (i.e., scale reliability, average variance extracted) are not applicable to formative measures. Support for each of these guidelines for formative measures is discussed below.

Content and indicator specification require that the research develop and operationalize a strong conceptual basis for the construct and its indicators. Empirical analyses, such as scale reliability measures, are of no use in this regard, as they are not required for a formative measure. To this end, the current research has developed a sound conceptual basis for both of these guidelines. Construct specification was the focus of Essay 1, with individual statement development and refinement occurring throughout Essays 1 and 2. In Essay 2, the literature review, Study 1, Pretest 1 and Pretests 2A, 2B, 3 and 4 focused on developing the best methodology for constructing the index based on the individual statements. Finally, Study 2 was designed to test the proposed methodology, assess the levels of indicator multicollinearity and test aspects of external validity.

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4 External validity will be further explored in Essay 3, which studies antecedents and outcomes.
Because formative measures do not require any specific level of internal consistency, commonly used measures such as inter-item correlations or reliabilities are not applicable. Instead the focus is on item redundancy that reduces the efficacy of individual items (Diamantopoulos & Siguaw, 2006). As scale reliability measures require an assumption of unidimensionality not found in formative constructs, another measure of formative item multicollinearity is needed. Following recommendations from Diamantopoulos and Siguaw (2006), the multicollinearity diagnostics from regression were used to assess indicator multicollinearity. Developing separate regression equations for each paradox, with the independent variables being the items specific to that paradox, variance inflation factor (VIF) values were calculated for each item. Lower VIF values indicate lower collinearity between items, with the upper threshold being 10 (Kleinbaum, Kupper, & Muller, 1988).

Analysis 4: Assess Construct Validity of Three-Step Method. As discussed above, indicator collinearity was assessed using the VIF for each item specific to a paradox. As shown in Table 29, the range of VIFs across the items for each paradox was well below the threshold indicating support for lack of indicator collinearity (Diamantopoulos & Winklhofer, 2001). This value is low enough so that each indicator can have an appreciable impact on the latent variable (Diamantopoulos & Siguaw, 2006).

**Table 29: Multicollinearity of Scale Items**

<table>
<thead>
<tr>
<th>Paradox</th>
<th>Collinearity Statistics</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower value</td>
<td>Upper value</td>
<td></td>
</tr>
<tr>
<td>ASSM-ISOL</td>
<td>.841</td>
<td>1.188</td>
<td></td>
</tr>
<tr>
<td>COMP-INCOMP</td>
<td>.632</td>
<td>1.582</td>
<td></td>
</tr>
<tr>
<td>CONTROL-CHAOS</td>
<td>.798</td>
<td>1.252</td>
<td></td>
</tr>
<tr>
<td>EFF-INEFF</td>
<td>.659</td>
<td>1.518</td>
<td></td>
</tr>
<tr>
<td>ENG-DISENG</td>
<td>.809</td>
<td>1.236</td>
<td></td>
</tr>
<tr>
<td>ENJOY-TASK</td>
<td>.822</td>
<td>1.216</td>
<td></td>
</tr>
<tr>
<td>FULFILLNEEDS-CREATESNEEDS</td>
<td>.489</td>
<td>2.046</td>
<td></td>
</tr>
<tr>
<td>PRIVATE-CUSTOM</td>
<td>.733</td>
<td>1.365</td>
<td></td>
</tr>
</tbody>
</table>

Summary. As quantitative studies related to paradox are limited, several tests of construct validity focused on comparing the three-step approach to alternative measures. In the previous section, the relationship between the three-step technique and the Direct Question approach was examined. Conducting cross-tabulations and considering the True Positive rate for the two approaches showed that the proposed approach was more stringent at identifying paradox, while still properly classifying those items that did indicate paradox. In the next section, the patterns of paradox are examined by analyzing both the factor structure of paradoxes and the patterns of paradox across individuals.

**Issue 3: Patterns of Paradox**

In addition to the empirical analyses already performed, and the additional analyses of external validity addressed in Essay 3, the levels of paradox incidence and the patterns of paradox also were examined to assess their correspondence to prior research and demonstrate consistency with expected patterns. More specifically, the current research examined the frequencies at which paradoxes occur, the structure between paradoxes and the patterns across individual respondents.
This examination provides a deeper understanding of the inter-relationships between paradoxes and consumers’ experiences with them. Essay 3 further examines external validity by considering the relationships between the measures and antecedents and outcomes.

This portion of Study 2 focused exclusively on those respondents with paradoxical experiences (i.e., individuals who have experienced at least one paradox), and in particular on those who have experienced more than one. As it is possible, and even highly likely, that individuals will experience more than one paradox, analyses focusing on the existence and patterns of multiple paradoxes were also performed. These analyses represent a substantive extension of past research, because no analysis has previously been performed that addresses the issue of whether individuals experience multiple paradoxes related to technology, or if they can only experience one at a time. As a first step, frequencies were used to determine which paradoxes were most common, a determination that was compared to the findings in qualitative research. Then the incidence of individuals experiencing multiple paradoxes was examined.

Given the existence of individuals experiencing multiple paradoxes, an analysis was performed to identify the relationships between these paradoxes. The first analysis identified the pairs of paradox most likely to occur together. Then factor analysis was employed to determine the overall structure of the various types of paradoxes. This analysis provided insights into the interrelationships between the paradoxes. For example, it is likely that the competence-incompetence paradox could overlap the control-chaos paradox, because feeling out of control is likely to lead to a sense of ineptitude, while feeling a strong sense of control could lead to feelings of proficiency. These types of expected relationships can be confirmed using these analyses.

As a final step, cluster analysis was utilized to examine the relationships between individual patterns of paradoxes across individuals. This empirical method of classification takes an inductive approach (Gerard, 1957) to understanding technology paradoxes. Cluster analysis defines groups of individuals based on the pattern of paradoxes they experience. The individual clusters provide further insights into which paradoxes are more likely to occur together and the incidence of these patterns across individuals.

**Analysis 5: Frequency and Structure of Paradox.** As first discussed in Issue 2, paradoxes were identified at levels quite comparable to past research (see Figure 8). The most commonly experienced paradox was Customization-Privacy, identified by 48 respondents (13.8%), while the least commonly experienced paradoxes were Competence-Incompetence and Fulfill needs-Creates needs, identified by only 5 respondents (1.4%). It is interesting to note that the new paradox introduced in Study 2, Customization-Privacy, was the paradox experienced most often, even though it had not been examined in prior research. Previous qualitative research (Mick & Fournier, 1998) indicates that the Control-Chaos and Competence-Incompetence paradoxes are the most frequently encountered.
The current research found a fairly high occurrence of Control-Chaos (27 respondents indicated this paradox), but a low occurrence of Competence-Incompetence (5 respondents indicated this paradox). One explanation for this result is that technology-based self-services were newer when the earlier study was undertaken. Furthermore, TBSSs have been designed to facilitate successful interactions, thereby reducing the likelihood that people feel both proficient when they use them successfully and inept if something goes awry. The lower occurrence of Competence-Incompetence and the high occurrence of Customization-Privacy, although somewhat context specific, highlight the changing nature of technology and the need to adjust paradox measures accordingly.

The next analysis examined the total incidences of paradox per individual. As shown in Table 30, in total, 96 respondents (27.7%) experienced at least one paradox. In addition, while the majority of the respondents did not indicate a paradox was present using the Three-Step Method with two or more indicators per construct, 17.0% indicated one paradox and 10.6% indicated two or more paradoxes, as shown in Table 30. This result indicates that the relationships between paradoxes must be examined.

Table 30: Number of Paradoxes Indicated

<table>
<thead>
<tr>
<th># of different types of paradoxes</th>
<th>1 or more indicator per construct</th>
<th>2 or more indicators per construct</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>156 (45.0%)</td>
<td>251 (72.3%)</td>
</tr>
<tr>
<td>1</td>
<td>72 (20.7%)</td>
<td>59 (17.0%)</td>
</tr>
<tr>
<td>2</td>
<td>49 (14.1%)</td>
<td>16 (4.6%)</td>
</tr>
<tr>
<td>3</td>
<td>34 (9.8%)</td>
<td>13 (3.7%)</td>
</tr>
<tr>
<td>4</td>
<td>16 (4.6%)</td>
<td>3 (0.9%)</td>
</tr>
<tr>
<td>5</td>
<td>8 (2.3%)</td>
<td>1 (0.3%)</td>
</tr>
<tr>
<td>6</td>
<td>6 (1.7%)</td>
<td>2 (0.6%)</td>
</tr>
<tr>
<td>7</td>
<td>5 (1.4%)</td>
<td>1 (0.3%)</td>
</tr>
<tr>
<td>8</td>
<td>1 (0.3%)</td>
<td>1 (0.3%)</td>
</tr>
</tbody>
</table>

Figure 9: Occurrence of Paradox Types by Count
The next analysis examined the frequency at which differing pairs of paradox occurred together. Table 31 shows the number of paradoxes that were indicated, as well as the number of times that that paradox was experienced in conjunction with other paradoxes. For example, when examining the presence of Customization-Privacy paradox, the paradoxes most likely to occur in conjunction with this paradox were Assimilation-Isolation and Engaging-Disengaging (both we indicated in conjunction with Customization-Privacy 15 times).

While this analysis provides insights into the relationships among the individual paradoxes, factor analysis can provide a better assessment of how these paradoxes interact collectively. To this end, factor analysis was performed for all respondents indicating at least one paradox to assess if any consistent structure emerged. Using the binary measures for each of the eight paradoxes, the suitability of the data for factor analysis was first assessed. Inspection of the correlation matrix revealed the presence of many coefficients of .3 and above. The Kaiser-Meyer-Okin value was .72, which exceeded the recommended value of .6 (Kaiser, 1974), and Bartlett’s Test of Sphericity (1954) reached statistical significance, supporting the factorability of the correlation matrix.

Table 31: Co-occurrence of Paradox Types

<table>
<thead>
<tr>
<th></th>
<th>Assimilation -Isolation</th>
<th>Competence-Incompetence</th>
<th>Control-Chaos</th>
<th>Efficiency-Inefficiency</th>
<th>Engaging-Disengaging</th>
<th>Fulfill needs-creates needs</th>
<th>Enjoyment-Task</th>
<th>Customization-Privacy</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assimilation-Isolation</td>
<td>30</td>
<td>1</td>
<td>5</td>
<td>7</td>
<td>6</td>
<td>3</td>
<td>5</td>
<td>15</td>
<td>72</td>
</tr>
<tr>
<td>Competence-Incompetence</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>22</td>
</tr>
<tr>
<td>Control-Chaos</td>
<td>5</td>
<td>3</td>
<td>27</td>
<td>3</td>
<td>9</td>
<td>4</td>
<td>7</td>
<td>11</td>
<td>69</td>
</tr>
<tr>
<td>Efficiency-Inefficiency</td>
<td>7</td>
<td>2</td>
<td>3</td>
<td>14</td>
<td>7</td>
<td>4</td>
<td>3</td>
<td>11</td>
<td>51</td>
</tr>
<tr>
<td>Engaging-Disengaging</td>
<td>6</td>
<td>3</td>
<td>9</td>
<td>7</td>
<td>29</td>
<td>4</td>
<td>5</td>
<td>15</td>
<td>78</td>
</tr>
<tr>
<td>Fulfill needs-creates needs</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>31</td>
</tr>
<tr>
<td>Enjoyment-Task</td>
<td>5</td>
<td>2</td>
<td>7</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>16</td>
<td>9</td>
<td>50</td>
</tr>
<tr>
<td>Customization-Privacy</td>
<td>15</td>
<td>3</td>
<td>11</td>
<td>11</td>
<td>15</td>
<td>5</td>
<td>9</td>
<td>48</td>
<td>117</td>
</tr>
</tbody>
</table>

A principal components analysis (PCA) revealed the presence of two components with eigenvalues exceeding 1, explaining 33.6% and 14.4% of the variance, respectively. An inspection of the scree plot revealed a clear break after the second component. Thus, the two components were retained for further investigation. This two-component solution explained a total of 48.0% of the variance. To aid in the interpretation of these two components, a Varimax rotation was performed. The rotated solution revealed the presence of a simple structure (Thurstone, 1947), with both components showing a number of strong loadings and all variables loading substantially on only one component (see Table 32).
Table 32: Factor Analysis of Individual Paradox

<table>
<thead>
<tr>
<th>Rotated Component Matrix</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>FULFILL-CREATES NEEDS</td>
<td>.791</td>
</tr>
<tr>
<td>COMP-INCOMP</td>
<td>.780</td>
</tr>
<tr>
<td>CONTROL-CHAOS</td>
<td>.592</td>
</tr>
<tr>
<td>ENG-DISENG</td>
<td>.458</td>
</tr>
<tr>
<td>ENJOY-TASK</td>
<td>.451</td>
</tr>
<tr>
<td>ASSM-ISOL</td>
<td></td>
</tr>
<tr>
<td>PRIVATE-CUSTOM</td>
<td></td>
</tr>
<tr>
<td>EFF-INEFF</td>
<td></td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

The interpretation of the two components indicated that Fulfills Needs-Creates Needs, Competence-Incompetence, Control-Chaos, Engaging-Disengaging, and Enjoyment-Task specific loaded highly on Component 1. Component 2 was comprised of Assimilation-Isolation, Customization-Privacy, and Efficiency-Inefficiency. Technology-based self-services are usually a means to an end for most consumers, meaning that a consumer uses a TBSS (e.g., an ATM) to achieve some functional purpose (e.g., make adjustments to one's bank account). Component 1 seems to capture this use of technology-based self-services, which focuses on achieving a goal. When things go well with technology, needs are fulfilled and one feels in control, engaged and competent in using the technology. But when things go wrong, chaos ensues, which means that needs are unfulfilled, making one feel incompetent and disconnected from the process. Component 2 is more centered on the personal aspects of technology. It seems that the core concept of this component is the problem underlying the Customization-Privacy paradox. Sharing one's information so as to have technology customized to one's needs increases one's efficiency and connection with other people. However, the downside of this paradox is the concern over privacy, and the more one protects privacy, the less efficient and connected one becomes.

Analysis 6: Identify Patterns of Paradox Across Individuals. It was shown that individuals do experience more than one paradox; therefore, the final analysis investigated the existence of and patterns among subsets of individuals who experience multiple paradoxes. Hierarchical cluster analysis was employed to identify groups of respondents based on the patterns of paradox they experienced. Binary-squared Euclidean distance was used as the proximity measure and Ward's approach was used as the linkage method.

Table 33 shows the later stages of the clustering schedule for the hierarchical cluster analysis (earlier and intermediate stages are omitted for conciseness). An examination of the increases in the agglomeration coefficient, with large percentage increases in the coefficient going from X clusters to X-1 clusters indicating that the X cluster solution is more appropriate (Hair, Black, Babin, Anderson, & Tatham, 2010), signified that an appropriate cluster solution was indicated going from stage 91 (five clusters) to 92 (four clusters). As such, the five-cluster solution was selected for further analysis.
Table 33: Stopping Rule for Cluster Analysis

<table>
<thead>
<tr>
<th>Stage</th>
<th>Before Joining</th>
<th>After joining</th>
<th>Value</th>
<th>% increase to next stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>86</td>
<td>11</td>
<td>10</td>
<td>27.465</td>
<td>11.78%</td>
</tr>
<tr>
<td>87</td>
<td>10</td>
<td>9</td>
<td>31.132</td>
<td>12.95%</td>
</tr>
<tr>
<td>88</td>
<td>9</td>
<td>8</td>
<td>35.764</td>
<td>15.76%</td>
</tr>
<tr>
<td>89</td>
<td>8</td>
<td>7</td>
<td>42.453</td>
<td>14.57%</td>
</tr>
<tr>
<td>90</td>
<td>7</td>
<td>6</td>
<td>49.691</td>
<td>13.96%</td>
</tr>
<tr>
<td>91</td>
<td>6</td>
<td>5</td>
<td>57.755</td>
<td>17.59%</td>
</tr>
<tr>
<td>92</td>
<td>5</td>
<td>4</td>
<td>70.082</td>
<td>15.83%</td>
</tr>
<tr>
<td>93</td>
<td>4</td>
<td>3</td>
<td>83.261</td>
<td>16.31%</td>
</tr>
<tr>
<td>94</td>
<td>3</td>
<td>2</td>
<td>99.493</td>
<td>16.42%</td>
</tr>
<tr>
<td>95</td>
<td>2</td>
<td>1</td>
<td>119.042</td>
<td></td>
</tr>
</tbody>
</table>

As indicated in Table 34, the five-cluster solution produced groups that exhibit markedly different characteristics with respect to the paradoxes they experience. Cluster 1 is characterized primarily by the Engaging-Disengaging paradox, but is also somewhat influenced by the Customization-Privacy and Control-Chaos paradoxes. For these 25 respondents, technology fosters involvement and flow, but also leads to passivity and disconnection. At the same time, this cluster reveals concerns over privacy and customization. Cluster 2, on the other hand, is concerned primarily with the Customization-Privacy paradox, although the Enjoyment-Task specific paradox does impact about a third of the respondents. Cluster 3 is composed of individuals greatly concerned with Assimilation-Isolation and somewhat concerned by Customization-Privacy. For the most part, these 19 respondents use technology to build relationships with other people, but are worried about the way in which it causes them to feel detached from those people. The fourth cluster is comprised of individuals who experience a large number of paradoxes, but are especially driven by Efficiency-Inefficiency, Customization-Privacy and Assimilation-Isolation. Cluster 4, while the smallest cluster with only 11 respondents, experienced the highest number of paradoxes. Finally, cluster 5 is most concerned with Control-Chaos, or technology’s ability to imbue an individual with power but also lead to upheaval and disorder.

Summary. Taken together, these patterns of paradox across individuals provide insight into the experiences consumers have with technology paradoxes. This research has shown that paradox is part of technology consumption, at least for technology-based self-services. In addition, it has demonstrated that consumers can experience more than one paradox at a time, and, based on this finding, developed a better understanding of the paradoxes that are more likely to occur in conjunction with each other. Finally, this is the first study that has sought to understand how different groups of consumers experience paradoxes differently and how different paradoxes drive group membership. Future research can further develop these groups to create a clearer picture of the characteristics of each group.
OUTCOMES

This research offers strong theoretical contributions to the study of consumer behavior. To the best of my knowledge, it is the first work to provide a comprehensive measurement protocol for assessing technology paradoxes. Furthermore, the protocol captures the internal tensions that are a key determinant of paradox, helping to differentiate it from the related constructs of ambivalence and mixed emotions. The development of this new measurement protocol will allow researchers to study paradox more extensively and further build on the existing qualitative research. For example, the research described in Essay 3 examined the antecedents and outcomes of technology paradoxes. Without a quantitative measure that captures the two conditions of paradox, it would not have been possible to empirically analyze these factors.

In addition, this study has implications for research beyond that specifically focused on paradox. It contributes to the field by offering a more systematic method for measuring items that cannot be assessed using simple bi-polar scales. The provision of an alternative to bi-polar scales facilitates a more complete understanding of consumer experiences, allowing researchers to uncover the contradictions of self-referential statements that cannot be identified using bi-polar techniques (Bobko, 1985).

Finally, this study replicates and expands the current literature. Within the context of self-service technologies, it was possible to quantitatively test for the presence of Mick and Fournier’s (1998) technology paradoxes. Specifically, quantitative measures were developed for six of the paradoxes (Engaging-Disengaging, Competence-Incompetence, Fulfills Needs-Creates Needs, Control-Chaos, Efficiency-Inefficiency, and Assimilation-Isolation). Also, further support for the literature on mixed emotions was provided by showing that some people have opposing evaluations of technology-based self-services.
ESSAY THREE: DEVELOPING A FRAMEWORK: ANTECEDENTS AND CONSEQUENCES OF PARADOX

INTRODUCTION

The study of paradox has a long history that can be traced back to Greek philosophy (O'Driscoll, 2008). Although paradoxes have been studied in many different disciplines, researchers have failed to fully develop a conceptual model of consumption paradoxes. For example, there are unresolved issues regarding the antecedents of paradoxes, including when they are likely to occur and who is most likely to experience them. This essay seeks to understand the antecedents, or specific individual factors, that are most likely to cause consumers to experience tension.

There also are unresolved issues regarding the consequences of paradoxes, including how consumers cope with paradoxes when making decisions. This essay seeks to uncover the strategies consumers use to cope with the stress caused by paradox, as well as the outcomes of different coping strategies. While Mick and Fournier (1998) identified potential coping strategies for responding to paradox, the strategies were not tested empirically, nor were any potential outcomes associated with them. Taken together, the lack of understanding of the antecedents and consequences of paradox leads to several unsolved questions that this essay addresses.

Issues Addressed

Specifically, this study considered the following issues:

1. What are the characteristics of people who experience paradox?
   a. What are the individual factors that make a person more likely to experience paradox?
   b. How are people who experience paradox different from those who do not?
2. What are the results of experiencing paradox?
   a. What is the impact of the consumer's experience with TBSS (technology-based self-services) on:
      - Satisfaction with TBSS
      - Satisfaction with the service provider
      - Dedication to the service provider
      - Confidence in TBSS
3. When people feel the tensions associated with paradox, what coping techniques do they employ?
   a. Do certain coping techniques align with certain types of paradoxes?
   b. Do different types of coping strategies mediate the relationships between paradox and outcomes?

This essay outlines the basic shortcomings in current research on consumer paradoxes. In addition, it describes the proposed framework for the study of paradoxes. Based on the framework, the essay discusses several basic research questions as well as methods for addressing those questions. Finally, the essay describes the conclusions and implications of the research.
Research Gaps

While researchers have made great strides in understanding paradoxes, there are some fundamental shortcomings in studies of the topic. Researchers have demonstrated that paradoxes do exist; however, they have failed to fully delineate the extent of consumption paradoxes. Firstly, studies of paradox have not considered antecedents. Secondly, the outcomes of paradoxes, beyond the coping techniques employed, are not well understood.

Research in marketing and related disciplines has shown that consumers are aware of paradoxes, but for the most part researchers have yet to consider the antecedents to paradox. Management researchers argue that the antecedents of paradoxes are situational and based on individual social cognitions (Smith & Lewis, 2011), but no work to date has studied what characteristics make some consumers more susceptible to experiencing paradox than others. This study explored the relationship between proposed antecedents and the presence of paradox.

Research on consumer paradoxes has developed a better understanding of some of the related consequences than of the antecedents. However, for the most part, this research has focused on the coping techniques employed in response to paradox. No research has specifically linked the existence of paradox with consumption-related outcomes such as satisfaction or loyalty. Therefore, this essay explores the consequences of paradox in more depth.

PROPOSED FRAMEWORK

Consumer paradox is defined as an individual's recognition of an intrapersonal conflict that stems from simultaneously conflicting experiences related to marketplace elements with ramifications on consumption outcomes. A marketplace element may refer to products, services, brands, events, ideas or beliefs. The interpersonal conflict results from uncertain evaluations due to vague or undefined outcomes.

Conceptual Model

This essay seeks to develop a conceptual model incorporating both the antecedents and outcomes of a consumption paradox. More specifically, it endeavors to identify the individual factors that are more likely to drive paradox. This essay also examines the consequences of paradox in a consumption setting in terms of satisfaction and dedication. Finally, it considers coping mechanisms that consumers employ when confronting paradox and the mediating impact of coping on outcomes. The proposed conceptual framework is shown in Figure 10. The discussion that follows gives further insights into this model by addressing the three research questions previously discussed. Firstly, technology is discussed as a situational antecedent. Secondly, individual antecedents are considered. Thirdly, outcomes of paradoxes are discussed. Finally coping techniques and their impact on outcomes are analyzed.

Context for This Research

The research studied consumer paradox within the context of technology-based self-services (TBSSs). TBSSs, also known as self-service technologies, refer to those technologies that customers use independently, without any interaction with, or assistance from, employees.
Examples include on-line banking, ATM's, on-line airline ticket reservations, pay-at-the-pump gas pumps, on-line package tracking, and fully automated telephone systems.

**Figure 10: Proposed Framework**

Technology has proven to be an informative context for studying consumer paradoxes. It has been shown that technology adoption provides a situational context that is likely to lead to consumer paradox (Mick & Fournier, 1998; Munene et al., 2002; Otnes et al., 1997; Johnson et al., 2008) because consumers frequently experience both positive and negative emotions related to technology adoption (Richins, 1997). Mick and Fournier (1998) examined technology related to household goods to identify technology paradoxes, and Munene et al. (2002) discovered a number of paradoxes by studying the technology related to service encounters. The pace of advances in technology, as well as the overabundance of choices, creates situations marked by paradox (Mick & Fournier, 1998; Otnes et al., 1997).

As a specific area of technology adoption, TBSSs are especially likely to provoke tensions and generate paradoxes because the ambiguity of service makes it difficult to evaluate performance (Parasuraman & Zeithaml, 1985). Other causes of tension include consumers' different levels of technology readiness (Parasuraman, 2000) and the continuous self-learning and motivation required to use TBSSs (Johnson et al., 2008). These various aspects of TBSS often cause consumers to experience evaluative inconsistencies that can lead to paradox (Jonas, Diehl, & Bromer, 1997).

Thus, prior research supports the use of technology, and specifically TBSSs, as a productive context for studying paradox. Since it is not expected that paradox is a phenomenon that occurs in all situations, nor is it expected to occur at a high rate, utilizing this context helped increase the chances that this research would uncover paradox. In addition, this research helped replicate
and extend the limited work that has already occurred related to consumer paradox, leading to a better understanding of the characteristics of people who experience paradox.

**RESEARCH QUESTIONS**

This work is part of a series of three essays designed to study consumer paradox. Essay 1 sought to establish the theoretical framework for the second and third essays. Essay 2 addressed the definition of paradox and developed a new method for capturing paradox quantitatively. This essay, Essay 3, focuses on constructing a conceptual framework for understanding paradox in a consumption setting by examining the antecedents and outcomes of paradox. Endeavoring to understand these relationships formed the basis for three research questions: What are the antecedents of paradox? What are the outcomes of experiencing paradox? When people feel the tensions associated with paradox, what coping techniques do they employ? This section highlights the research questions, explains the proposed steps for resolving each, and provides the results of the data analysis.

**Research Question 1: What Are the Antecedents of Paradox?**

Research to date has ignored the factors that are likely to lead to paradox. A principal goal of this part of the study was to analyze a set of individual factors that might indicate that a consumer is more likely to experience paradox. The individual factors that were considered included both general characteristics (i.e., need for cognition, personal need for structure, tolerance of ambiguity, perceived risk and need for interaction) and beliefs about TBSSs (i.e., related to TBSS, expertise in TBSS, knowledge of TBSS and involvement with TBSS). The following section briefly describes each of these items and its relationship with the presence or absence of paradox.

**Antecedent Relationships**

**Need for cognition.** Consumer paradoxes contain elements of complexity and uncertainty, so solving them effectively is not a one-step process. As paradoxes are complex problems, resolving the conflicts requires continuous sense making and the development of multiple perspectives (Unnikrishnan, Nair, & Ramnarayan, 2000). Therefore, the effectiveness of the resolution should be related to the type and nature of the information-gathering behavior of the individual confronting the paradox. One type of information-gathering approach is need for cognition (NFC), an individual dispositional factor that refers to an intrinsic motivation to engage in and enjoy effortful cognitive endeavors (Enge, Fleischhauer, Brocke, & Strobel, 2008). Individuals who are high in need for cognition are naturally inclined to engage in deep reflection or to "seek, acquire, think about, and reflect back on information to make sense of stimuli, relationships and events in their world" (Cacioppo, Petty, Feinstein, & Jarvis, 1996, p. 198). In contrast, individuals low in need for cognition are more likely to use less elaboration when processing information and, therefore, are less likely to reconcile trade-offs and more likely to engage in effort-reducing heuristics (Dole & Sinatra, 1998; Nowlis, Kahn, & Dhar, 2002). This study proposed that a stronger need to cognitively engage in events made people more likely to experience a paradox, thus
**Hypothesis 1:** Individuals that are high (low) in need for cognition are more (less) likely to experience paradox.

**Personal need for structure.** As technology drives advances in product and service offerings, consumption decisions become more complex and overwhelming (Fana, Gordon, & Pathak, 2005). This overload makes information processing challenging, so consumers must seek ways to reduce the information overload (Neuberg & Newsom, 1993). An individual's innate drive to control and process this information overload can influence how likely someone is to engage in internal structuring. One measure of the drive to structure information is personal need for structure, which refers to a stronger disposition to cognitively structure the world so that it is unambiguous and clear (Neuberg & Newsom, 1993; Thompson, Naccarato, Parker, & Moskowitz, 2001). Because consumers high in personal need for structure are motivated to seek out simple, structured ways of dealing with their worlds, they are less likely to encounter paradox, thus

**Hypothesis 2:** Individuals high (low) in personal need for structure are less (more) likely to experience paradox.

**Tolerance for ambiguity.** A related, but somewhat opposing, construct to personal need for structure is tolerance for ambiguity. While personal need for structure describes an individual's disposition to structure information, tolerance for ambiguity describes an individual's ability to interpret vague or unstructured information. More specifically, tolerance for ambiguity refers to the manner in which a consumer perceives and processes information about ambiguous or unfamiliar situations (Furnham & Ribchester, 1995). Individuals who are low in tolerance for ambiguity will avoid or quickly stop processing paradoxical information (Vernon, 1970) and are more likely to perceive an ambiguous situation as strictly black or white (Bhushan & Amal, 1986). On the other hand, people with a higher tolerance for ambiguity make decisions based on a larger set of stimuli (Vernon, 1970) and will continue seeking information to solve problems (Grenier, Barrette, & Ladouceur, 2005). Therefore, they are more likely to uncover a paradox, thus

**Hypothesis 3:** Individuals that are high (low) in tolerance for ambiguity are more (less) likely to experience paradox.

**Perceived Risk.** Personal need for structure and tolerance for ambiguity on some level both relate to situational risk. The need to structure information and make sense of the world is focused on reducing risk, while tolerating ambiguity refers to the ability to accept risk. A related concept is the risk perceived to be present in a consumption situation. Perceived risk refers to the uncertainty of possible negative consequences of using a product or service at an individual level (Featherman & Pavlou, 2003). This factor is important when considering self-service technologies, because research in related areas, such as on-line purchasing, has shown that perceived risk is a key determinant in the acceptance of electronic commerce services (Jarvenpaa, Tractinsky, & Saarinen, 1999). Perceived risk increases involvement (Mitchell, 1999), which in turn increases processing and data gathering, and thus increases the chances that a consumer will gather information that leads to conflicting evaluations (Richins, Bloch, &
McQuarrie, 1992). Paradox is the outcome if these conflicting evaluations are acknowledged and cannot be resolved, thus

**Hypothesis 4:** Individuals who experience high (low) levels of perceived risk are more (less) likely to experience paradox.

Need for Interaction. Sometimes elements of the environment can force the relevancy of individual traits. In technology paradoxes, one such individual trait is need for interaction. Dabholkar (1996) describes the need for interaction as "the need that some individuals feel for interacting with the service employee in a service encounter" (p. 564). Often advances in technology can reduce the ability consumers have to interact with individuals as machines take the place of the service provider. While these advances bring some benefits, a high need for interaction will have a negative effect on attitudes towards using technology (Dabholkar and Bagozzi, 2002). So when individuals high in need for interaction must use TBSSs, they often feel greater levels of stress associated with the experience. This increase in stress will cause greater information processing and therefore lead to a greater chance that paradox will be encountered, thus:

**Hypothesis 5:** Individuals who experience high (low) need for interaction are more (less) likely to experience paradox.

Expertise, Knowledge and Involvement. This research also considered the impact of the three interrelated constructs of expertise, knowledge and involvement on paradox. Expertise is the skill and judgment one acquires from exposure to and use of a product. Knowledge refers to information acquired about a product category, and while it is related to expertise, it is a separate construct. Researchers have shown that expertise related to product use and a person's knowledge structure about the product are not necessarily correlated (Zaichkowsky, 1985b). Closely related to these two constructs is involvement, which is a construct that captures an individual's perceived relevance of a product category based on inherent needs, values and interest (Zaichkowsky, 1985a). Because involvement is a motivational construct, it is distinct from expertise or knowledge. Involvement does not imply that someone has expertise or knowledge related to a product category, although it can drive the motivation to increase experience or knowledge (Zaichkowsky, 1985b).

First, expertise with technology was studied. There were two competing perspectives on what influence expertise would have on the likelihood of experiencing paradox. It is possible that increased expertise gives consumers more insight into the conflicting elements of technology because there is more opportunity to experience both the good and the bad of technology use. Thus the increase in number of experiences could lead to a greater possibility of identifying a paradox. On the other hand, it is also possible that increased expertise presents more information that individuals can use to better judge conflicting elements and resolve them before paradoxes develop. Two competing hypotheses address this construct:

**Hypothesis 6a:** Individuals with high (low) levels of expertise with TBSSs are less (more) likely experience paradox.
**Hypothesis 6b:** Individuals with high (low) levels of expertise with TBSSs are more (less) likely experience paradox.

Like expertise, the effect of knowledge was studied without a clear expectation of what impact knowledge might have on the likelihood of paradox to occur. Knowledge provides a greater understanding of both the good and the bad aspects of technology, thus increasing the possibility of identifying a paradox. But on the other hand, increased knowledge reduces uncertainty and risk (Smith & Park, 1992; Gurhan-Canli, 2003), which would reduce processing and thereby reduce the chance that an individual experiences paradox. Again, two competing hypotheses address this construct:

**Hypothesis 7a:** Individuals with high (low) levels of knowledge regarding TBSSs are less (more) likely experience paradox.

**Hypothesis 7b:** Individuals with high (low) levels of knowledge regarding TBSSs are more (less) likely experience paradox.

While involvement is often related to expertise and knowledge, involvement should have a more predictable relationship to paradox. As a motivational construct, involvement has been shown to increase processing, data gathering, and engaging in counterarguments (Richins et al., 1992; Wright, 1973). Individuals with high involvement in a product category will spend more time considering options and searching for the right selection (Clarke & Belk, 1978). As people high in involvement will gather more information, consider more options and engage in more counterarguments, it is proposed that:

**Hypothesis 8:** Individuals with high (low) levels of involvement with TBSSs are more (less) likely experience paradox.

**Method**

This study was conducted with a sample of 347 adult respondents who were part of an online consumer panel survey. Of the participants, 41.5% were male and 58.5% were female. The panel was developed to be representative of the U.S. population between the ages of 18 to 65. This sample was felt to be suitable for understanding users of TBSS because limiting the age would reduce the chance that a respondent had not used TBSSs at some point. The age of respondents ranged from 18 to 65, with an average age of 34. The respondents were 70.9% Caucasian, 11.0% African American, 7.8% Hispanic, and 6.6% Asian. Participants were compensated for completing the online survey.

The antecedent variables were measured using the 3-item Need for Cognition scale (Ailawadi, Neslin, & Gedenk, 2001), the 12-item Tolerance for Ambiguity scale (positively worded items from McLain, 1993), the 4-item Perceived Risk of Self-Service Technology scale (Meuter, Bitner, Ostrom, & Brown, 2005), the 6-item Personal Need for Structure scale (Neuberg & Newsom, 1993), the 3-item Need for Interaction scale (Dabholkar, 1996), and the Knowledge of Product Class scale (Chang, 2004). Other scale items include a 10-item involvement with TBSS

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5 This same sample was used to address all three research questions.
scale (Zaichkowsky, 1994), and a scale created for this study that measured expertise with TBSSs by relying on self-reported usage for six common TBSSs (withdraw money from an ATM, conduct banking transactions online, book travel plans online, use self-checkout at a grocery store, pay bills online and shop for clothes online).

The dependent variables for research question 1 were the presence or absence of paradox. Using the three-step method detailed in Essay 2, the presence of paradox was measured for both overall and specific paradox types.

In addition to the antecedents, a number of other variables were included as control variables. First, dispositional innovation was included as it is closely related to acceptance of new technologies and thus accounts for the confounding influence of acceptance on the adoption of TBSS. Several basic demographic variables (i.e., gender, age, income, and education) were also included to account for any influences that those variables might have on views of technology. In all instances, no predictions were made on the relationships between the control variables and paradoxes, but they were included in the logistic models.

Participants completed an online survey that was positioned as a survey of their views of technology-based self-service. Respondents were first introduced to the concept of TBSSs, followed by questions assessing their experiences with them across a wide range of services and their views of TBSSs in general. Respondents then proceeded to a series of questions for the three-step process of defining paradox described in Essay 2. Participants first indicated their agreement/disagreement with a series of statements related to both positive and negative aspects of TBSSs. If respondents indicated that they strongly agreed with both positive and negative statements regarding a specific technology paradox, they were then asked to choose which statement was most in conflict with the positive statement. For the selected pair, respondents then indicated their felt conflict about the opposing items. Next, respondents who identified a paradox by indicating at least 2 items related to a specific paradox as in conflict were asked to select the paradox that was most challenging to them personally. A series of follow-up questions focused on the coping mechanisms employed, as well as on the specific TBSS and service provider associated with the focal paradox. Finally, participants answered questions measuring individual qualities, along with the control variables.

In line with previous research (e.g., Dow & Lorima, 2009), binary logistic regression was used to test our hypotheses related to Research Question 1. Logistic regression is an effective tool for predicting a dichotomous variable (i.e., a paradox) (Hair et al., 2006). It was used for hypothesis testing because it allows for the examination of each antecedent individually, while also accounting for the effects of other antecedents and the control variables. Each hypothesis was tested by examining the sign and significance of the estimated coefficients associated with each antecedent. Variables were entered in a two-step process, with the control variables entered in step 1 and antecedent variables in step 2. Models had to achieve a significant level of overall model fit to be used for hypothesis testing. If the model did not achieve significant fit, univariate tests of each antecedent was used.

To test the hypotheses, separate logistic regression models were run for overall paradox and then for each of the eight specific paradoxes. The overall paradox model grouped those respondents
who experienced two or more paradoxes (of any type) versus respondents who did not experience any paradox. The separate models for each type of paradox allowed for assessment of the differential impacts of antecedents across the different types of paradoxes. The paradox-specific models grouped those respondents who experienced the target paradox versus respondents who experienced no paradox. As a result, respondents who experienced a paradox other than the target paradox were excluded from the analysis of each specific paradox. For example, for the Assimilation-Isolation model, respondents were placed in the "No Paradox" group if they did not experience any paradox, while those who experienced an Assimilation-Isolation paradox were placed in the other group. But respondents who experienced a paradox other than Assimilation-Isolation were excluded from the analysis altogether. Thus the paradox-specific models compared individuals who experienced the target paradox (e.g., Assimilation-Isolation) with respondents who did not experience any paradox at all. Each model contained the eight hypothesized independent variables (Tolerance for Ambiguity, Need for Interaction, Personal Need for Structure, Need for Cognition, Perceived risk, Knowledge of TBSS technology in general, Expertise, Involvement with TBSS technology in general) in addition to the control variables (Dispositional innovativeness, gender, age and income).

As a complement to the logistic regression models, univariate tests of group differences were also performed for each antecedent, both for the overall paradox group and the specific paradox groups. These tests provided insight into additional relationships not identified in the logistic regression models that might indicate the need for additional research. Moreover, when the logistic regression model failed to achieve a significant level of overall model fit, these tests were used to assess the hypotheses. The univariate tests used the same groupings of respondents as the logistic models, comparing those who experienced the target paradox with those who did not experience any paradox.

Results

The first analysis subjected the antecedent variables to an exploratory factor analysis (Table 35) to confirm the proposed structure of the scale items. Eight factors, accounting for 65 percent of the total variance, were extracted and rotated to a varimax criterion. The items and their factor loadings are reported in Table 36. In all cases, the items loaded highest on the factor representing the appropriate construct. In addition, all eight antecedent scales prove to be highly reliable, with Cronbach's alphas ranging from .70 to .92.

As described earlier, the hypotheses were tested by entering the antecedent variables, along with the control variables, into a series of logistic regression analysis models to predict their relationships with paradox. Nine models, one for the overall model and one for each of the eight paradoxes, were then estimated.
### Table 35: Summary of Antecedent Scales

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<tr>
<th>Scale</th>
<th># of Items in Scale</th>
<th>Source</th>
<th>Reported Reliability</th>
<th>Response Format</th>
<th>Reliability in this Study</th>
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<td>Need for cognition</td>
<td>3</td>
<td>Ailawadi, Neslin, &amp; Gedenk (2001)</td>
<td>0.86</td>
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<td>Personal need for structure&lt;sup&gt;a&lt;/sup&gt;</td>
<td>6</td>
<td>Neuberg &amp; Newsom (1993)</td>
<td>0.77</td>
<td>5-point</td>
<td>0.77</td>
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<tr>
<td>Tolerance for ambiguity&lt;sup&gt;a&lt;/sup&gt;</td>
<td>11</td>
<td>McLain (1993)</td>
<td>0.86</td>
<td>5-point</td>
<td>0.84</td>
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<td>Perceived risk</td>
<td>5</td>
<td>Meuter, Bitner, Ostrom, &amp; Brown (2005)</td>
<td>.85-.87</td>
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<tr>
<td>Expertise</td>
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<sup>a</sup>Amended scale to use only positively worded items

### Table 36: Factor Analysis of Antecedent Items

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<th>3</th>
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</tbody>
</table>
The overall model was statistically significant, $\chi^2 (1, N=347) = 26.23$, $p = .016$, indicating that the model was able to distinguish between respondents who experienced paradox and those who did not and provided a test of the hypotheses pertaining to the antecedents. As shown in Table 37, three hypotheses (H2, H4 and H5) had some support. Two of the antecedents (personal need for structure and perceived risk of TBSS) made statistically significant contributions to the overall model, while personal need for interaction was marginally significant. These results for the overall model demonstrate that the antecedents do significantly predict the presence or absence of paradox in the aggregate. However, this model does not examine if the antecedents act in different ways for each paradox. To address this issue, logistic regression models were estimated for each specific type of paradox.

Four of the eight paradox-specific models (Assimilation-Isolation, Fulfills Needs-Creates Needs, Customization-Privacy and Enjoyment-Task Specific) achieved statistical significance for overall model fit. As shown in Table 37, levels of fit for these models were quite acceptable—Assimilation-Isolation ($\chi^2 = 36.28$, $p = .001$), Fulfills Needs-Creates Needs ($\chi^2 = 21.835$, $p = .058$), Customization-Privacy ($\chi^2 = 27.76$, $p = .010$), and Enjoyment-Task Specific ($\chi^2 = 37.94$, $p = .001$). The hypotheses tests for each model are discussed in the following section. Hypotheses related to the four paradox-specific models that did not achieve a statistically significant fit were examined by univariate tests of group differences, discussed in a later section.

The hypotheses tests for the four paradox-specific models identified very different sets of significant impacts across the paradoxes. The significant antecedents of Assimilation-Isolation included need for cognition ($p = .004$), personal need for structure ($p = .011$), and perceived risk of TBSS ($p = .013$). Antecedents that were significant for Fulfills Needs-Creates Needs included need for cognition ($p = .022$), personal need for structure ($p = .012$), and involvement with TBSS ($p = .053$). The significant antecedents of the Customization-Privacy paradox were need for interaction ($p = .018$) and perceived risk of TBSS ($p = .008$), with marginal significance for need
for cognition (p = .064). Finally, for the Enjoyment-Task Specific paradox, the significant antecedents included personal need for structure (p = .001), need for interaction (p = .001), expertise related to TBSS (p = .023) and knowledge of TBSS (p = .031). For the unidirectional hypotheses (H1-H5 and H8) all means were in the expected direction except the marginal antecedent for Customization-Privacy, which was in the opposite direction. The competing hypotheses (H6a, H6b, H7a and H7b) found significant support for H6b and H7b on Enjoyment-Task specific. In conjunction, the results of the paradox-specific models demonstrate that the paradoxes have different antecedents.

For the four paradox-specific models that did not achieve statistically significant model fit, the hypotheses were assessed using univariate tests of the group differences. While these tests did not account for the other antecedents and the control variables, they nonetheless provided some measure of the relationship between the antecedents and experience of a paradox (Table 38).

As would be expected, because the overall model fit was poor for these paradoxes, antecedents exhibiting differences were only found in three instances involving two antecedents. Expertise exhibited a significant influence for the Efficiency-Inefficiency and Engaging-Disengaging paradoxes, providing additional support for Hypothesis 6b. In addition, marginal support was found for personal need for structure (H2) among those who experienced the Control-Chaos paradox. There were no significant differences found for the antecedents in the Competence-Incompetence paradox.

Sample size differences are due to comparison technique. For each target paradox, means are between those that experienced the target paradox and those that experienced no paradox.

In addition, the independent means differences tests lent further support to the results of the significant logistic regression models. For the most part, differences identified in the means tests were consistent with significant antecedents in the logistic analysis; however, two differences did emerge. Means tests showed differences for involvement with TBSSs on both Assimilation-Isolation and Customization-Privacy. This finding indicates that the relationship between involvement and these two specific paradoxes might be a fruitful area for future research.

Discussion

Table 39 provides a summary of the tests of the eight hypotheses for Research Question 1. While the overall model only showed influence for three antecedents, the paradox-specific models found support for all of the antecedents except tolerance for ambiguity. By demonstrating that different paradoxes have different antecedents, this study builds on the results discussed in Essay 2 that demonstrated different patterns of the experience of paradox. If some groups of people are more likely to experience certain subsets of paradox, as Essay 2 argues, then it stands to reason that the antecedents would vary by paradox.
Table 37: Tests of Hypotheses with Logistic Regression by Paradox Type

<table>
<thead>
<tr>
<th></th>
<th>Overall Model Paradox</th>
<th>Assimilation - Isolation</th>
<th>Control - Chaos</th>
<th>Efficiency - Inefficiency</th>
<th>Fulfills Needs - Creates Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model sig.</strong></td>
<td>0.016</td>
<td>0.001</td>
<td>0.134</td>
<td>0.550</td>
<td>0.058</td>
</tr>
<tr>
<td><strong>R²</strong></td>
<td>0.115</td>
<td>0.239</td>
<td>0.074</td>
<td>0.132</td>
<td>0.445</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>347</td>
<td>269</td>
<td>254</td>
<td>243</td>
<td>236</td>
</tr>
<tr>
<td><strong>Antecedents</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1: Need for Cognition</td>
<td>-0.020</td>
<td>0.521</td>
<td>0.071</td>
<td>0.915</td>
<td>0.004</td>
</tr>
<tr>
<td>H2: Personal need for structure</td>
<td>-0.538</td>
<td>0.015</td>
<td>-1.104</td>
<td>0.005</td>
<td>-0.993</td>
</tr>
<tr>
<td>H3: Tolerance for ambiguity</td>
<td>-0.055</td>
<td>0.841</td>
<td>-0.078</td>
<td>0.877</td>
<td>0.110</td>
</tr>
<tr>
<td>H4: Perceived risk</td>
<td>0.369</td>
<td>0.040</td>
<td>0.766</td>
<td>0.013</td>
<td>-0.087</td>
</tr>
<tr>
<td>H5: Need for Interaction</td>
<td>0.294</td>
<td>0.096</td>
<td>0.128</td>
<td>0.689</td>
<td>0.056</td>
</tr>
<tr>
<td>H6: Expertise</td>
<td>0.246</td>
<td>0.151</td>
<td>0.134</td>
<td>0.634</td>
<td>0.304</td>
</tr>
<tr>
<td>H7: Knowledge</td>
<td>0.008</td>
<td>0.966</td>
<td>0.433</td>
<td>0.150</td>
<td>-0.087</td>
</tr>
<tr>
<td>H8: Involvement</td>
<td>-0.121</td>
<td>0.578</td>
<td>-0.290</td>
<td>0.574</td>
<td>0.745</td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dispositional innovativeness</td>
<td>-0.270</td>
<td>0.125</td>
<td>-0.682</td>
<td>0.068</td>
<td>-0.592</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.521</td>
<td>0.056</td>
<td>-0.519</td>
<td>0.758</td>
<td>-0.225</td>
</tr>
<tr>
<td>Age</td>
<td>-0.009</td>
<td>0.490</td>
<td>0.021</td>
<td>0.326</td>
<td>0.017</td>
</tr>
<tr>
<td>Income</td>
<td>-0.131</td>
<td>0.116</td>
<td>-0.070</td>
<td>0.628</td>
<td>0.048</td>
</tr>
<tr>
<td>Constant</td>
<td>1.311</td>
<td>0.354</td>
<td>-2.292</td>
<td>0.899</td>
<td>-3.640</td>
</tr>
</tbody>
</table>

Sample size differences are due to comparison technique. For each target paradox, means are between those that experienced the target paradox and those that experienced no paradox.
Table 37 cont’d

<table>
<thead>
<tr>
<th></th>
<th>Engaging-Disingaging</th>
<th>Competence-Incompetence</th>
<th>Enjoyment-Task Specific</th>
<th>Customization-Privacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model sig.</td>
<td>0.888</td>
<td>0.495</td>
<td>0.001</td>
<td>0.010</td>
</tr>
<tr>
<td>R²</td>
<td>0.074</td>
<td>0.303</td>
<td>0.423</td>
<td>0.155</td>
</tr>
<tr>
<td>N</td>
<td>256</td>
<td>235</td>
<td>245</td>
<td>273</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Antecedents</th>
<th>beta</th>
<th>sig</th>
<th>beta</th>
<th>sig</th>
<th>beta</th>
<th>sig</th>
<th>beta</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: Need for Cognition</td>
<td>0.286</td>
<td>0.294</td>
<td>1.919</td>
<td>0.084</td>
<td>0.443</td>
<td>0.262</td>
<td>-0.392</td>
<td>0.064</td>
</tr>
<tr>
<td>H2: Personal need for structure</td>
<td>-0.127</td>
<td>0.722</td>
<td>-0.828</td>
<td>0.426</td>
<td>-2.073</td>
<td>0.001</td>
<td>-0.209</td>
<td>0.462</td>
</tr>
<tr>
<td>H3: Tolerance for ambiguity</td>
<td>-0.041</td>
<td>0.925</td>
<td>1.954</td>
<td>0.234</td>
<td>-0.885</td>
<td>0.155</td>
<td>-0.094</td>
<td>0.796</td>
</tr>
<tr>
<td>H4: Perceived risk</td>
<td>0.108</td>
<td>0.710</td>
<td>-1.049</td>
<td>0.228</td>
<td>-0.063</td>
<td>0.880</td>
<td>0.630</td>
<td>0.008</td>
</tr>
<tr>
<td>H5: Need for Interaction</td>
<td>0.310</td>
<td>0.298</td>
<td>0.191</td>
<td>0.818</td>
<td>1.668</td>
<td>0.001</td>
<td>0.560</td>
<td>0.018</td>
</tr>
<tr>
<td>H6: Expertise</td>
<td>0.136</td>
<td>0.625</td>
<td>0.060</td>
<td>0.479</td>
<td>1.085</td>
<td>0.023</td>
<td>0.136</td>
<td>0.545</td>
</tr>
<tr>
<td>H7: Knowledge</td>
<td>0.078</td>
<td>0.788</td>
<td>-1.027</td>
<td>0.198</td>
<td>0.950</td>
<td>0.031</td>
<td>-0.078</td>
<td>0.733</td>
</tr>
<tr>
<td>H8: Involvement</td>
<td>0.333</td>
<td>0.538</td>
<td>1.215</td>
<td>0.246</td>
<td>-0.210</td>
<td>0.682</td>
<td>-0.117</td>
<td>0.671</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control Variables</th>
<th>beta</th>
<th>sig</th>
<th>beta</th>
<th>sig</th>
<th>beta</th>
<th>sig</th>
<th>beta</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispositional innovativeness</td>
<td>0.050</td>
<td>0.890</td>
<td>-2.312</td>
<td>0.101</td>
<td>-1.023</td>
<td>0.086</td>
<td>-0.230</td>
<td>0.418</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.257</td>
<td>0.557</td>
<td>-1.854</td>
<td>0.177</td>
<td>0.305</td>
<td>0.663</td>
<td>-0.362</td>
<td>0.317</td>
</tr>
<tr>
<td>Age</td>
<td>-0.034</td>
<td>0.125</td>
<td>-0.075</td>
<td>0.286</td>
<td>-0.011</td>
<td>0.730</td>
<td>-0.015</td>
<td>0.386</td>
</tr>
<tr>
<td>Income</td>
<td>-0.045</td>
<td>0.726</td>
<td>0.148</td>
<td>0.617</td>
<td>-0.447</td>
<td>0.060</td>
<td>-0.222</td>
<td>0.053</td>
</tr>
<tr>
<td>Constant</td>
<td>-4.209</td>
<td>0.045</td>
<td>-2.652</td>
<td>0.678</td>
<td>-1.206</td>
<td>0.728</td>
<td>-0.613</td>
<td>0.741</td>
</tr>
</tbody>
</table>

Sample size differences are due to comparison technique. For each target paradox, means are between those that experienced the target paradox and those that experienced no paradox.
Table 38: Hypothesis Tests by Univariate Tests for Non-significant Paradox-Specific Models

<table>
<thead>
<tr>
<th>Group</th>
<th>Control-Chaos</th>
<th>Efficiency-Inefficiency</th>
<th>Engaging-Disengaging</th>
<th>Competence-Incompetence</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>254 27</td>
<td>243 14</td>
<td>251 29</td>
<td>235 5</td>
</tr>
<tr>
<td>H1: Need for Cognition</td>
<td>2.76 2.94</td>
<td>2.76 2.67</td>
<td>2.76 3.09</td>
<td>2.76 3.20</td>
</tr>
<tr>
<td>H4: Perceived Risk</td>
<td>2.84 2.83</td>
<td>2.84 3.13</td>
<td>2.84 3.10</td>
<td>2.84 2.65</td>
</tr>
<tr>
<td>H5: Need for Interaction</td>
<td>3.22 3.16</td>
<td>3.22 3.52</td>
<td>3.22 3.54</td>
<td>3.22 3.33</td>
</tr>
<tr>
<td>H6: Expertise</td>
<td>3.27 3.54</td>
<td>3.27 3.81**§</td>
<td>3.27 3.62*§</td>
<td>3.27 3.33</td>
</tr>
<tr>
<td>H7: Knowledge of TBSS</td>
<td>3.17 3.26</td>
<td>3.17 3.38</td>
<td>3.17 3.43</td>
<td>3.17 2.85</td>
</tr>
<tr>
<td>H8: Involvement</td>
<td>3.87 4.03</td>
<td>3.87 4.18</td>
<td>3.87 4.02</td>
<td>3.87 3.82</td>
</tr>
</tbody>
</table>

Group 0: no paradox
Group 1: experienced target paradox
*significant at the .1 level
**significant at the .05 level

Table 39: Summary of Hypothesis Tests for Antecedents

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Paradox-Specific Models</th>
<th>Univariate Tests of Group Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 1</td>
<td>Assimilation-Isolation* Fulfill needs-Creates needs** Customization-Privacy*</td>
<td></td>
</tr>
<tr>
<td>Hypothesis 2</td>
<td>Overall model** Fulfill needs-Creates needs** Enjoyment-Task specific** Assimilation-Isolation**</td>
<td>Control-Chaos*</td>
</tr>
<tr>
<td>Hypothesis 3</td>
<td>NOT SUPPORTED</td>
<td></td>
</tr>
<tr>
<td>Hypothesis 4</td>
<td>Overall model** Assimilation-Isolation** Customization-Privacy**</td>
<td></td>
</tr>
<tr>
<td>Hypothesis 5</td>
<td>Overall model* Enjoyment-task specific** Customization-Privacy**</td>
<td></td>
</tr>
<tr>
<td>Hypothesis 6A</td>
<td>NOT SUPPORTED</td>
<td></td>
</tr>
<tr>
<td>Hypothesis 6B</td>
<td>Enjoyment-Task specific**</td>
<td>Efficiency-Inefficiency** Engaging-Disengaging*</td>
</tr>
<tr>
<td>Hypothesis 7A</td>
<td>NOT SUPPORTED</td>
<td></td>
</tr>
<tr>
<td>Hypothesis 7B</td>
<td>Enjoyment-Task specific**</td>
<td></td>
</tr>
<tr>
<td>Hypothesis 8</td>
<td>Fulfill needs-Creates needs*</td>
<td></td>
</tr>
</tbody>
</table>

*significant at the .1 level
**significant at the .05 level
Secondly, the results show that some antecedents are stronger drivers of paradox than others. As shown in Table 40, some of the antecedents have influence on a greater number of paradoxes than others. For example, personal need for structure was identified as an influence in the overall measure of paradox, as well as four of the eight paradox-specific models. Other strong influences of paradox include need for cognition, need for interaction and perceived risk. The only antecedent that did not significantly contribute to the experience of paradox was tolerance for ambiguity. These results are contrary to expectations and provide an area for future research.

Finally, as also shown in Table 40, some paradoxes are influenced by a large number of antecedents, while others are only influenced by one antecedent. This result implies that this set of antecedents is better suited for some of the specific paradoxes than others. At the same time, the predictive power of the logistic regression equations were acceptable, ranging from variance explained of 15.5% up to 44.5%. The lack of significant influence in one of the stronger models (the Competent-incompetent paradox) may be the result of two factors. First, this was a relatively rare paradox, experienced by only five of the respondents. While this paradox exhibited higher incidence in past qualitative research on technology in general, it may be less applicable to TBSSs. Moreover, TBSSs are designed to be simple and easy to understand, which should reduce the likelihood that TBSSs make people feel incompetent.

Table 40: Summary Results of Antecedents by Paradox Type

<table>
<thead>
<tr>
<th>Antecedent</th>
<th>Need for Cognition</th>
<th>Personal Need for Structure</th>
<th>Tolerance for Ambiguity</th>
<th>Perceived Risk</th>
<th>Need for Interaction</th>
<th>Expertise</th>
<th>Knowledge of TBSS tech in general</th>
<th>Involvement with TBSS tech in general</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall paradox</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control-Chaos</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create-Fulfill Needs</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engage-Disengage</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competent-Incompetent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enjoy-task</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assimilation-Isolation</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customization-Privacy</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency-Inefficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Check indicates that antecedent was significant or marginally significant for paradox in either logistic regression or means tests

Research Question 2: What Are the Outcomes of Experiencing Paradoxes?

Research on consumer paradoxes has developed a better understanding of consequences than antecedents. As mentioned previously, researchers have shown that when faced with paradoxes in the marketplace, consumers apply various coping strategy, including avoidance and confrontation (Baron et al., 2006; Cui et al., 2009; Jarvenpaa & Lang, 2005; Mick & Fournier,
Yet only two studies have considered the outcomes beyond coping strategy. Mick and Fournier (1998) applied qualitative methods to understand the emotional outcomes of paradox that lead to coping. Whereas Cui et al. (2009) measured the influence of coping strategy on beliefs about product usefulness, ease of use, and fun, they ignored the impact of these variables on satisfaction, loyalty and consumer confidence. To date, research has not developed a comprehensive framework for understanding the impact of paradoxes on some common outcomes of consumer decision-making. A principle goal of this essay is to analyze a set of outcome variables related to TBSSs (i.e., Satisfaction with TBSSs in general, satisfaction with a specific TBSS and confidence in TBSSs) as well as to service providers (i.e., satisfaction with service provider and loyalty to service provider) that might be impacted by paradox. The section below explains the outcome variables in more detail, building on research on the related construct of ambivalence. Past researchers have used the concepts of paradox and ambivalence interchangeably although they are distinct. However, the experience of confronting conflicting positive and negative evaluations of an object may have an effect on satisfaction and loyalty similar to that of ambivalence.

Outcome Relationships

Satisfaction with TBSS and service provider. TBSSs are often provided by companies to increase services and thus satisfaction (Johnson et al., 2008). However, various aspects of TBSSs are likely to cause evaluative inconsistencies that can lead to paradoxes (Jonas et al., 2000). Therefore, it stands to reason that satisfaction is a useful outcome to measure when the impact of paradoxes on consumers is considered. This issue is especially important because past research on paradoxes has considered coping strategy, but has not accurately addressed the outcomes of these responses. The current study sought to understand the impact on satisfaction when consumers were not able to properly process the benefits and detriments of a service and thus experienced a paradox. This research specifically tested overall satisfaction with respect to TBSSs and to a particular TBSS service provider, following service literature that shows that overall, or cumulative, satisfaction is a superior measure to satisfaction based on recent experience with a provider (Anderson, Fornell, & Lehmann, 1994).

While research has failed to examine the relationship between paradox and satisfaction, there have been a few studies that have considered the impact of a related construct, ambivalence, on satisfaction. This research has shown ambivalence to be an antecedent for satisfaction, in that there is a negative relationship between ambivalence and satisfaction (Olsen et al., 2005; Mano & Oliver, 1993). This finding is supported by other research showing that ambivalent attitudes are weaker, less stable, and less extreme than unidirectional attitudes and evaluations (Johnson et al., 2008). Thus, the research on ambivalence lends support to the following hypotheses regarding satisfaction with both the TBSS and the service provider:

**Hypothesis 9a:** Individuals who experience paradox will have lower levels of satisfaction with TBSSs than those who do not experience paradox.

**Hypothesis 9b:** Individuals who experience paradox related to a specific TBSS will have lower levels of satisfaction with regard to that TBSS than those who do not experience paradox.
Hypothesis 9c: Individuals who experience paradox will have lower levels of satisfaction with a service provider than those who do not experience paradox.

Loyalty to service provider. The links between increased customer satisfaction, increased customer loyalty, and increased profits are well established in research on the service industries (Cronin, Brady, & Hult, 2000; Hallowell, 1996; Oliver, 1999; Patterson & Smith, 2003; Yu & Dean, 2001). However, researchers have failed to consider the relationships between paradox and loyalty. Research on ambivalence has shown that the lack of certainty associated with ambivalent feelings is negatively related to loyalty (Olsen et al., 2005). This reduced loyalty is driven by a reduction in satisfaction (Povey, Wellens, & Conner, 2001; Sparks, Conner, Rhiannon, Sheppard, & Povey, 2001) and by a weakened relationship between satisfaction and loyalty (Jonas et al., 1997; Conner & Sparks, 2002). This study proposed that, like ambivalent consumers, consumers who experience a paradox are less satisfied and therefore less loyal. It is reasonable to assume that the greater the conflict generated by paradoxes, the less loyalty is present.

Hypothesis 10: Individuals who experience paradox will have lower levels of loyalty to a service provider than those who do not experience paradox.

Confidence in TBSS. For consumers to gain the intended benefits of TBSSs, they must have enough confidence in the technology to have the desire to use it. Research has shown that usage and knowledge increase confidence, but uncertainty decreases it (Bobbitt & Dabholkar, 2001). To date, no research has examined the relationship between paradox and confidence. However, since paradox stems from the uncertainty of outcomes, it is likely that the presence of paradox in a purchase situation will reduce consumer confidence. With respect to TBSSs in particular, a consumer gains confidence from use of the technology, but the uncertainty of paradox has the potential to reduce the frequency of use and thereby erode confidence. Thus,

Hypothesis 11: Individuals who experience paradox will have lower levels of confidence in TBSSs than those who do not experience paradox.

Method

Analysis for this research question used the same dataset described earlier for Research Question 1. To reiterate, the dataset consisted of responses from a sample of 347 adult respondents who were part of an online consumer panel survey. The analyses for this research question employed the same definitions of overall and specific paradox as used in Research Question 1, plus an additional measure: the focal paradox. The focal paradox was considered only for those respondents who indicated that they experienced one or more paradoxes using the three-step method, resulting in a sample of 96 respondents. The focal paradox was defined by asking respondents which paradox presented the greatest challenge for them personally. It was expected that this focal paradox, since it was the most dominant, would produce the strongest relationship to the outcome variables. Due to the small sample sizes for the specific types of paradoxes (see Figure 11), the focal paradox was categorized as one of the two classes of paradox (process-oriented or personal-oriented) identified using factor analysis in Essay 2. Process-oriented paradox types include Fulfill Needs-Create Needs, Enjoyment-Task Specific, Engaging-
Disengaging, Control-Chaos, and Competent-Incompetent. Personal-oriented paradox types include Assimilation-Isolation, Efficiency-Inefficiency, and Customization-Privacy.

With respect to the outcomes of paradox, five measures of specific consumption-related variables were employed. First, overall attitudes towards TBSSs were examined using the 3-item Overall Satisfaction with TBSS technology scale (Crosby & Stephens, 1987) and the 3-item Confidence in TBSS scale (Zhang & Buda, 1999). In addition, respondents were asked to indicate which TBSS best exemplified the focal paradox. Follow-up questions were asked regarding this specific TBSS, including separate 5-point Overall Satisfaction with TBSS and Satisfaction with Specified TBSS scales (Crosby & Stephens, 1987), the 3-item Satisfaction with service provider scale (Patterson & Smith, 2003), the 4-item Loyalty to service provider scale (Lichtenstein, Drumwright, & Braig, 2004) and the 2-item Commitment to service provider scale (Patterson & Smith, 2003). Due to low reliabilities and a lack of differentiation in the factor analysis, loyalty to service provider and commitment to service provider were combined after the removal of reverse coded items for a combined measure of loyalty to service provider.

The hypotheses associated with Research Question 2 were tested using Multivariate Analysis of Variance (MANOVA) followed by univariate tests of group differences. MANOVA was used because it is a comprehensive and statistically powerful test for the evaluation of mean differences across several criterion variables versus separate univariate tests for each dependent (outcome) variable. In addition, since the outcome variables are correlated, MANOVA allows for obtaining the most accurate picture of the relationships between paradox and the outcome variables.

![Figure 11: Paradox Type Representing Focal Paradox](chart.png)

To test the hypotheses, MANOVA analyses were run on three levels. First, the hypotheses were tested at the overall paradox level, which contrasted those respondents experiencing any type of paradox with those who did not experience any paradox. Next, MANOVA tests were run for each of the specific paradoxes, allowing for the identification of differential impacts of specific
paradoxes on the outcomes. Finally, the hypotheses were tested at the focal paradox level to determine if the most challenging paradox had a stronger impact on the outcome variables. As in Research Question 1, respondents for the specific and focal paradoxes were structured such that respondents who experienced a paradox other than the target paradox were excluded from the analysis. Each model contained the five hypothesized outcome variables (Satisfaction with TBSSs in general, Satisfaction with target TBSS, Confidence in TBSS, Satisfaction with service provider and Loyalty to service provider).

As a complement to the MANOVA analysis, univariate tests of group differences were also performed for each outcome variable at all three levels of paradox (overall paradox, specific paradox, focal paradox). These tests provided insight into additional relationships not found in the overall MANOVA test that might indicate the need for additional research. Moreover, when MANOVA failed to achieve a significant level of overall model difference, these tests were used to assess the hypotheses.

**Results**

First, an exploratory factor analysis was performed on the outcome variables to confirm the proposed structure of the scale items. Initial results showed problems with the service provider loyalty and commitment to service provider scales in that the reverse coded items loaded together on their own factor and the forward coded items loaded on a separate factor. This result indicated the need to modify the original scales, resulting in a new loyalty measure that combined the positively worded items of the original two scales and excluded the reverse coded items. Exploratory factor analysis was run again utilizing this combined loyalty scale (Table 41). Five factors, accounting for 88.2 percent of the total variance, were extracted and rotated to a varimax criterion. Of the items for the specific service provider ratings on satisfaction and loyalty, one loyalty item ("I would recommend them to friends, neighbors, and relatives.") loaded more strongly on service provider satisfaction, but also loaded highly with service provider loyalty, so it was dropped from the analysis. This removal resulted in a set of factors in which the items loaded highest on the factor representing the appropriate construct. The items and their factor loadings are reported in Table 43. In addition, all eight antecedent scales proved to be highly reliable, with Cronbach's alphas ranging from .91 to .97.

**Table 41: Factor Analysis of Outcome Items**

<table>
<thead>
<tr>
<th>Rotated Component Matrix</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>SPSat2</td>
<td>.873</td>
</tr>
<tr>
<td>SPSat1</td>
<td>.850</td>
</tr>
<tr>
<td>SPSat3</td>
<td>.842</td>
</tr>
<tr>
<td>Service provider loyalty2</td>
<td></td>
</tr>
<tr>
<td>Service provider loyalty4</td>
<td></td>
</tr>
<tr>
<td>Service provider loyalty5</td>
<td></td>
</tr>
<tr>
<td>Service provider loyalty1</td>
<td></td>
</tr>
<tr>
<td>General satisfaction with TBSSs3</td>
<td></td>
</tr>
<tr>
<td>General satisfaction with TBSSs1</td>
<td></td>
</tr>
<tr>
<td>General satisfaction with TBSSs2</td>
<td></td>
</tr>
</tbody>
</table>
Table 42 cont’d

<table>
<thead>
<tr>
<th>Rotated Component Matrix</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Satisfaction with listed TBSS1</td>
<td>.935</td>
</tr>
<tr>
<td>Satisfaction with listed TBSS2</td>
<td>.930</td>
</tr>
<tr>
<td>Satisfaction with listed TBSS3</td>
<td>.852</td>
</tr>
<tr>
<td>General confidence in TBSSs2</td>
<td></td>
</tr>
<tr>
<td>General confidence in TBSSs3</td>
<td></td>
</tr>
<tr>
<td>General confidence in TBSSs1</td>
<td></td>
</tr>
</tbody>
</table>

Table 43: Summary of Outcome Scales

<table>
<thead>
<tr>
<th>Scale</th>
<th># of Items in Scale</th>
<th>Source</th>
<th>Reported Reliability</th>
<th>Response Format</th>
<th>Reliability in this Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction with TBSS</td>
<td>3</td>
<td>Crosby &amp; Stephens (1987)</td>
<td>0.96</td>
<td>5-point</td>
<td>0.93</td>
</tr>
<tr>
<td>Confidence in TBSS</td>
<td>3</td>
<td>Zhang &amp; Buda (1999)</td>
<td>0.85</td>
<td>5-point</td>
<td>0.97</td>
</tr>
<tr>
<td>Satisfaction with service provider</td>
<td>3</td>
<td>Patterson &amp; Smith (2003)</td>
<td>.91-.96</td>
<td>5-point</td>
<td>0.91</td>
</tr>
<tr>
<td>Satisfaction selected TBSS</td>
<td>3</td>
<td>Crosby &amp; Stephens (1987)</td>
<td>0.96</td>
<td>5-point</td>
<td>0.96</td>
</tr>
<tr>
<td>Loyal to service provider</td>
<td>4</td>
<td>Positively worded items from Lichtenstein, Drumwright, &amp; Braig (2004) and Patterson &amp; Smith (2003)</td>
<td>n/a</td>
<td>5-point</td>
<td>0.92</td>
</tr>
</tbody>
</table>

As described earlier, the hypotheses were tested with a series of between-groups MANOVAs to investigate the differences between those respondents who experienced the target paradox and those who did not with respect to the outcome variables. Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers; homogeneity of variance-covariance matrices; and multicollinearity, with no serious violations noted. Eleven models, one for the overall model, one for each of the eight specific types of paradoxes and one for each of the two focal paradoxes were then estimated.

The overall model was not statistically significant, $F (5, 272) = 0.970, p = .436$; Wilks’ Lambda = .982, indicating that the model was not able to distinguish between respondents who experienced paradox and those who did not experience at least one paradox for any of the hypothesized outcomes variables. While this finding indicates that the presence or absence of paradox in aggregate does not impact the predicted outcomes, the test did not analyze if the results are different for each type of paradox. To address this issue, MANOVAs were run for each specific type of paradox as well as for the focal paradoxes.

Two of the eight paradox-specific models (Competence-Incompetence and Enjoyment-Task Specific) achieved marginal statistical significant or better. As shown in Table 45, levels of fit for these models were quite acceptable—Enjoyment-Task Specific ($F (5,200) = 2.451, p = .035$; Wilks’ Lambda = .942) and Competence-Incompetence ($F (5,191) = 2.014, p = .078$; Wilks’ Lambda = .950). In addition, one focal paradox model (Personal Focal Paradox) achieved
statistical significance ($F(5, 235) = 2.829, p = .017; \text{Wilks' Lambda} = .943$). The hypothesis tests for the two paradox-specific models and the one focal paradox model are discussed in the following section. Hypotheses related to the models that did not achieve a statistically significant fit were examined by univariate tests of group differences, discussed in a later section.

The hypotheses tests in the two paradox-specific models identified different significant outcomes across the two paradoxes (Error! Reference source not found.). The significant outcomes of enjoyment-Task Specific included Overall satisfaction with TBSS technology ($p = .003$) and Satisfaction with target TBSS ($p = .025$). However, the means for Satisfaction with target TBSS were not in the hypothesized direction. One outcome for Competence-Incompetence (Satisfaction with service provider) was marginally significant ($p = .064$). Finally, the Personal Focal Paradox showed a statistically significant impact on loyalty to service provider ($p = .041$) and marginally significant influences on overall satisfaction with TBSS technology ($p = .055$) and confidence in TBSS ($p = .068$). In conjunction, these findings lent support to the assumption that different paradoxes can be expected to produce different outcomes.

For the six paradox-specific models and the overall and process-oriented focal paradoxes, which did not achieve statistically significant model fits, the hypotheses were assessed using univariate tests of the group differences. While these tests do not allow for accounting for the relationships between the outcome variables, they nonetheless provide some measure of the relationship between the experience of a paradox and the outcome variables (Table 44 and Table 45).

As the overall model fit was poor for these paradox types, outcomes exhibiting differences were only found in three instances involving two paradoxes. Assimilation-Isolation exhibited a significant influence on service provider loyalty and confidence in TBSS. In addition, marginal support was found for the impact of Customization-Privacy on overall satisfaction with TBSS technology. The aggregated overall paradox; the different focal paradoxes; and the specific paradoxes of Control-Chaos, Efficiency-Inefficiency, Fulfill Needs-Creates Needs, and Engagement-Disengagement exhibited no significant differences on the outcomes.
Table 44: Results of MANOVA by Overall Paradox and Focal Paradox

<table>
<thead>
<tr>
<th></th>
<th>Overall model paradox</th>
<th>Personal</th>
<th>Process oriented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model sig.</td>
<td>0.370</td>
<td>.017**</td>
<td>.992</td>
</tr>
<tr>
<td>F</td>
<td>1.083</td>
<td>2.829</td>
<td>.101</td>
</tr>
<tr>
<td>Degrees of Freedom</td>
<td>5/271</td>
<td>5/235</td>
<td>5/221</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group</th>
<th>0</th>
<th>1</th>
<th>0</th>
<th>1</th>
<th>0</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>H9A: Overall satisfaction with TBSS technology</td>
<td>Means 4.05</td>
<td>3.91</td>
<td>4.05</td>
<td>3.81</td>
<td>3.91</td>
<td>4.05</td>
</tr>
<tr>
<td></td>
<td>F/p 1.91</td>
<td>.168</td>
<td><strong>3.71</strong></td>
<td>.055*</td>
<td>0.00</td>
<td>.995</td>
</tr>
<tr>
<td>H9B: Satisfaction with target TBSS</td>
<td>Means 2.62</td>
<td>2.75</td>
<td>2.62</td>
<td>2.89</td>
<td>2.62</td>
<td>2.56</td>
</tr>
<tr>
<td></td>
<td>F/p .957</td>
<td>.329</td>
<td>2.56</td>
<td>.111</td>
<td>0.07</td>
<td>.783</td>
</tr>
<tr>
<td>H9C: Service provider satisfaction</td>
<td>Means 3.72</td>
<td>3.69</td>
<td>3.72</td>
<td>3.71</td>
<td>3.71</td>
<td>3.68</td>
</tr>
<tr>
<td></td>
<td>F/p 0.05</td>
<td>0.822</td>
<td>0.01</td>
<td>.927</td>
<td>0.08</td>
<td>.780</td>
</tr>
<tr>
<td>H10: Service provider loyalty</td>
<td>Means 3.36</td>
<td>3.29</td>
<td>3.36</td>
<td>3.08</td>
<td>3.36</td>
<td>3.36</td>
</tr>
<tr>
<td></td>
<td>F/p 2.12</td>
<td>.147</td>
<td><strong>4.21</strong></td>
<td>.041**</td>
<td>0.01</td>
<td>.969</td>
</tr>
<tr>
<td>H11: Confidence in TBSS tech in general</td>
<td>Means 3.91</td>
<td>3.77</td>
<td>3.91</td>
<td>3.63</td>
<td>3.91</td>
<td>3.95</td>
</tr>
<tr>
<td></td>
<td>F/p 1.34</td>
<td>.249</td>
<td>3.36</td>
<td>.068</td>
<td>0.10</td>
<td>.752</td>
</tr>
</tbody>
</table>

Group 0: no paradox
Group 1: experienced target paradox
*significant at the .1 level
**significant at the .05 level
Table 45: Results of MANOVA by Specific Paradox Type

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Model sig.</td>
<td>.191</td>
<td>.583</td>
<td>.659</td>
<td>.404</td>
<td>.526</td>
<td>.078*</td>
<td>.035**</td>
<td>.505</td>
</tr>
<tr>
<td>F</td>
<td>1.501</td>
<td>.755</td>
<td>0.654</td>
<td>1.026</td>
<td>0.836</td>
<td>2.014</td>
<td>2.451</td>
<td>0.866</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>0</th>
<th>1</th>
<th>0</th>
<th>0</th>
<th>1</th>
<th>0</th>
<th>1</th>
<th>0</th>
<th>1</th>
<th>0</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>H9A: Overall satisfaction with TBSS technology</td>
<td>Means</td>
<td>4.05</td>
<td>3.79</td>
<td>4.05</td>
<td>4.43</td>
<td>4.05</td>
<td>4.32</td>
<td>4.05</td>
<td>4.30</td>
<td>4.05</td>
<td>4.65</td>
<td>4.05</td>
<td>4.23</td>
</tr>
<tr>
<td>F/p</td>
<td>0.36</td>
<td>.548</td>
<td>0.13</td>
<td>.718</td>
<td>0.86</td>
<td>.356</td>
<td>0.46</td>
<td>.497</td>
<td>2.25</td>
<td>.135</td>
<td>0.87</td>
<td>.352</td>
<td>8.90</td>
</tr>
<tr>
<td>H9B: Satisfaction with target TBSS</td>
<td>Means</td>
<td>2.62</td>
<td>2.80</td>
<td>2.62</td>
<td>2.61</td>
<td>2.62</td>
<td>2.77</td>
<td>2.62</td>
<td>2.93</td>
<td>2.62</td>
<td>2.57</td>
<td>2.62</td>
<td>3.07</td>
</tr>
<tr>
<td>F/p</td>
<td>.560</td>
<td>.455</td>
<td>0.01</td>
<td>.934</td>
<td>0.20</td>
<td>.653</td>
<td>0.39</td>
<td>.533</td>
<td>0.06</td>
<td>.805</td>
<td>0.82</td>
<td>.367</td>
<td>5.12</td>
</tr>
<tr>
<td>F/p</td>
<td>0.37</td>
<td>.541</td>
<td>2.04</td>
<td>.155</td>
<td>0.03</td>
<td>.850</td>
<td>1.35</td>
<td>.246</td>
<td>1.91</td>
<td>.168</td>
<td>3.47</td>
<td>.064*</td>
<td>1.71</td>
</tr>
<tr>
<td>F/p</td>
<td>2.71</td>
<td>1.01</td>
<td>0.78</td>
<td>.379</td>
<td>0.47</td>
<td>.495</td>
<td>0.04</td>
<td>.839</td>
<td>1.69</td>
<td>.195</td>
<td>0.01</td>
<td>.926</td>
<td>2.13</td>
</tr>
<tr>
<td>H11: Confidence in TBSS tech in general</td>
<td>Means</td>
<td>3.91</td>
<td>3.49</td>
<td>3.91</td>
<td>4.12</td>
<td>3.91</td>
<td>4.13</td>
<td>3.91</td>
<td>4.33</td>
<td>3.91</td>
<td>4.03</td>
<td>3.91</td>
<td>4.07</td>
</tr>
<tr>
<td>F/p</td>
<td>4.88</td>
<td>.026</td>
<td>1.61</td>
<td>.206</td>
<td>0.87</td>
<td>.353</td>
<td>1.30</td>
<td>.255</td>
<td>0.53</td>
<td>.466</td>
<td>0.20</td>
<td>.654</td>
<td>0.12</td>
</tr>
</tbody>
</table>

Group 0: no paradox
Group 1: experienced target paradox
*significant at the .1 level
**significant at the .05 level
Table 46: Hypothesis Tests by Univariate Tests for Paradox-Specific Models

<table>
<thead>
<tr>
<th>Group</th>
<th>Overall Paradox</th>
<th>Process-Oriented Focal Paradox</th>
<th>Assimilation-Isolation</th>
<th>Control-Chaos</th>
<th>Efficiency-Inefficiency</th>
<th>Fulfills Needs-Creates Needs</th>
<th>Engaging-Disengaging</th>
<th>Customization-Privacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>251 86 60 36</td>
<td>251 30</td>
<td>251 27</td>
<td>251 14</td>
<td>251 29</td>
<td>251 15</td>
<td>251</td>
<td>0 1</td>
</tr>
<tr>
<td>H9B: Satisfaction target TBBSS</td>
<td>2.63 2.76</td>
<td>2.63 2.56</td>
<td>2.63 2.79</td>
<td>2.63 2.61</td>
<td>2.63 2.77</td>
<td>2.63 2.93</td>
<td>2.63 2.57</td>
<td>2.63 2.84</td>
</tr>
</tbody>
</table>

Group 0: no paradox, Group 1: experienced target paradox
*significant at the .1 level
**significant at the .05 level
All means in predicted direction
Sample size differences are due to comparison technique. For each target paradox, means are between those that experienced the target paradox and those that experienced no paradox.


Discussion

Table 47 provides a summary of the tests of the five hypotheses for Research Question 2. While the overall model did not show support for the influence of paradox on the outcome variables, the paradox-specific models found at least marginal support for all outcome variables. As was the case for antecedents, differences were exhibited on the outcomes when models were analyzed at the specific-paradox level, rather than at the aggregate level. While this finding provided some support for the assumption that the tensions associated with different paradoxes produce different outcomes, half of the specific paradoxes did not have a significant influence over any of the outcome variables (Table 48).

Table 47: Summary of Hypothesis Tests for Outcome Variables

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>MANOVA</th>
<th>Tests of Independent means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 9A</td>
<td>Personal Focal Paradox*</td>
<td>Customization-Privacy*</td>
</tr>
<tr>
<td>Hypothesis 9B</td>
<td>Enjoyment-Task specific**</td>
<td></td>
</tr>
<tr>
<td>Hypothesis 9C</td>
<td>Competence-Incompetence*</td>
<td></td>
</tr>
<tr>
<td>Hypothesis 10</td>
<td>Personal Focal Paradox*</td>
<td>Assimilation-Isolation**</td>
</tr>
<tr>
<td>Hypothesis 11</td>
<td></td>
<td>Assimilation-Isolation**</td>
</tr>
</tbody>
</table>

*significant at the .1 level  
**significant at the .05 level  
*Means not in predicted direction

Breaking down the outcome measures into TBBS-related outcomes (H9A and B and H11) and service provider-related outcomes (H9C and H10) allowed for the development of some inferences. For example, the Enjoyment-Task Specific paradoxes seemed to have the strongest impact on TBSS-related outcomes. The significantly higher ratings given to the target TBSS by respondents who experienced the enjoyment-task specific paradox was a surprising result. This finding was counter to the proposed relationship, which speculated that satisfaction with a target TBSS would be lower when a paradox was present. One reason for this result might be the fact that, if this paradox is present, individuals are gaining more from the offering then they expected. If users expect TBSSs to be either useful or fun, and they encounter one that is both, it might surpass their expectations and increase their satisfaction with the target technology.

With respect to service provider outcomes, only the Assimilation-Isolation paradox showed significant influence. One possible reason for the lack of relationships between paradoxes and service provider variables might be the numerous factors that are involved in judging a relationship with a specific service provider. Since most relationships with service providers extend beyond their self-service technology offerings, a paradox related to those offerings may have little impact in most cases. For example, if an individual were considering his or her personal experience with a grocer that offers self-service checkout, a paradox related to that checkout would most likely have very little impact on his or her overall satisfaction with the grocer. Indeed, the store selection and layout, pricing, lighting, signage, parking, and location, among other things, would also influence satisfaction with the grocer.
Table 48: Summary Results of Outcomes by Paradox Type

<table>
<thead>
<tr>
<th>Overall paradox</th>
<th>Satisfaction with TBSS technology</th>
<th>Satisfaction with target TBSS</th>
<th>Service Provider Satisfaction</th>
<th>Service Provider Loyalty</th>
<th>Confidence in TBSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process-oriented focal paradox</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control-Chaos</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create-Fulfill Needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engage-Disengage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competent-Incompetent</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enjoyment-Task specific</td>
<td>√</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal focal paradox</td>
<td>√</td>
<td></td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assimilation-Isolation</td>
<td></td>
<td>√</td>
<td>√</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>Customization-Privacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency-Inefficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Check indicates that antecedent was significant or marginally significant for paradox in either MANOVA or means tests

Another finding counter to expectations was the limited amount of significant relationships between the two focal paradoxes and the outcome variables. In combination, the focal paradoxes were expected to represent the most challenging paradox experienced by respondents. As such, it was anticipated that they would show a stronger influence on the outcome variables than the specific paradoxes. One reason for this apparent disconnect might be the small sample size of respondents who chose a focal paradox. Future research should seek to retest both focal paradoxes on a larger sample.

On the whole, this research showed only limited support for the outcome variables studied. This result suggests that more research is needed on the potential impact of consumer paradox. Because the chosen outcome variables have many antecedents, it is most likely that the relationship between paradox and those variables is not strong enough to counter the other influences. Future research should consider outcome variables that are more closely related to experiencing paradox. These other variables might include customer complaint behaviors, word of mouth, and repeat usage. In addition, it is also possible that the question format did not tap into a strong and specific experience with paradox. Future research should focus on encouraging respondents to recall a challenging and poignant paradoxical experience and then test for outcomes of that particular experience.

**Research Question 3: When People Feel the Tensions Associated with Paradox, What Coping Strategies Do They Employ?**

This research question investigated which coping strategies were employed by people experiencing paradox. Researchers have shown that, when confronted by a paradox, consumers are cognizant of the conflicting evaluative elements, which provoke feelings of anxiety and stress (Richins, 2004; Johnson et al., 2008). This cognizance, in turn, elicits coping behaviors for reducing tensions, including avoidance and confrontation (Cui et al., 2009; Jarvenpaa & Lang, 2005; Lazarus et al., 1986). In the marketing literature, coping is defined as "the set of cognitive and behavioral processes initiated by consumers in response to emotionally arousing, stress
inducing interactions with the environment aimed at bringing forth more desirable emotional states and reduced levels of stress" (Duhacheck, 2005, p. 42).

While paradoxes can occur across multiple consumption settings, technology has proven to be a successful context for studying consumer paradox. The positive and negative attributes of technology and the pace of change in technological markets seem to drive paradoxes. Baron et al. (2006) argue that the most relevant types of coping strategies for technology paradoxes are consumption avoidance and consumption confrontative strategies. Avoidance coping strategies seek to minimize interaction with technology by refusing to purchase, delaying a purchase, ignoring the technology, neglecting the technology, suspending use of the technology, distancing oneself from the technology, or abandoning the technology (Baron et al., 2006; Cui et al., 2009; Jarvenpaa & Lang, 2005; Mick & Fournier, 1998). An avoidance technique is more likely to be used when the technology is confusing or highly demanding, or when users are under stress or pressure. Confrontation coping strategies seek to understand and adapt to the technology by conducting a pre-test or trial, utilizing buying heuristics, engaging in extended decision making, requiring extended warranties, accommodating the technology, partnering with the technology, or striving to master the technology (Baron et al., 2006; Mick & Fournier, 1998). It has been shown that avoidance strategies are more likely to lead to negative beliefs, while confrontation strategies are more likely to lead to positive beliefs (Cui et al., 2009; Mick & Fournier, 1998).

Less well understood are the relationships between the different types of paradoxes and the coping strategies. Only one study has closely examined coping responses specifically related to consumer paradox. Mick and Fournier (1998) applied quantitative methods to investigate which coping strategies consumers applied when faced with a technology paradox; however, their research did not tie the coping strategy to the paradox type. To help correct this shortcoming, this study examined which coping strategies aligned with which paradoxes.

Method

Since coping strategies are only utilized when a person experiences a paradox, this research question focused on the 96 respondents in the sample who experienced a paradox. The respondents were evenly split between males and females, with ages ranging from 18 to 55 and an average age of 33 years.

As coping strategies are employed in response to a specific paradox, it was important to understand which paradox invoked the need for coping. In this regard, the "focal paradox" was used as the paradox in question. As discussed in Research Question 2, the focal paradox was the paradox selected by the respondent as the most challenging and tension-producing. For the purpose of analysis, the eight categories of focal paradox generated groups of insufficient size. Thus, the eight categories were grouped into two classes of focal paradox (process-oriented and personal-oriented) based on the factor analysis performed in Essay 2.

After a respondent selected a focal paradox, all questions regarding coping were asked in relation to this paradox. Respondents were shown a list of nine different coping strategies and asked to indicate which responses they were most likely to employ when faced with this focal paradox.
The coping strategies choices (see Table 49) were created for this study based on the coping strategies described by Mick and Fournier (1998).

**Table 49: Coping Scale Items**

<table>
<thead>
<tr>
<th>Confrontational responses</th>
<th>Avoidance responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follow previously established &quot;rules of thumb&quot; to make a decision (Coping5)</td>
<td>Avoid information related to the problem causing the paradox (Coping1)</td>
</tr>
<tr>
<td>Take time to gather as much information as I can so that I can make a rational, well thought-out decision (Coping6)</td>
<td>Refuse to use the technology that causes a paradox (Coping2)</td>
</tr>
<tr>
<td>Ask friends and family about their experience (Coping7)</td>
<td>Postpone making a decision to use the technology (Coping3)</td>
</tr>
<tr>
<td>Attempt to create a closer relationship with the organization that is providing the technology (Coping12)</td>
<td>Stop using the technology that causes the sense of tension (Coping9)</td>
</tr>
<tr>
<td>Try to become the best at using the new technology (Coping13)</td>
<td></td>
</tr>
</tbody>
</table>

Coping strategy was operationalized as the choice of one or more responses for a specific coping type (avoidance or confrontation). Since respondents could employ one or both types of coping strategies, the result was a four-category classification of coping strategies—no coping, only confrontative coping, only avoidance coping and both types of coping. For the purpose of analysis, a two-category grouping was also used—no coping versus some form of coping.

The first analysis assessed whether the type of coping strategy varied by type of focal paradox (process-oriented versus personal). Two chi-square tests were performed between coping category and focal paradox—one employing the two-group categories (no coping versus some form of coping) while the other considered four coping categories (no coping, confrontative coping only, avoidance coping only or both types of coping).

The second analysis investigated whether the type of coping strategy impacted the outcome measures examined in Research Question 3. This analysis complements Research Question 2 by providing insight into additional effects of a paradox that might be exhibited through the coping strategy used in response. Similar to Research Question 2, MANOVA was performed to assess if differences were found between the various groups of respondents based on their coping strategy. Again, respondents were analyzed in two sets of groups—the two-group category (no coping versus some form of coping) and the four-group category. Overall MANOVA tests as well as univariate tests of each outcome measure were analyzed to identify possible group differences.

**Results**

An exploratory factor analysis was conducted to confirm the proposed structure of the scale items. Two factors (Avoidance coping and Confrontative coping) were extracted and rotated to a varimax criterion. The items and their factor loadings are reported in Table 50. In all cases, the items loaded highest on the factor representing the appropriate construct. Since these items represent distinct responses in each coping category, only one or two responses in a given
category may be employed by an individual. The result is that scale reliabilities will be lower than a "typical" reflective measure. Cronbach's alpha values of .52 and .45 were found for the Avoidance and Confrontative types of coping categories, respectively. While these values fall below the proposed cut-off of .60 for exploratory research, the dichotomous nature of the items and the expected limited use of items in a category provided a context in which they were deemed to exhibit adequate reliability (Nunnally & Bernstein, 1994). Moreover, as these items are dichotomous, the rule of thumb for inter-rater reliabilities can serve as a guide. The proposed standards for kappa coefficient for inter-rater reliability are as follows: ≤0=poor, .01–.20=slight, .21–.40=fair, .41–.60=moderate, .61–.80=substantial, and .81–1=almost perfect (Landis & Koch, 1977).

Table 50: Factor Analysis of Coping Items

<table>
<thead>
<tr>
<th>Rotated Component Matrix*</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Coping-Refuse to use the technology that causes a paradox</td>
<td>.754</td>
</tr>
<tr>
<td>Coping-Stop using the technology that causes the sense of tension</td>
<td>.737</td>
</tr>
<tr>
<td>Coping-Postpone making a decision to use the technology</td>
<td>.542</td>
</tr>
<tr>
<td>Coping-Avoid information related to the problem causing the paradox</td>
<td>.475</td>
</tr>
<tr>
<td>Coping-Follow previously established &quot;rules of thumb&quot; to make a decision</td>
<td></td>
</tr>
<tr>
<td>Coping-Take time to gather as much information as I can so that I can make a rational, well thought out decision</td>
<td>.641</td>
</tr>
<tr>
<td>Coping-Attempt to create a closer relationship with the organization that is providing the technology</td>
<td>.593</td>
</tr>
<tr>
<td>Coping-Try to become the best at using the new technology</td>
<td>.504</td>
</tr>
<tr>
<td>Coping-Ask friends and family about their experience</td>
<td>.460</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
* Rotation converged in 3 iterations.

As discussed earlier, a coping strategy type (Confrontative or Avoidance) was indicated when a respondent indicated at least one specific response from either category.

Next, the relationship between the type of paradox and the type of coping strategy was examined. Because both focal paradox and coping strategy were categorical, chi-square analyses were performed. Table 51 shows the crosstabulation of focal paradox type and coping strategy for two categories—no coping versus some form of coping. The chi-square test with Yates Continuity correction showed a significant association between type of focal paradox and the presence or absence of coping \( \chi^2 \) (1, N=96) = 3.882, p = .049, indicating that an individual experiencing a personal focal paradox was more likely to engage in coping behavior than an individual experiencing a process-oriented paradox. Table 52 shows the crosstabulation of the focal paradox by type of coping. The chi-square test showed no significant association, \( \chi^2 \) (1, N=96) = 5.349, p = .148. This result provides support for the assumption that the type of coping strategy is not influenced by the type of paradox.
Table 51: Crosstabulation of Focal Paradox by Presence or Absence of Coping

<table>
<thead>
<tr>
<th>Focal Paradox</th>
<th>Coping</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No coping</td>
<td>Some form of coping</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Personal</td>
<td>6</td>
<td>44</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Process-oriented</td>
<td>14</td>
<td>32</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>76</td>
<td>96</td>
<td></td>
</tr>
</tbody>
</table>

Table 52: Crosstabulation of Focal Paradox by Type of Coping

<table>
<thead>
<tr>
<th>Focal Paradox</th>
<th>Coping</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No coping</td>
<td>Only confront</td>
<td>Only avoid</td>
<td>Both</td>
</tr>
<tr>
<td>Personal</td>
<td>6</td>
<td>18</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>Process-oriented</td>
<td>14</td>
<td>11</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>29</td>
<td>19</td>
<td>28</td>
</tr>
</tbody>
</table>

Then the relationship between the type of coping strategy and the outcome variables was examined. As previously discussed, MANOVA was performed to assess if differences were found between the various groups of respondents based on their coping strategy. First, the analysis was performed on the two-group category (no coping versus some form of coping), which was not statistically significant: F (5, 80) = 0.961, p = .447. This result indicates that the presence or absence of paradox does not impact the predicted outcomes at the aggregate level. Univariate tests were conducted to identify possible group differences in individual outcomes, but showed no significant differences on the outcome variables.

Finally, the relationship between the four-group category of coping strategy and the outcome variables was examined using MANOVA. This model was not statistically significant: F (5, 80) = 0.980, p = .477. This result indicated that the model was not able to distinguish between respondents who exhibited different types of coping for the hypothesized outcome variables. Univariate tests were conducted to identify possible group differences in individual outcomes and found significance only for the service provider-related outcomes of Satisfaction with service provider (p = .041) and Loyalty to Service provider (p = .025). Results of post hoc tests indicated that for those who engaged in confrontation coping had greater Satisfaction with Service Provider than those who engaged in avoidance coping. In addition, those that utilized both coping techniques were significantly more loyal than those who engaged avoidance strategies or indicated no coping (see Table 53).

Table 53: Results of Means Difference for Coping

<table>
<thead>
<tr>
<th></th>
<th>No coping</th>
<th>Only confrontational coping</th>
<th>Only avoidance coping</th>
<th>Both coping types</th>
</tr>
</thead>
<tbody>
<tr>
<td>H9A: Overall satisfaction with TBSS technology</td>
<td>3.90</td>
<td>3.95</td>
<td>3.81</td>
<td>3.94</td>
</tr>
<tr>
<td>H9B: Satisfaction with target TBSS</td>
<td>3.23</td>
<td>2.60</td>
<td>3.02</td>
<td>2.57</td>
</tr>
<tr>
<td>H9C: Service provider satisfaction</td>
<td>3.33</td>
<td>3.84</td>
<td>3.26</td>
<td>3.96</td>
</tr>
<tr>
<td>H10: Service provider loyalty</td>
<td>2.64</td>
<td>3.19</td>
<td>2.92</td>
<td>3.59</td>
</tr>
<tr>
<td>H11: Confidence in TBSS tech in general</td>
<td>3.83</td>
<td>3.86</td>
<td>3.65</td>
<td>3.73</td>
</tr>
</tbody>
</table>
Discussion

This essay sought to understand the impact of coping on paradox. However, this research did not find any significant differences between type of paradox encountered and the type of coping strategy employed, whether it be coping versus not coping or expanding the coping strategies to specific types of coping. Coping strategy also does not have many strong relationships to outcome measures. The only significant relationships for coping strategy were for service provider related measures, which showed some differences between types of coping strategies and Satisfaction with Service Provider and Loyalty to Service Provider. These findings indicate that, while paradoxes create stresses that must be coped with, coping does not mediate the relationship between paradoxes and outcomes.

The multifaceted antecedents to coping strategy might explain the lack of relationship between paradox type and coping. Research in psychology has shown that antecedents of coping include interactions between individual differences, environment factors and situational characteristics (Parkes, 1986). Individual factors can include motivational dispositions, goals, values and expectations (Krohne, 2001). For example, person-specific goals such as reducing uncertainty, inhibiting emotional arousal, or trying to change the causes of a stressful encounter may have a stronger impact that situational predictors (such as paradox) into what type of coping behavior is exhibited when confronting a stressful situation (Karoly, 1999; Lazarus, 1991a).

Another individual factor that might influence the relationship between paradox and coping is habitual coping tendency (Krohne et al., 2000). The current research did not tap into these tendencies. Although respondents were asked about a specific technology in which they were likely to encounter paradox, the coping option they choose might have tapped a more general coping response. Future research should more closely tie responses to a specific paradoxical episode and control for these individual tendencies to cope.

Finally, it has been argued that coping strategy might be tightly linked to the kind of emotion experienced as a result of a stressful encounter (Lazarus, 1993). It is possible that paradoxes will drive different emotional responses that are based on individual cognitive appraisal of the paradox. This current study did not examine the emotional responses to paradox, but instead focused on loyalty and satisfaction. Future research should examine the emotional outcomes of paradox and look for relationships between these emotional outcomes and coping.

OUTCOMES

This research, combined with that reported in Essays 1 and 2, contributes to the literature in consumer behavior by better defining the construct of consumer paradox. It expands the understanding of consumer paradox by delineating a framework that addresses the contextual and individual factors that lead to a feeling of paradox, the consequences of that paradox, and the role that coping plays. In addition, this study is one of the first to empirically test technology paradoxes to better explain the relationships between antecedents and outcomes.
First, this research considered both the situational and individual antecedents to paradox. Technology has been shown to be a strong driver of paradox, so the consumer's experience with paradox was investigated within the context of technology-based self-service. In addition, the individual factors that make an individual more likely to experience paradox, such as personal need for structure, need for interaction, and perceived risk of self-service technology, were examined. This study also determined that individual paradoxes have different antecedents. The identification of these antecedents affords marketing practitioners and policymakers with the ability to ascertain which consumers are most likely to experience paradox and reduce the likelihood of paradox occurring.

Additionally, this study explored the relationship between the experience of paradox and outcome variables related to satisfaction, loyalty and confidence. Researchers have argued that customer characteristics moderate the relationships between customer satisfaction and loyalty (Patterson & Smith, 2003; Mittal & Kamakura, 2001). Given the strong link between satisfaction and economic returns (Anderson et al., 1994), the impact of paradoxes and their outcomes should be important to marketing managers. Unfortunately, no research to date has extended the analysis of paradox to include the impact on satisfaction or loyalty. In addition, Johnson et al. (2008) have argued that conflicting evaluations can hurt consumer relationships, even when consumers are satisfied, because of the tensions caused by uncertainty. For example, lack of certainty about marketplace offerings increases the effectiveness of advertising claims (Hoch & Ha, 1986), a result that can apply to competitors' messages as well. Thus it is imperative that managers give consumers the right information to reduce the occurrence of paradoxical tensions and encourage the application of positive coping strategies.

Finally, this study examined the role of coping strategies. The relationship between coping response and paradox was quantitatively measured, although in this case, the coping strategy did not seem to change based on the type of paradox experienced, nor did it appear to have an impact on the outcome variables. These findings indicate that, while paradoxes create stresses that must be coped with, the coping behavior does not mediate the relationship between paradoxes and outcomes. In addition, this research described the types of coping techniques associated with paradox. While current research indicates that, on the whole, avoidance strategies are more likely to lead to negative beliefs and confrontation strategies are more likely to lead to positive beliefs (Cui et al., 2009; Mick & Fournier, 1998), how consumers respond to different paradoxes and which paradoxes are likely to lead to either avoidance or confrontation strategies remain open questions.
REFERENCES


Utz, S., & Kramer, N. (2009) The privacy paradox on social network sites revisited: The role of individual characteristics and group norms. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 3*(2), article 2.


## APPENDIX A: QUALITATIVE INTERVIEW SCRIPT

<table>
<thead>
<tr>
<th>Introduction</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain</td>
<td></td>
</tr>
<tr>
<td>- What the project is about</td>
<td></td>
</tr>
<tr>
<td>- Ethical issues</td>
<td></td>
</tr>
<tr>
<td>- Ask for consent form to be signed</td>
<td></td>
</tr>
</tbody>
</table>

### Questions about paradox in general

1. When I say the word paradox, what does this mean to you?

   PROBE: Why do you say this?

2. Can you think of a time you experienced paradox in your life? Can you describe the situation?

   PROBE: If they can't think of any paradoxes

   - Really looking for a situation in which you see both the good and the bad, or the pluses and minuses.
   - Bring up technology as an area that people are likely to experience paradoxical situations, and ask them to think in that context.
   - Give some examples, and see if that sparks any ideas.

   If they have examples, ask if there is anything else that comes to mind?
3. What do you think are the main reasons you felt that sense of paradox?

PROBE: Did you sense a tension between the conflicting evaluations? What do you make of these tensions?

4. How does it make you feel when you recognize a paradoxical situation?

PROBE: Why do you think this is the case?

5. Are you likely to take action to resolve a paradox?

PROBE:

IF YES: What are you likely to do? What has been the outcome of your actions?

IF NO: Do you avoid thinking about it, or do you recognize a paradox and just decide that it is something you live with?
<table>
<thead>
<tr>
<th><strong>If technology related paradoxes haven't been discussed</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain how technology seems to be an area in which many people experience paradox.</td>
</tr>
<tr>
<td>6. Can you think of a time you felt this way related to technology?</td>
</tr>
<tr>
<td>PROBE: Please explain.</td>
</tr>
<tr>
<td>If they can't think of any paradoxes</td>
</tr>
<tr>
<td>- Really looking for a situation in which you see both the good and the bad, or the pluses and minuses.</td>
</tr>
<tr>
<td>- Give some examples, and see if that sparks any ideas.</td>
</tr>
<tr>
<td>7. What do you think are the main reasons you felt that sense of paradox?</td>
</tr>
<tr>
<td>PROBE: Anything else?</td>
</tr>
<tr>
<td>8. Does this change how you approach a certain technology (if you sense a paradox)?</td>
</tr>
<tr>
<td>PROBE: Why do you think this is? What else are you likely to do? How does this make you feel?</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>---</td>
</tr>
</tbody>
</table>
| 9. | Is there a specific aspect of technology or type of technological product that you see both good and bad in, but don't view it as a conflict?  
PROBE: How is this different? How do you react to this type of situation? |
| 10. | Can you think of a technology that you view as almost exclusively positive?  
PROBE: Does this change how you approach this certain technology versus if you sense a paradox? Why do you think this is the case? |
| 11. | Can you think of a technology that you view as almost exclusively negative?  
PROBE: Does this change how you approach this certain technology versus if you sense a paradox? Why do you think this is the case? |
| 12. | Do you have any questions? Is there anything else we should know? |
APPENDIX B: CODING GUIDELINES

General paradox—first set of questions regarding paradoxes in general

- Major life decision—expressing a paradox related to a major life decision (i.e. taking a job in a new town)
- Product purchase related—expressing a paradox related to acquiring a new product
- Product use related—expressing a paradox related to use of a product owed by the respondent
- Situation—expressing a paradox that appears to be inherent in a given situation

Technology paradox—second set of questions regarding paradoxes related to technology

- Assimilation/isolation—referring to an object's ability to facilitate human togetherness versus its ability to lead to human separation.
- Control/chaos—referring an object's ability to facilitate regulation or order versus its ability to lead to upheaval or disorder.
- Efficiency/inefficiency—refers to an object's ability to facilitate less effort or time spent in certain activities versus its ability to require greater effort or time involvement.
- Fulfills/creates needs—refers to an object's ability to facilitate the fulfillment of needs or desires versus its ability to lead to the development or awareness of needs or desires previously unrealized.
- Engaging/disengaging—refers to an object's ability to facilitate involvement, flow, or activity versus its ability to lead to disconnection, disruption, or passivity.
- Competence/incompetence—refers to an object's ability to facilitate feelings of intelligence or efficacy versus its ability to lead to feelings of ignorance or ineptitude.
- Freedom/dependence—refers to an object's ability to facilitate independence or fewer restrictions, or lead to dependence or more restrictions.
- New/obsolete—refers to an object's ability to provide the user with the most recently developed benefits of scientific knowledge, but also already or soon to be outmoded as they reach the marketplace.
- Enjoyment/Task orientated—refers to an object's ability to provide for fun and enjoyment verses the object's ability to fulfill task specific activities.

Emotions

- Anger—feeling or expressing annoyance, animosity, or resentment (Frustrated, angry, irritated)
- Discontent—feelings of disappointment or lack of fulfillment (Unfulfilled, discontented)
- Worry—feeling the need to be prudent or wary (nervous, tense, worried)
- Sadness—drained of strength or energy (depressed, sad, miserable)
- Fear—worried and tense because of possible misfortune, danger, etc. (scared, afraid, panicky)
- Shame—feeling unwise or silly, less than competent (embarrassed, ashamed, humiliated)
- Envy—longing to possess something awarded to or achieved by another (envious, jealous)
Loneliness—distress that results from discrepancies between ideal and perceived social relationships. (lonely, homesick)

Romantic Love—sexy, romantic, passionate (Probably not applicable)

Love—to have a strong liking for (loving, sentimental, warm hearted)

Peacefulness—lack of strife or agitation (calm, peaceful)

Contentment—The state of being satisfied with the ways things are (contented, fulfilled)

Optimism—general feeling that there will be a positive outcome (optimistic, encouraged, hopeful)

Joy—great delight or happiness caused by something exceptionally good (happy, pleased, joyful)

Excitement—the state of being roused into action (excited, thrilled, enthusiastic)

Surprise—arousal of curiosity or interest (surprised, amazed, astonished)

Guilty—feelings of culpability especially for imagined offenses or from a sense of inadequacy (guilty, remorseful)

Coping

Ignore—Avoiding information about the characteristics or availability of certain objects

Refuse—Declining the opportunity to own a specific object

Delay decision—Postponing but eventually acquiring a specific object

Pretest—Using someone else's object temporarily or acquiring an object but not assuming definitive ownership until the return policy or warranty expires

Heuristics—utilizing a known "rule of thumb" to guide a decision

Extended decision making—Taking stock of one's needs, searching diligently for detailed information, and then choosing the most appropriate alternative in a careful, calculating manner

Seeking additional assurance—seeking outside sources that can help reinforce a decision.

Neglect—Showing temporary indifference toward an object

Abandonment—Declining or discontinuing the use of an object or leaving an object unrepaired if it has malfunctioned

Distancing—Developing restrictive rules for when or how an object will or will not be used or physically placing an object in an unobservable or remote site

Accommodation—changing tendencies, preferences, routines, etc., according to the perceived requirements, abilities, or inabilities of an object

Partnering—Establishing with an object or company a close, committed relationship or heartfelt attachment

Mastering—Dominating an object by thoroughly learning its operations, strengths, and weaknesses
APPENDIX C: INITIAL STATEMENTS

Statements sorted by proposed categories.

Assimilation/isolation

- I am more comfortable interacting with the people working for my service provider than dealing with TBSSs.
- In general, TBSSs allow for two-way communication with me and the service provider.
- In general, TBSSs allow me to participate in customer discussions.
- In general, TBSSs allow me to provide feedback to the company.
- In general, TBSSs are interpersonal.
- In general, TBSSs are primarily a one-way communication tool.
- In general, TBSSs enable communication.
- TBSSs help bring customers together.
- TBSSs make me feel like I'm part of something bigger.
- TBSSs make me feel like no one at the company cares about my business.
- TBSSs make me miss the interaction I used to have with the company employees.

Control/chaos

- Being forced to use a TBSS causes havoc in my day.
- By taking an active part in using TBSSs, I can have considerable influence as a customer.
- I feel free to use the kind of TBSS I like to.
- I feel like TBSSs force me to relinquish control.
- In general, TBSSs enhance my effectiveness in product searching and buying.
- In my experience with TBSSs, they create more trouble than they are worth.
- My experience with TBSSs is entirely within my control.
- Often after using a company's TBSS, I still find myself requiring assistance from company employees.
- TBSSs allow me to be in charge of the shopping situation.
- TBSSs create more confusion that dealing with service reps.
- TBSSs give me the power to be in control.
- Using TBSSs gives me a lot of flexibility getting what I want from the company.
- Using TBSSs lets me choose where and when to shop.
- Using TBSSs make it easy to get exactly what I want when I want.
- Utilizing TBSSs allows me to make a lot of decisions on my own.

Efficiency/inefficiency

- In general, TBSSs enable me to search and buy products faster.
- In general, TBSSs help me complete my task in a speedier manner than relying on customer service personnel.
- In general, TBSSs provide immediate answers to questions.
- Most TBSSs are convenient to use.
- Purchases generally take longer using TBSSs than using employees.
TBSSs often are more complicated then needs to be.
- Using TBSSs help me save time.
- Using TBSSs improve my efficiency.
- With TBSSs, I have put effort into adapting the technology to meet my needs.

Fulfills/creates needs

- I choose to use TBSSs for their ability to solve routine needs.
- I count on TBSSs creating more problems than they solve.
- I have the necessary means and resources to use TBSSs.
- I never seem to solve my problems using TBSSs.
- In general, as a source of information, TBSSs are unreliable.
- In general, TBSSs are a proven tool for delivering good customer service.
- My experiences with TBSSs leave me wanting better service.
- TBSSs are a company's attempt to save money by giving the customer more work.
- TBSSs are reliable for solving my problems.
- TBSSs are reliable in fulfilling my request.
- TBSSs rarely meet my requirements for service.
- TBSSs show deficiencies when it comes to meeting my needs.
- When it comes to meeting my needs, customer service employees are better than TBSSs.

Engaging/disengaging

- Consumers prefer TBSSs because they don't have to think when using them.
- In general, TBSSs are flexible to interact with.
- In general, TBSSs are interactive.
- In general, TBSSs keep me focused and on task.
- In general, TBSSs keep my attention.
- People rely too much on TBSSs.
- TBSSs help create smoother flows for service over customer service employees.
- TBSSs help facilitate my involvement with the task at hand.
- The prevalence of TBSSs are causing people to lose the ability to think outside the box.
- Using TBSSs tends to create more disruptions for consumers.

Competence/incompetence

- A first-time buyer can make a purchase with TBSSs without much help.
- I believe that the TBSSs are easy to use.
- I feel very knowledgeable about TBSSs.
- I have a lot of experience with using TBSSs.
- I'm proficient when it comes to using TBSSs.
- In general, I believe that that TBSSs are cumbersome to use.
- In general, I find most TBSSs to be unmanageable.
- In general, I find TBSSs are easy to navigate.
- In general, I find TBSSs useful to me.
- In general, it is difficult to use TBSSs.
- In general, TBSSs are clear and understandable.
- In general, TBSSs are easy to interact with.
- In general, TBSSs are user-friendly.
- In general, TBSSs increase my productivity in searching and purchasing products.
- In general, TBSSs offer logical layouts that are easy to follow.
- It is easy to become skillful at using TBSSs.
- It is easy to make TBSSs do what I want it to.
- It is easy to use TBSSs.
- Learning to operate TBSSs is easy.
- Learning to use TBSSs is easy to me.
- TBSSs make me feel dumb.
- TBSSs make me feel like I'm behind the times.
- To be effective, TBSSs dumb down the customer experience to its basic elements.

Enjoyment/Task Specific

- I choose to use TBSSs because they are enjoyable.
- I choose to use TBSSs because they are functional.
- I choose to use TBSSs for their ability to provide pleasure.
- I find using TBSSs entertaining.
- I find using TBSSs exciting.
- I find using TBSSs fun.
- I find using TBSSs pleasant.
- In general TBSSs are very useful.
APPENDIX D: ITEM DESCRIPTIONS FOR EXPERT RATERS

Technology-Based Self-Service (TBSSs), also known as self-service technologies, describe those technologies that customers independently use without any interaction with, or assistance from, employees. Examples include the use of on-line banking, ATM’s, on-line airline ticket reservations, pay-at-the-pump gas pumps, on-line package tracking, and fully automated phone systems.

Technology paradoxes explain how people view technology, which can be positive or negative (and sometimes a mixture of both). I would like to examine 7 paradoxes related to TBSSs:

1. Assimilation/isolation—Technology's ability to facilitate human togetherness vs. its ability to lead to human separation. TBSSs can help bring people together, for example, company websites that offer discussion boards for customers to interact with each other and create a brand community. Technology can also lead to isolation by removing face-to-face interaction with employees, like banks giving incentives to customers to use on-line banking rather than meeting with tellers in the bank.

2. Control/chaos—Technology's ability to facilitate regulation or order vs. its ability to lead to upheaval or disorder. For example, ATMs give customers control by allowing them to get money at any time from numerous locations. The lack of control often can come from fears of making mistakes or having problems when there isn’t sufficient employee oversight over the situation, like entering the wrong stock symbol in an on-line stock order.

3. Efficiency/inefficiency—Technology's ability to facilitate less effort or time spent in certain activities vs. its ability to require greater effort or time involvement. Utilizing TBSSs can often allow a customer to save time by bypassing lines, such as the self-service option at the post office. TBSSs can be time consuming to learn or use, for example, it is rare for customer to be as fast at the self-service grocery checkout as store cashiers, since cashiers have all the codes memorized for produce and other items.

4. Fulfills/creates needs—Technology's ability to facilitate the fulfillment of needs or desires vs. its ability to lead to the development or awareness of needs or desires previously unrealized. Often TBSSs can help fulfill needs related to time constraints or location convenience, like the ability to shop on-line instead of going to the mall. But often the use of TBSSs causes the need for additional purchase to fully take advantage of the service, like when customers of on-line investing services find they need additional software to make good investment decisions.

5. Engaging/disengaging—Technology's ability to facilitate involvement, flow, or activity vs. its ability to lead to disconnection, disruption, or passivity. TBSSs can help with the flow of activity by allowing people to take care of mundane tasks quickly in order to get on with life, the way that automated bill paying allows people to not have to take time out of their life to pay bills. But TBSSs can also cause people to become less involved in activities and more passive in general, for example using a travel agent gives customers more opportunity to learn about unique local hotels then on-line travel sites, where customers typically stay with brand name hotel chains.

6. Competence/incompetence—Technology's ability to facilitate feelings of intelligence or efficacy vs. its ability to lead to feelings of ignorance or ineptitude. For example the
wealth of information available to on-line investors can lead to illusions of knowledge, or the sheer amount of information can be overwhelming, creating feelings of ignorance.

7. Enjoyment/task specific—Technology's ability to be "fun" vs. its ability to solve specific tasks. Users of TBSSs can have different goals for utilizing the technology, either hedonic or utilitarian. For example, on-line shopping can be enjoyable for its own sake, or it can be a means for achieving a task.
APPENDIX E: EXPERT RATER SUPPORTED STATEMENTS

1. Assimilation/isolation
   - TBSSs help bring customers together.
   - In general, TBSSs enable communication.
   - TBSSs make me feel like no one at the company cares about my business.
   - In general, TBSSs allow me to participate in customer discussions.
   - In general, TBSSs are primarily a one-way communication tool.
   - I am more comfortable interacting with the people working for my service provider than dealing with TBSSs.
   - TBSSs make me miss the interaction I used to have with the company employees.
   - TBSSs make me feel like I'm part of something bigger.
   - In general, TBSSs are interpersonal.
   - In general, TBSSs allow for two way communication between me and the service provider.

2. Control/chaos
   - By taking an active part in using TBSSs, I can have considerable influence as a customer.
   - I feel like TBSSs force me to relinquish control.
   - TBSSs allow me to be in charge of the shopping situation.
   - Being forced to use a TBSS causes havoc in my day.
   - My experience with TBSSs is entirely within my control.
   - TBSSs give me the power to be in control.
   - Using TBSSs lets me choose where and when to shop.
   - In my experience with TBSSs, they create more trouble than they are worth.
   - I count on TBSSs creating more problems than they solve.
   - It is easy to make TBSSs do what I want them to.
   - TBSSs create more confusion than dealing with service reps.
   - I feel free to use the kind of TBSS I like to.

3. Efficiency/inefficiency
   - Using TBSSs helps me save time.
   - Using TBSSs improves my efficiency.
   - Most TBSSs are convenient to use.
   - Purchases generally take longer using TBSSs than using employees.
   - In general, TBSSs help me complete my task in a speedier manner than relying on customer service personnel.
   - TBSSs often are more complicated than they need to be.
   - It is easy to use TBSSs.
   - In general, TBSSs increase my productivity in searching for and purchasing products.
   - A first-time buyer can make a purchase with TBSSs without much help.

4. Fulfills/creates needs
   - TBSSs show deficiencies when it comes to meeting my needs.
   - When it comes to meeting my needs, customer service employees are better than TBSSs.
   - In general, I find TBSSs useful to me.
• In general, TBSSs are flexible to interact with.
• I choose to use TBSSs for their ability to solve routine needs.
• In general, TBSSs are a proven tool for delivering good customer service.
• TBSSs are reliable in fulfilling my request.
• In general, TBSSs improve my performance in product searching and buying.

5. Engaging/disengaging
• In general, TBSSs keep my attention.
• Consumers prefer TBSSs because they don't have to think when using them.
• The prevalence of TBSSs are causing people to lose the ability to think outside the box.
• TBSSs help facilitate my involvement with the task at hand.

6. Competence/incompetence
• I feel very knowledgeable about TBSSs.
• Learning to operate TBSSs is easy.
• TBSSs make me feel dumb.
• I have a lot of experience with using TBSSs.
• It is easy to become skillful at using TBSSs.
• I'm proficient when it comes to using TBSSs.
• Learning to use TBSSs is easy to me.

7. Enjoyment/task specific
• I choose to use TBSSs because they are enjoyable.
• I find using TBSSs exciting.
• I find using TBSSs fun.
• I find using TBSSs pleasant.
• I find using TBSSs entertaining.
• I choose to use TBSSs for their ability to provide pleasure.
APPENDIX F: FINAL SURVEY

Default Question Block

Self Service Technology Study
CONSENT FORM

Thank you for agreeing to participate in this research. This survey will take no longer than 30 minutes to complete. This study concerns consumer opinions related to technology-based self service and is being conducted on behalf of the Department of Marketing at Louisiana State University. We support the practice of protection for individuals participating in research. Your participation is completely voluntary, and you may withdraw from the study at any time.

Be assured that your name will not be associated in any way with the research findings. All of your actions will be confidential. Each participant will be asked various questions representing their opinions and attitudes. Please know there are no right or wrong answers, and your comments will help organizations better serve consumers.

By clicking the link below and continuing with this survey, you indicate that you understand and agree with the following points:
My participation is completely voluntary. I will not face any significant discomforts or stresses. My participation involves no risk. The results of my participation are confidential and will not be released in any individually identifiable form. All data sheets will be coded by number, thus preserving anonymity. The investigators listed below will answer any further questions I may have about the study. Monday – Friday, 8:00 a.m. – 4:30 p.m., and the contact information for the Chairperson of the IRB at Louisiana State University is identified below:

Investigator: Carolyn Canny, Doctoral Student, LSU, phone (225) 578-8779
Investigator: Dr. William Black, Professor, LSU, phone (225) 578-8613
Chairman of the IRB: Dr. Robert C. Mathews, 203 B–1 David Boyd Hall, phone (225) 578-8692

Please indicate your understanding of the above information and agreement to participate voluntarily by clicking the link (>>>) below.

This survey deals with Technology Based Self Service (TBSS) -- technologies in which customers are performing services that an employee of the company used to do.

While some of these are not new, advances in technology are creating more options for companies to offer customers self-service options.

TBSSs can include simple ancillary services such as:
- ATM's
- on-line airline ticket reservations
- pay at the pump gas pumps
- on-line package tracking
- fully automated phone systems

TBSSs can also include more complicated systems that are responsible for the fundamental aspects of the transaction including:
- on-line banking
- on-line shopping
- on-line investing

Finally, TBSS can also include non-economic transactions such as:
- Weather updates texted from the Weather Channel
- on-line tutorials
- birthday reminders from social networking sites

This survey is interested in your perception of TBSSs and how they impact your experiences and interactions with firms. We are interested in your options on TBSSs in general, both the good and bad aspects. Please think about the TBSSs you use, as well as the TBSSs you avoid, as you answer the questions in this survey.

These technologies have become much more widely used and provide consumers with many advantages (e.g., convenience, flexibility) while also having some inherent disadvantages (e.g., initial learning required, lack of personal interaction, etc.). This study is interested in how consumers balance these advantages against the disadvantages in their use of TBSSs.

What is the definition of TBSS as defined above?

☐ Technologically Based Self Service
☐ Technology Based Self Service
☐ Time Based Social Services
☐ Treat Based Supplemental Service
First we would like you to just describe in your own words your feelings toward TBSSs.

What are your favorite types of TBSSs? __________________________________________________________________________________________________________________________________________________________

What types of TBSSs do you use most often? __________________________________________________________________________________________________________________________________________________________

What TBSSs are you most likely to avoid? __________________________________________________________________________________________________________________________________________________________

What are the biggest advantages of TBSSs? __________________________________________________________________________________________________________________________________________________________

What are the biggest disadvantages of TBSSs? __________________________________________________________________________________________________________________________________________________________

TBSS views

You will now see a series of statements. For each statement, indicate whether you Agree or Disagree that they describe your feelings and experiences with TBSSs (Technology Based Self Service).

TBSSs...

...are an easy means for me to communicate with and provide feedback to companies

☐ Disagree
☐ Agree somewhat
☐ Strongly agree

Please select "Disagree" from the scale in order to continue

☐ Disagree
☐ Agree Somewhat
☐ Strongly Agree

...create barriers between me and firm employees when I need them

☐ Disagree
☐ Agree somewhat
☐ Strongly agree

... allow me to make a lot of decisions on my own

☐ Disagree
☐ Agree somewhat
☐ Strongly agree

... limit what I can actually get done

☐ Disagree
☐ Agree somewhat
☐ Strongly agree

... allow me to accomplish tasks in the manner best suited to me

☐ Disagree
☐ Agree somewhat
☐ Strongly agree

...require a substantial investment on my part (time, effort, equipment) to fully take advantage of their benefits
☐ Disagree
☐ Agree somewhat
☐ Strongly agree

... allow me to do everything I need
☐ Disagree
☐ Agree somewhat
☐ Strongly agree

...are really only useful for resolving common problems not unique issues
☐ Disagree
☐ Agree somewhat
☐ Strongly agree

...allow me to perform tasks anonymously
☐ Disagree
☐ Agree somewhat
☐ Strongly agree

...help me feel connected to the firm so that I am not just another “number” or customer
☐ Disagree
☐ Agree somewhat
☐ Strongly agree

...give me the ability to do more tasks than before
☐ Disagree
☐ Agree somewhat
☐ Strongly agree

...cause me to go through unnecessary steps to complete a single task
☐ Disagree
☐ Agree somewhat
☐ Strongly agree

...cause me to worry about privacy issues
☐ Disagree
☐ Agree somewhat
☐ Strongly agree

...are beneficial when they are able to use my history as a customer
☐ Disagree
☐ Agree somewhat

131
- Strongly agree

...make it easy to get exactly what I want when I want
- Disagree
- Agree somewhat
- Strongly agree

...many times make me unsure of what exactly I am getting
- Disagree
- Agree somewhat
- Strongly agree

...seem to make my 'to-do' list never ending
- Disagree
- Agree somewhat
- Strongly agree

...make my day-to-day tasks easier
- Disagree
- Agree somewhat
- Strongly agree

...provide so many choices and so much information that many times I become overwhelmed
- Disagree
- Agree somewhat
- Strongly agree

...increase my productivity in searching for information and solutions
- Disagree
- Agree somewhat
- Strongly agree

...are meant to make me more efficient
- Disagree
- Agree somewhat
- Strongly agree

...save companies money by making me do more work
- Disagree
- Agree somewhat
- Strongly agree

...let me choose where and when to accomplish tasks
- Disagree
<table>
<thead>
<tr>
<th>Agree somewhat</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

...require users to choose from a more limited menu of options than face-to-face service
- Disagree
- Agree somewhat
- Strongly agree

...allow me to have considerable control as a customer
- Disagree
- Agree somewhat
- Strongly agree

...are controlled by technology, not by me.
- Disagree
- Agree somewhat
- Strongly agree

...allow me to carry out tasks as I want
- Disagree
- Agree somewhat
- Strongly agree

...constrain in many ways what I can actually do
- Disagree
- Agree somewhat
- Strongly agree

...help me gain valuable feedback and even a sense of community with other customers
- Disagree
- Agree somewhat
- Strongly agree

...make me miss personal interactions with other customers and employees
- Disagree
- Agree somewhat
- Strongly agree

...make things much more convenient for me
- Disagree
- Agree somewhat
- Strongly agree

...require me to extend more effort than doing it the 'old-fashioned' way
- Disagree
...are great because they are fun to use
- Disagree
- Agree somewhat
- Strongly agree

...are valuable because of the functionality they provide
- Disagree
- Agree somewhat
- Strongly agree

...help me complete my task in a fastest possible manner
- Disagree
- Agree somewhat
- Strongly agree

...cause my tasks to take longer than just working with employees
- Disagree
- Agree somewhat
- Strongly agree

...create a sense of excitement when they are used
- Disagree
- Agree somewhat
- Strongly agree

...are very good at completing the task, but are generally boring
- Disagree
- Agree somewhat
- Strongly agree

...simplify the process I have to go through
- Disagree
- Agree somewhat
- Strongly agree

...restrict my freedom of choice
- Disagree
- Agree somewhat
- Strongly agree
...make it easy to connect with other users or employees
- Disagree
- Agree somewhat
- Strongly agree

...make it harder for me to 'really get to know' other users or employees
- Disagree
- Agree somewhat
- Strongly agree

...allow firms to gather too much information about me
- Disagree
- Agree somewhat
- Strongly agree

...greatly improve my online experience by using personal information about me
- Disagree
- Agree somewhat
- Strongly agree

...are enjoyable in their own way
- Disagree
- Agree somewhat
- Strongly agree

...are only beneficial because they are functional and straightforward
- Disagree
- Agree somewhat
- Strongly agree

...are something I should use if available
- Disagree
- Agree somewhat
- Strongly agree

...are frustrating to use
- Disagree
- Agree somewhat
- Strongly agree

...make the company accessible to me as never before
- Disagree
- Agree somewhat
- Strongly agree
...require that I understand how to 'work the system' to get anything done

☐ Disagree
☐ Agree somewhat
☐ Strongly agree

...make me feel part of something bigger

☐ Disagree
☐ Agree somewhat
☐ Strongly agree

...let me be on my own

☐ Disagree
☐ Agree somewhat
☐ Strongly agree

Please select "Strongly agree" from the scale below in order to continue

☐ Disagree
☐ Agree somewhat
☐ Strongly agree

...let me develop a competence that makes the process better and easier

☐ Disagree
☐ Agree somewhat
☐ Strongly agree

...always make me feel like I can make a mistake at any step

☐ Disagree
☐ Agree somewhat
☐ Strongly agree

...are generally simple to use

☐ Disagree
☐ Agree Somewhat
☐ Strongly Agree

...can be very difficult to master

☐ Disagree
☐ Agree Somewhat
☐ Strongly Agree
...create a “false sense” of anonymity

- Disagree
- Agree Somewhat
- Strongly Agree

...allow for experiences to be customized to my needs

- Disagree
- Agree Somewhat
- Strongly Agree

...make me concerned about the amount of personal data collected

- Disagree
- Agree Somewhat
- Strongly Agree

...are appealing because of their ability to create experiences tailored just for me

- Disagree
- Agree Somewhat
- Strongly Agree

Block 57

In the next section, we would like to better understand some of your answers to the previous questions. In some instances, you stated that you agreed with two statements that might seem to be in conflict with one another. If that occurred, we would like to understand if you see them as in conflict or not.

For example, someone might agree with the statement that cellphones give a great deal of freedom because they allow users to take calls anywhere and at anytime. At the same time, he might agree with the statement that cellphones reduce individual freedom because there is the expectation that people should always be available.

Different people are going to experience different levels of conflict in reconciling these two statements about cellphones.
- Some people might not see any conflict, because they view the freedom granted as much greater than the expectations placed upon them (or vice versa).
- In the middle are the people who sometimes feel they are able to come to terms with the conflict and other times are not able to.
- On the other end are people who feel a high level of conflict because they are unable to reconcile these statements and can say if the freedom is worth the burden of being on call at all times.

You will be asked a set of questions based on your previous responses. If you are given only ONE choice in any of these questions, please mark that choice to move onto the next question.

Please press "continue" to move on to the next section.

226Skip

In an earlier section, you agreed that TBSSs...
- save companies money by making me do more work

But you also agreed with the conflicting statements below.

Please indicated the item that you feel is in most in conflict with your acceptance of TBSSs...
- save companies money by making me do more work
- ...are meant to make me more efficient
- ...increase my productivity in searching for information and solutions
When you think about BOTH TBSSs
... save companies money by making me do more work and TBSSs $tq / / QID474 / ChoiceGroup / SelectedChoices$ how conflicted do you feel?
- I don't see any real conflict
- Sometimes I see this conflict, sometimes I don't
- I see no way to reconcile these conflicting aspects of TBSSs

79 skip

In an earlier section, you agreed that TBSSs
... many times make me unsure of what exactly I am getting

But you also agreed with the conflicting statements below.

Please indicated the item that you feel is in most in conflict with your acceptance of TBSSs
... many times make me unsure of what exactly I am getting
- ... make it easy to get exactly what I want when I want
- ... let me choose where and when to accomplish tasks
- ... allow me to have considerable control as a customer
- ... simplify the process I have to go through

When you think about BOTH TBSSs
... many times make me unsure of what exactly I am getting and TBSSs $tq / / QID480 / ChoiceGroup / SelectedChoices$ how conflicted do you feel?
- I don't see any real conflict
- Sometimes I see this conflict, sometimes I don't
- I see no way to reconcile these conflicting aspects of TBSSs

76 skip

In an earlier section, you agreed that TBSSs
... are an easy means for me to communicate with and provide feedback to companies

But you also agreed with the conflicting statements below.

Please indicated the item that you feel is in most in conflict with your acceptance of TBSSs
... are an easy means for me to communicate with and provide feedback to companies
- ... create barriers between me and firm employees when I need them
- ... make me miss personal interactions with other customers and employees
- ... make it harder for me to get to 'really get to know' other users or employees
- ... let me be on my own

When you think about BOTH TBSSs
... are an easy means for me to communicate with and provide feedback to companies and TBSSs $tq / / QID486 / ChoiceGroup / SelectedChoices$ how conflicted do you feel?
- I don't see any real conflict
- Sometimes I see this conflict, sometimes I don't
- I see no way to reconcile these conflicting aspects of TBSSs
In an earlier section, you agreed that TBSSs

... limit what I can actually get done

But you also agreed with the conflicting statements below.

Please indicated the item that you feel is in most in conflict with your acceptance of TBSSs

... limit what I can actually get done

☐ ... allow me to make a lot of decisions on my own
☐ ... allow me to do everything I need
☐ ... give me the ability to do more tasks than before
☐ ... make things much more convenient for me

When you think about BOTH TBSSs

... limit what I can actually get done

and TBSSs $\text{fq} / \text{QIDS15}/\text{ChoiceGroup}/\text{SelectedChoices}$ how conflicted do you feel?

☐ I don’t see any real conflict
☐ Sometimes I see this conflict, sometimes I don’t
☐ I see no way to reconcile these conflicting aspects of TBSSs

In an earlier section, you agreed that TBSSs

... are really only useful for resolving common problems not unique issues

But you also agreed with the conflicting statements below.

Please indicated the item that you feel is in most in conflict with your acceptance of TBSSs

... are really only useful for resolving common problems not unique issues

☐ ... allow me to make a lot of decisions on my own
☐ ... allow me to do everything I need
☐ ... give me the ability to do more tasks than before
☐ ... make things much more convenient for me

When you think about BOTH TBSSs

... are really only useful for resolving common problems not unique issues

and TBSSs $\text{fq} / \text{QIDS15}/\text{ChoiceGroup}/\text{SelectedChoices}$ how conflicted do you feel?

☐ I don’t see any real conflict
☐ Sometimes I see this conflict, sometimes I don’t
☐ I see no way to reconcile these conflicting aspects of TBSSs

In an earlier section, you agreed that TBSSs

... help me feel connected to the firm so that I am not just another “number” or customer

But you also agreed with the conflicting statements below.

Please indicated the item that you feel is in most in conflict with your acceptance of TBSSs

... help me feel connected to the firm so that I am not just another “number” or customer

☐ ... allow me to perform tasks anonymously
☐ ... cause me to worry about privacy issues
☐ ... allow firms to gather too much information about me
☐ ... create a “false sense” of anonymity
When you think about TBSSs being both
...help me feel connected to the firm so that I am not just another “number” or customer
and $\langle \text{QID461}/\text{ChoiceGroup}/\text{SelectedChoices} \rangle$ how conflicted do you feel?

- I don’t see any real conflict
- Sometimes I see this conflict, sometimes I don’t
- I see no way to reconcile these conflicting aspects of TBSSs

77KSJIP

In an earlier section, you agreed that TBSSs
...cause me to go through unnecessary steps to complete a single task
But you also agreed with the conflicting statements below.

Please indicated the item that you feel is in most in conflict with your acceptance of TBSSs
...cause me to go through unnecessary steps to complete a single task
- ... allow me to make a lot of decisions on my own
- ... allow me to do everything I need
- ... give me the ability to do more tasks than before
- ... make things much more convenient for me

When you think about BOTH TBSSs
...cause me to go through unnecessary steps to complete a single task
and TBSS $\langle \text{QID507}/\text{ChoiceGroup}/\text{SelectedChoices} \rangle$ how conflicted do you feel?

- I don’t see any real conflict
- Sometimes I see this conflict, sometimes I don’t
- I see no way to reconcile these conflicting aspects of TBSSs

78skip

In an earlier section, you agreed that TBSSs
...are beneficial when they are able to use my history as a customer
But you also agreed with the conflicting statements below.

Please indicated the item that you feel is in most in conflict with your acceptance of TBSSs
...are beneficial when they are able to use my history as a customer
- ... cause me to worry about privacy issues
- ... allow me to perform tasks anonymously
- ... allow firms to gather too much information about me
- ... create a “false sense” of anonymity
- ... make me concerned about the amount of personal data collected

When you think about BOTH TBSSs
...are beneficial when they are able to use my history as a customer
and TBSS $\langle \text{QID448}/\text{ChoiceGroup}/\text{SelectedChoices} \rangle$ how conflicted do you feel?

- I don’t see any real conflict
- Sometimes I see this conflict, sometimes I don’t
- I see no way to reconcile these conflicting aspects of TBSSs
In an earlier section, you agreed that TBSSs

...provide so many choices and so much information that many times I become overwhelmed

But you also agreed with the conflicting statements below.

Please indicated the item that you feel is in most conflict with your acceptance of TBSSs

...provide so many choices and so much information that many times I become overwhelmed

- ...are meant to make me more efficient
- ...increase my productivity in searching for information and solutions
- ...help me complete my task in a fastest possible manner

When you think about BOTH TBSSs

...save companies money by making me do more work

and TBSSs $1q / (/QID476 / ChoiceGroup / SelectedChoices) how conflicted do you feel?

- I don’t see any real conflict
- Sometimes I see this conflict, sometimes I don’t
- I see no way to reconcile these conflicting aspects of TBSSs

In an earlier section, you agreed that TBSSs

...require users to choose from a more limited menu of options than face-to-face service

But you also agreed with the conflicting statements below.

Please indicated the item that you feel is in most conflict with your acceptance of TBSSs

...require users to choose from a more limited menu of options than face-to-face service

- ...make it easy to get exactly what I want when I want
- ...let me choose where and when to accomplish tasks
- ...allow me to have considerable control as a customer
- ...simplify the process I have to go through

When you think about BOTH TBSSs

...require users to choose from a more limited menu of options than face-to-face service

and TBSSs $1q / (/QID483 / ChoiceGroup / SelectedChoices) how conflicted do you feel?

- I don’t see any real conflict
- Sometimes I see this conflict, sometimes I don’t
- I see no way to reconcile these conflicting aspects of TBSSs

In an earlier section, you agreed that TBSSs

...are controlled by technology, not by me.

But you also agreed with the conflicting statements below.

Please indicated the item that you feel is in most conflict with your acceptance of TBSSs

...are controlled by technology, not by me.

- ...make it easy to get exactly what I want when I want
- ...let me choose where and when to accomplish tasks
- ...allow me to have considerable control as a customer
- ...simplify the process I have to go through
Default Question Block

Self Service Technology Study
CONSENT FORM

Thank you for agreeing to participate in this research. This survey that should take no longer than 30 minutes to complete. This study concerns consumer opinions related to technology based self service and is being conducted on behalf of the Department of Marketing at Louisiana State University. We support the practice of protection for individuals participating in research. Your participation is completely voluntary, and you may withdraw from the study at anytime.

Be assured that your name will not be associated in any way with the research findings. All of your actions will be confidential. Each participant will be asked various questions representing their opinions and attitudes. Please know there are no right or wrong answers, and your comments will help organizations better serve consumers.

By clicking the link below and continuing with this survey you indicate that you understand and agree with the following points:
My participation is completely voluntary. I will not face any significant discomforts or stresses. My participation involves no risk. The results of my participation are confidential and will not be released in any individually identifiable form. All data sheets will be coded by number, thus preserving anonymity. The investigators listed below will answer any further questions I may have about the study Monday - Friday, 8:00 a.m. - 4:30 p.m., and the contact information for the Chairman of the IRB at Louisiana State University is identified below.

Investigator: Carolyn Garrison, Doctoral Student, LSU, phone (225) 578-8779
Investigator: Dr. William Black, Professor, LSU, phone (225) 578-8403
Chairman of the IRB: Dr. Robert C. Mathews, 203 B-1 David Boyd Hall, phone (225) 578-8692

Please indicate your understanding of the above information and agreement to participate voluntarily by clicking the link (>>> ) below.

This survey deals with Technology Based Self Service (TBSS) -- technologies in which customers are performing services that an employee of the company used to do.

While some of these are not new, advances in technology are creating more options for companies to offer customers self-service options.

TBSSs can include simple ancillary services such as:
- ATM's
- on-line airline ticket reservations
- pay at the pump gas pumps
- on-line package tracking
- fully automated phone systems

TBSSs can also include more complicated systems that are responsible for the fundamental aspects of the transaction including:
- on-line banking
- on-line shopping
- on-line investing

Finally, TBSS can also include non-economic transactions, such as:
- Weather updates texted from The Weather Channel
- on-line tutorials
- birthday reminders from social networking sites

This survey is interested in your perception of TBSSs and how they impact your experiences and interactions with firms. We are interested in your options on TBSSs in general, both the good and bad aspects. Please think about the TBSSs you use, as well as the TBSSs you avoid, as you answer the questions in this survey.

These technologies have become much more widely used and provide consumers with many advantages (e.g., convenience, flexibility) while also having some inherent disadvantages (e.g., initial learning required, lack of personal interaction, etc.). This study is interested in how consumers balance these advantages against the disadvantages in their use of TBSSs.

What is the definition of TBSS as defined above?

- Technologically Biased Selfish Syndrome
- Technology Based Self Service
- Time Based Social Services
- Treat Based Supplemental Service
... require me to extend more effort than doing it the 'old-fashioned' way

- ... allow me to make a lot of decisions on my own
- ... allow me to do everything I need
- ... give me the ability to do more tasks than before
- ... make things much more convenient for me

When you think about BOTH TBSSs
... require me to extend more effort than doing it the 'old-fashioned' way
and TBSS 14q //QID/58//ChoiceGroup/SelectedChoices how conflicted do you feel?

- I don't see any real conflict
- Sometimes I see this conflict, sometimes I don't
- I see no way to reconcile these conflicting aspects of TBSSs

86 skip

In an earlier section, you agreed that TBSSs
... are great because they are fun to use

Please indicated the item that you feel is in most in conflict with your acceptance of TBSSs
... are great because they are fun to use

- ... are valuable because of the functionality they provide
- ... are very good at completing the task, but are generally boring
- ... are only beneficial because they are functional and straightforward
- ... are frustrating to use

When you think about BOTH TBSSs
... are great because they are fun to use
and TBSS 14q //QID/48//ChoiceGroup/SelectedChoices how conflicted do you feel?

- I don't see any real conflict
- Sometimes I see this conflict, sometimes I don't
- I see no way to reconcile these conflicting aspects of TBSSs

87 skip

In an earlier section, you agreed that TBSSs
... cause my tasks to take longer than just working with employees

But you also agreed with the conflicting statements below.

Please indicated the item that you feel is in most in conflict with your acceptance of TBSSs
... cause my tasks to take longer than just working with employees

- ... are meant to make me more efficient
- ... increase my productivity in searching for information and solutions
- ... help me complete my task in a fastest possible manner

When you think about BOTH TBSSs
... cause my tasks to take longer than just working with employees
and TBSS 14q //QID/77//ChoiceGroup/SelectedChoices how conflicted do you feel?

- I don't see any real conflict
- Sometimes I see this conflict, sometimes I don't
- I see no way to reconcile these conflicting aspects of TBSSs

88 skip
In an earlier section, you agreed that TBSSs
...create a sense of excitement when they are used

Please indicate the item that you feel is in most conflict with your acceptance of TBSSs
...create a sense of excitement when they are used
☐ ...are valuable because of the functionality they provide
☐ ...are very good at completing the task, but are generally boring
☐ ...are only beneficial because they are functional and straightforward
☐ ...are frustrating to use

When you think about BOTH TBSSs
...create a sense of excitement when they are used
and TBSSs $\langle q/\langle QID499/ChoiceGroup/Choice/Answer\rangle\rangle$ how conflicted do you feel?
☐ I don’t see any real conflict
☐ Sometimes I see this conflict, sometimes I don’t
☐ I see no way to reconcile these conflicting aspects of TBSSs

89 skip

In an earlier section, you agreed that TBSSs
...simplify the process I have to go through

But you also agreed with the conflicting statements below.

Please indicate the item that you feel is in most conflict with your acceptance of TBSSs
...simplify the process I have to go through
☐ ...make it easy to get exactly what I want when I want
☐ ...let me choose where and when to accomplish tasks
☐ ...allow me to have considerable control as a customer
☐ ...simplify the process I have to go through

When you think about BOTH TBSSs
...simplify the process I have to go through
and TBSSs $\langle q/\langle QID483/ChoiceGroup/Choice/Answer\rangle\rangle$ how conflicted do you feel?
☐ I don’t see any real conflict
☐ Sometimes I see this conflict, sometimes I don’t
☐ I see no way to reconcile these conflicting aspects of TBSSs

90 skip

In an earlier section, you agreed that TBSSs
...make it easy to connect with other users or employees

But you also agreed with the conflicting statements below.

Please indicate the item that you feel is in most conflict with your acceptance of TBSSs
...make it easy to connect with other users or employees
☐ ...create barriers between me and firm employees when I need them
☐ ...make me miss personal interactions with other customers and employees
☐ ...make it harder for me to get to ‘really get to know’ other users or employees
☐ ...let me be on my own
When you think about BOTH TBSSs
...make it easy to connect with other users or employees
and TBSSs $q://QID483\langle ChoiceGroup/SelectedChoices\rangle$ how conflicted do you feel?
- I don’t see any real conflict
- Sometimes I see this conflict, sometimes I don’t
- I see no way to reconcile these conflicting aspects of TBSSs

91 skip

In an earlier section, you agreed that TBSSs
...greatly improve my online experience by using personal information about me
But you also agreed with the conflicting statements below.
Please indicated the item that you feel is in most conflict with your acceptance of TBSSs
...greatly improve my online experience by using personal information about me
- ...cause me to worry about privacy issues
- ...allow me to perform tasks anonymously
- ...allow firms to gather too much information about me
- ...create a “false sense” of anonymity
- ...make me concerned about the amount of personal data collected

When you think about BOTH TBSSs
...greatly improve my online experience by using personal information about me
and TBSSs $q://QID460\langle ChoiceGroup/SelectedChoices\rangle$ how conflicted do you feel?
- I don’t see any real conflict
- Sometimes I see this conflict, sometimes I don’t
- I see no way to reconcile these conflicting aspects of TBSSs

92 skip

In an earlier section, you agreed that TBSSs
...are enjoyable in their own way
Please indicated the item that you feel is in most conflict with your acceptance of TBSSs
...are enjoyable in their own way
- ...are valuable because of the functionality they provide
- ...are very good at completing the task, but are generally boring
- ...are only beneficial because they are functional and straightforward
- ...are frustrating to use

When you think about BOTH TBSSs
...are enjoyable in their own way
and TBSSs $q://QID500\langle ChoiceGroup/SelectedChoices\rangle$ how conflicted do you feel?
- I don’t see any real conflict
- Sometimes I see this conflict, sometimes I don’t
- I see no way to reconcile these conflicting aspects of TBSSs

93 skip

In an earlier section, you agreed that TBSSs
are something I should use if available
Please indicated the item that you feel is in most in conflict with your acceptance of TBSSs
...are something I should use if available
  ☐ ...are valuable because of the functionality they provide
  ☐ ...are very good at completing the task, but are generally boring
  ☐ ...are only beneficial because they are functional and straightforward
  ☐ ...are frustrating to use

When you think about BOTH TBSSs
...are something I should use if available
and TBSSs SIQ/CHI/Group/SelectedChoices) how conflicted do you feel?
  ☐ I don't see any real conflict
  ☐ Sometimes I see this conflict, sometimes I don’t
  ☐ I see no way to reconcile these conflicting aspects of TBSSs

214 Skip

In an earlier section, you agreed that TBSSs
...require that I understand how to 'work the system' to get anything done
But you also agreed with the conflicting statements below.
Please indicated the item that you feel is in most in conflict with your acceptance of TBSSs
...require that I understand how to 'work the system' to get anything done
  ☐ ...make the company accessible to me as never before
  ☐ ...let me develop a competence that makes the process better and easier
  ☐ ...are generally simple to use

When you think about BOTH TBSSs
...require that I understand how to 'work the system' to get anything done
and TBSSs SIQ/CHI/Group/SelectedChoices) how conflicted do you feel?
  ☐ I don't see any real conflict
  ☐ Sometimes I see this conflict, sometimes I don’t
  ☐ I see no way to reconcile these conflicting aspects of TBSSs

215 Skip

In an earlier section, you agreed that TBSSs
...make me feel part of something bigger
But you also agreed with the conflicting statements below.
Please indicated the item that you feel is in most in conflict with your acceptance of TBSSs
...make me feel part of something bigger
  ☐ ...create barriers between me and firm employees when I need them
  ☐ ...make me miss personal interactions with other customers and employees
  ☐ ...make it harder for me to get to 'really get to know' other users or employees
  ☐ ...let me be on my own

When you think about BOTH TBSSs
...make me feel part of something bigger
and TBSSs (Q(q //QID491//ChoiceGroup/SelectedChoices) how conflicted do you feel?

- I don't see any real conflict
- Sometimes I see this conflict, sometimes I don't
- I see no way to reconcile these conflicting aspects of TBSSs

216kip

In an earlier section, you agreed that TBSSs
...always make me feel like I can make a mistake at any step

But you also agreed with the conflicting statements below.

Please indicated the item that you feel is in most conflict with your acceptance of TBSSs
...always make me feel like I can make a mistake at any step

- ...make the company accessible to me as never before
- ...let me develop a competence that makes the process better and easier
- ...are generally simple to use

When you think about BOTH TBSSs
...always make me feel like I can make a mistake at any step

and TBSSs (Q(q //QID511//ChoiceGroup/SelectedChoices) how conflicted do you feel?

- I don't see any real conflict
- Sometimes I see this conflict, sometimes I don't
- I see no way to reconcile these conflicting aspects of TBSSs

217kip

In an earlier section, you agreed that TBSSs
...can be very difficult to master

But you also agreed with the conflicting statements below.

Please indicated the item that you feel is in most conflict with your acceptance of TBSSs
...can be very difficult to master

- ...make the company accessible to me as never before
- ...let me develop a competence that makes the process better and easier
- ...are generally simple to use

When you think about BOTH TBSSs
...can be very difficult to master

and TBSSs (Q(q //QID512//ChoiceGroup/SelectedChoices) how conflicted do you feel?

- I don't see any real conflict
- Sometimes I see this conflict, sometimes I don't
- I see no way to reconcile these conflicting aspects of TBSSs

218kip
In an earlier section, you agreed that TBSSs
...require a substantial investment on my part (time, effort, equipment) to fully take advantage of their benefits
But you also agreed with the conflicting statements below.
Please indicated the item that you feel is in most in conflict with your acceptance of TBSSs
...require a substantial investment on my part (time, effort, equipment) to fully take advantage of their benefits
☐ ...allow me to carry out tasks as I want
☐ ... allow me to accomplish tasks in the manner best suited to me
☐ ...make my day-to-day tasks easier

When you think about BOTH TBSSs
...require a substantial investment on my part (time, effort, equipment) to fully take advantage of their benefits and TBSSs
Q1q //QIDS94/ChoiceGroup/SelectedChoices) how conflicted do you feel?
☐ I don't see any real conflict
☐ Sometimes I see this conflict, sometimes I don't
☐ I see no way to reconcile those conflicting aspects of TBSSs

2191kip

In an earlier section, you agreed that TBSSs
...seem to make my 'to-do' list never ending
But you also agreed with the conflicting statements below.
Please indicated the item that you feel is in most in conflict with your acceptance of TBSSs
...seem to make my 'to-do' list never ending
☐ ...allow me to carry out tasks as I want
☐ ... allow me to accomplish tasks in the manner best suited to me
☐ ...make my day-to-day tasks easier

When you think about BOTH TBSSs
...seem to make my 'to-do' list never ending and TBSSs
Q1q //QIDS93/ChoiceGroup/SelectedChoices) how conflicted do you feel?
☐ I don't see any real conflict
☐ Sometimes I see this conflict, sometimes I don't
☐ I see no way to reconcile those conflicting aspects of TBSSs

3321kip

In an earlier section, you agreed that TBSSs
...allow for experiences to be customized to my needs
But you also agreed with the conflicting statements below.
Please indicated the item that you feel is in most in conflict with your acceptance of TBSSs
...allow for experiences to be customized to my needs
☐ ...cause me to worry about privacy issues
☐ ...allow me to perform tasks anonymously
☐ ... allow firms to gather too much information about me
☐ ...create a "false sense" of anonymity
☐ ...make me concerned about the amount of personal data collected

When you think about BOTH TBSSs
...allow for experiences to be customized to my needs...
333skip

In an earlier section, you agreed that TBSSs...
...are appealing because of their ability to create experiences tailored just for me

But you also agreed with the conflicting statements below.

Please indicate the item that you feel is in most conflict with your acceptance of TBSSs...
...are appealing because of their ability to create experiences tailored just for me

☐ ...cause me to worry about privacy issues
☐ ...allow me to perform tasks anonymously
☐ ...allow firms to gather too much information about me
☐ ...create a “false sense” of anonymity
☐ ...make me concerned about the amount of personal data collected

When you think about BOTH TBSSs...
...are appealing because of their ability to create experiences tailored just for me

and TBSSs (q://QID463/ChoiceGroup/SelectedChoices) how conflicted do you feel?

☐ I don’t see any real conflict
☐ Sometimes I see this conflict, sometimes I don’t
☐ I see no way to reconcile these conflicting aspects of TBSSs

76skipagain

In an earlier section,

You AGREED with the statement
...are an easy means for me to communicate with and provide feedback to companies

But you DISAGREED with the statement
...create barriers between me and firm employees when I need them

When you think about these two answers, how does it make you feel?

completely conflicted | not at all conflicted
not at all ambivalent | completely ambivalent

76skip

In an earlier section,

You AGREED with the statement
...create barriers between me and firm employees when I need them

But you DISAGREED with the statement
...are an easy means for me to communicate with and provide feedback to companies

When you think about these two answers, how does it make you feel?

completely conflicted | not at all conflicted
completely ambivalent | not at all ambivalent
77 skips again

In an earlier section,

You AGREED with the statement
... give me the ability to do more tasks than before
But you DISAGREED with the statement
... cause me to go through unnecessary steps to complete a single task

When you think about these to answers, how does it make you feel?

<table>
<thead>
<tr>
<th>completely conflicted</th>
<th>completely ambivalent</th>
<th>not at all conflicted</th>
<th>not at all ambivalent</th>
</tr>
</thead>
</table>

77 skips

In an earlier section,

You AGREED with the statement
... cause me to go through unnecessary steps to complete a single task
But you DISAGREED with the statement
... give me the ability to do more tasks than before

When you think about these to answers, how does it make you feel?

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<th>not at all conflicted</th>
<th>not at all ambivalent</th>
</tr>
</thead>
</table>

82 skips again

In an earlier section,

You AGREED with the statement
... allow me to have considerable control as a customer
But you DISAGREED with the statement ... are controlled by technology, not by me.

When you think about these to answers, how does it make you feel?

<table>
<thead>
<tr>
<th>completely conflicted</th>
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82 skips

In an earlier section,

You AGREED with the statement
... allow me to have considerable control as a customer
But you DISAGREED with the statement ... are controlled by technology, not by me.

When you think about these to answers, how does it make you feel?

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<th>not at all ambivalent</th>
</tr>
</thead>
</table>

78 skips again

In an earlier section,

You AGREED with the statement
... cause me to worry about privacy issues
But you DISAGREED with the statement
... are beneficial when they are able to use my history as a customer

When you think about these to answers, how does it make you feel?

<table>
<thead>
<tr>
<th>completely conflicted</th>
<th>completely ambivalent</th>
<th>not at all conflicted</th>
</tr>
</thead>
</table>
748 Skip

In an earlier section,

You AGREED with the statement
...are beneficial when they are able to use my history as a customer
But you DISAGREE with the statement
...cause me to worry about privacy issues

When you think about these answers, how does it make you feel?

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>completely ambivalent</td>
<td>not at all ambivalent</td>
</tr>
</tbody>
</table>

938 Skipagain

In an earlier section,

You AGREED with the statement
...are something I should use if available
But you DISAGREE with the statement
...are frustrating to use

When you think about these answers, how does it make you feel?

<table>
<thead>
<tr>
<th>completely conflicted</th>
<th>not at all conflicted</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

938 Skip

In an earlier section,

You AGREED with the statement
...are frustrating to use
But you DISAGREE with the statement
...are something I should use if available

When you think about these answers, how does it make you feel?

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</tr>
</tbody>
</table>

2148 Skipagain

In an earlier section,

You AGREED with the statement
...make the company accessible to me as never before
But you DISAGREE with the statement
...require that I understand how to ‘work the system’ to get anything done

When you think about these answers, how does it make you feel?

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>completely ambivalent</td>
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</tr>
</tbody>
</table>

2148 Skip

In an earlier section,

You AGREED with the statement
...require that I understand how to ‘work the system’ to get anything done
Do you communicate with the managers...
making the company accessible to me as never before

When you think about these to answers, how does it make you feel?

<table>
<thead>
<tr>
<th>completely conflicted</th>
<th>not at all conflicted</th>
</tr>
</thead>
<tbody>
<tr>
<td>completely ambivalent</td>
<td>not at all ambivalent</td>
</tr>
</tbody>
</table>

219: Skip

In an earlier section,

You AGREED with the statement
... make my day-to-day tasks easier
But you DISAGREED with the statement
... seem to make my 'to-do' list never ending

When you think about these to answers, how does it make you feel?

<table>
<thead>
<tr>
<th>completely conflicted</th>
<th>not at all conflicted</th>
</tr>
</thead>
<tbody>
<tr>
<td>completely ambivalent</td>
<td>not at all ambivalent</td>
</tr>
</tbody>
</table>

220: Skip

In an earlier section,

You AGREED with the statement
... are meant to make me more efficient
But you DISAGREED with the statement
... save companies money by making me do more work

When you think about these to answers, how does it make you feel?

<table>
<thead>
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<tbody>
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</table>

220: Skip

In an earlier section,

You agreed with the statement
... save companies money by making me do more work
But you disagreed with the statement
... are meant to make me more efficient

When you think about these to answers, how does it make you feel?

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<tbody>
<tr>
<td>completely ambivalent</td>
<td>not at all ambivalent</td>
</tr>
</tbody>
</table>
## TBSS use

We are interested in knowing how often you use TBSS’s versus conduct business in person. Based on your current usage, how often do you...

<table>
<thead>
<tr>
<th>Activity</th>
<th>Never use TBSSs for this activity</th>
<th>Rarely (less than 20% of the time)</th>
<th>Occasionally (20-50% of the time)</th>
<th>Most of the time (50-80% of the time)</th>
<th>Almost always (80% of the time or more)</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdraw money from a bank using an ATM</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Conduct banking transactions online</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Book travel plans online</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Use self-check out at grocery store</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Pay bills online</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Shop for clothes online</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

How satisfied are you with your experiences using TBSSs in the following areas

<table>
<thead>
<tr>
<th>Activity</th>
<th>Very Dissatisfied</th>
<th>Dissatisfied</th>
<th>Neutral</th>
<th>Satisfied</th>
<th>Very Satisfied</th>
<th>Do not use TBSS for this service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdraw money from a bank using an ATM</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Conduct banking transactions online</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Book travel plans online</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Use self-check out at grocery store</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Pay bills online</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Shop for clothes online</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

## TBSS views

How would you describe your experiences with TBSSs in general?

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I know a lot about TBSS.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I would consider myself an expert in terms of my knowledge of TBSS.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I know more about TBSS than my friends do.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I usually pay a lot of attention to information about TBSS.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I fear that using TBSS reduces the confidentiality of my service history.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I am unsure if TBSSs perform satisfactorily.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Using TBSSs infringes on my personal privacy.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Overall, using TBSSs is risky.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

How would you describe TBSSs using the following:

- important
- unimportant
- interesting
- boring
- relevant
- irrelevant
- important
- unimportant
Self Service Technology Study
CONSENT FORM

Thank you for agreeing to participate in this research. This survey that should take no longer than 30 minutes to complete. This study concerns consumer opinions related to technology based self service and is being conducted on behalf of the Department of Marketing at Louisiana State University. We support the practice of protection for individuals participating in research. Your participation is completely voluntary, and you may withdraw from the study at anytime.

Be assured that your name will not be associated in any way with the research findings. All of your actions will be confidential. Each participant will be asked various questions representing their opinions and attitudes. Please know there are no right or wrong answers, and your comments will help organizations better serve consumers.

By clicking the link below and continuing with this survey you indicate that you understand and agree with the following points:
My participation is completely voluntary. I will not face any significant discomforts or stresses. My participation involves no risk. The results of my participation are confidential and will not be released in any individually identifiable form. All data sheets will be coded by number, thus preserving anonymity. The investigators listed below will answer any further questions I may have about the study Monday – Friday, 8:00 a.m. – 4:30 p.m., and the contact information for the Chairman of the IRB at Louisiana State University is identified below.

Investigator: Carolyn Garnett. Doctoral Student, LSU, phone (225) 578-8779
Investigator: Dr. William Black, Professor, LSU, phone (225) 578-8403
Chairman of the IRB: Dr. Robert C. Mathews, 203 B-1 David Boyd Hall, phone (225) 578-8692

Please indicate your understanding of the above information and agreement to participate voluntarily by clicking the link (>>>) below.

This survey deals with Technology Based Self Service (TBSS) -- technologies in which customers are performing services that an employee of the company used to do.

While some of these are not new, advances in technology are creating more options for companies to offer customers self-service options.

TBSSs can include simple ancillary services such as:
- ATM's
- on-line airline ticket reservations
- pay at the pump gas pumps
- on-line package tracking
- fully automated phone systems

TBSSs can also include more complicated systems that are responsible for the fundamental aspects of the transaction including:
- on-line banking
- on-line shopping
- on-line investing

Finally, TBSS can also include non-economic transactions, such as:
- Weather updates texted from the Weather Channel
- on-line tutorials
- birthday reminders from social networking sites

This survey is interested in your perception of TBSSs and how they impact your experiences and interactions with firms. We are interested in your opinions on TBSSs in general, both the good and bad aspects. Please think about the TBSSs you use, as well as the TBSSs you avoid, as you answer the questions in this survey.

These technologies have become much more widely used and provide consumers with many advantages (e.g., convenience, flexibility) while also having some inherent disadvantages (e.g., initial learning required, lack of personal interaction, etc.). This study is interested in how consumers balance these advantages against the disadvantages in their use of TBSSs.

What is the definition of TBSS as defined above?
- Technologically Biased Selfish Syndrome
- Technology Based Self Service
- Time Based Social Services
- Treat Based Supplemental Service
While TBSSs usually make it possible to get what I want when I want it, many times they restrict the number of available choices and make me unsure of what exactly I am getting.

COMPETENCE--INCOMPETENCE
I really do feel like I can develop a level of technological competence when using TBSSs, but I also find they are so difficult to master that I feel like I can make a mistake at anytime when I am using them.

ENJOYMENT--TASK SPECIFIC
I find TBSSs to be more fun than traditional methods of accomplishing tasks, but their true strength is functionality and effectiveness in getting the job done.

PERSONALIZATION--PRIVACY
While TBSSs provide great user experiences (e.g., personal recommendations, customized websites, etc.), they also raise serious concerns about privacy issues because they gather too much information about customers.

FULFILLS NEEDS--CREATES NEEDS
TBSSs are really oriented toward making things much more convenient, but in using them I seem to always take on additional tasks and my ‘to-do’ list seems never ending.

Paradox outcomes

Out of the paradoxes you choose above, which one represents the most important conflict for you personally?

» PERSONALIZATION--PRIVACY
While TBSSs provide great user experiences (e.g., personal recommendations, customized websites, etc.), they also raise serious concerns about privacy issues because they gather too much information about customers.

» ASSIMILATION--ISOLATION
Even though TBSSs allow me to be connected to so many more employees or even other users than I could have in person, I feel I am really missing something by eliminating face-to-face interaction.

» COMPETENCE--INCOMPETENCE
I really do feel like I can develop a level of technological competence when using TBSSs, but I also find they are so difficult to master that I feel like I can make a mistake at anytime when I am using them.

» CONTROL--CHAOS
While TBSSs usually make it possible to get what I want when I want it, many times they restrict the number of available choices and make me unsure of what exactly I am getting.

» EFFICIENCY--INEFFICIENCY
I expect TBSSs to be faster than relying on personal service, but they usually still take longer than I anticipated.

» ENGAGING--DESENGAGING
TBSSs are great for taking care of mundane tasks and making life simpler, but I also find it quite easy to get off track, thus spending more time and being less efficient in getting the job done.

» ENJOYMENT--TASK SPECIFIC
I find TBSSs to be more fun than traditional methods of accomplishing tasks, but their true strength is functionality and effectiveness in getting the job done.

» FULFILLS NEEDS--CREATES NEEDS
TBSSs are really oriented toward making things much more convenient, but in using them I seem to always take on additional tasks and my ‘to-do’ list seems never ending.

When you experience this paradox that causes the most conflict, how are you most likely to react? (Check all that apply)

- Avoid information related to the problem causing the paradox
- Refuse to use the technology that causes a paradox
- Postpone making a decision to use the technology
- Tentatively use the technology until a decide if it’s good or bad
- Follow previously established “rules of thumb” to make a decision
- Take time to gather as much information as I can so that I can make a rational, well thought out decision
- Ask friends and family about their experience
- Don’t really care about the cause
- Stop using the technology that causes the sense of tension
- Break down the paradox in small chunks (Break it down)
Default Question Block

Self Service Technology Study
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These technologies have become much more widely used and provide consumers with many advantages (e.g., convenience, flexibility) while also having some inherent disadvantages (e.g., initial learning required, lack of personal interaction, etc.). This study is interested in how consumers balance these advantages against these disadvantages in their use of TBSS.

What is the definition of TBSS as defined above?
- Technologically Biased Selfish Syndrome
- Technology Based Self Service
- Time Based Social Services
- Treat Based Supplemental Service
<table>
<thead>
<tr>
<th>I enjoy trying new products.</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>When I see a product somewhat different from the usual, I check it out.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I am often among the first people to try a new product.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I like to try new and different things.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Human contact in providing services makes the process enjoyable for the consumer.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I like interacting with the person who provides the service.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>It bothers me to use a machine when I could talk to a person instead.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I don’t think new situations are any more threatening than familiar situations.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I’m drawn to situations which can be interpreted in more than one way.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I am good at managing unpredictable situations.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I am tolerant of ambiguous situations.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I enjoy tackling problems which are complex enough to be ambiguous.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I often find myself looking for something new, rather than trying to hold things constant in my life.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I generally prefer novelty over familiarity.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Some problems are so complex that just trying to understand them is fun.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I have little trouble coping with unexpected events.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I pursue problems situations which are so complex some people call them “mind bogglers.”</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I prefer a situation where there is some ambiguity.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>It upsets me to go into a situation without knowing what I can expect from it.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I enjoy having a clear and structured mode of life.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I don’t like situations that are uncertain.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I hate to change my plans at the last minute.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I hate to be with people who are unpredictable.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I find that a consistent routine enables me to enjoy life more.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I become uncomfortable when the rules in a situation are not clear.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Demographics**

Finally, some brief questions about yourself for classification purposes.

**Gender**

- [ ] Male
- [ ] Female
- [ ] I prefer not to share this information

**Ethnicity**

- [ ] Caucasian

157
☐ African-American
☐ Asian-American
☐ Hispanic or Latino
☐ Other
☐ I prefer not to share this information

Age

Household income
☐ Less than $25,000
☐ $25,000 to $50,000
☐ $50,001 to $75,000
☐ $75,001 to $100,000
☐ Over $100,000
☐ I prefer not to share this information

Home zip-code

Please answer the following questions regarding your experience with this survey

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I thought the question here really represented my feelings about TBSSs</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I took extra care in making a sound evaluation of TBSSs.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Now that a great deal of information has been shared, what do TBSSs mean to you?

Are you a student taking this survey as part of a course assignment?
Yes ☐ No ☐

To receive credit, please enter your name (first and last)
First
Last
APPENDIX G: IRB CERTIFICATE

Application for Exemption from Institutional Oversight

In requesting an amendment to this application for exemption from the Institutional Review Board (IRB) oversight, I report that no direct interaction involves human subjects, as defined by the regulations. However, I acknowledge that I am reporting on a study that is part of the larger context of another project that is subject to IRB oversight. The IRB has approved an amendment to this proposal, as the study is part of a larger project that requires multi-disciplinary collaboration.

Applicant: Please fill out the application in its entirety and include the completed application as well as any A-E, level 3 review. Once the application is completed, please submit two copies of the completed application to the IRB Office or to a member of the IRB Committee. Members of the committee can be found at [website link for LSU's research guidelines].

A Complete Application Includes the Following:
- Two copies of the completed form
- One copy of the completed application
- Two copies of the completed application
- A brief project description adequate to evaluate risks to subjects and to explain your responses to Parts A & B
- Copies of all consent forms to be used
- This proposal is part of a grant proposal, including a copy of the proposal and all attachment material
- The contact person for questions or concerns is [Name and Contact Information]
- Certificate of Completion of Human Subjects Protection Training for all personnel involved [Signature]
- A copy of the study protocol [Signature]
- A copy of the study protocol [Signature]
- Study Exempted By:
- [Signature]
- [Signature]
- Exemption Expires: [Exemption Date]

1) Principal Investigator: [Name]
   [Affiliation]
   [Phone]
   [Email]

2) Co-Investigator(s): [Name(s)]
   [Affiliation(s)]
   [Phone(s)]
   [Email(s)]

3) Project Title: [Title]

4) Proposal? (yes or no) [ ] Yes [ ] No
   If yes, LSU Proposal Number [ ] [ ]

5) Subject pool: [ ] Yes: [ ] No: [ ]
   [ ] Yes: [ ] No: [ ]
   [ ] Yes: [ ] No: [ ]
   [ ] Yes: [ ] No: [ ]

6) PI Signature: [Signature]
   Date: [Date]

**I certify that the information provided is accurate and complete. If the project scope or design is altered, I will submit a revised proposal.**

Screening Committee Action: [Exempted] [Not Exempted] Category/Paragraph [ ]

Reviewer: [Name]
Signature: [Signature]
Date: [Date]
VITA

Carolyn Popp Garrity received her Bachelor of Business Administration degree in marketing and management from the University of Cincinnati and her Master in Business Administration degree in marketing and nonprofit management from American University. After graduating, Ms. Garrity worked for nonprofit, community building organizations in North Carolina and Georgia before becoming the Director of Marketing for Aslan Training. She then became the Vice President for Client Services at The Entrepreneurial Center in 2000. In this position, she was responsible for providing consulting services to 60+ high-tech and biotech firms in the business incubator. She then moved to Baton Rouge, LA to pursue the Ph.D. program at Louisiana State University. In December, 2012, Ms. Garrity earned her Doctor of Philosophy in business administration (marketing). She then began her career in academia as an Assistant Professor of Business at Birmingham-Southern College. Ms. Garrity enjoys researching several areas of marketing, but her primary focus is on entrepreneurship, new product introduction, non-profit marketing and social media. Her research has been presented at several marketing conferences including the American Marketing Association, Society for Marketing Advances and the Society for Consumer Psychology.