# UNDERSTANDING E-SERVICE FAILURES: FORMATION, IMPACT AND RECOVERY

by

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## ABSTRACT

E-service failure has been the bane of e-commerce by compelling consumers to either abandon transactions entirely or to switch to traditional brick-and-mortar establishments. More often than not, it is not the manifestation of e-service failure that drives away consumers, but rather, the absence or inadequacies of service recovery solutions that led to undeserved anger and frustration. Yet, despite the 'dangers' posed by e-service failures, there has not been a study to-date that systematically investigates how perceptions of failure emerge within an online transactional environment and what can be done to address these sources of potential consumer disappointments. Drawing on the Expectation Disconfirmation Theory (EDT) and the Counterfactual Thinking Perspective, this study synthesizes contemporary literature to arrive at separate typologies of e-service failure and recovery. Then, an integrated theory of e-service failure and recovery is constructed together with testable hypotheses. To empirically validate the model, two studies have been conducted and their designs elaborated. Essentially, findings from the two studies serve to inform both academics and practitioners on: (1) how consumer perceptions of different types of e-service failure manifest on e-commerce websites; (2) the impact of these perceptual failures on consumers' expectations about transactional outcome, process and cost, as well as; (3) what kind of e-service recovery technology would be beneficial in alleviating negative failure consequences.

# PREFACE

This research was approved by the University of British Columbia Behavioral Research Ethics Board (certificate number H10-00051).

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# CHAPTER 1 – INTRODUCTION

E-service failures are common occurrences in e-commerce transactions. In a comprehensive review of modern websites spanning multiple industries, Oneupweb (2010), a digital marketing agency, reported that e-commerce transactions continue to exhibit an alarming 45% failure rate. Similar findings were echoed in Harris Interactive's (2006) survey of 2,790 online consumers in the United States, revealing that 88% of consumers experienced problems when transacting online. The study by Harris Interactive (2006) further uncovered that e-service failures negatively impact e-merchants by forcing 40% of online consumers to abandon transactions entirely (8%) or to switch to a physical competitor (32%). These results are corroborated in Forrester Consulting's (2009) survey of 1,048 online shoppers: 79% of online shoppers who encountered any form of e-service failure will no longer purchase from the faulty website, 46% will develop a negative impression of the e-merchant, and 44% will notify friends and family about the negative experience.

Additionally, 91% of consumers who experienced any form of e-service failure also stated that they are more likely to question e-merchants' ability to safeguard confidential personal information disclosed during online transactions (Harris Interactive 2006). This implies that failure in one aspect of an e-commerce transaction will produce a *negative spillover effect,* causing customers to lose faith in other facets of the transactional process. This spillover could be attributed to heightened emotions during service failures that obstruct cognitive reasoning (Andreassen 2001; McColl-Kennedy and Sparks 2003). Because of the spillover, e-service failures may also adversely affect e-businesses in general: consumers may be reluctant to engage in e-commerce transactions as a consequence of earlier bad experiences.

## *1.1 Motivation and Research Objectives*

When service failures occur, consumers expect vendors to be competent and caring in offering commensurable recovery measures (Bitner et al. 1990). Empirically, Smith et al. (1999) affirmed that it is possible to recover from almost any kind of service failure, regardless of its form

and magnitude, so long as the recovery measure is commensurate with the failure experienced by consumers. While service failures may be unwelcome occurrences, the effectiveness of corresponding service recovery measures determines whether consumers would be appeased and retained (Holloway and Beatty, 2003). As noted by Spreng et al. (1996), service recovery offsets consumers' negativism towards failure events in three ways: (1) providing assurance of the fairness and sincerity of the offending vendor (i.e., admits to mistakes and makes restitution); (2) lessening the magnitude of negative consequences arising from the failures, and; (3) persuading victims to cast the blame elsewhere. Since e-commerce is reliant on the IT-enabled web interface as the *focal* point of contact between consumers and e-merchants (Benbasat and DeSanctis, 2001; Cenfetelli et al., 2008), it is not only susceptible to conventional forms of offline retail failures, such as wrong product delivery or slow customer service, it can also succumb to technological malfunctions. For instance, Forrester Consulting's (2009) survey discovered that webpage loading delays and site crashes are the leading causes of failures for e-commerce websites, accounting for 23% and 17% of dissatisfactions in consumers respectively. If such e-service failures were to be met with incommensurable service recovery efforts, it may erode what little confidence customers may have with e-commerce transactions. Indeed, the empirical findings of Holloway and Beatty (2003) concluded that e-service recoveries are generally deemed to be inadequate or inequitable relative to the failures experienced. An in-depth appreciation of e-service failure and recovery hence makes a significant and timely contribution to extant literature for four reasons.

First, although service failure and recovery is gaining momentum within marketing literature as an important investigative topic (e.g., de Matos et al., 2007; Rinberg et al., 2007, Smith et al., 1999; Tax et al., 1998), there is general consensus that we still have a somewhat limited understanding of the phenomenon, especially with regards to the e-commerce transactional environment (Holloway and Beatty, 2003). This trend is even more prevalent in the domain of Management Information Systems (MIS) where a review of prominent journals from the basket of eight (i.e., *European Journal*

*of Information Systems*, *Information Systems Journal*, *Information Systems Research*, *Journal of Information Technology*, *Journal of Management Information Systems*, *Journal of Strategic Information Systems*, *Journal of the Association for Information Systems* and *MIS Quarterly*) from 2001 to 2010 indicates that research into e-service failure and recovery is practically non-existent.

Second, e-commerce is distinct from offline retail in that the entire transaction is accomplished via web-enabled services (Cenfetelli et al., 2008; Homburg et al., 2002). As the contact points increase between consumers and web technologies, opportunities for e-service failures grow exponentially as well (Holloway and Beatty, 2003). Specifically, e-commerce websites, due to their reliance on web technologies, are extremely vulnerable to the aftermath of failure occurrences as there is little room for physical intervention (Holloway and Beatty, 2003). A deeper understanding of e-service failures is therefore necessary to stem the loss of consumers that is prevalent even among sophisticated e-commerce websites (Forrester Consulting, 2009).

Third, previous studies have hinted that e-service failures are not necessarily reflections of their physical counterparts. For example, Bitner et al.'s (1990, 1994) and Kelley et al.'s (1993) typologies of service failures, while they can account for failure incidents within physical retail and offline service channels, appear out of place when contrasted with that of Holloway and Beatty's (2003), which uncovered failures exclusive to e-commerce transactions. Comparatively, service failures identified in Bitner et al.'s (1990, 1994) and Kelley et al.'s (1993) typologies generally revolve around interactional conflicts between consumers and store employees (e.g., 'wrongful accusation of customers or failure in dealing with uncooperative customers'), whereas failure dimensions advocated by Holloway and Beatty (2003) include several technologically-induced problems (e.g., 'navigational or payment difficulties'). Further, contemporary frameworks lack sufficient theoretical grounding for formulating explanations and predictions on how consumers respond to service failures.

Fourth, it is well-accepted that the majority of consumers, when confronted with service failures, will choose to simply forsake the transaction and terminate their relationship with the vendor (Hart et al., 1990; Tax and Brown, 1998). This trend may be even more pronounced for e-commerce transactions. Because consumers tend to participate in *pseudo*-relationships with multiple e-merchants and can readily switch among e-commerce websites with the mere click of a mouse button, the majority of them, when confronted with e-service failures, will choose to simply forsake the transaction and terminate their relationship with the offending e-merchant (Harris Interactive, 2006). The provision of suitable e-service recovery technologies on e-commerce website can be construed as the only chance for e-merchants to redeem themselves in the unfortunate event of a failure. Yet, as admitted by Holloway and Beatty (2003), current e-commerce websites are not only lagging in the provision of e-service recovery technologies to alleviate probable e-service failures, but even when such technologies are made available, recovery measures are usually incommensurate with the damages suffered by consumers. Whenever consumers feel betrayed as in the case of unrecovered service failures, Ward and Ostrom (2006) warned that consumers may exact revenge on the offending vendor through spreading negative word of mouth or engaging in sabotaging behaviors.

To bridge the aforementioned knowledge gaps, this thesis develops a theory that *explains* and *predicts* consumers' reactions to e-service failures and recoveries. Particularly, by drawing on the e-service and system success literatures to derive a novel typology of e-service failure that captures failure events unique to e-commerce settings, this thesis is the first of its kind to undertake a deductive approach in systematically categorizing e-service failures. Further, we subscribe to Smith et al.'s (1999) typology of four service recovery modes in prescribing actionable design principles that may inform e-merchants in the development of a holistic e-service recovery solution for coping with e-service failures. In so doing, this thesis endeavors to answer the following research questions:

1. *How do e-service failures manifest on e-commerce websites and what is their impact on online consumer behavior?*

2. *How can information technology be leveraged to design effective e-service recovery mechanisms for addressing various forms of e-service failure?*

### *1.2 Guiding Framework*

E-service failures are damaging to e-commerce transactions by decreasing consumers' likelihood of attaining predetermined objectives (Bitner et al., 2000; McCollough et al., 2000) and must be countered through the provision of commensurable service recovery technologies (Smith et al., 1999; Tax et al., 1998). Depending on the probability of service failures and the existence of commensurable recoveries, the service encounter presents itself as a window of opportunity through which existing customers can be retained or lost and prospective ones may be attracted or deterred (Bitner, 1990; Maxham III and Netemeyer, 2003; Folkes, 1984). An integrated theory of e-service failure and recovery is therefore necessary for two reasons. First, such a theory is desirable as a step towards unraveling the interactional effect between failure events and recovery technologies in influencing online consumer behaviors (Holloway and Beatty, 2003; Kelley et al., 1993). By treating service failures and recoveries as distinct phenomena within extant literature, Smith et al. (1999) noted that scholars essentially rob their studies of any realism because such a distinction does not reflect pragmatic business circumstances. More importantly, a theory of e-service failure and recovery endows researchers with an explanatory framework by which to examine "specific determinants of an effective recovery and the relative importance of individual recovery attributes in restoring customer satisfaction across a variety of service failure conditions" (Smith et al., 1999, p. 357; see also Holloway and Beatty, 2003; Kelley et al., 1993; Maxham III and Netemeyer, 2003).

Yet, with the notable exception of Smith et al. (1999), there is a paucity of studies that consider service failure and recovery in tandem within a single nomological network. Even then, Smith et al.'s (1999) model lacks sufficient explanatory and predictive power in disentangling the formation, impact and recovery of e-service failures due to two reasons. One, in treating service failure as a singular construct, Smith et al.'s (1999) study sacrifices the richness inherent within multidimensional failure frameworks (e.g., Bitner et al., 1990, 1994; Holloway and Beatty, 2003;

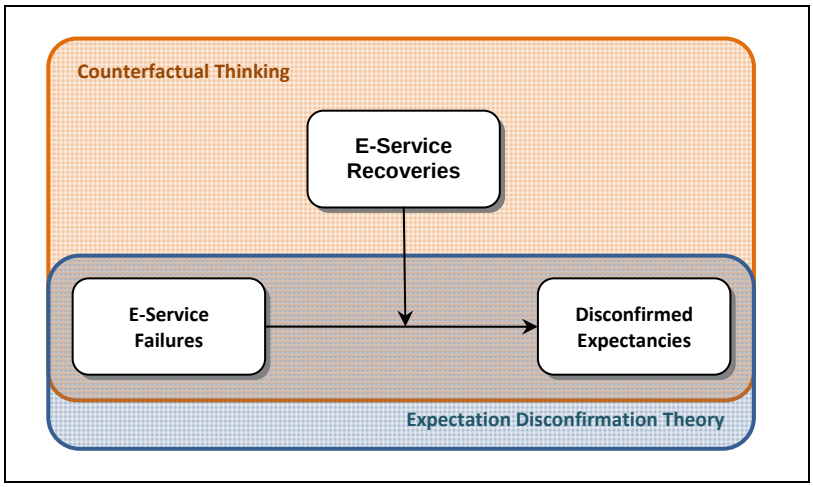
Kelley et al., 1993) by assuming homogeneity in consequences across failure events. Two, due to its emphasis on offline retail, Smith et al.'s (1999) work does not cater to the contextual uniqueness of e-commerce transactions in its conceptualization of service failures and recoveries. This limits its applicability to e-commerce websites in terms of prescribing actionable design principles that could be harnessed by e-merchants to improve online transactional experiences.

A review of extant literature on service failure and recovery uncovers two predominant research streams. Studies belonging to the first research stream can be construed as ***preventive*** in that they seek to comprehend the causes of service failures and their impact on consumer behaviors. Core contributions of this line of work reside in the advancement of descriptive typologies of service failures (i.e., Bitner et al., 1990, 1994; Holloway and Beatty, 2003; Kelley et al., 1993) and in-depth appreciation of consumers' reactions towards failure events, which range from attributional inclinations (e.g., Bitner, 1990; Folkes, 1984; Hess et al., 2007; Leong et al., 1997; Maxham III and Netemeyer, 2002a; Taylor, 1994) to behavioral responses such as complaints (e.g., Bove and Robertson, 2005; DeWitt and Brady, 2003), vendor switching (e.g., Keaveney, 1995) and negative word-of-mouth (e.g., DeWitt and Brady, 2003; Maxham III and Netemeyer, 2002a; Weun et al., 2004). Conversely, the second research stream focuses on prescribing feasible ***corrective*** actions to be undertaken in addressing service failures. Apart from introducing typologies of viable service recoveries to accommodate the myriad of offline failures (Kelley et al., 1993; Smith et al., 1999; Tax et al., 1998), primary contributions of this research stream also encompass detailed inspection into the effectiveness of recovery measures, such as compensation (e.g., Mattila and Patterson, 2004a, 2004b; McColl-Kennedy et al., 2003), explanation (e.g., Mattila and Patterson, 2004a, 2004b), rapport (e.g., DeWitt and Brady, 2003; Rosenbaum and Massiah, 2007) and voice (e.g., McColl-Kennedy et al., 2003; Karande et al., 2007), in rectifying service failures. This thesis therefore endeavors to merge the aforementioned research streams by proposing a theory that not only accounts for consumers'

reactions towards e-service failures, but also predicts the effectiveness of various recovery technologies in coping with these failures when they manifest.

To construct the theory and develop testable hypotheses for empirical inquiries, we draw extensively on the ***Expectation Disconfirmation Theory*** (EDT) to explain the impact of e-service failures on online consumers and ***Counterfactual Thinking*** to postulate the effectiveness of various e-service recovery technologies in moderating different failure consequence. Figure 1.1 depicts the overarching theoretical framework underlying this thesis.

**Figure 1.1: Overarching Theoretical Framework**




Our theory is constructed in two stages. In the first stage, we draw on the EDT to provide an underlying conceptual foundation for theorizing e-service failures and their immediate consequences. We then synthesized the e-service and system success research streams to advance a novel typology of e-service failure that classifies failure events into ***informational***, ***functional*** and ***system*** categories. Under each of these categories is a collection of constituent failure dimensions that are synonymous with technological deficiencies which could emerge on e-commerce websites. These dimensions translate to actionable design principles that can be exploited by e-merchants to improve consumers' e-commerce transactional experiences. The ***Critical Incident Technique*** (CIT) methodology was then employed to solicit events of e-service failures from reality. These failure events were scrutinized, via

content analytical techniques, to ascertain whether our proposed typology is more suited to the appreciation and classification of e-service failures in comparison to contemporary frameworks.

In the second stage, we subscribe to consumers' counterfactual thinking process in arguing for the inclusion of e-service recovery as an integral part of service delivery for e-commerce websites. Then, building on our proposed e-service failure typology and Smith et al.'s (1999) typology of service recovery, we advance an integrated theory of e-service failure and recovery by drawing on: (1) the EDT to postulate negative consequences of information, functional and system failures, and; (2) Counterfactual Thinking to predict the effectiveness of various e-service recovery technologies in moderating these failure consequences. An experimental study was subsequently conducted to validate the causal relationships presented in this theory. Together, the two studies will lay the foundation for unlocking a new line of research in the area of e-service failure and recovery.

### *1.3 Dissertation Structure*

This thesis comprises a total of 7 chapters, inclusive of the introduction. In Chapter 2, an expectancy perspective of e-services is presented. The EDT is introduced as the conceptual foundation for deriving a working definition of e-service failure. Contemporary frameworks of service failures are then reviewed to clarify the reasoning behind our advancement of a novel typology of e-service failure that assimilates knowledge from e-service and system success literatures. Next, Chapter 3 outlines the data collection and analysis strategy for the first study by providing detailed explanations on the CIT and content analytical procedures. Based on the empirical findings, we compare and contrast our proposed typology against contemporary frameworks in classifying pragmatic incidences of e-service failures. The chapter ends with a summary of the theoretical contributions and pragmatic implications of the first study as well as its potential limitations. Subscribing to the notion of counterfactual thinking, Chapter 4 provides a working definition for e-service recovery. In addition, the chapter showcases three contemporary frameworks of service recovery to explain the rationale for choosing Smith et al.'s (1999) typology as the guiding theoretical

framework for modeling e-service recovery. Chapter 5 builds on preceding chapters by advancing an integrated theory of e-service failure and recovery together with testable hypotheses. Specifically, the chapter touches on the conceptualization of e-service failure consequences, elaborating on the delineation of the disconfirmation construct in the EDT to better reflect the multiplicity of negative consequences that may befall consumers who encounter e-service failures. It is also contended in the chapter that different type of e-service recovery technology may be commensurable with different failure consequence. Based on the theory, Chapter 6 outlines the design of a repeated measures experiment that manipulates different configurations of e-service failure and recovery treatment to examine the impact of their interactions on negative failure consequences. Chapter 6 closes by summarizing the theoretical contributions and pragmatic implications of the second study together with its potential limitations. The last chapter, Chapter 7 concludes with a general overview of the theoretical contributions and pragmatic implications of this thesis, the insights to be gleaned towards informing the design of e-commerce websites, and propositions for further research.

# CHAPTER 2 – AN EXPECTANCY PERSPECTIVE OF E-SERVICE FAILURE

An e-service encounter involves the entire transactional process that begins when a consumer visits a website to query products and/or services to the moment when a product or service, which matches the consumer's needs, has been delivered to his/her satisfaction (Boyer et al. 2002). Service failures in general can be conceived as consumers' evaluations of service delivery falling below their expectations or 'zone of tolerance' (Zeithaml et al. 1993). An e-service failure therefore arises whenever an e-commerce website lacks the technological capabilities essential for a consumer to accomplish his/her intended transactional activities. The Expectation Disconfirmation Theory (EDT) was championed by Oliver (1980) as a theoretical framework for deciphering consumers' reactions to the performance of products and/or services in relation to their pre-consumption expectations. The EDT posits that expectations, coupled with product/service performance, determine consumers' post-consumption attitudes. This effect, in turn, is mediated by the disconfirmation of consumers' expectations through product/service performance. That is, if a product/service satisfies or outperforms expectations (i.e., positive disconfirmation), positive post-consumption attitudes will develop, whereas if the product/service falls short of expectations (i.e., negative disconfirmation), negative attitudinal responses will develop (Oliver 1980). Since the applicability of the disconfirmation paradigm in the investigation of service failures has been reinforced in extant literature (e.g., Andreassen 2001; Bearden and Teel 1983; Bitner 1990; Smith et al. 1999), we subscribe to the EDT in defining ***e-service failure*** as *an event whereby the performance of an e-service on an e-commerce websites falls short of consumers' expectations* (see Hess et al. 2007).

Next, we review existing frameworks of service failures to justify our stance for advocating a novel typology of e-service failures that better captures failure events representative of and unique to e-commerce transactional environments.

## *2.1 E-Service Failure: A Review of Alternate Frameworks*

The earliest attempt at deriving a typology of service failures was undertaken by Bitner et al. (1990). Relying on the CIT, Bitner et al. (1990) solicited 352 incidents of dissatisfied service encounters from the airline, hotel and restaurant industries. They then employed inductive classification techniques to arrive at three core categories of service failures (i.e., failure of service delivery system, failure to meet customer needs and requests as well as unprompted and unsolicited service behaviors), each with its own constituent dimensions. This typology was later expanded by Bitner et al. (1994) who, in further classifying 774 critical incidents on service failures reported in the exact same three industries, uncovered a fourth category of service failure that relates to problematic customer behaviors (see Table 2.1).

**Table 2.1: Typology of Service Encounter Failures [as adapted from Bitner et al. (1990) and/or Bitner et al. (1994)]**

| Construct | Definition (Event in which...) |
|---|---|
| ***Failure of Service Delivery System*** **[as adapted from Bitner et al. (1990) and Bitner et al. (1994)]** | |
| **Unavailable Service** | Vendor fails to provide services that are normally available or expected |
| **Unreasonably Slow Service** | Vendor is slow in servicing customers |
| **Other Core Service Failure** | Vendor fails to meet basic performance standards for other aspects of the core service (apart from its absence or slowness) |
| ***Failure to Meet Customer Needs and Requests*** **[as adapted from Bitner et al. (1990) and Bitner et al. (1994)]** | |
| **Failure to Meet 'Special Needs' Customers** | Vendor fails to recognize and accommodate customers' special demographical, physical and/or sociological needs (e.g., disabilities) |
| **Failure to Meet Customer Preferences** | Vendor fails to recognize and accommodate customers' preferences that run contrary to standard practices |
| **Failure to Address Admitted Customer Error** | Vendor fails to resolve problems that arise from customers' admitted errors |
| **Failure to Manage Disruptive Others** | Vendor fails to deal appropriately with disruptive customers |
| ***Unprompted and Unsolicited Service Behaviors*** **[as adapted from Bitner et al. (1990) and Bitner et al. (1994)]** | |
| **Failure to Pay Attention to Customer** | Vendor fails to pay sufficient attention to customers during service encounters |
| **Failure due to Out-of-the Ordinary Service Behavior** | Vendor fails to perform in an expected manner and culminates in adverse consequences for customers |
| **Failure to be Sensitive to Cultural Norms** | Vendor fails to observe cultural norms during service encounters |
| **Gestalt Evaluation Failure** | Vendor fails to prevent isolated failures from affecting other related services |
| **Failure to Perform Under Adverse Circumstances** | Vendor fails to perform efficaciously under unfavorable circumstances |
| ***Failure to Address Problematic Customer Behavior*** **[as adapted from Bitner et al. (1994)]** | |

| Construct | Definition (Event in which...) |
|---|---|
| **Failure to Address Drunken Customers** | Vendor fails to deal with intoxicated customers who are causing troubles |
| **Failure to Address Verbal and Physical Abuse** | Vendor fails to deal with customers who engage in physical and/or verbal abuses |
| **Failure to Address Customers Breaking Company Laws or Policies** | Vendor fails to deal with customers who refuse to comply with company rules and regulations |
| **Failure to Address Uncooperative Customers** | Vendor fails to deal with customers who are generally rude, uncooperative and/or unreasonably demanding |

Bitner et al.'s (1990, 1994) typology of service failures has been applied by other scholars in investigating the phenomenon (e.g., McColl-Kennedy and Sparks 2003; Leong et al. 1997). However, because Bitner et al.'s (1990, 1994) typology is derived from pure service industries, it was subsequently refined by Kelley et al. (1993) for merchandise retailing. Like Bitner et al. (1990, 1994), Kelley et al. (1993) gathered 661 critical incidents on service failures involving general merchandise retailing (i.e., department stores, discount stores, variety stores and mail order retailers). Based on these critical incidents, Kelley et al. (1993) adapted Bitner et al.'s (1990, 1994) typology to the retail sector by collapsing overlapping dimensions, delineating ambiguous ones to improve clarity and eliminating the remainder that were deemed to be redundant (see Table 2.2).

**Table 2.2: Typology of Retail Failures [as adapted from Kelley et al. (1993)]**

| Construct | Definition (Event in which...) |
|---|---|
| ***Failure of Service Delivery System and/or Product*** | |
| **Policy Failure** | Vendor fails to enact service policies that are deemed to be just among customers |
| **Slow/Unavailable Service** | Vendor fails to provide services that are normally available or expected and/or is slow in servicing customers |
| **System Pricing Failure** | Vendor erroneously price listed products |
| **Packaging Errors** | Vendor fails to properly package purchased products and/or label packages correctly |
| **Product Defects** | Purchased products fail to function as they are supposed to |
| **Out-of-Stock** | Vendor fails to supply accurate information on the inventory levels of listed products |
| **Hold Disasters** | Vendor fails to guarantee that products waiting to be claimed by customers do not become lost or damaged |
| **Alteration and Repairs Failure** | Vendor fails ensure that product alterations or repairs are performed in a precise and speedy fashion |
| **Bad Information** | Vendor misinforms customers in making transactional decisions |
| ***Failure to Meet Customer Needs and Requests*** | |

| Construct | Definition (Event in which...) |
|---|---|
| **Special Order/Request Failure** | Vendor fails to fulfill special or unique requests that were promised to customers |
| **Failure to Address Admitted Customer Error** | Vendor fails to resolve problems that arise from customers' admitted errors |
| ***Unprompted and Unsolicited Service Behaviors*** | |
| **Mischarging** | Vendor charges customers more than necessary for product purchases |
| **Wrongful Accusation of Customers** | Vendor wrongfully accuses customers of inappropriate actions and/or places them under excessive surveillance during service encounters |
| **Failure due to Service-Induced Embarrassment** | Vendor embarrasses customers due to insensitivity or mistakes during service encounters |
| **Attention Failures** | Vendor fails to pay sufficient attention to customers during service encounters |

Both Bitner et al.'s (1990, 1994) and Kelley et al.'s (1993) typologies of service failures suffer from the drawback of being derived from offline failure incidents and may not adequately denote issues pertinent to e-commerce transactions. Through in-depth interviews conducted with 30 individuals with prior experiences of e-service failures before surveying another 295 online shoppers, Holloway and Beatty (2003) proposed an alternate typology that comprises six categories of e-service failures (i.e., delivery problems, website design problems, customer service problems, payment problems, security problems, and miscellaneous). Each of these e-service failure categories in turn contains constituent dimensions that reflect failure events prevalent within e-commerce transactions (see Table 2.3).

**Table 2.3: Typology of Online Service Failures [as adapted from Holloway and Beatty (2003)]**

| Construct | Definition (Event in which...) |
|---|---|
| ***Delivery Problems*** | |
| **Purchase Arrived Later than Promised** | E-merchant is late in delivering purchased products to customers |
| **Purchase Never Delivered** | E-merchant fails to deliver purchased products to customers |
| **Wrong Item Delivered** | E-merchant delivers products that are different from what were purchased |
| **Wrong Size Product Delivered** | E-merchant delivers products with different specifications from what were purchased |
| **Purchase Damaged During Delivery** | E-merchant fails to properly package purchased products to avoid damage during delivery |
| ***Website Design Problems*** | |
| **Navigational Problems at Site** | E-merchant fails to offer easy accessibility to service content offered |
| **Product Poorly Presented at Site** | E-merchant fails to supply relevant information on product specifications |
| **Insufficient Information Provided at Site** | E-merchant fails to supply sufficient information on transactional activities |

| Construct | Definition (Event in which...) |
|---|---|
| **Products Incorrectly Listed at Site as in Stock** | E-merchant fails to supply accurate information on the inventory levels of listed products |
| **Incorrect Information Provided at Site** | E-merchant fails to supply correct information that aid customers in making transactional decisions |
| ***Customer Service Problems*** | |
| **Poor Customer Service Support** | E-merchant fails to meet customers' service expectations when performing online transactions |
| **Poor Communication with the Company** | E-merchant fails to provide communication channels for customers to seek assistance |
| **Unfair Return Policies** | E-merchant compels customers to return purchased products under unjust terms |
| **Unclear Return Policies** | E-merchant fails to supply unambiguous information for returning purchased products |
| ***Payment Problems*** | |
| **Credit Card Overcharged** | E-merchant charges customers more than necessary for product purchases |
| **Website Purchasing Process Confusing** | E-merchant fails to offer a straightforward product purchasing process for customers |
| **Difficulties Experienced While Paying** | E-merchant fails to provide payment options desired by customers |
| **Problems with Product Quality** | Purchased products fail to function as they are supposed to |
| **Consumer Dissatisfied with Product Quality** | Customers are disappointed with the way purchased products function |
| ***Security Problems*** | |
| **Credit Card Fraud** | E-merchant charges customers for unauthorized purchases |
| **Misrepresented Merchandise** | E-merchant misinforms customers into purchasing products with unlisted specifications |
| **Email Address Released to E-Marketers** | E-merchant releases customers' disclosed email addresses to e-marketers without proper authorization |
| ***Miscellaneous*** | |
| **Failure to Address Unintentional Customer Mistakes** | E-merchant fails to resolve problems that arise out of unintentional mistakes on the part of customers |
| **Retailer Charged Some Customers More than Others** | E-merchant charges certain customers more than others for purchasing exact same products |
| **Lack of Personalized Information at Site** | E-merchant fails to tailor transactional information to meet customers' requirements |

Contemporary frameworks of service failures (i.e., Bitner et al. 1990, 1994; Holloway and Beatty 2003; Kelley et al. 1993) are inappropriate in capturing the spectrum of failure events unique to e-commerce transactions for three reasons. First, Bitner et al.'s (1990, 1994) and Kelley et al.'s (1993) typologies emphasize physical retail and encompass events for which the probability of occurrence is almost negligible in e-commerce settings (e.g., 'failure in dealing with drunken customers' and 'wrongful accusation of customers'). Second, even for Holloway and Beatty (2003)

whose typology is tailored to e-commerce transactions, the blend of both service and non-service failure dimensions have made it exceedingly difficult to pinpoint actionable technological levers that can be exploited by e-merchants in improving the design of e-commerce websites (Benbasat and Zmud 2003). Though several failure dimensions in Holloway and Beatty's (2003) typology pertain to technological flaws that compromise the service standards of e-commerce websites (e.g., 'insufficient information and navigational problems'), others relate to troubles with business practices (e.g., 'email address released to e-marketers'), product quality (e.g., 'problems with product quality') or purchase delivery (e.g., 'purchase never delivered'), which go beyond web design technicalities. The same can be said for Bitner et al. (1990, 1994) and Kelley et al. (1993) in that many failure dimensions in both typologies are unsuited as technological prescriptions. Finally, as the three frameworks originate from a grounded methodological approach that relies on the inductive categorization of failure events, the resultant failure dimensions lack sufficient theoretical grounding such that one cannot offer explanations accounting for their manifestation. To overcome the limitations of existing frameworks, e-service and system success literatures are synthesized to advance a typology of e-service failure that delineates failure events for e-commerce transactions into three main categories, namely ***informational failures***, ***functional failures*** and ***system failures***.

### *2.2 A System-Oriented Typology of E-Service Failures*

Within service literature, scholars have noted that the consumption of an e-service must go beyond outcome consumption to include process consumption because the functional processes leading to service fulfillment are transparent to the consumer (Grönroos 1998; Grönroos et al. 2000). For this reason, services have often been conceptualized as a mix of ***content*** and ***delivery*** elements (see Baker and Lamb 1993; Grönroos et al. 2000; Rust and Oliver 1994). Whereas service content is concerned with what consumers actually receive from the service encounter, service delivery relates to the manner by which customers interact with the service. Swartz and Brown (1989) maintained that

any theorization of services must include considerations for *what* services are offered as well as *how* these services are being offered.

There is ample conceptual and empirical justification for drawing an identical distinction within e-commerce transactional environments. Without direct interaction with human service providers, Grönroos et al. (2000) argued that e-commerce websites must be "functionally advanced enough [i.e., effective service content] and technically easy to operate [i.e., efficient service delivery] by the customer so that he or she can get access to the service package" (p. 248). While an e-commerce website may offer effective content functions that assist consumers in purchasing desired products or services, accessibility to and interactivity with these functions are reliant on the website's ability to harness the web medium for efficient delivery. This is a crucial distinction, yet one that has been infrequently made in theorizing e-services (Tan et al. 2010).

Moreover, service content deficiencies result in negative consequences that are independent of those emerging from service delivery inadequacies. Whereas ineffective service content reduces consumers' likelihood of obtaining favorable outcomes from transactional activities, inefficient service delivery amplifies the difficulty of performing such activities (Van Riel et al. 2001). Empirically, the significance of distinguishing between content and delivery in conceptualizing e-services has also been verified for both e-commerce (Cenfetelli et al. 2008) and e-government (Tan et al. 2010) contexts. Findings from these studies claim that regardless of how accessible or interactive service content may be, it serves little purpose if it does not satisfy consumers' transactional requirements. Conversely, offering superior service content is pointless if it is not accessible to consumers through efficient delivery (Cenfetelli et al. 2008; Tan et al. 2010). From a design perspective, the distinction between content and delivery is paramount to the identification of actionable design principles that are informative and purposeful. Cenfetelli et al. (2008) and Tan et al. (2010) demonstrated that differentiating between content and delivery for e-services is vital for identifying design guidelines that entail both web features which assist consumers in obtaining

desirable transactional outcomes and medium characteristics which determine consumers' accessibility to and interactivity with such features.

Service content and delivery resonate with the notions of ***informational*** and ***system*** attributes within system success literature (see DeLone and McLean 1992, 2003; Wixom and Todd 2005). Since the seminal work of DeLone and McLean (1992) in which they positioned informational and system attributes as the cornerstone of system success, numerous empirical studies have attested to their significance in influencing users' appraisal of technological systems (see DeLone and McLean 2003 for a comprehensive review). Whereas informational attributes characterize the value of information generated by a technological system (Wang and Strong 1996), system attributes are about the system's technical performance (Hamilton and Chervany 1981). While system attributes are synonymous with the delivery aspects of services (Collier and Bienstock 2006; Fassnacht and Koese 2006), informational attributes constitute just one facet of service content because the functional capabilities of technological systems are largely neglected as distinct but complementary elements of service content (Janda et al. 2002).

The concept of *functionality* has been employed to describe web-enabled functions that create value for consumers throughout the acquisition process of products and/or services (Cenfetelli et al. 2008; Lightner 2004). Functionalities are distinguishable from informational attributes in that they reflect service applications that generate and tailor transactional information to fit the requirements of individual consumers (Cenfetelli et al. 2008; Etezadi-Amoli and Farhoomand 1996; Janda et al. 2002; Lightner 2004). For instance, payment functionalities produce confirmation receipts verifying order information whereas tracking functionalities yield delivery details on the current whereabouts of purchased products. We therefore further differentiate between informational and functional attributes of e-services as constituent components making up the broader notion of service content and postulate that failures for e-commerce websites may be delineated into those associated with the ***informational***,

***functional,*** or ***system*** aspects of e-services[1]. Delineating e-service failures into informational, functional and system components echoes the work of Grover and Benbasat (2007) who, in inductively classifying 104 potentially unfavorable e-commerce events, suggested that consumer risk in online transactions is associated with information misuse, transactional functionality efficiency and system performance. The remainder of this chapter will examine informational, functional, and system failures in greater detail to arrive at viable working definitions and identify constituent dimensions belonging to each of these categories.

Table 2.4 summarizes our proposed typology of e-service failure that distinguishes among informational, functional and system attributes; some of which overlap with those uncovered by Holloway and Beatty (2003) (e.g., inaccurate information, non-navigability and insecurity). We will later outline an empirical study to substantiate our typology and validate its superiority over prior frameworks in the classification of e-service failure events.

[1] While the notion of functionality appears to overlap with the concept of service quality, it is not the case. As aptly surmised by Cenfetelli et al. (2008), functionalities represent the extent to which technological artifacts exist on e-commerce websites to fulfill consumers' service expectations whereas service quality captures consumers' overall evaluation of how well those functionalities are delivered.

**Table 2.4: Proposed E-Service Failure Typology**

| Construct | Definition (Event in which…) |
|---|---|
| ***Informational Failure*** | |
| **Inaccurate Information** | Information provided on an e-commerce website contains errors that misinform consumers in making transactional decisions |
| **Incomplete Information** | Information provided on an e-commerce website is insufficient to aid consumers in making transactional decisions |
| **Irrelevant Information** | Information provided on an e-commerce website cannot be utilized by consumers in making transactional decisions |
| **Untimely Information** | Information provided on an e-commerce website is not updated to support consumers in making transactional decisions |
| ***Functional Failure*** | |
| **Needs Recognition Failure** | Functionalities of an e-commerce website are incapable of assisting consumers to formulate their needs and preferences for products and/or services |
| **Alternatives Identification Failure** | Functionalities of an e-commerce website are incapable of assisting consumers to gather information on and source for interested products and/or services |
| **Alternatives Evaluation Failure** | Functionalities of an e-commerce website are incapable of assisting consumers to draw comparisons among interested products and/or services |
| **Acquisition Failure** | Functionalities of an e-commerce website are incapable of assisting consumers to place orders for desired products and/or services |
| **Post-Purchase Failure** | Functionalities of an e-commerce website are incapable of assisting consumers to: (1) obtain purchased products and/or services; (2) solicit advice on ways to maximize the utility of purchased products and/or services, and; (3) dispose of unwanted products and/or services. |
| ***System Failure*** | |
| **Inaccessibility** | Services of an e-commerce website are not readily accessible |
| **Non-Adaptability** | Services of an e-commerce website are unable to accommodate diverse content and usage patterns |
| **Non-Navigability** | Services of an e-commerce website are difficult to navigate |
| **Delay** | Services of an e-commerce website are inordinately slow in access |
| **Insecurity** | Services of an e-commerce website are not safeguarded against access by unauthorized individuals |

### 2.2.1 Informational Failures

The saliency of informational attributes in determining system output is well documented (DeLone and McLean 2003; Wixom and Todd 2005). Past studies have linked informational attributes to a host of positive benefits for task accomplishments such as workplace performance (Goodhue and Thompson 1995), productivity enhancements (Northrop et al. 1990), decisional quality (Wixom and Watson 2001), and system satisfaction (Etezadi-Amoli and Farhoomand 1996). There is an abundance of empirical evidence within e-service (see Appendix A) and system success (DeLone and McLean 2003) literatures that alludes to the importance of informational attributes in directing system outcomes. Similarly, Holloway and Beatty (2003) discovered that informational failures (e.g.,

incorrect listing of out-of-stock items) capture a substantial fraction of technological problems that consumers associate with e-commerce websites. We hence postulate that ***informational failure*** constitutes a major deficiency of e-commerce websites and that it occurs whenever *information provided on an e-commerce website is incapable of guiding consumers in the accomplishment of their transactional activities*. Further, even though there exists disagreements among scholars over a representational list of preferred informational attributes for any given technological system (e.g., Wand and Wang 1996; Wang and Strong 1996), there is general consensus that *accuracy*, *completeness*, *relevance,* and *timeliness* are definitive of information quality (DeLone and McLean 2003; Wixom and Todd 2005). We hence posit that informational failures on e-commerce websites are caused by *inaccurate*, *incomplete*, *irrelevant,* and/or *untimely* transactional information.

### 2.2.2 Functional Failures

Homburg et al. (2002) observed that the breadth and depth of service functionalities shape consumers' shopping experience by providing constant support throughout the entire transactional process. With e-commerce websites acting as the focal interface between consumers and e-merchants, the provision of timely assistance from pre- to post-transactional stages can only be realized through web-enabled functionalities, especially in nurturing a personalized customer service experience (Cenfetelli et al. 2008; Lightner 2004; Surjadjaja et al. 2003; Tan et al. 2010). Within service failure literature, Holloway and Beatty (2003) have identified ordering and payment difficulties as pervasive forms of functional failure experienced by consumers who transact via e-commerce websites. We hence define ***functional failure*** to have occurred whenever *functionalities provided on an e-commerce website are incapable of supporting consumers in the accomplishment of their transactional activities*. Further, in line with Jacoby's (1998) delineation of consumer decision making into five sequential activities (i.e., *needs recognition*, *alternatives identification*, *alternatives evaluation*, *product acquisition,* and *post-purchase*), we contend that functional failure may occur for any of these activities. Also, while we have argued for the necessity of offering functionalities on e-

commerce websites to cater to the aforementioned core activities of consumer decision making, we acknowledge that these activities do not necessarily have to occur in sequence during online transactions. For instance, if a consumer has already decided on purchasing a specific product prior to visiting an e-commerce website, product acquisition functionalities would be rendered more relevant than those catering to needs recognition, alternatives identification and alternatives evaluation.

***Needs Recognition Failure***: Needs recognition failure occurs whenever e-commerce websites fail to provide functionalities that assist consumers in making sense of their needs and preferences (Cenfetelli et al. 2008; Ives and Learmonth 1984; Lightner 2004). Because face-to-face communication and clarification are restricted for online transactions, the provision of functionalities supporting needs recognition serves three basic purposes: (1) to educate consumers about a product and/or service offered on an e-commerce website; (2) to get these consumers to realize how offerings from the website differ from that of its competitors, and; (3) to aid them in selecting the product and/or service best suited to their requirements (Piccoli et al. 2001). The absence of needs recognition functionalities would hence leave consumers in a state that is not much better off than when they first started, still lost as to how their transactional needs can be met.

***Alternatives Identification Failure***: Once a consumer has narrowed down (e.g., via recommendation agents) to a smaller subset of products he/she is interested in, he/she may want to search for additional information on the performance of each product in the consideration set (Furse et al., 1984) or on possible locations for acquiring these products (Piccoli et al. 2001). Failure to provide functionalities that consolidate informational sources for easy referencing would compound onto consumers' difficulty in identifying relevant alternatives.

***Alternatives Evaluation Failure***: Individuals typically employ a two-stage cognitive evaluation process in making decisions with complex parameters (Jedetski et al. 2002; Xiao and Benbasat 2007). Whereas the first stage involves the refinement and transformation of consumers' preferences into a subset of promising alternatives (i.e., needs recognition) (Xiao and Benbasat 2007),

it is only through the second stage of in-depth comparisons among generated alternatives that consumers eventually come to a purchase decision (Jedetski et al. 2002). For an in-depth comparison of alternatives to be meaningful, e-commerce websites must provide functionalities (e.g., Comparison Matrix) that organize evaluative criteria of product and/or service alternatives in an intuitive and easily comprehensible manner (Haubl and Trifts 2000; Jedetski et al. 2002). Otherwise, consumers' decision making process would be impeded.

***Acquisition Failure***: Acquisition pertains to functionalities that facilitate the completion of online transactions (Ives and Learmonth 1984; Ives and Mason 1990). Piccoli et al. (2001) stressed that technological functionalities can simplify the acquisition process by retaining consumer information (e.g., shipping and payment information), which can be reused for subsequent orders. Acquisition failures (e.g., missing ordering and payment functions) are hence fatal to e-commerce websites, with payment errors being identified by Holloway and Beatty (2003) as a key inhibitor of online transactions.

***Post-Purchase Failure***: Post-purchase activities are those associated with the ownership and retirement of products and/or services. Whereas ownership is geared towards assisting consumers in obtaining and maximizing the utility of purchased goods, retirement is concerned with the clearance of products and/or services that have outlived their usefulness (Ives and Learmonth, 1984; Ives and Mason, 1990). Post-purchase functionalities include tracking services to monitor the status of purchase orders (Cenfetelli et al. 2008), FAQs to answer common enquiries regarding the usage of purchased products (Santos 2003; Singh 2002), return centers to facilitate the refund of defective products (Surjadjaja et al. 2003), and online auctions to support the disposal of unwanted products in a cost effective fashion (Piccoli et al. 2001). In a way, post-purchase functionalities are aimed at giving consumers ease of mind after purchases and their absence would compromise the entire transactional experience.

### 2.2.3 System Failures

System quality has been demonstrated to streamline task performance through enhanced adaptability to changing requirements (Vandenbosch and Huff 1997; Wixom and Watson 2001). Within the e-commerce context, the absence of key system attributes may undermine the delivery of service content for e-commerce websites and lead to unnecessary complications of the online transactional process for consumers (Cenfetelli et al. 2008). Holloway and Beatty's (2003) categorization of e-service failures have similarly incorporated navigational difficulties as a core failure dimension. We hence define ***system failure*** to have occurred whenever *service content (i.e., information and functionalities) offered by an e-commerce website is not delivered in a conducive manner that facilitates consumers in the accomplishment of their transactional activities*. Adapting DeLone and McLean's (2003) recommended metrics of system quality for successful e-commerce systems in conjunction with prevalent system attributes identified through our review of e-service literature (see Appendix A), we posit that system failures occur whenever e-service content is *inaccessible*, *non-adaptable*, *non-navigable*, *delayed,* and *insecure* in its delivery.

***Inaccessibility***: As e-merchants struggle to maximize the potential of Internet technologies in overcoming physical limits during e-service delivery (Douglas et al. 2003; Janda et al. 2002; McKinney et al. 2002), diversity in the physiological capabilities of their target audience (e.g., dyslexia, visually impaired) and consumers' adoption of divergent technologies (e.g., PCs versus Macintoshes, or Internet Explorer versus Firefox) are sometimes overlooked as fundamental elements affecting the accessibility of e-services (Shim et al. 2002). Within the domain of e-government, Tan and Benbasat (2009) reported that such inconsistencies in e-service accessibility are commonplace even among mature websites and reduce the efficiency of the Internet as an impartial delivery medium.

***Non-Adaptability***: The strongest appeal of the Internet as an e-service delivery medium resides in its capacity to adapt and personalize transactions according to consumers' stipulated requirements (Agarwal and Venkatesh 2002). Content personalization on an e-commerce website

however, is contingent on whether e-services are delivered in a manner that facilitates dynamic engagement and interaction with their target audience (Cagurati et al. 2005; Katz and Byrne 2003). Particularly, the capability of e-commerce websites to cope with diverse service content (e.g., multilingualism) and usage patterns (e.g., different conventions for data entry due to inter-country variations) plays a critical role in content personalization (Evanschitzky et al. 2004; Palmer 2002; Srinivasan 2002). Without personalizable content, non-adaptable e-services may impose unnecessary constraints on consumers' transactional behaviors (Tan and Benbasat, 2009).

***Non-Navigable***: The navigability of an e-commerce website governs the effort-performance expectancy of consumers (Childers et al. 2001; Tan and Benbasat 2009). The complexity of the navigational structure determines the ease by which an e-commerce website can be readily traversed by an inexperienced consumer and ultimately, affects the amount of cognitive effort that must be expended by the consumer to accomplish his/her transactional task (Korthauer and Koubek 1994). Non-navigability of e-commerce websites thus constitutes a form of e-service failure (Holloway and Beatty 2003).

***Delay***: Response time has been shown to be a major deterrence against consumers' adoption of e-commerce websites (Rose et al. 1999; Rose and Straub 2001; Torkzadeh and Dillon 2002). Past empirical studies have revealed an inverse relationship between response time and system users' productivity (Barber and Lucas, 1983; Martin and Corl, 1986): long delays have been shown to lead to complaints of frustration (Doherty and Kelisky, 1979), feelings of dissatisfaction (Lee and MacGregor, 1985), sense of disorientation (Sears et al., 2000) and eventual abandonment (Nah, 2002). In light of the overwhelming evidence on response time being predictive of e-service quality (see Appendix A), delay should be recognized as a form of failure in e-commerce transactions.

***Insecurity***: Security has received widespread attention in e-commerce literature (Wang 2002). Security in e-commerce websites pertains to protective measures to safeguard disclosed transactional information from unsanctioned or illegal intrusions by third parties (Collier and Bienstock 2003, 2006;

Etezadi-Amoli and Farhoomand 1996; Wang 2002). Holloway and Beatty (2003) also classified insecurity as a high priority failure for e-services.

### 2.2.4 A System-Oriented Typology of E-Service Failures

Appendix A maps *informational*, *functional,* and *system* attributes in our typology (see Table 2.4) to previous studies that have advocated similar attributes as being desirable qualities of e-services. It can be deduced from Appendix A that the informational, functional, and system failures in our typology are representative of potentially problematic areas of concern for e-services.

Clearly, our typology differs from contemporary frameworks in three ways. First, unlike Bitner et al. (1990, 1994) and Kelley et al. (1993), we concentrate primarily on the identification of a generic and representative collection of e-service failure causes that confront consumers in conducting e-commerce transactions. This leaves out service failures that rarely occur in e-commerce transactions such as the disastrous handling of bothersome consumers or the embarrassment and wrongful accusation of customers. Second, while we admit that problems related to business practices (e.g., 'unfair return policies'), product quality (e.g., 'consumer dissatisfied with product quality'), and purchase delivery (e.g., 'purchase damaged during delivery') are also part of e-commerce transactions, we opt to exclude such errors from our typology and focus exclusively on transactional failures that are within e-merchants' abilities to rectify through improvements to web interface design. Further, in place of a wider variety of failure categories and dimensions depicted in past typologies, we choose to retain a precise but meaningful set of higher-order e-service failure categories (i.e., *informational*, *functional,* and *system* failures), each comprising a set of lower-order dimensions of e-service inadequacies. We believe that such a framework can yield targeted and purposeful design prescriptions for service enhancements on e-commerce websites. Finally, our typology circumvents the theoretical limitation of past frameworks by deductively deriving our e-service failure categories and dimensions from the synthesis of service and system success research streams. This forms a stronger conceptual foundation from which to rationalize about the causes of e-service failures.

## *2.3 Summary*

Grounded in an expectancy perspective, this chapter proposes a working definition of e-service failure for e-commerce transactional environments. Further, it reviews existing typologies of service failures and discovers that the application of these frameworks to the classification of e-service failures is inherently challenging. Consequently, building on e-service and system success literatures, this chapter advances a typology of e-service failure that distinguishes among informational, functional and system aspects of an e-service encounter. The next chapter, Chapter 3, describes the first study that is designed to assess the comprehensiveness of our proposed typology in classifying e-service failure events in reality.

# CHAPTER 3 – AN EXPLORATORY STUDY OF E-SERVICE FAILURE CAUSES (1ST STUDY)

Because my proposed e-service failure typology represents a loose adaption of web attributes highlighted within extant literature on e-service and system success, its validity is dependent on its ability to outperform contemporary frameworks of service failures (i.e., Bitner et al. 1990, 1994; Holloway and Beatty 2003; Kelley et al. 1993) in classifying failure events that transpired during actual e-commerce transactions. The first study therefore employs the *Critical Incident Technique* (CIT) for data collection to compare and contrast our proposed e-service failure typology against contemporary frameworks in order to ascertain its suitability in classifying incidences of e-commerce transactional failures.

The CIT has been applied to the investigation of a variety of service and system-related phenomena including customer-vendor interactions (Nyquist and Booms 1987), service encounters (Bitner et al. 1990, 1994; Kelley et al. 1993), and virtual teams (Thomas and Bostrom 2010). The CIT comprises four sequential steps: (1) deciding the objectives of the activity; (2) formulating plans and agendas for the collection of critical incidents; (3) gathering and analyzing data, and; (4) interpreting empirical findings (Flanagan 1954). Reliability of the CIT has been verified in past information systems studies (e.g., Majchrzak et al. 2005; Thomas and Bostrom 2010).

Keaveney (1995) noted that the CIT is especially appropriate when research objectives are targeted at both theory development and pragmatic relevance. In this study, a critical incident is conceived as any event, combination of events, or series of events between a consumer and an e-commerce website that caused the former to experience failure in the usage of e-services. Critical incidents were defined broadly to cast a wide net to ensure an adequate coverage of probable technological deficiencies across e-commerce websites. Respondents could report incidents along any stage of the online transactional process or on any aspect of the website.

### *3.1 Questionnaire Development*

Given the predominantly Internet-savvy target audience of respondents with previous e-service failure experience, we opted to solicit critical incidents of e-service failures through digital means (Boyer et al. 2002; Stanton and Rogelberg 2001). A qualitative electronic survey questionnaire was carefully crafted for data collection. The questionnaire begins with a definition of e-service failure and some common examples to familiarize respondents with the phenomenon of interest. Then, respondents are requested to indicate their frequency of performing online transactions and whether they have experienced some form of e-service failure within the last six months. This single filtering question is devised to eliminate respondents with no recent experience of e-service failure. Next, respondents are instructed to either choose from a variety of e-merchants or provide a description of the type of e-commerce website on which they have encountered the e-service failure. In line with Keaveney's (1995) advice, such a question offers a certain degree of structure to the type of e-commerce websites for which e-service failures may occur, without necessarily limiting respondents to the pre-specified list.

Respondents are then asked to state their purpose for visiting the e-commerce website:

| |
|---|
| *Please describe **in detail** your **purpose** for visiting the website for which you have experienced the online service failure* |

This question on the purpose of the visit is to discern respondents' transactional objectives because we do not presume that consumers transact online for the sole purpose of maximizing utility. These transactional objectives offer valuable background information on the situational context within which the e-service failure occurs.

The next question touches on the actual phenomenon of interest by requesting respondents to elaborate on the e-service failure experienced, with additional probes for details. Because the development of our theory is confined to online transactional failures in order to generate

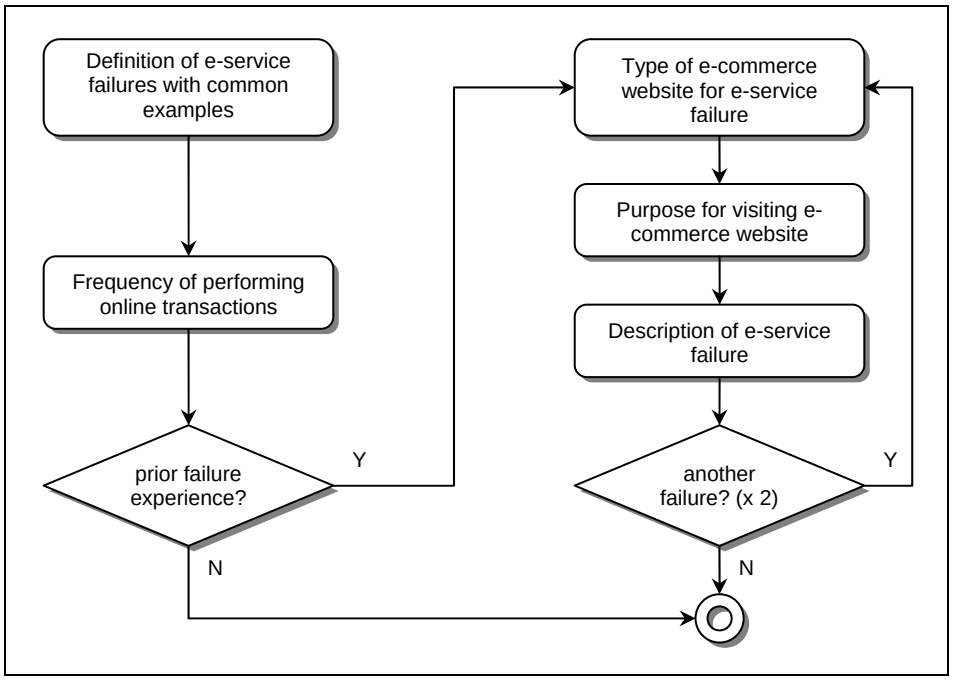
prescriptions for web interface design, the probes are deliberately phrased to emphasize the recollection of problems related to technological features on e-commerce websites:

> *Please describe **in detail** the online transaction you were conducting when you experienced the online service failure as well as the events leading to this failure. You should elaborate on the following:*
>
> 1. *What you have managed to accomplished on the website **prior** to the occurrence of the online service failure*
>
> 2. *Details of the online service failure experienced [Please be **specific** on the website feature(s) involved and why you perceive these feature(s) to have failed]*

As respondents may have been exposed to multiple episodes of e-service failures, the same format of questioning was repeated twice to prompt each respondent to recall a minimum of one and a maximum of three critical incidents. A diagrammatic flow of the online survey questionnaire is depicted in Figure 3.1.

In answering the questionnaire, respondents were never told to analyze why the failure incident(s) occurred. Rather, they were expected to merely narrate events that had transpired—something people do quite effortlessly (Bitner et al. 1990; Nyquist and Booms 1987). A pre-test was conducted with a convenient sample of faculty members and graduate students from a large North American university. No major issues surfaced during the pre-test.

**Figure 3.1: Diagrammatic Flow of Online Survey Questionnaire**




### *3.2 Data Collection*

Invitations were emailed to members belonging to a nationwide panel of e-business consumers from a commercialized marketing research firm. In exchange for their participation, the marketing research firm awarded participating panel members points that can be redeemed for prizes. Due to the possibility of disabled e-mail accounts, spam filtering, or other forms of account blockages, no mechanism was available to gauge the diffusion rate of the invitation to all panelists. Following Cenfetelli et al. (2008), we reviewed the computer logs of the web server on which the electronic survey was hosted. The server logs recorded 991 visits to the online questionnaire, some of which may not be unique. Using the filtering question inserted at the start of the questionnaire to sift out respondents who have experienced e-service failure(s), 233 out of the 991 visitors to the survey satisfied our sampling criteria, thereby yielding a conservative estimate of 23.5% response rate.

Flanagan (1954, p. 340) suggested that "if full and precise details are given, it can usually be assumed that this information is accurate. Vague reports suggest that the incident is not well remembered and that some of the data may be incorrect". Accordingly, responses from 22 respondents were judged to be ambiguous and deleted, giving a final sample of 211 respondents for

data analysis. Table 3.1 summarizes the descriptive statistics for the sample together with a breakdown of the number of e-service failure incidents reported by various demographic groups. Paired *t*-tests between our sample and those documented in Cenfetelli et al.'s (2008) survey of 1,235 consumers on the service quality of e-commerce websites reveal no significant difference in demographic distribution (i.e., $t_{(14)} = -0.118$, $p = .907$).

**Table 3.1: Descriptive Statistics for Online Survey Respondents [Sample *N* = 211]**

| Demographic Characteristic | No. of Respondents [%] | Comparison[1] | Frequency of E-Commerce Website Visitations | E-Service Failure [Total Incidents = 316] | | | |
|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | Total |
| **Gender** | | | | | | | |
| Male | 132 [62.56%] | 34% | At least once per 2 weeks | 90 | 20 | 22 | 196 |
| Female | 79 [37.44%] | 66% | At least once per 2 weeks | 53 | 11 | 15 | 120 |
| **Age** | | | | | | | |
| Age 19-29 | 32 [15.16%] | 10% | At least once per 2 weeks | 26 | 1 | 5 | 43 |
| Age 30-49 | 86 [40.76%] | 60% | At least once per 2 weeks | 62 | 10 | 14 | 124 |
| Age 50-64 | 71 [33.65%] | 28% | At least once per 2 weeks | 42 | 12 | 17 | 117 |
| Age 65+ | 20 [9.48%] | 2% | At least once per month | 11 | 8 | 1 | 30 |
| Unwilling to disclose | 2 [0.01%] | 0% | At least once per week | 2 | 0 | 0 | 2 |
| **Educational Level** | | | | | | | |
| College education or higher | 160 [75.83%] | 87% | At least once per 2 weeks | 103 | 25 | 32 | 249 |
| Less than college education | 49 [23.22%] | 13% | At least once per 2 weeks | 38 | 6 | 5 | 65 |
| Unwilling to disclose | 2 [0.01%] | 0% | At least once per month | 2 | 0 | 0 | 2 |
| **Income** | | | | | | | |
| $0-$29,999 | 68 [32.23%] | 15% | At least once per month | 48 | 10 | 10 | 98 |
| $30,000-$50,000 | 50 [23.70%] | 24% | At least once per 2 weeks | 34 | 8 | 8 | 74 |
| $50,000-$75,000 | 39 [18.48%] | 28% | At least once per 2 weeks | 28 | 6 | 5 | 55 |
| $75,000+ | 44 [20.85%] | 33% | At least once per 2 weeks | 29 | 4 | 11 | 70 |
| Unwilling to disclose | 10 [0.05%] | 0% | At least once per week | 4 | 3 | 3 | 19 |

[1] Cenfetelli et al. (2008)

A total of 316 e-service failure incidents were reported by the respondents (see Table 3.1). Of these 316 incidents, 58 (or 18%) contain descriptions of two distinct e-service failure episodes within a single recall and are therefore split into separate incidents to prevent confounds from surfacing during data analysis. An example of such recalls is this:

| |
|---|
| **Incident**: *"I wanted to buy a plane ticket online. I was able to choose the destination, date, and started placing the order, then to realize later that: (1) the price changed during the time I was completing the order, and (2) the website doesn't accept my credit card."* |

To avoid the loss of valuable contextual information, we segregate the aforementioned description into two separate incidents in the following manner:

| |
|---|
| **Incident A**: *"I wanted to buy a plane ticket online. I was able to choose the destination, date, and started placing the order, then to realize later that the price changed during the time I was completing the order."* |
| **Incident B**: *"I wanted to buy a plane ticket online. I was able to choose the destination, date, and started placing the order, then to realize later that the website doesn't accept my credit card."* |

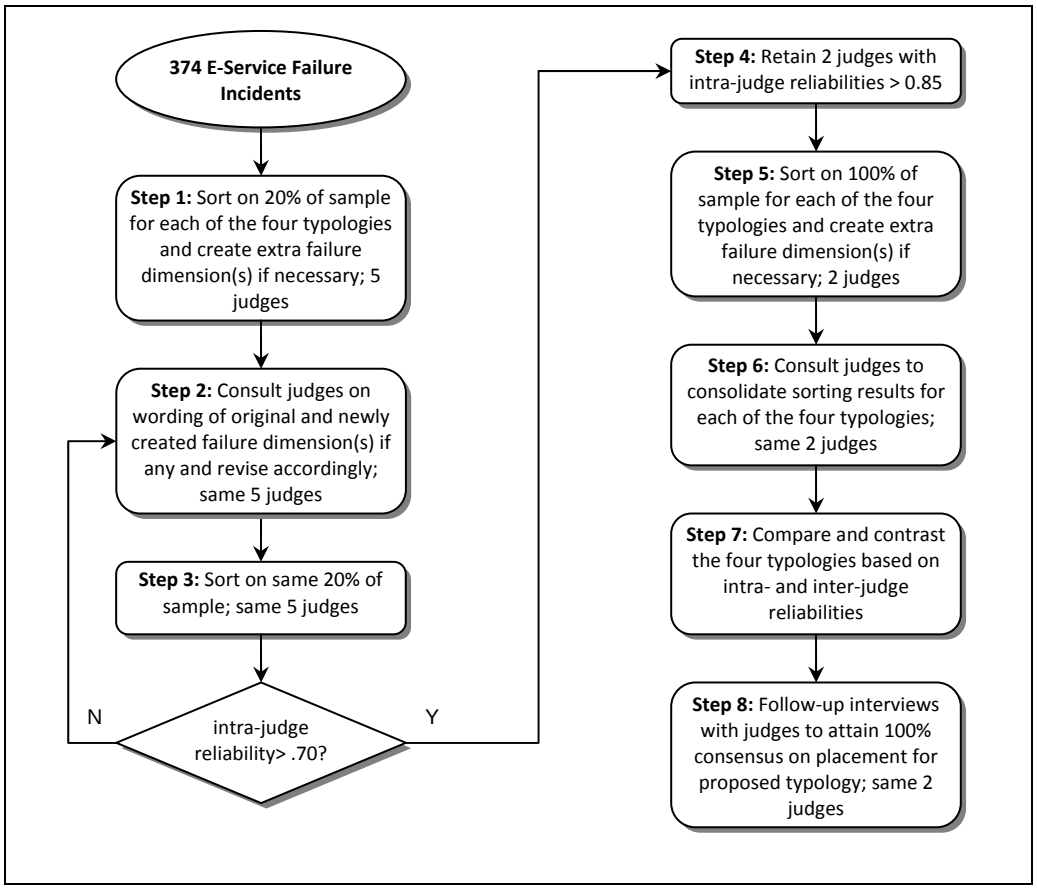
In splitting the 58 incidents, we arrive at a final sample of 374 data points for analysis.

### *3.3 Data Analysis*

Content analysis was carried out to sort the sample of 374 incidents into each of the four typologies outlined in Chapter 2. Intra- and inter-judge reliabilities were compared to ascertain the validity of our proposed e-service failure typology in characterizing e-commerce transactional failures relative to the other frameworks.

Noting past recommendations for CIT studies (see Boyatzis 1998; Butterfield et al. 2005; Keaveney 1995), we adhered to a set of content analytical procedures that have been developed exclusively for framework comparisons. A diagrammatic flow of the entire content analysis process for e-service failure incidents is depicted in Figure 3.2.

**Figure 3.2: Diagrammatic Flow of Content Analytical Procedures for E-Service Failure Incidents**




### 3.3.1 Analytical Procedures

To begin, five judges were recruited from students enrolled in an MBA program in a large North American university to refine the wording of failure dimensions in each of the four typologies. Because Bitner et al.'s (1990, 1994) and Kelley et al.'s (1993) typologies originate from offline service failures, this step is essential in ensuring that the definitions of failure dimensions in these frameworks are amenable to e-commerce transactions. Further, as part of the program, these judges have taken a course on e-businesses and such familiarity with the e-commerce context would be advantageous in assessing the appropriateness of failure definitions for the various frameworks. 77 (or ~20%) incidents were randomly extracted from the sample and assigned to the five judges to be sorted into each of the four typologies. The entire sorting exercise is semi-structured. For each

typology, judges were told to place each incident into one of the pre-existing failure dimensions or to create an extra dimension if they were unsure of its placement.

Upon the completion of the sorting exercise, the judges were consulted on the phrasing of the failure dimensions and modifications were made whenever necessary. Then, the judges were again presented with the same 77 incidents to be sorted into the refined failure dimensions. Intra-judge reliabilities (i.e., extent to which a single judge assigns an identical incident to the same failure dimension in both classification exercises) were computed. The second sorting exercise yielded intra-judge reliability values that exceed the recommended threshold of 0.70 (Boyatzis 1998) for each typology. This signifies consistency in the judges' interpretation of failure dimensions and testifies to the clarity in the phrasing of the dimensions. Of the five judges, two with intra-judge reliability scores above 0.85 were retained for the remainder of the content analysis process. Inter-judge reliabilities were not factored into the selection of the two judges because we do not wish to bias subsequent sorting activities towards a particular framework.

Next, sorting was performed for the entire sample of 374 incidents, which included the 77 incidents from before. The sorting exercise abided by the same protocol described previously. Once the sorting was completed, the two judges were questioned on the way they classified the incidents, with particular attention on the newly created failure dimensions for consolidation purposes. At this time, the judges were permitted to reassign incidents that they believed were wrongly placed, but they were not obliged to do so. The reason for not forcing a greater level of agreement among judges is to ensure that the judges are most ***comfortable*** with their current classification of the incidents. This provides a basis for comparing the viability of each typology in catering to the diversity of e-service failures that may arise during e-commerce transactions. Both intra- and inter-judge (i.e., extent to which different judges assign an identical incident to the same failure dimension) reliabilities were calculated for each typology based on the eventual classification of the incidents.

### 3.3.2 Findings from Framework Comparison

Table 3.2 summarizes intra- and inter-judge reliabilities for each typology. Appendix B contains a detailed breakdown of the classification of incidents for failure dimensions within each typology. Appendix C employs our proposed typology as a point of reference to: (1) showcase examples of failure incidents that have been unanimously sorted into each of our failure dimensions, and; (2) illustrate how these incidents have been classified with respect to other frameworks.

**Table 3.2: Intra- and Inter-Judge Reliabilities of E-Service Failure Classifications**

| Framework | Intra-Judge Reliability [Sample *N* = 77] | Inter-Judge Reliability [Sample *N* = 374] |
|---|---|---|
| Bitner et al.'s (1990, 1994) Typology of Service Encounter Failures | 0.74 | 0.50 |
| Holloway and Beatty's (2003) Typology of Online Service Failures | 0.76 | 0.59 |
| Kelley et al.'s (1993) Typology of Retail Failures | 0.81 | 0.70 |
| Proposed E-Service Failure Typology | 0.89 | 0.88 |

As can be seen from Tables B-1 and B-4 in Appendix B, the sorting exercises generated one additional dimension (i.e., 'informational failure') for Bitner et al.'s (1990, 1994) typology to cater to informational problems and three other dimensions (i.e., 'mischarging', 'product delivery problems' and 'unresponsive to customer enquiries') for our proposed typology to accommodate non-transaction-oriented errors. We grouped the three newly created failure dimensions under the higher-order category of 'Non-Transaction-Oriented Failures'.

Due to the interpretive nature of the content analytical procedures, we cannot claim that the results in Table 3.2, Appendixes B and C are definitive in proving the suitability of each of the four typologies in representing incidences of e-service failures. Nevertheless, several inferences can be drawn with regards to the pros and cons of applying each typology to the appreciation and classification of e-service failures.

First, as can be concluded from the intra-reliability values in Table 3.2, our proposed typology fares better than other frameworks at distinguishing the underlying cause of one failure

incident from another. The same individual is able to match a failure incident with its cause more consistently based on our typology than with others.

Second, the inter-reliability values in Table 3.2 demonstrate that our proposed typology enables greater consensus among individuals on the causes of seemingly dissimilar failure incidents. This is also substantiated through Table B-4 in Appendix B; the inter-judge reliabilities of all deductively-derived failure dimensions in our proposed typology exceed the recommended threshold of 0.70 (Boyatzis 1998) and are generally much higher than those of failure dimensions belonging to other typologies. Appendix C further exemplifies how disagreements may surface among individuals when typologies, besides the one we proposed, are applied to the classification of e-service failures.

Third, of the four typologies, only ours can boast of a relatively even spread of failure incidents across different dimensions. In contrast, Bitner et al.'s (1990, 1994), Kelley et al.'s (1993), and Holloway and Beatty's (2003) typologies tend to have all-inclusive dimension(s) with high concentrations of failure incidents (see Tables B-1, B-2 and B-3 in Appendix B). For instance, the dimension of 'other core service failure' in Bitner et al's (1990, 1994) typology absorbs close to 41% of the total number of failure incidents in the dataset due to its blanket definition. The same can be said for the 'slow/unavailable service' dimension in Kelley et al.'s (1993) typology and the 'poor customer service support' dimension in Holloway and Beatty's (2003) typology. This in turn lends credibility to the conciseness and relative orthogonality of the failure dimensions in our proposed typology.

Finally, our proposed typology is the only one with no 'empty' dimensions, i.e. no dimension is left without instances of e-service failure. The other three typologies have at least one 'empty' dimension each, as seen from Tables B-1, B-2, and B-3 in Appendix B. As a whole, our proposed typology can therefore be deemed to be reasonably parsimonious; it neither carries failure dimensions which do not coincide with actual manifestations of e-service failures (e.g., 'failure to manage disruptive others' in Bitner et al.'s (1990, 1994) typology), nor does it include all-encompassing but

equivocal dimensions for which the prescription of actionable design principles is practically impossible (e.g., 'poor customer service support' in Holloway and Beatty's (2003) typology).

## *3.4 Discussion*

While research into service failure has had a long tradition in the marketing discipline, there are comparatively few studies which delve into this phenomenon in e-commerce transactions. Building on the EDT, the first study sets out to achieve two primary objectives. First, we synthesize e-service and system success literatures to construct a novel typology that delineates e-service failures into informational, functional, and system categories, each with its own collection of constituent dimensions. Then, leveraging on the CIT to solicit descriptive accounts of failure events that transpired during actual e-commerce transactions, our typology is compared and contrasted against contemporary frameworks of service failures to establish its suitability in classifying such events. Findings from our empirical investigation indicate that our proposed e-service failure typology can be deemed to be more comprehensive than contemporary frameworks in capturing the contextual uniqueness of failure events intrinsic to e-commerce transactions. The remainder of this chapter will summarize the theoretical contributions, pragmatic implications and potential limitations of this study.

### 3.4.1 Implications for Research

The first study makes novel contributions to extant literature on e-service failure on two fronts. First, we construct a typology of e-service failures that caters exclusively to e-commerce transactional environments. Through the deductive identification of generic and representational failure categories common to e-commerce websites (i.e., *informational*, *functional,* and *system failures*), our typology is the first to offer theoretically-grounded explanations for the manifestation of different forms of e-service failures. Further, under these higher-order failure categories, we have identified lower-order constituent dimensions that accentuate website design flaws which are within e-merchants' ability to correct. Indeed, the pertinence of these failure categories and dimensions are corroborated with empirical evidence from our investigation. Based on the content analysis of e-

service failure incidents, our typology appears to be robust in classifying and characterizing e-commerce transactional failures in comparison to contemporary frameworks. Findings indicate that all the failure dimensions of our typology (as compared to other frameworks) conform to reality and are unambiguous in meaning.

Second, despite a long tradition of research into the determinants of successful information systems, there has been no scholarly attempt to leverage on the knowledge accumulated in this area when conceptualizing e-service failures. Instead, scholars like Holloway and Beatty (2003) tend to emphasize the service aspect of e-service failures without giving enough notice to the technological side of things. This study is hence ground-breaking in that it subscribes to an assimilative strategy in constructing a typology of e-service failures by giving equal prominence to both service and system success research streams. Empirical evidence testifies to the importance of synthesizing e-service and system success literatures in the construction of an e-service failure typology that is both parsimonious and representative.

### 3.4.2 Implications for Practice

This study should be of keen interest to e-merchants for two reasons. First, our e-service failure typology can serve as an analytical toolkit for them to conduct benchmark studies on their e-commerce websites to assess whether visitors to the websites face transactional difficulties. Because the validity of the failure categories and dimensions in our typology are ascertained from critical incidents of e-service failures that transpired recently (i.e., past six months), faulty e-commerce websites may be more pronounced than what e-merchants imagined. This may also explain the 45% rate of failure in e-commerce transactions reported by Oneupweb (2010).

Second, our e-service failure typology offers actionable design prescriptions for e-merchants to improve the quality of their e-commerce websites. Even though the failure dimensions do not delve into the technicalities of e-service implementation, they do offer guidelines on the areas to watch out for in the maintenance of e-commerce websites. E-commerce websites are never static and their

designs evolve over time to accommodate changing customer preferences (Wind 2001). Whenever the design of an e-commerce website is having a facelift, our typology could come in handy as a checklist to pinpoint any design flaws that may deter consumers from visiting.

### 3.4.3 Limitations

Three caveats exist with regards to this study. First, while the CIT is suitable for eliciting practical instances of events that have transpired, the retrospective nature of the recollection implies that the events may not be remembered accurately and there is no way of verifying whether recounts are distorted to fit respondents' mental version of events. However, we have minimized such deviations in our empirical investigation. In getting respondents to recall e-service failure incidents they have encountered only in the past six months, we aim for recent experiences in order to minimize inaccurate or incomplete descriptions due to memory loss. Further, there is an inherent advantage in employing the CIT for data collection on e-service failures; failure events are more likely to have a lasting impression on respondents due to heightened emotions (Andreassen 2001; McColl-Kennedy and Sparks 2003; Smith et al. 1999).

Second, while we have taken every effort to ensure that all data points (i.e., e-service failure incidents and consequences) are self-contained and content analytical procedures are rigorous, the interpretive nature of our research may impose a certain degree of subjectivity to our findings. Despite the care taken in the selection of judges for our content analysis, we acknowledge that judges' interpretation of e-service failure events relies on personal judgments that may vary among individuals depending on past experiences. Therefore, findings from this empirical investigation should be validated through further research, especially across other e-service contexts such as e-government.

Third, because the judges for the content analysis were recruited from MBA students who have taken a course on e-businesses, there is a possibility that these judges may have acquired a certain level of familiarity with the e-service failure dimensions in our proposed typology. While such

familiarity may positively skew the intra- and inter-reliability values for our typology in comparison to Bitner et al.'s (1990, 1994) and Kelley et al.'s (1993) frameworks, we have reasons to believe that this may not be the case in our study. As can be inferred from Table 3.2, the intra- and inter-reliability values for Kelley et al.'s (1993) framework is higher than those for Holloway and Beatty's (2003) framework, which contains a larger number of technological failure dimensions. If knowledge bias—arising from judges' familiarity with the e-business context—were to have an upward biasing effect on our empirical results, then contrary to our findings, Holloway and Beatty's (2003) framework would have higher intra- and inter-reliability values as compared to that of Kelley et al.'s (1993).

### 3.4.4 Summary

This chapter outlines the design and execution of an exploratory study that employs the CIT to solicit e-service failure events from practice. These e-service failure events in turn are analyzed, via content analytical techniques, to validate our proposed typology of e-service failure (see Table 2.4). Data gathered via the CIT attests to the robustness of the typology. The next chapter, Chapter 4, defines and introduces e-service recoveries as technological features that could be implemented on e-commerce websites to moderate failure consequences.

# CHAPTER 4 – A COUNTERFACTUAL THINKING PERSPECTIVE OF E-SERVICE RECOVERY

E-service failures manifest whenever consumers detect service deviations from *a priori* expectations. This deviation may be due to one of two reasons: (1) when customers' expectations are untenable (e.g., trying to acquire a product with non-existent attributes), or; (2) when an e-commerce website is ill-equipped with essential e-services to fulfill consumers' valid expectations (Holloway and Beatty, 2003). ***Counterfactual thinking*** is contrasting what is perceived to be with what might have been, which Roese (1997) termed as contrastive thinking. When an individual is in a counterfactual frame of mind, he/she may (cognitively) alter parts of an event in assessing its consequence or outcome (Roese and Olson 1995). Folger and Cropanzano (2001) argued that counterfactual thinking is often subconsciously embraced by individuals to assess the seriousness of an offense.

When applied to situations of service failures, counterfactual thinking tells us that a consumer will construe a sequence of events that vary from what actually took place (i.e. events which run contrary to reality) (McColl-Kennedy and Sparks, 2003). That is, the consumer is engaged in a contrastive evaluation process that gauges how things might have been if events had transpired differently. For instance, a consumer who experienced payment difficulties on an e-commerce website may reflect: "If only the payment functions had worked properly, I would have completed my transaction and obtained the product of my choice". Thus, in evaluating any service failure event, Folger and Cropanzano (2001) claimed that a consumer engages in three contrastive frames of mind: what *could* have happened (e.g., the e-commerce website could have ensured that payment functions work properly), what *should* have happened (e.g., the e-commerce website should have provided alternative payment methods), and how it *would* have felt had alternative actions been taken (e.g., I would have been satisfied with the e-commerce website if either of the two measures had been implemented) (see also Teas, 1993).

Because e-service failures are typically accompanied by unwanted consequences (e.g., money spent, time or effort wasted) that leave the consumer feeling worse off than when he/she first started (Bitner et al., 1990), we define ***e-service recovery*** as the *extent to which recovery technologies offered by an e-commerce website are able to moderate negative consequence(s) experienced by consumers in the event of an e-service failure*. In this sense, e-service recoveries cater to the '*should*' frame of mind in counterfactual thinking.

The next section reviews contemporary frameworks of service recovery to clarify our choice of Smith et al.'s (1999) typology of service recovery modes as the theoretical framework for classifying recovery technologies on e-commerce websites.

### *4.1 A Proposed Typology of E-Service Recovery*

The first typology of service recovery was proposed by Kelley et al. (1993) who, in gathering 661 critical incidents of service failures for which 335 led to 'good' recoveries and 326 resulted in 'poor' recoveries, uncovered 12 recovery strategies that are commonly employed by vendors in addressing failure occurrences (see Table 4.1). Of the 12 recovery strategies, Kelley et al. (1993) observed that certain strategies may further exacerbate the situation. While extensive, Kelley et al.'s (1993) typology of service recovery suffers from the same fate as contemporary frameworks of service failures in that the CIT does not generate theoretical justification for the existence of inductively derived dimensions. Indeed, Kelley et al. (1993) do not present sufficient reasoning to justify why the recovery strategies prescribed in their typology are practiced in reality nor are they able to gauge the effectiveness of each recovery strategy in pacifying consumers in the event of service failures.

Departing from the inductive technique to creating typologies of service recovery, Tax et al. (1998) synthesized past studies in marketing and social psychology to create a classification scheme of service recovery tactics that are founded on theories of justice. Consistent with previous theorizations of justice as a multi-dimensional concept (e.g., Colquitt et al., 2001; Masterson et al.,

2000), Tax et al. (1998) distinguished among distributive, procedural and interactional justice in constructing their typology of service recovery. From their review of extant literature on complaint handling, Tax et al. (1998) arrived at 13 dimensions of service recovery that correspond to the three forms of justice. This was later expanded, via data gathered from the qualitative survey of 257 respondents, to 20 dimensions (see Table 4.1). Yet, the service recovery dimensions advocated in Tax et al.'s (1998) typology are inappropriate as actionable design principles for e-commerce websites despite the deductive manner of their derivation. First, it is difficult to transform the huge quantity of service recovery dimensions in Tax et al.'s (1998) typology into design guidelines that can be acted upon by e-merchants. Further, several dimensions deal with recovery measures that necessitate human touch (e.g., politeness and honesty) and would be challenging to replicate on e-commerce websites.

Subscribing to the Social Exchange Theory (SET), Smith et al. (1999) built on the work of Tax et al. (1998) in advancing a typology of service recovery, which they empirically verified, through a mixed-design experiment, to be relatively inclusive in addressing a representative sample of service failures. Closely related to notions of justice, the SET has been applied pervasively by marketing scholars in articulating service recovery measures (e.g., Homans 1961; Walster and Berscheid, 1978; Walster et al., 1973). The SET accentuates mutual reciprocity among participants as the underlying mechanism of governance in any relational network, i.e. it involves the dynamic exchange of "diffuse, ill-defined obligations in terms of the nature, value, and timing of the benefits rendered and received by the parties" (Organ, 1990, p. 63). Individuals participating in social exchanges must therefore have "faith in the cooperative intentions of the other [parties] with whom they are engaging due to the lack of a mechanism that could enforce an equal exchange" (Gefen and Ridings, 2002, p. 51; Rosenbaum and Massiah, 2007).

Conceptually, the SET acts as an appropriate theoretical lens from which to explicate the costs and benefits borne by participants within transactional relationships (Gefen and Ridings, 2002).

Smith et al. (1999) likened a service encounter to a social exchange whereby a consumer engages in a market transaction on the belief that he/she will receive a desirable outcome after expending a certain amount of resources to carry out stipulated transactional activities. But because of the presence of dysfunctional services, expended resources may be forfeited without producing the desired transactional outcome for the consumer. If such a loss is not reimbursed in kind through service recovery efforts on the part of the vendor, Smith et al. (1999) contended that the social exchange cannot be equalized, which may erode the willingness of the consumer to further participate in the exchange relationship (see Bitner et al., 1990).

Applying the SET, Smith et al. (1999) proposed four modes of service recovery that align with the concepts of distributive, procedural and interactional justice similar to that of Tax et al. (1998), namely *compensation*, *response sensitivity*, *affinity* and *initiative*. Together, these four service recovery modes symbolize a targeted approach to the resolution of service failures by reimbursing consumers with equitable resources relative to incurred losses. That is, remuneration could be either utilitarian in that it involves the exchange of economic resources (e.g., money, goods or time) or symbolic in that it entails the exchange of socio-psychological resources (e.g., status, esteem, or empathy) (Smith et al., 1999). This thesis espouses Smith et al.'s (1999) typology as the most comprehensive yet parsimonious framework from which to isolate leverage points for optimizing e-service recovery efforts on e-commerce websites. Three reasons justify our claim.

First, as illustrated in Table 4.1, both the retail recovery strategies advanced by Kelley et al. (1993) and the justice-oriented service recovery tactics introduced by Tax et al. (1998) can be readily subsumed under Smith et al.'s (1999) typology of service recovery modes. Second, as compared to Smith et al.'s (1999) taxonomy, Kelley et al.'s (1993) and Tax et al.'s (1998) typologies of service recovery are much too abstract and sophisticated to generate prescriptive guidelines for informing the design of e-service recovery technologies on e-commerce websites (Benbasat and Zmud, 2003; Voorhees and Brady, 2005). Moreover, as stated before, several dimensions in both typologies

demand a physical presence (e.g., honesty and manager/employee intervention) and would not be feasible as a recovery technology for e-commerce websites. Third, we also reject Kelley et al.'s (1993) and Tax et al.'s (1998) typologies due to their inclusion of both workable and non-workable (shown in red in Table 4.1) service recovery measures. E-commerce websites are extremely vulnerable to the repercussions from e-service failures as consumers face minimal switching costs in alternating among e-merchants (Harris Interactive, 2006). Therefore, it is not feasible for e-merchants to consider non-workable e-service recovery solutions because there are no second chances for a failed recovery.

**Table 4.1: Comparison of Contemporary Frameworks of Service Recovery**

| Service Recovery Modes [as adapted from Smith et al. 1999] | Definition [Ability of recovery measures to appease customers through…] | Justice-Oriented Service Recovery Tactics [Tax et al. 1998] | Definition [Ability of recovery tactics to appease or anger customers through…] | Service Recovery Strategies [as adapted from Kelley et al. 1993] | Definition [Ability of recovery strategies to appease or anger customers through…] |
|---|---|---|---|---|---|
| **Compensation** | Reimbursement of tangible economic resources such as money, discount, free merchandise and coupons. | **Reimbursement / Refund** | Reimbursement of the full cost paid by customers for products or services prior to the failure. | **Refund** | Reimbursement of the full cost paid by customers for products or services prior to the failure. |
| | | **Replacement** | Replacement of defective products purchased. | **Replacement** | Replacement of defective products purchased. |
| | | **Store Credit** | Offering credit for customers' next transaction at the same location from which they have experienced the failure. | **Store Credit** | Offering credit for customers' next transaction at the same location from which they have experienced the failure. |
| | | **No Comparison** | **No Comparison** | **Discount** | Providing discounts on desired products or free merchandise. |
| **Response Sensitivity** | Availability of measures that anticipate the possibility of common customer's experiences and are competent in dealing with them efficiently. | **Repair** | Repairing defective products purchased or rectifying service mistakes. | **Correction** | Prompt rectification of mistakes that were made by the firm with no physical intervention from employees. |
| | | **Assuming Responsibility** | Taking responsibility for controllable service failures. | **Manager/Employee Intervention** | Intervention of service personnel who are empowered to solve the problems at hand. |
| | | **No Resolution** | Ignoring customers totally despite knowing the failure occurrence. | **Nothing** | Ignoring customers totally despite knowing the failure occurrence. |
| | | **Process Control** | Empowering customers to take control over how they wish the service recovery to proceed. | **No Comparison** | **No Comparison** |

| Service Recovery Modes [as adapted from Smith et al. 1999] | Definition [Ability of recovery measures to appease customers through…] | Justice-Oriented Service Recovery Tactics [Tax et al. 1998] | Definition [Ability of recovery tactics to appease or anger customers through…] | Service Recovery Strategies [as adapted from Kelley et al. 1993] | Definition [Ability of recovery strategies to appease or anger customers through…] |
|---|---|---|---|---|---|
| | | **Knowledge of Process** | Advising customers of the procedural steps involved in service recovery. | | |
| | | **No Comparison** | **No Comparison** | **Failure Escalation** | Delays in providing correction measures such that the service failure scenario is allowed to escalate in magnitude. |
| **Affinity** | Building of rapport using socio-psychological resources such as apologies, the accordance of esteem, politeness/courtesy, concern and empathy. | **Apology** | Offering apologies for service failures and the resulting inconvenience to customers. | **Apology** | Offering apologies for service failures and the resulting inconvenience to customers. |
| | | **Convenience** | Resolving service failures with minimal hassle and inconvenience to customers. | **Unsatisfactory Correction** | Undertaking corrective actions that were made with much hassle and inconvenience to customers who have already suffered from the initial failure. |
| | | **Timing / Speed** | Resolving service failures in as little time as possible. | **No Comparison** | **No Comparison** |
| | | **Flexibility** | Allowing customers to make special requests during service recovery that are not commonly practiced. | | |
| | | **Politeness** | Assisting customers through the service recovery process in an affable manner. | | |
| | | **Empathy** | Aiding customers through the service recovery process in a personalized fashion. | | |
| | | **Effort** | Going beyond the call of duty during service recovery. | | |
| | | **Explanation / Information** | Offering explanation and/or information to customers on the cause behind the occurrence of service failures | | |
| | | **Honesty** | Being truthful to customers about the occurrence of service failures and/or recovery measures | | |
| | | **Attitude** | Ensuring that service | | |

| Service Recovery Modes [as adapted from Smith et al. 1999] | Definition [Ability of recovery measures to appease customers through…] | Justice-Oriented Service Recovery Tactics [Tax et al. 1998] | Definition [Ability of recovery tactics to appease or anger customers through…] | Service Recovery Strategies [as adapted from Kelley et al. 1993] | Definition [Ability of recovery strategies to appease or anger customers through…] |
|---|---|---|---|---|---|
| | | | recovery is to the satisfaction of customers. | | |
| **Initiative** | Demonstration of the capability of the vendor to proactively engage customers in the solicitation of unreported failures and the provision of innovative solutions that are not expected of the firm. | **Correction Plus** | Providing services that goes beyond mere correction of the failure and puts customers in a better position from where they started from. | **Correction Plus** | Providing services that goes beyond mere correction of the failure and puts customers in a better position from where they started from. |
| | | **Follow-Up** | Keeping customers informed of the progress of service recovery efforts. | **No Comparison** | **No Comparison** |
| | | **No Comparison** | **No Comparison** | **Customer-Initiated Correction** | Offering service recovery only upon contact from customers in scenarios whereby the firm is expected to have known about the failure beforehand. |

Adapting Smith et al.'s (1999) typology to e-commerce websites, we postulate that e-service recovery technologies can be designed to appease consumers who have experienced failure occurrences through: (1) ***compensation*** where tangible economic resources are reimbursed; (2) ***response sensitivity*** where common errors are anticipated and guidance on their resolution is provided; (3) ***affinity*** where rapport is built using socio-psychological resources, and; (4) ***initiative*** where consumers are proactively engaged in the identification of unreported e-service failures. Further, as can be seen from Appendix D, recovery technologies, which are predominantly accessible from modern e-commerce websites, can be readily classified under one of the four recovery modes, thereby lending credibility to our choice of Smith et al.'s (1999) typology as the guiding theoretical framework for conceptualizing e-service recovery.

While we have demonstrated the relevance of each the four service recovery modes in Smith et al.'s (1999) typology to e-commerce transactional environments, we have opted to drop the concept of initiative in this thesis. Because initiative on e-commerce websites is typically implemented as a

*pop-up* survey questionnaire that synchronizes with consumers' transactional activities to solicit feedback on various web aspects (see Appendix D), it may be construed by consumers as an inhibitor (Cenfetelli, 2004). Citing pop-ups as a prime example, Cenfetelli (2004) defined inhibitors as "perceptions held by a user about a system's attributes with consequent effects…that act solely to discourage use" (p. 475). Inhibitors capture the intuition that the presence of certain functionalities on e-commerce websites may serve to discourage usage among consumers even though their absence may not have any positive impact as well. In this sense, initiative in the form of pop-up survey questionnaires may not be a desirable mode of e-service recovery because it could induce failure perceptions among consumers instead: unlike pop-up advertisements, such questionnaires are likely to be highly disruptive to the transactional process by compelling consumers to switch between browser windows (see Appendix D).

### *4.2 Summary*

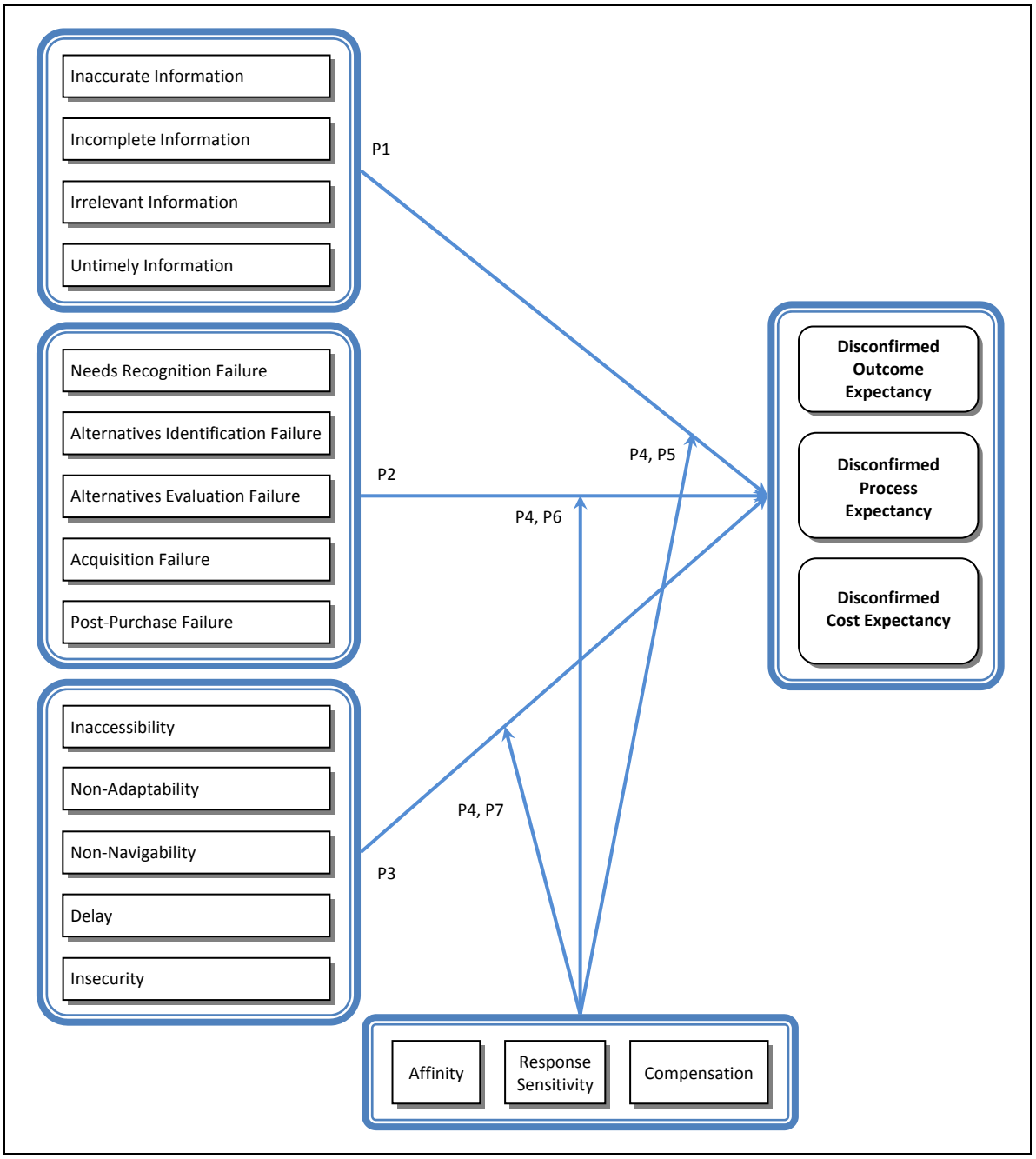
Reviewing contemporary frameworks of service recovery, this chapter adapts and positions Smith et al.'s (1999) typology as an intuitive framework from which to taxonomize the myriad of e-service recovery technologies accessible from e-commerce websites and prescribe actionable design principles for e-merchants. Having derived guiding theoretical frameworks of e-service failure and recovery in the preceding chapters, Chapter 5 will construct an integrated theory together with testable hypotheses for empirical investigation.

# CHAPTER 5 – AN INTEGRATED THEORY OF E-SERVICE FAILURE AND RECOVERY

In this chapter, we focus on the construction of an integrated theory of e-service failure and recovery. Building on our proposed typology of e-service failure and Smith et al.'s (1999) typology of service recovery, we draw on: (1) the Expectation Disconfirmation Theory (EDT) to postulate negative consequences of information, functional and system failures, and; (2) Counterfactual Thinking to predict the effectiveness of compensatory, affinity and response sensitivity e-service recovery technologies in moderating these failure consequences.

Figure 5.1 depicts our theory of e-service failure and recovery.

**Figure 5.1: Theory of E-Service Failure and Recovery**




## *5.1 An Expectation Disconfirmation Perspective of E-Service Failure Consequences*

Fundamental to service failure is the idea of expectation disconfirmation (Hess et al., 2007; Hoffman and Bateson, 1997). It is well-accepted within service literature that consumers generally possess preconceived notions of service performance and that service failures manifest whenever those preconceptions have been violated (e.g., Andreassen 2001; Bearden and Teel 1983; Bitner 1990;

Hess et al. 2007; Smith et al. 1999). The same reasoning applies to e-service failures. Due to the existence of multiple frames of reference (e.g., previous transactional experience from both online and offline retail) from which online consumers may draw upon to base their evaluations of e-commerce websites, it is natural that the disconfirmation of these predefined expectations would be indicative of e-service failures.

However, the EDT, in its current form, lacks sufficient explanatory and predictive power in modeling e-service failures and their consequences. Despite the extensive application of the EDT in investigating service failures, none has gone beyond theorizing disconfirmation as a monolithic construct. Implicitly, the manifestation of a service failure implies that a consumer's expectations have *not* been fulfilled in some manner (Hess et al., 2007; Hoffman and Bateson, 1997). Yet to-date, there have been no scholarly attempts to further delineate the disconfirmation construct to yield insights into the type of consumer expectation that has been compromised whenever a particular form of service fails.

Expectations are principal determinants of consumers' positive attitudes towards e-commerce websites because they are the baseline from which evaluative judgments about focal e-services are formulated (Bhattacherjee, 2001). The disconfirmation of customer expectations is driven by the *value* to be gained from service utilization—the utility accorded to consumers due to perceptual differences between what is to be expected and what is actually given (Cronin et al. 2000; Parasuraman and Grewal 2000). Embodied within the concept of value is an inference to cost-benefit analysis (Cronin et al. 2000; Parasuraman and Grewal 2000) and, as reasoned by Davis et al. (1992), cost-benefits associated with technology usage are rooted in: (1) the capacity of the technology to produce desired task outcomes, as well as; (2) the tangible and intangible costs that must be expended by individuals in utilizing the technology. This distinction between outcome and cost associated with technology usage has been reflected in the well-established Technology Acceptance Model (TAM) as users' perceptions of 'usefulness' and 'ease of use' towards technological systems (Davis, 1989).

Likewise, in a comprehensive review of technology acceptance models and theories being applied in system usage studies, Venkatesh et al. (2003) advanced a Unified Theory of Acceptance and Use of Technology (UTAUT) that delineates performance and effort expectancy as distinct influences affecting users' receptivity towards technological systems.

Yet, going beyond the cost and outcome associated with service utilization, there is ample evidence within service literature to suggest that the servicing ***process*** should not be ignored (e.g., Collier and Bienstock 2003, 2006). Berry et al. (1985) differentiated between process and outcome in conceptualizing services (see also Collier and Bienstock 2003, 2006; Fassnacht and Koese 2006). They argued that service process depicts consumers' interactive exchange with a service, whereas service outcome is the consequence culminating from the execution of the service (Berry et al. 1985).

The importance of incorporating process as a distinctive facet of services is also echoed by Mentzer et al. (2001). Mentzer et al.'s (2001) study on logistics service quality revealed that consumers' service expectations can be segregated into those pertaining to order placement (i.e., process) and those regarding order receipt (i.e., outcome). Similarly, Jacoby (1998) divided consumers' product acquisition process into five sequential stages (i.e., *needs recognition*, *alternatives identification*, *alternatives evaluation*, *product acquisition,* and *post-purchase*) and maintained that the provision of services to move transactional activities seamlessly along these stages is the key to fulfilling customers' expectations. Arguably, consumers are likely to possess expectations about how transactional processes should flow on e-commerce websites and these expectations are disconfirmed whenever they encounter disruptions to their transactions due to the presence of e-service failures. We hence distinguish among *outcome*, *process,* and *cost* as distinct expectations that consumers harbor towards service utilization. That is, e-service failures may lead to the disconfirmation of consumers' outcome, process and cost expectancies:

1. ***Disconfirmed outcome expectancy*** manifest whenever *the transactional outcome(s) obtained from the e-commerce website is not what is desired by the consumer*,

2. ***Disconfirmed process expectancy*** manifest whenever *the transactional process on the e-commerce website does not proceed in a manner expected by the consumer*, and;
3. ***Disconfirmed cost expectancy*** manifest whenever *a consumer expends more resources than anticipated in transacting via an e-commerce website*.

### 5.1.1 Consequences of Informational Failures

A basic tenet of consumer behavioral theory holds that when customers make purchase decisions, the type of information is instrumental to the formation of decisional outcomes (Furse et al., 1984; Keaveney and Parthasarathy, 2001; Muthukrishnan and Chattopadhyay, 2007). As affirmed through existing studies of consumer satisfaction and service quality, the information employed by customers in making choice decisions impacts outcome predictability (e.g., Boulding et al., 1993; Oliver, 1997; Yi, 1990; Zeithaml et al., 1993, 1996). That is, if misinformation were to be supplied by an e-commerce website, whether intentionally or unintentionally, consumers may be misled into acquiring products and/or services that do not fit their requirements. Similarly, Collier and Bienstock (2003, 2006) have attested to informational attributes (e.g., accuracy and timeliness) as crucial antecedents of service outcome quality. Because the saliency of informational attributes in influencing task outcomes is well documented within system success (e.g., Bailey and Pearson, 1983; Ives et al, 1983; Wixom and Todd, 2005) and service failure (e.g., Gershoff et al., 2001; Holloway and Beatty, 2003) literatures, we propose that:

> ***Hypothesis 1:*** *Informational failure on an e-commerce website will result in the disconfirmation of consumers'* ***outcome*** *expectancy.*

### 5.1.2 Consequences of Functional Failures

Functional failures cause dissonance to manifest in e-commerce transactional processes. Empirical findings suggest that service functionalities, no matter how well designed they may be, are rendered meaningless if they cannot satisfy consumers' transactional needs (Cenfetelli et al. 2008). The same opinion was expressed by Piccoli (2001), who claimed that one must "think creatively about how technology can be integrated into your products and into your customer's experience

[because] the most innovative ideas are often not the most costly or resource-intensive, but simply those based on an understanding of how customer needs can effectively be satisfied" (p. 45). E-commerce websites in this sense, should not only mirror physical retailers in the range and sophistication of services being offered to consumers, but must also made available transactional functionalities, which are otherwise infeasible via conventional media (Barnes and Vidgen 2003; Homburg et al., 2002).

Studies conducted in both e-commerce (Cenfetelli et al., 2008) and e-government (Tan et al., 2010) domains have claimed that consumers' service expectations for online transactions are not only distinguishable from those for their offline counterparts, but that these expectations also vary depending on which stage of the transactional process consumers are currently engaged in. The availability of complementary web-enabled functionalities to cater to the spectrum of service expectations throughout the online transactional process is therefore deterministic of an e-commerce website's eventual acceptance by its target audience (Cenfetelli et al., 2008; Tan et al., 2010). For instance, while recommendations agents are probably needed in the beginning of an e-commerce transaction to assist consumers in product selection, ordering and payment functions become salient in the later stages for product acquisition purposes. Olsen (2003) has blamed functional failures along various stages of the online transactional process for systematically ejecting consumers from e-commerce websites and contributing to a low conversion rate of 34% among purchase-ready customers (see also Holloway and Beatty, 2003). Given the growing evidence that alludes to the decisive role of service functionalities in sustaining a fluid e-commerce transactional process (e.g., Cenfetelli et al., 2008; Lightner, 2004; Tan et al., 2010), we propose that:

> ***Hypothesis 2:*** *Functional failure on an e-commerce website will result in the disconfirmation of consumers'* ***process*** *expectancy.*

### 5.1.3 Consequences of System Failures

The minute a consumer visits an e-commerce website, he/she already begins to incur a cost for the transaction, be it effort expended or time spent. Because system attributes affect the efficiency

with which consumers can access service content on an e-commerce website (DeLone and McLean, 2003; Wixom and Todd, 2005), it is inevitable that the presence of system failures lowers consumers' effort-performance expectancy as a much higher transactional cost must now be incurred to attain satisfactory service performance (Holloway and Beatty, 2003). Empirical justification for such a relationship is abundant.

Prior research has testified to an inverse relationship between response time and the amount of resources invested by system users (Barber and Lucas, 1983; Martin and Corl, 1986). Studies have shown that delays on e-commerce websites induce a sense of loss in consumers because they are forced to spend way more time than projected in accomplishing online transactions (Lee and MacGregor, 1985; Sears et al., 2000). Nah (2002) noted that, in the worst case scenario, consumers would rather terminate the transaction than waste time on unbearably slow e-commerce websites. Besides response time, there are yet other system attributes that have obtained support in extant service literature as having an impact on consumers' transactional costs such as accessibility (e.g., Agarwal and Venkatesh, 2002; Douglas et al., 2003; Shim et al., 2002), adaptability (e.g., e.g., Agarwal and Venkatesh 2002; Kim et al. 2006; Palmer 2002; Ribbink et al. 2004; Semeijn et al. 2005; Srinivasan et al. 2002; Surjadjaja et al. 2003) and navigability (e.g., Meliàn-Alzola and Padron-Robaina 2006; Semeijn et al. 2005; Surjadjaja et al. 200). Since the impact of system attributes on transactional costs has received broad consensus among researchers, we propose that:

> ***Hypothesis 3:*** *System failure on an e-commerce website will result in the disconfirmation of consumers'* ***cost*** *expectancy.*

### *5.2 A Counterfactual Thinking Perspective of E-Service Recovery Effectiveness*

When e-service failures occur, counterfactual thinking would compel consumers to question if e-commerce websites have taken steps to improve the situation, the absence of which would indicate a misguided recovery process (McColl-Kennedy and Sparks, 2003). Counterfactual thinking plays a critical role in consumers' assessment of e-service recovery because the suitability of recovery

technologies would depend on whether they conform to measures that customers anticipate to be present on e-commerce websites to alleviate negative failure consequences.

From a counterfactual thinking perspective, we differentiate between the mere ***presence*** of a recovery technology and its ***commensurability*** in determining consumers' reactions towards e-service failures. Whereas the presence of e-service recoveries signals an e-merchant's willingness to make amends for e-service failures and lessen to an extent the *immediate* fallout from failure incidents, it is the commensurability of these recoveries that would ultimately decide consumers' *eventual* behavioral responses towards the offending e-commerce website.

Previous research lends supports to this distinction as well. McColl-Kennedy et al. (2003) empirically certified that the *presence* of any manner of service recovery is better than inaction. The existence of e-service recoveries, regardless of their compatibility, would moderate the negative consequences arising from e-service failures. Further, as observed by Tam and Ho (2006), e-commerce websites emits cues (or signals) that consumers exploit to augment transactional activities such as discerning the risk of the transaction (Schlosser et al., 2006) or detecting deception (Xiao and Benbasat, 2011). The presence of e-service recoveries thus fulfills a secondary purpose of instilling a calming effect on consumers that increases their confidence in salvaging failed transactions. For example, just by having self-service resolution centers alone may convince consumers that they can most certainly recover from any unfavorable transactional outcomes (e.g., defective products, wrong purchases and misplaced deliveries). We therefore propose that:

> ***Hypothesis 4:*** *The* ***presence*** *of any e-service recovery technology (compensation, response sensitivity or affinity) will negatively moderate the positive relationship between an e-service failure and consumers' disconfirmed expectancy.*

Yet, equal emphasis must be placed on the commensurability of e-service recovery technologies. Smith et al (1999) observed an interaction effect between failure and recovery by illustrating that consumers prefer recoveries that are *commensurate* with the form and magnitude of failure consequence experienced. A mismatch between failure consequence and recovery is limited in

easing consumers' displeasure. For example, if unusually long delay in the loading of webpages is the problem, compensating consumers with product discounts may be a disproportionate response. Rather, having an alternate site with minimal graphics to accelerate the loading process would be the preferred solution. Separating the presence of e-service recovery technologies from their commensurability would thus enrich our theory. In subsequent sections, we revisit extant literature on service recovery to propose that although any type of recovery technology (i.e., compensation, response sensitivity and affinity) is better than inaction at moderating consumers' disconfirmed expectancies that arise from e-service failures, certain recovery may be more effective than others depending on the nature of the expectation being disconfirmed.

### 5.2.1 Moderating Effect of Compensatory Recovery Technology

Compensation is a standard recovery procedure in which consumers are reimbursed (in the form of coupons, discounts, free merchandise and refunds) for any losses they may have suffered as a consequence of service failures (Smith et al., 1999). Though there are considerable disagreements over the level of compensation to be awarded for a given failure incident, existing studies are unanimous in attesting to the importance of compensation in counterbalancing negative service outcomes (e.g., McCollough et al., 2003; Lovelock and Wirtz, 2004; Wirtz and Mattila, 2004). Through content analysis of qualitative complaints, Tax et al. (1998) claimed that compensation is particularly advantageous in assisting consumers to recover from undesirable service outcomes. Likewise, Mattila and Patterson (2004a, 2004b) uncovered that compensation drives customers' perceptions of outcome fairness whereas McColl-Kennedy et al. (2003) revealed that it is especially pertinent in alleviating service failures that plague outcome-driven consumers. Conceivably, while there are no signs to indicate that compensation may not be relevant to other forms of service failures, the bulk of empirical evidence appears to suggest that it is better suited as a recovery for disconfirmed outcomes. Since e-commerce transactions take place virtually with little room for physical intervention, compensation measures must not only guarantee that consumers are sufficiently

reimbursed for damages suffered, they should also entail digital means for customers to arrange for reimbursements without having to engage in human contact. For example, if a consumer is misinformed (due to informational failures) into acquiring a product that does not meet his/her requirements, self-service resolution centers such as those offered by major e-commerce players (e.g., Amazon.com, eBay.com or Expedia.com) should be provided to assist the consumer in seeking amends for the misguided purchase. We therefore propose that:

> ***Hypothesis 5:*** *Compensatory e-service recovery technology will have a stronger negative moderating effect on the positive relationship between an e-service failure and consumers' disconfirmed outcome expectancy as compared to response sensitivity and affinity recovery technologies.*

### 5.2.2 Moderating Effect of Response Sensitivity Recovery Technology

Response sensitivity has been an integral part of service quality and measures vendors' propensity to be helpful and prompt in responding to consumers (Cenfetelli et al., 2008; Clemmer and Schneider, 1993, 1996; Parasuraman et al., 1985, 1988). A well-timed and fitting response to service failures has been observed to improve consumers' assessment of service encounters (Berry et al., 1994; Bitner et al., 1990; Clark et al., 1992; Hart et al., 1990; Kelley et al., 1993; Smart and Martin, 1992; Taylor, 1994). In the context of e-commerce websites, the criticality of response sensitivity has been acknowledged by Gefen (2002), who stated that while it may be "doubtful if automated systems today can provide the kind of responsive service that salespeople can, but there are some responsiveness aspects that also relate to websites: providing prompt service, providing helpful guidance when problems occur, and telling customers accurately when the ordered services will be performed or the products delivered" (p. 32). This view is also borne out in previous studies of recovery voice whereby scholars noted that it is imperative for vendors to demonstrate their receptivity and sensitivity towards customer feedback during service failures by giving dissatisfied consumers a chance to voice their opinions about how existing services may be enhanced to avert similar failures in the future (e.g., Karande et al., 2007; McColl-Kennedy et al., 2003; Sparks and McColl-Kennedy, 2001). Arguably, response sensitivity is the most appropriate mode of recovery

whenever transactional processes are abruptly disrupted because swift and targeted responses should be imminent to prevent customer exits. E-service recoveries exhibiting response sensitivity are also evident from modern e-commerce websites whereby one is accustomed to finding comprehensive guides on Frequently Asked Questions (FAQs) (e.g., Amazon.com, eBay.com and Expedia.com), live help (e.g., Dell.com and Futureshop.ca) and/or customer feedback forms (e.g., Amazon.com, Dell.com, eBay.com, Expedia.com and Futureshop.ca). Evidently, the provision of such recoveries moderates the negative consequences of functional failures by offering: (1) ready answers to common transactional queries (e.g., step-by-step tutorials on how to order and pay for a product), or; (2) communication channels for consumers to report transactional problem(s) and seek assurance that measures are being undertaken to prevent a repeat of such problems (e.g., automated response to feedback). We therefore propose that:

> ***Hypothesis 6:*** *Response sensitivity e-service recovery technology will have a stronger negative moderating effect on the positive relationship between an e-service failure and consumers' disconfirmed process expectancy as compared to compensatory and affinity recovery technologies.*

### 5.2.3 Moderating Effect of Affinity Recovery Technology

Affinity (with the most common manifestation being an apology) is a valuable reward that redistributes esteem (a social resource) in an exchange relationship (Smith et al., 1999). Apologies from vendors communicate respect and empathy to consumers in the event of service failures, which in turn lowers the latter's condemnation of the disappointing service encounters (Hart et al. 1990; Kelley et al. 1993). Studies have shown that apologies project a sense of care and transparency on the part of vendors by being upfront with consumers on the causes of service failures (Hart et al. 1990; Houston et al. 1998; Kelley et al. 1993; Taylor 1994). Costs incurred by consumers for e-service failures vary considerably on an individual basis (Mattila 2001). For instance, whereas one consumer might view a delay in loading time for an e-commerce website to be exceedingly wasteful, another may find the same delay to be reasonably acceptable. Without sufficient knowledge on the value each individual consumer attaches to the amount of resources (tangible or otherwise) he/she invested on an

offending e-commerce website, an apology could be a more universal remedy in that it goes a long way towards "[acknowledging] the costs that were imposed upon the consumer" (Houston et al. 1998, p. 742). This is also evident from existing studies of service delays. Service delays not only impose economic overheads (e.g., time wasted) as well as social and emotional tolls on consumers (e.g., anger and frustration) (Larson 1987), they also involve opportunity costs in that customers could have seek out other alternatives (Leclerc et al. 1995). Without the ability to accurately assess the loss suffered by consumers in service delays, Houston et al. (1998) admitted that vendors may be better off giving an apology. In apologizing, vendors not only express their recognition of the delay, but they also convey sympathy towards consumers' unfortunate predicament (Taylor 1994). We therefore propose that:

> ***Hypothesis 7:*** *Affinity e-service recovery technology will have a stronger negative moderating effect on the positive relationship between an e-service failure and consumers' disconfirmed cost expectancy as compared to compensatory and response sensitivity recovery technologies.*

### *5.3 Summary*

Building on our proposed e-service failure typology and Smith et al.'s (1999) typology of service recovery, we construct a theory of e-service failure and recovery by assimilating the *preventive* and *corrective* research streams within extant literature. Specifically, we draw on the EDT to account for disconfirmed expectancies that arise from informational, functional and system failures and counterfactual thinking to hypothesize the effectiveness of compensatory, response sensitivity and affinity recovery technologies in alleviating these disconfirmed expectancies. Based on this theory, Chapter 6 outlines the design and execution of a repeated measures experimental study to validate the relationships embedded within the theory.

# CHAPTER 6 – AN EXPERIMENTAL STUDY OF E-SERVICE FAILURE AND RECOVERY (2ND STUDY)

As noted by Holloway and Beatty (2003), existing e-commerce websites are lagging in the provision of e-service recovery technologies to alleviate e-service failures. Therefore, to validate our theory of e-service failure and recovery, an online experiment was conducted to achieve two research objectives: (1) to ascertain the impact of the three predominant forms of e-service failure (i.e., *informational failure*, *functional failure* and *system failure*) on consumers' disconfirmed expectancies, and; (2) to explore the effectiveness of the three e-service recovery technologies (i.e., *compensation*, *response sensitivity* and *affinity*) in alleviating negative consequences arising from these failures.

## *6.1 Experimental Design*

While prior research has testified to the existence of an interaction effect between failure and recovery (e.g., Holloway and Beatty, 2003; Kelley et al., 1993; Smith et al, 1999), it is not yet apparent what type(s) of recovery technologies would be effective in moderating negative consequences that arise from a particular form of failure. To this end, the validation of our theory of e-service failure and recovery closes the knowledge gap pertaining to the commensurability of recovery technologies relative to the failure experienced. The experiment was designed as a matchup between probable e-service recovery technologies with specific instantiations of e-service failures. Given the constraints of an experimental study, it is not feasible to manipulate every form of e-service failure in our theory. Rather, we selected three pervasive types of e-service failure, one each from the categories of informational, functional and system failure, to serve as treatments in our experiment. Hypotheses being tested in this experiment are summarized in Table 6.1.

**Table 6.1 Hypothesis to be Tested**

| |
|---|
| **H1**: Informational failure on an e-commerce website will result in the disconfirmation of consumers' outcome expectancy. |
| **H2**: Functional failure on an e-commerce website will result in the disconfirmation of consumers' process expectancy. |
| **H3**: System failure on an e-commerce website will result in the disconfirmation of consumers' cost expectancy. |
| **H4**: The presence of any e-service recovery technology (compensation, response sensitivity or affinity) will negatively moderate the positive relationship between an e-service failure and consumers' disconfirmed expectancy |
| **H5**: Compensatory e-service recovery technology will have a stronger negative moderating effect on the positive relationship between an e-service failure and consumers' disconfirmed outcome expectancy as compared to response sensitivity and affinity recovery technologies. |
| **H6**: Response sensitivity e-service recovery technology will have a stronger negative moderating effect on the positive relationship between an e-service failure and consumers' disconfirmed process expectancy as compared to compensatory and affinity recovery technologies. |
| **H7**: Affinity e-service recovery technology will have a stronger negative moderating effect on the positive relationship between an e-service failure and consumers' disconfirmed cost expectancy as compared to compensatory and response sensitivity recovery technologies. |

The experiment employs a ***3*** [*Type of E-Service Failure*: Informational Failure, Functional Failure and System Failure] x ***2*** [*Compensation*: Present and Absent] x ***2*** [*Affinity*: Present and Absent] x ***2*** [*Response Sensitivity*: Present and Absent] *between-subjects* factorial design with 619 participants (see Table 6.2). Apart from the twenty-four treatment groups, a control group [$N$ = 25] with no e-service failure was also included as part of the experimental design to contrast the presence of an e-service failure against its absence on participants' disconfirmed expectancies. Together, this yields a total of 644 participants in the experiment.

**Table 6.2: Between-Subjects Experimental Design**

| **E-Service Recovery** | **COM [✓]** | | | | **COM [✖]** | | | |
|---|---|---|---|---|---|---|---|---|
| | **AFF [✓]** | | **AFF [✖]** | | **AFF [✓]** | | **AFF [✖]** | |
| **E-Service Failure** | **RES [✓]** | **RES [✖]** | **RES [✓]** | **RES [✖]** | **RES [✓]** | **RES [✖]** | **RES [✓]** | **RES [✖]** |
| **Informational Failure (IF)** | Group 1 [$N$ = 25] | Group 2 [$N$ = 26] | Group 3 [$N$ = 26] | Group 4 [$N$ = 25] | Group 5 [$N$ = 27] | Group 6 [$N$ = 26] | Group 7 [$N$ = 25] | Group 8 [$N$ = 26] |
| **Functional Failure (FF)** | Group 9 [$N$ = 26] | Group 10 [$N$ = 25] | Group 11 [$N$ = 25] | Group 12 [$N$ = 25] | Group 13 [$N$ = 25] | Group 14 [$N$ = 25] | Group 15 [$N$ = 27] | Group 16 [$N$ = 25] |
| **System Failure (SF)** | Group 17 [$N$ = 25] | Group 18 [$N$ = 27] | Group 19 [$N$ = 25] | Group 20 [$N$ = 26] | Group 21 [$N$ = 28] | Group 22 [$N$ = 25] | Group 23 [$N$ = 27] | Group 24 [$N$ = 27] |

COM – Compensation

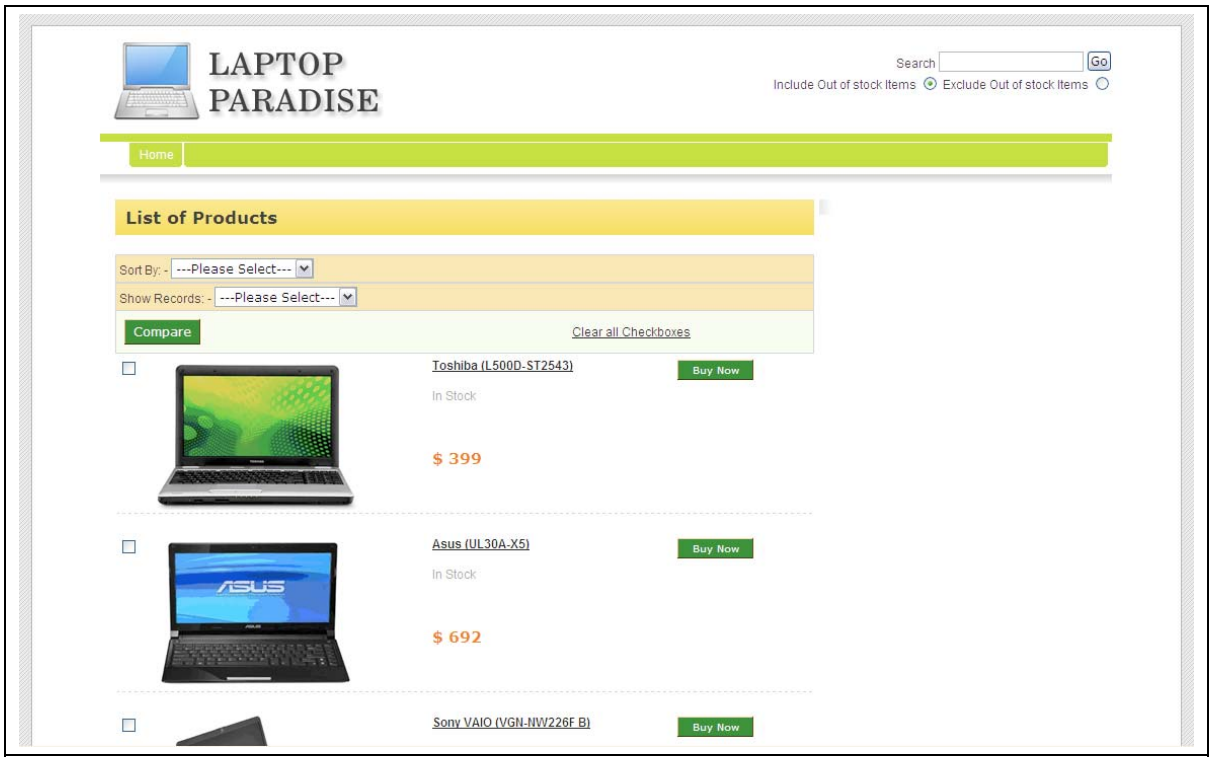
AFF – Affinity

RES – Responsiveness

### 6.1.1 A General Overview of Experimental Procedures

***Experimental Setting***: An experimental website featuring an artificial e-merchant was created for each of the twenty-four treatment groups as well as for the control group. Experimental websites for the twenty-five cells are entirely identical with the exception of an e-service failure and the inclusion of an e-service recovery technology corresponding to the specific manipulation for each of the twenty-four treatment groups (see Table 6.2). Each website features the same lineup of 45 laptop computers with product attributes that are consistent with models, which are freely available from online marketplaces at the time of the experiment. This preserves the realism of the experimental setting. Figure 6.1 depicts the experimental website from the control group that is void of any e-service failure and recovery manipulations.

**Figure 6.1: Experimental Website from Control Group**




Like the first study, experimental participants were recruited with the aid of a commercialized marketing firm. Sourcing for external participants increases the generalizability of our empirical findings at the expense of lesser control over experimental procedures. Nevertheless, with ample pre-

testing and fine-tuning of the experimental design, we are convinced that this loss of control does not pose a threat to the internal validity of the experiment.

An email invitation was broadcasted to the entire panel of potential subject pool accessible from the commercialized marketing firm. The email contains a synopsis of the experimental procedures together with a link to one of the twenty-five experimental websites if the recipient is willing to participate in the study. Each participant is rewarded with participation-based incentives from the marketing firm. Arrangements were made with the marketing firm to randomly assign participants to one of the twenty-five treatment groups. The first page of the experimental websites is a preamble that contains detailed descriptions of the experimental procedures as well as an electronic consent form for participants to 'sign' (see Figure 6.2). Only upon giving consent will participants be permitted to continue with the experiment. Participants were also reminded that their participation is entirely voluntary and they can choose to withdraw from the experiment at any point in time by closing the browser window.

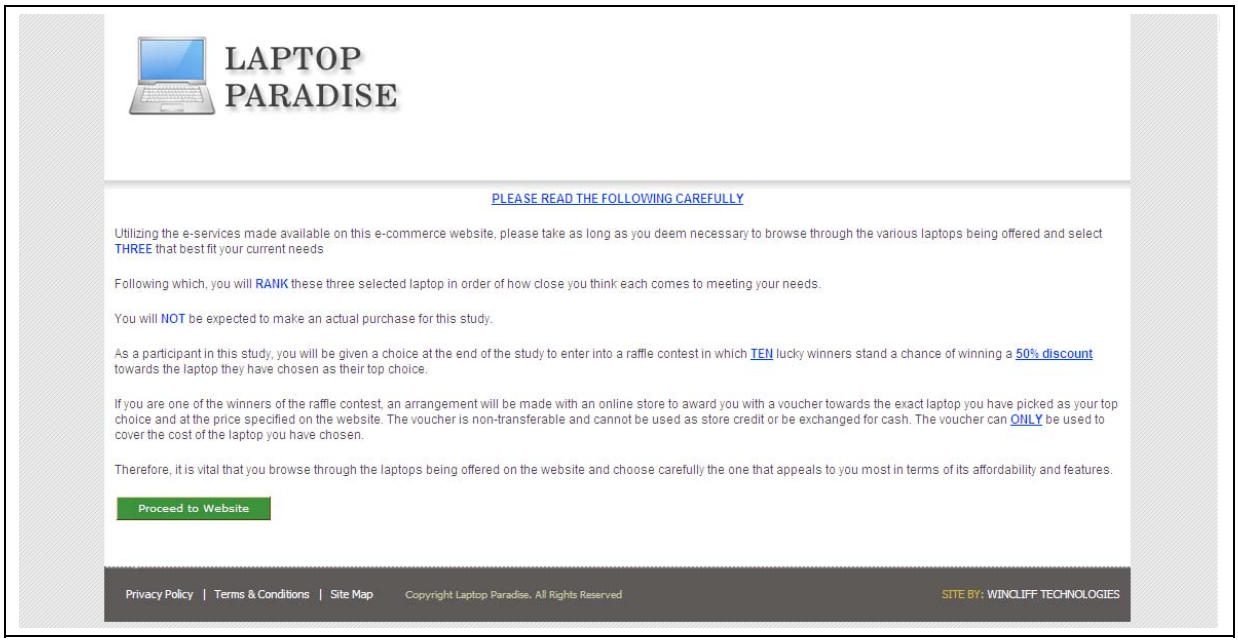
**Figure 6.2: Introductory Page and Electronic Consent Form of Experimental Websites**


For participants who chose to proceed with the experiment, they were given an *unconstrained* experimental task that requires them to browse through the various laptops being offered on the experimental websites and select **THREE** that best match their current needs (see Figure 6.3). Participants were also told that they are automatically entered into a raffle context for which **TEN** lucky winners stand a chance of winning a **50%** discount towards the laptop they have chosen as their

top choice: laptop prices range from USD $299 to USD $1,999 with the mean being USD $819.67 and the median being USD $692 due to realistic pricing of laptop models (i.e., laptop models are priced according to market rates). It was also made known to participants that even if they were to emerge as winners of the raffle contest, arrangements will be made with an e-merchant to award them with a voucher towards the exact laptop they have picked as their top choice and at the price specified on the website. The voucher is non-transferable and cannot be used as store credit or be exchanged for cash, i.e. the voucher can **ONLY** be used cover the cost of the laptop they have chosen.

The aforementioned conditions are imposed to substantially incentivize participants without prompting them to aim for the most expensive laptop right away. Because winners of the raffle contest were still expected to foot the other 50% of the laptop cost, participants would be motivated in their search for laptops that fit their requirements and at a price which is affordable to them. The design of the experimental task was finalized after three rounds of pilot testing in which we rejected a predefined task with performance incentives as well as one that is identical to the preceding task but with a smaller discount of 20% for winners of the raffle contest: the former being rejected due to its inability to motivate participants for an unrelated task and the latter being rejected for the insufficiency of the discount to generate adequate motivation among participants (since they still expect to pay for the other 80% of the laptop cost).

**Figure 6.3: Description of Experimental Task**

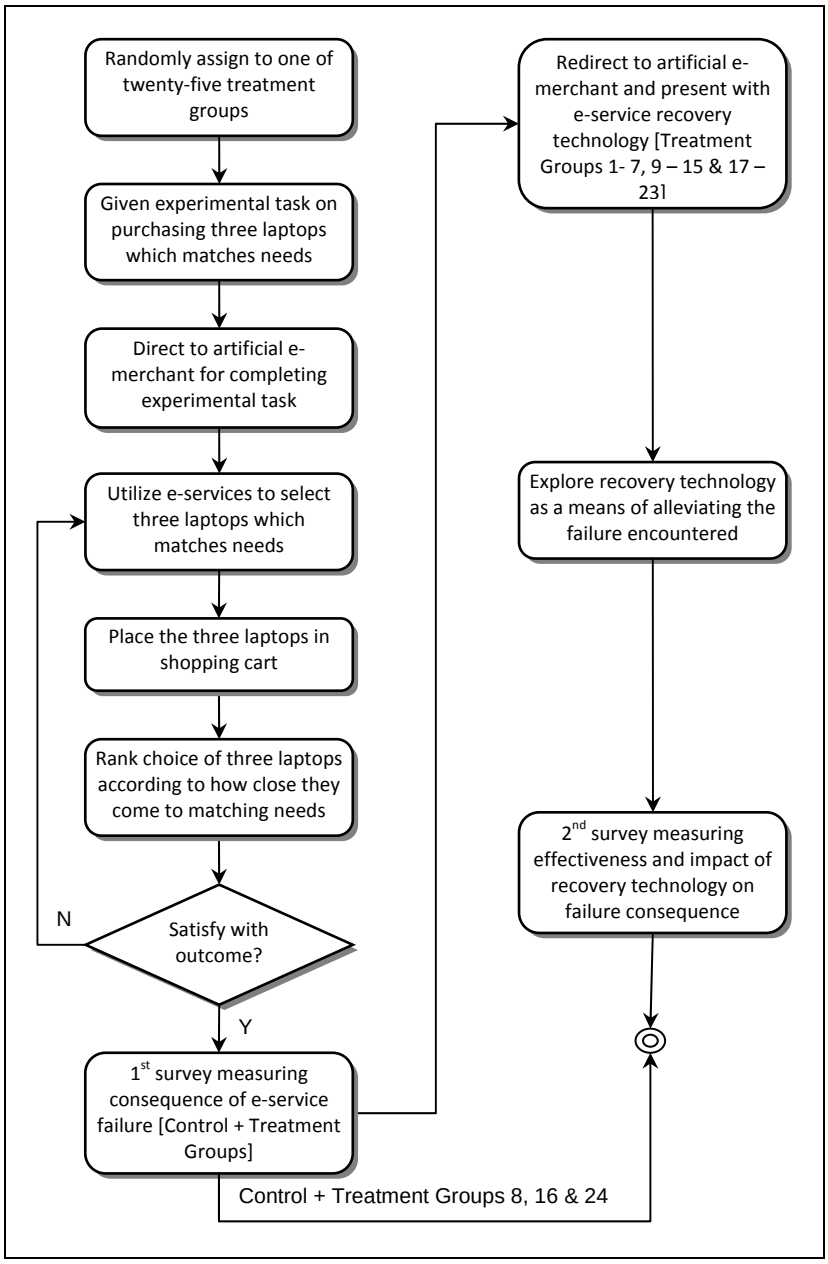



Once ready, participants were directed to the artificial e-merchant for their treatment group to begin shopping for the laptops. There was no time limit imposed on participants to make the purchase decision. To complete the experimental task, participants must: (1) select three laptops; (2) place them in the shopping cart; (3) rank them according to how close they think each comes to meeting their needs, and; (4) click the submit button. Upon submitting their choices, participants were directed to an online survey questionnaire to provide evaluations of the recently completed transaction. This questionnaire is designed both as a manipulation check to determine whether failure manipulations have been successful and as data collection for the impact of e-service failure manipulations on consumers' disconfirmed expectancies (i.e., consequences of e-service failure treatments must be measured before the introduction of recovery technologies). Answering the survey questionnaire completes the experiment for the control group as well as for treatment groups 8, 16 and 24, which are not exposed to any type of e-service recovery technology.

Conversely, participants belonging to Groups 1 – 7, 9 – 15 and 17 – 23 were forwarded to another page containing the e-service recovery technology that corresponds to the manipulation for

their treatment group. From the experimental procedures stated in the preamble of the experimental websites, participants were aware that they can take as long as they want to explore the 'e-services' (i.e., recovery technologies) that have been provided in relation to their earlier shopping experience. Once participants were satisfied that they have done all they can with the e-service recovery technology, they can proceed onto the final stage of the experiment where they are presented with a second survey questionnaire, which contains both manipulation checks for the e-service recovery technologies being provided and measures evaluating the effectiveness of these technologies in alleviating failure consequences. Figure 6.4 depicts a simplified diagrammatic flow of the experimental procedures.

**Figure 6.4: Diagrammatic Flow of Experimental Procedures**




### 6.1.2 Manipulations of E-Service Failures

While there are comparatively many studies in the marketing discipline that embraces experimental designs in the investigations of offline service failures, there is no such tradition for e-service failures. Consequently, due to the paucity of experimental studies that are contextualized to e-service failures, manipulations for failure treatments were based primarily on the triangulation

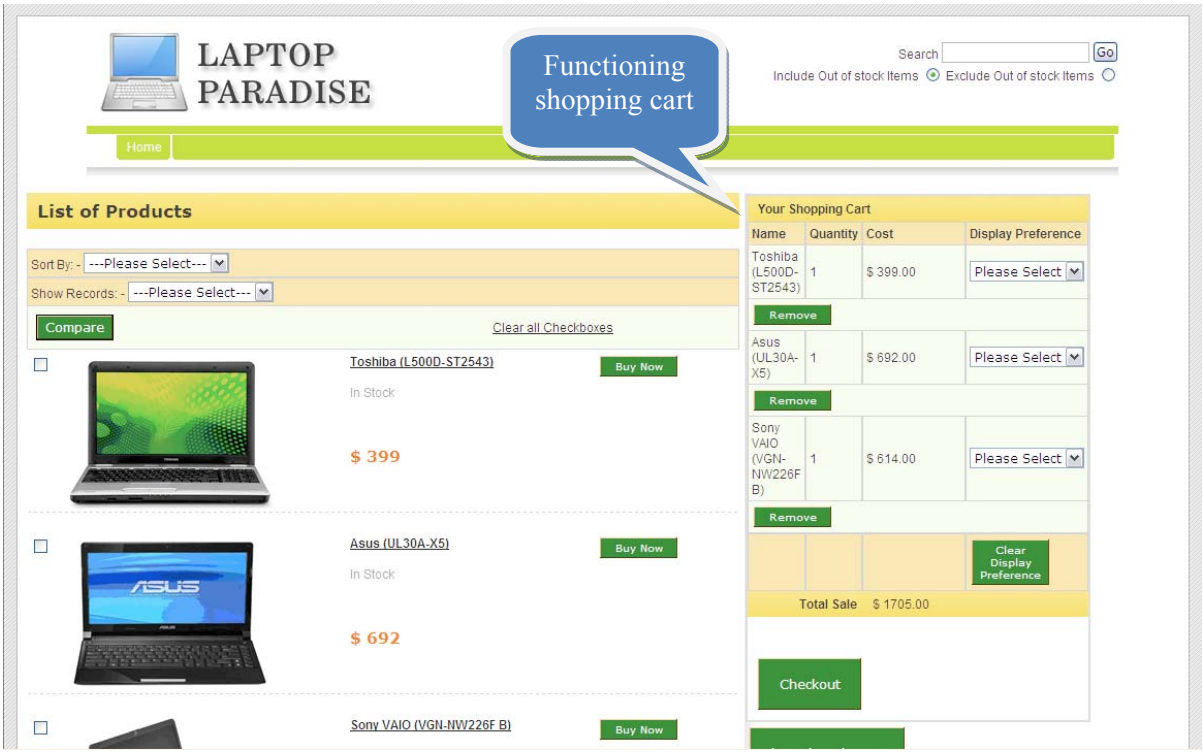
between actual failure incidents solicited from the first study (see Table 6.3) and past empirical studies that experiment with web features, albeit from a system success angle.

**Table 6.3: Sample E-Service Failure Incidents**

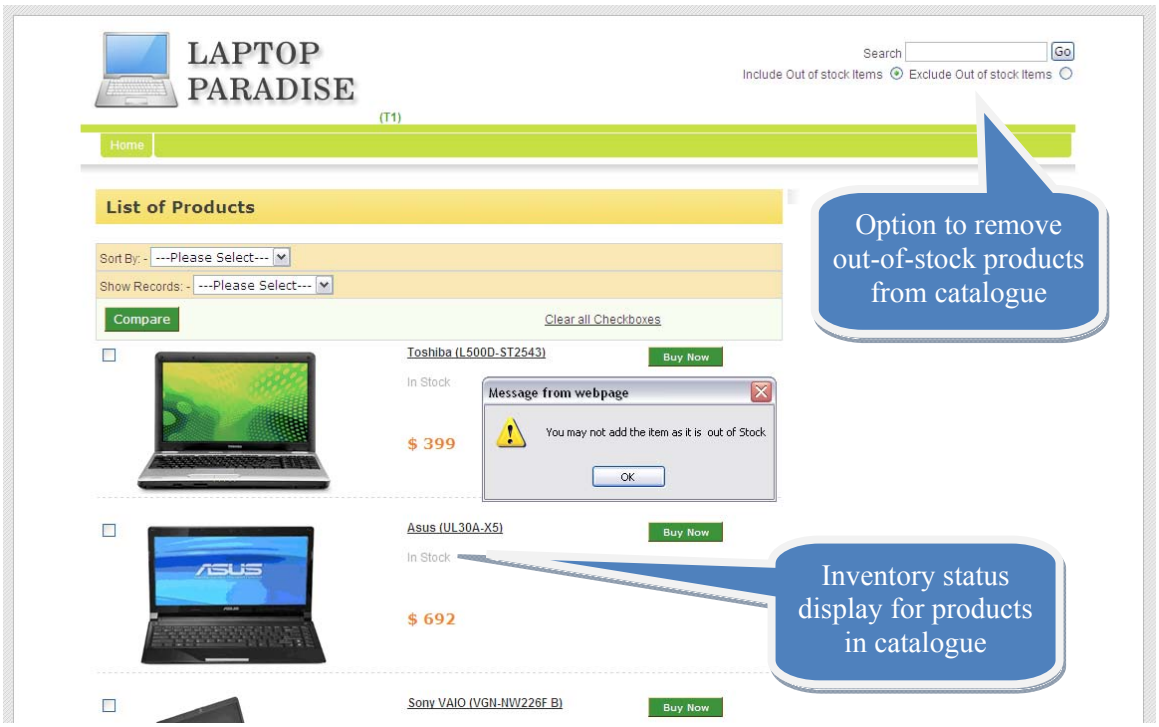
| Construct | Sample E-Service Failure Incident [First Study] |
|---|---|
| **Informational Failure** | ***Out-of-Stock Products***: "I was ordering clothes and the color and sizes of the clothing I was ordering was supposed to be in stock, but I received an error message saying no longer available or out of stock." |
| **Functional Failure** | ***Product Comparison Error***: "I recently tried to order several items from a retail store via their website, www.kohls.com. After choosing several products and entering the desired quantities, I decided to visit Overstock.com to compare prices for similar items before placing the order with Kohl's. Before switching websites, I created a username and password on the Kohl's website, assuming that my "basket" contents would be saved. However, after navigating to the Overstock website and then returning to Kohls.com, my basket contents had been cleared. Other shopping sites that I've used tend to be very sticky with my basket contents even when I am not logged in as a user. As long as I'm entering from the same IP address, my shopping basket contents are usually retained. But this was not the case on the Kohl's site. I did not recreate my online order with them." |
| **System Failure** | ***Long Delays***: "I was taking a look at my online account to see the recent transactions. It was slow and it delays my time spent on the Internet and viewing my personal information online." |

***Informational Failure***: Consistent with the qualitative data collected in the first study, one recurring form of informational failure is the inclusion of out-of-stock items in the product catalogues and/or consideration sets generated by recommendation agents on e-commerce websites. Out-of-stock items being listed on e-commerce websites was also highlighted as a constituent dimension of e-service failure in Holloway and Beatty's (2003) typology. Our manipulation of informational failure therefore took the form of the first three products placed into the shopping cart being tagged as out of stock (see Figure 6.5). To further amplify the effects of our informational failure treatment, the experimental website was designed to bolster participants' expectations of all listed products being in stock by: (1) including an option for participants to exclude out-of-stock items from the product catalogue, and; (2) having an inventory status display for every individual item in the product catalogue (see Figure 6.5). This gives participants the impression that any product listed on the e-commerce website must be in stock. Hereafter, we refer to our manipulation of informational failure as '***out-of-stock***' for clarity.

**Figure 6.5: Illustration of Control versus Informational Failure Manipulation**



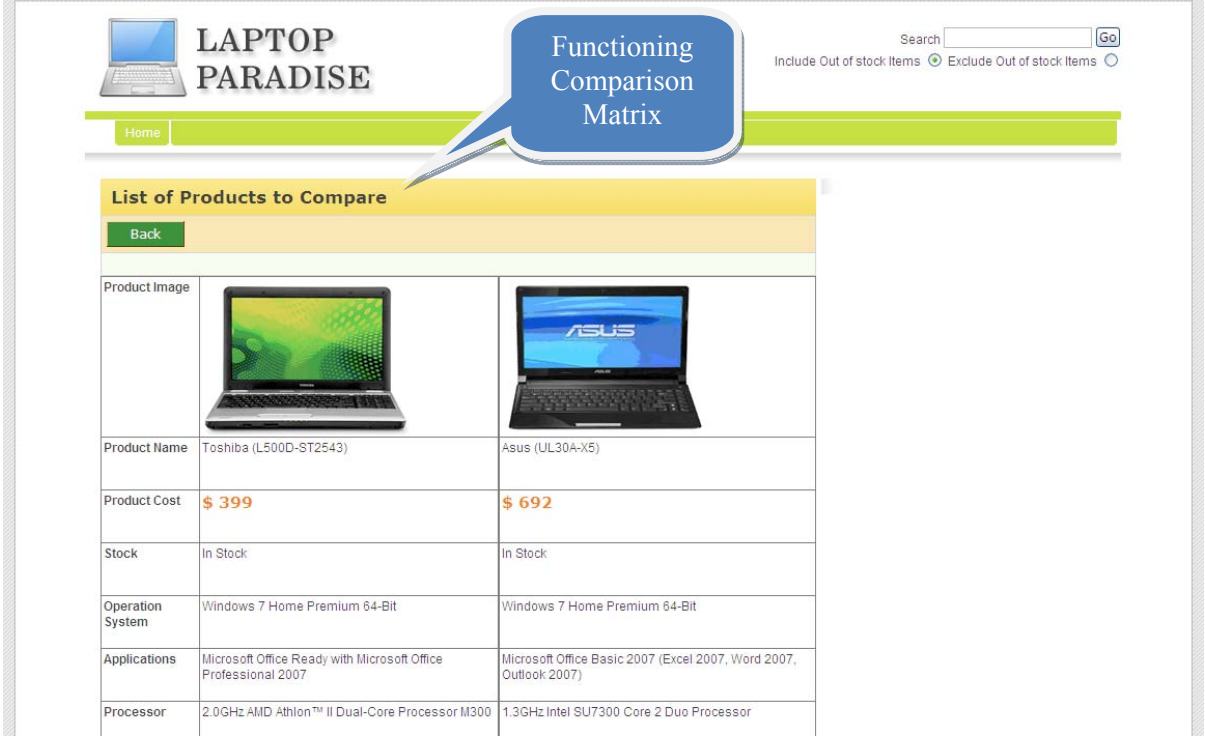

**Functioning Experimental Website [Control Group]**



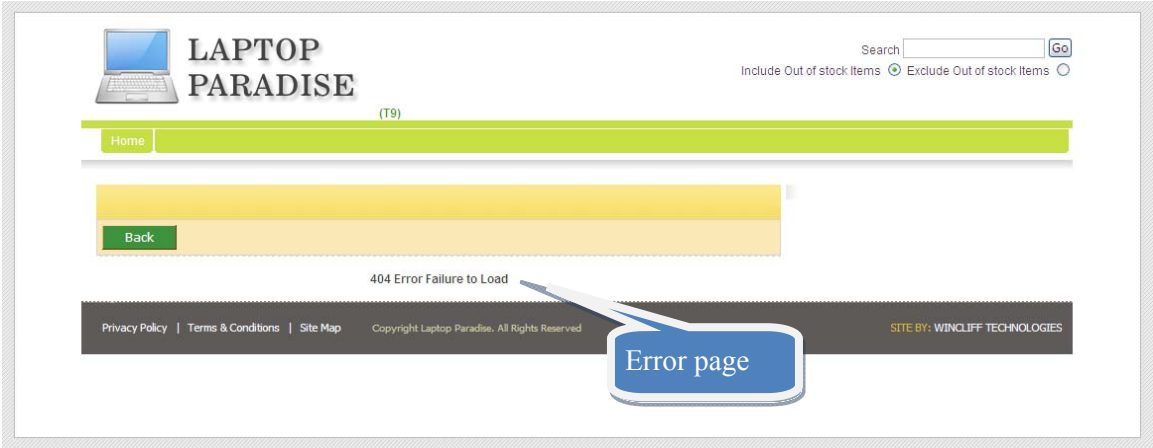

**Out-of-Stock Items [Treatment Groups 01 – 08]**

***Functional Failure***: Consumers rely on in-depth comparisons among product alternatives to arrive at purchase decisions (Jedetski et al., 2002; Payne et al., 1993). Therefore, e-commerce websites must provide functionalities that organize attribute information in an intuitive and easily comprehensible manner to facilitate inter-product comparison. The experimental studies of Haubl and Trifts (2000) as well as Jedetski et al. (2002) have alluded to the significance of the Comparison Matrix as an alternatives evaluation tool for such purposes. Although comparison matrixes are becoming a permanent fixture of recommendation agents as can be found at Procompare.com [http://www.procompare.com/], it is not mandatory for these two functionalities to always co-exist. Futureshop [http://www.futureshop.ca] for one, implements the comparison matrix as a feature of its product catalogue due to the lack of recommendation agents. Because each laptop comprises a total of 16 product attributes with real values that were extracted from existing e-commerce websites, comparison matrixes were incorporated as a feature of product catalogues on experimental websites to enable participants to compare and contrast viable alternatives. In the absence of recommendation agents, the comparison matrix would be an essential feature of the experimental websites to assist participants in laptop selection. But for those websites with functional failure manipulation (i.e., treatment groups 9 – 16), an error message was displayed instead whenever participants tried to make use of the comparison matrix (see Figure 6.6). The provision of a dysfunctional comparison matrix thus amplifies our functional failure manipulation. Hereafter, we refer to our manipulation of functional failure as '***missing comparison***' for clarity.

**Figure 6.6: Illustration of Control versus Functional Failure Manipulation**




**Functioning Experimental Website [Control Group]**




**Product Comparison Error [Treatment Groups 09 – 16]**

***System Failure***: Response time is indicative of system quality (see Bailey and Pearson, 1983; Ives et al., 1983). Evidence from past experimental studies claims that consumers undertake psychological discounts at 8 seconds (Kuhmann, 1989), lose interest at 10 seconds (Ramsay et al., 1998), become impatient at 12 seconds (Hoxmeier and DiCesare, 2000), engage in disruptive actions

at 15 seconds (Shneiderman, 1998) and abandon the task at 38 seconds (Nah, 2002). Because the purpose of our system failure manipulation is to induce sufficient disappointment among participants in the system aspects of the experimental websites without encouraging thoughts of task abandonment, it was implemented as a 12 seconds time delay being forcefully imposed on the loading of every product-related webpage (i.e., product catalogue and comparison matrix) for websites with such treatments, but not on the other pages (e.g., homepage and shopping cart). By creating a sharp contrast in loading speed between product-related and other webpages, we amplified the effects of our system failure treatment. Further, it can be calculated from our system failure manipulation that the total time delay experienced by participants is equivalent to the number of viewed products multiplied by 12 seconds, i.e. the greater the number of products being viewed by a participant, the longer the time delay he/she experienced. This creates frustration among participants who, despite having an incentive to go through each viable laptop alternative, experienced an extra 12 seconds of time delay for viewing every other interested alternative. Hereafter, we refer to our manipulation of system failure as '***delay***' for clarity.

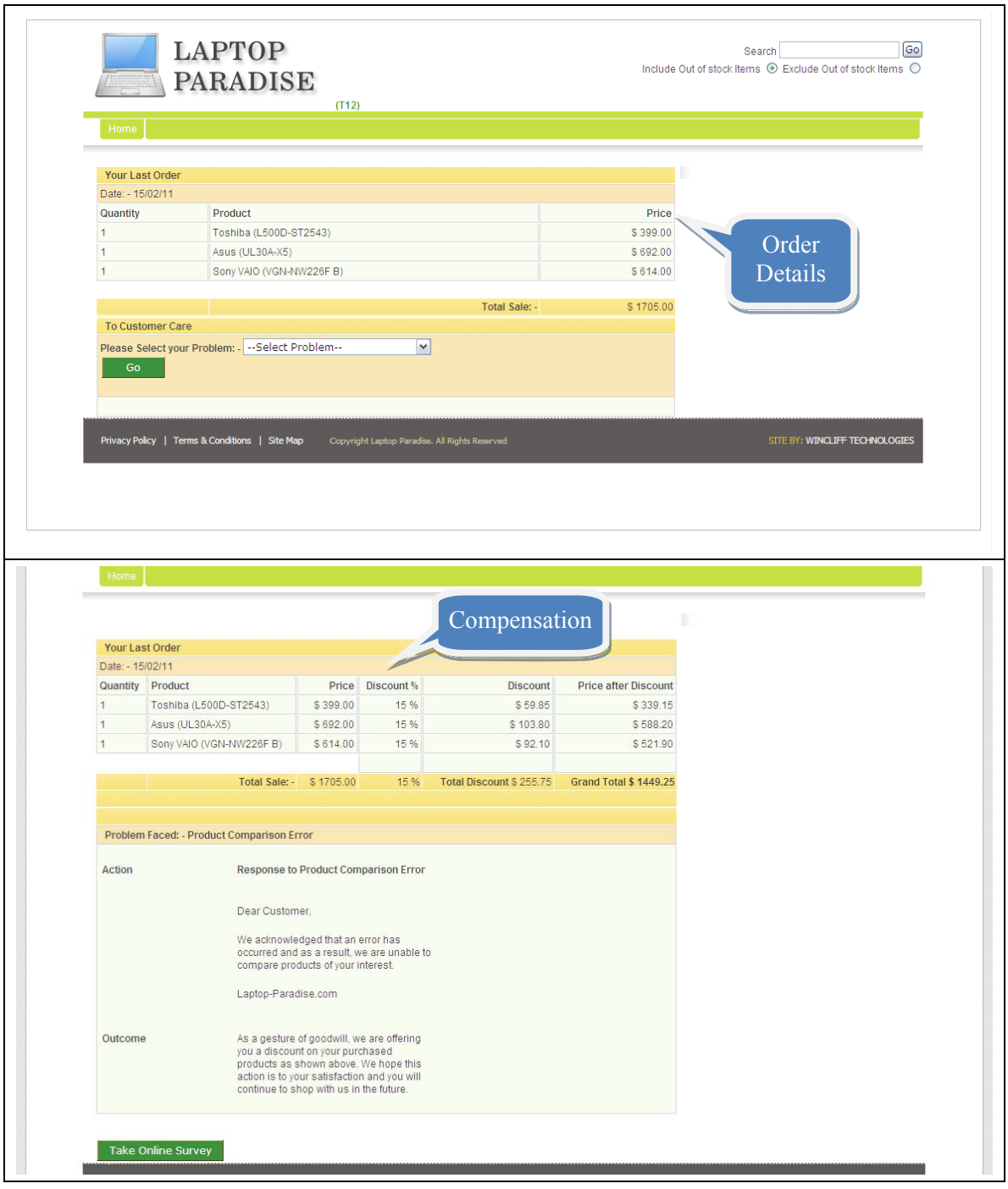
### 6.1.3 Manipulations of E-Service Recoveries

For manipulations of e-service recovery technologies, a review of existing e-commerce websites was conducted to generate ideas on manipulations of e-service re recovery technology that are realistic. Appendix D exemplifies e-service recovery technologies that have implemented by e-commerce websites in practice. Aligning our manipulations of e-service recovery technologies with Appendix D thus enhances the generalizability of our empirical findings. Further, as part of our manipulation checks, participants are asked to evaluate the realism of our recovery treatments in order to verify whether the treatments comply with actual practices on contemporary e-commerce websites.

***Compensation***: Compensation has been a standard practice of service recovery in which consumers are reimbursed for any damages they may have suffered as a consequence of failure incidents (Smith et al., 1999). Lovelock and Wirtz (2004) claimed that a stingy compensation may be

conceived by consumers as being worse off (or potentially offending) than when no compensation is offered. Past studies on compensation of service failures have manipulated the recovery measure as a discount on the eventual purchase, which ranges anywhere from 20% (Wirtz and Mattila, 2004) to 50% (McCollough et al., 2003). As it is not the intention of this research to quibble over the level of compensation for a given instance of e-service failure, the manipulation will take the form of a self-serving help center (see Figure 6.7) that walks participants through a series of options to diagnose the problem and eventually offers a discount of 15% on the prices of laptops chosen by participants. Given that laptop computers are high-priced products and realistic pricing is adhered to in this experiment, a discount of 15% already translates to a substantial amount of monetary value for participants. Moreover, this discount is over and above the incentive of 50% being awarded in the raffle contest. Because participants stand a chance of being rewarded with a further discount on the laptop price if they were to emerge as winners of the raffle contest, our compensation treatment would be effective as a form e-service recovery as verified in the pretests. Hereafter, we refer to our manipulation of compensation as '***discount***' for clarity.

**Figure 6.7: Illustration of Compensatory E-Service Recovery Technologies**




***Affinity***: Apology communicates respect and empathy to the consumer (Smith et al., 1999). Linguistic researchers have broken down an apology into four primary components, namely *remorse*, *responsibility admission*, *promise of forbearance* and *offer of repair* (Scher and Darley, 1997).

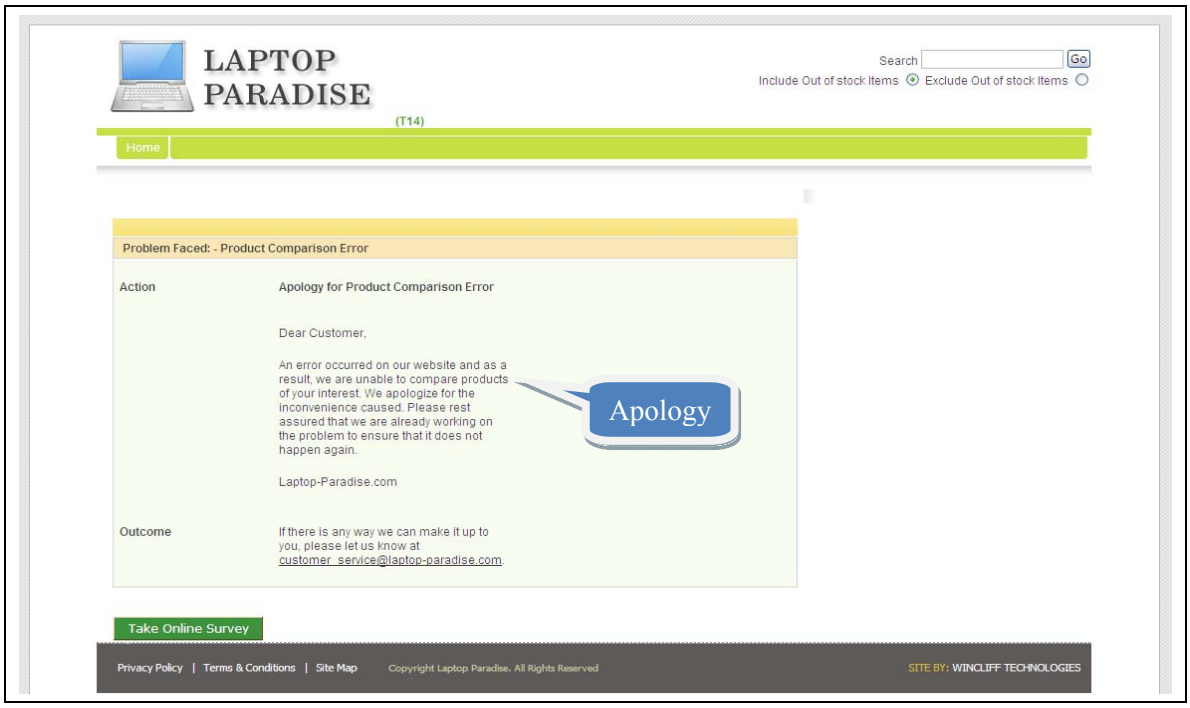
Among the four components, responsibility admission and remorse contains information that is deemed indispensable to an apology as they convey "admission of blameworthiness and regret for an undesirable event" (Darby and Schlenker, 1982, p. 352). Conversely, promises of forbearance boost the effectiveness of apologies through reassuring the victim that the transgression will not be repeated whereas offer of repair relates to the remedial function of an apology by proposing to repair the situation such that it is as if the transgression had not occurred in the first place (Scher and Darley, 1997). It should be noted that an offer of repair is distinct from compensation in that it does not specify the terms of the remedial action. Rather, it solicits the victim's input on what a viable remedy might be. Table 6.4 illustrates an example of an apology for e-service failures according to the four components.

**Table 6.4: Example of Apology for Informational Failure**

| Component | Purpose | Expression |
|---|---|---|
| **Responsibility Admission** | Acknowledge of the violation of normative or ethical standards of conduct | "An error occurred when we tried to process your order" |
| **Remorse** | Expression of remorse or regret over one's actions | "We apologize for the inconvenience" |
| **Promise of Forbearance** | Promise to not repeat one's transgression | "Rest assured, we are already working on the problem to ensure that it does not happen again" |
| **Offer of Repair** | Offer to make recompense for one's actions | "If there is any way we can make it up to you, please let us know" |

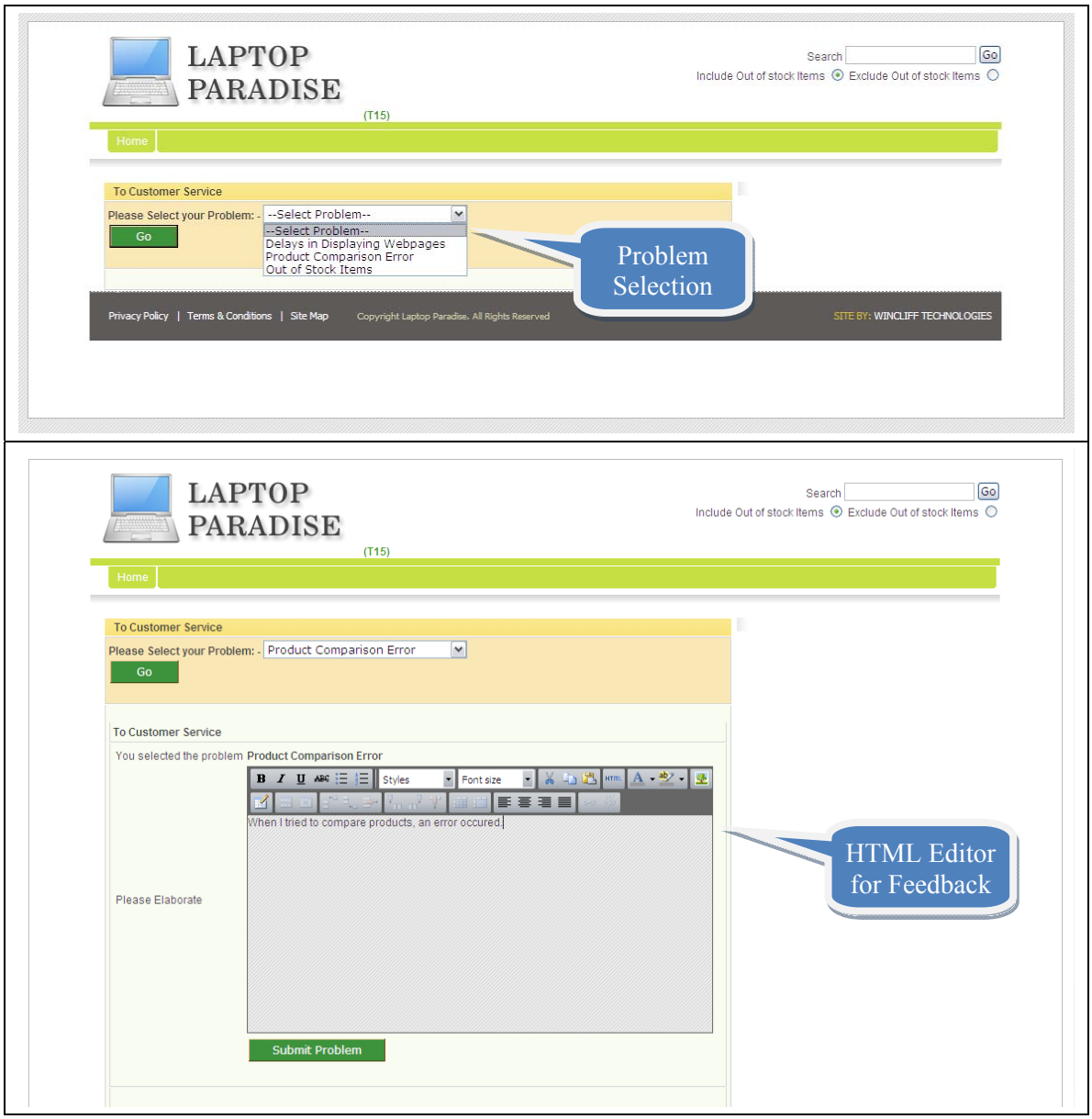
Since it has empirically shown that the number of apology components is deterministic of its effectiveness (Schlenker and Darby, 1981), we manipulated affinity through the creation of generic webpages (see Figure 6.8), each comprising all four apology components and catering to one of the three types of e-service failures. Further, we ensure that while the apologies were designed to admit to the existence of e-service failures on the part of the experimental websites, they do not specify the cause of these failures and instead, emphasize a desire for reconciliation. Otherwise, it may draw unnecessary attention to the cause of the failure and prompt failure attributions among participants, thereby confounding the empirical results. Hereafter, we refer to our manipulation of affinity as '***apology***' for clarity.

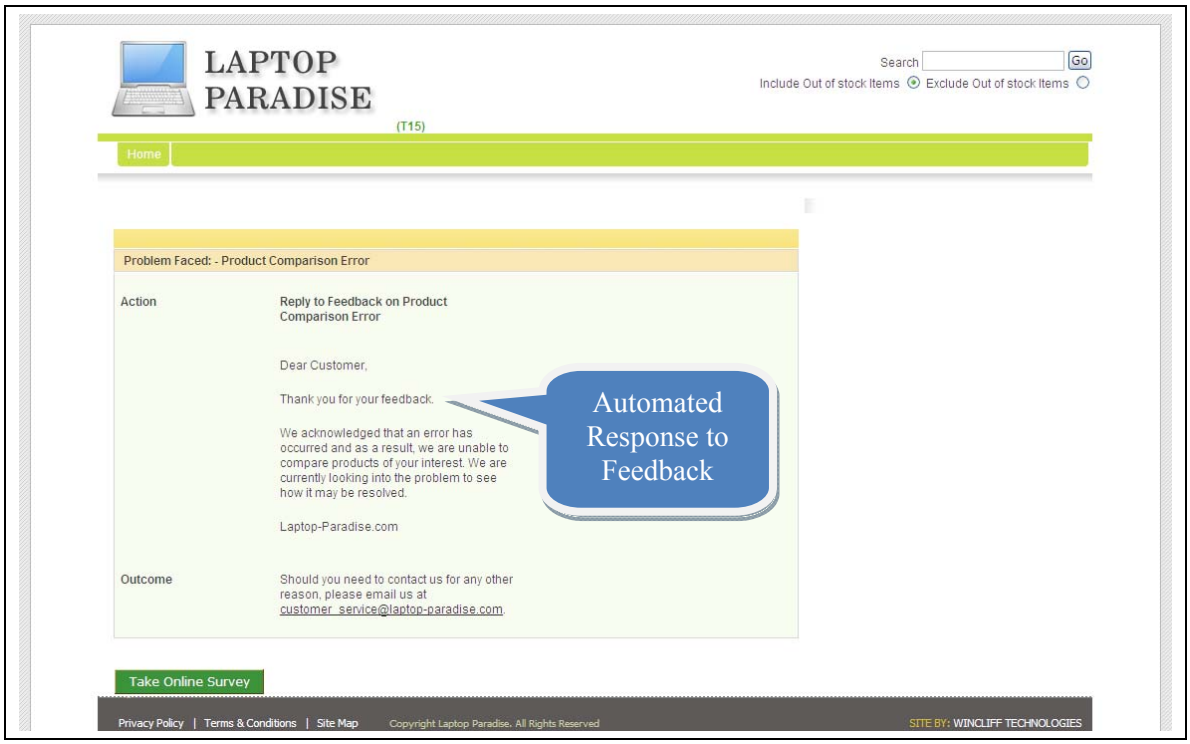
**Figure 6.8: Illustration of Affinity E-Service Recovery Technologies**




***Response Sensitivity***: Response sensitivity relates to the procedural aspects of recovery in that it is concerned with whether actions have been taken to address the failure incident (Smith et al., 1999). Within the e-commerce domain, response sensitivity can take the form of digitized evaluation forms with several predefined categories for participants to provide feedback on the e-service failure encountered (see Figure 6.9). After which, an automatic response email is generated to acknowledge receipt of participants' feedback and assure them that actions are being taken to address their feedback. While the response email is instantaneously generated, it is consistent with the empirical results of Smith et al. (1999), who indicated that an immediate response fares much better than a delayed response in alleviating consumers' dissatisfaction. Giving dissatisfied consumers a chance to voice their concerns with regards to the service failure encountered has been empirically verified to be a salient recovery measure by numerous researchers (e.g., Karande et al., 2007; McColl-Kennedy et al., 2003; Sparks and McColl-Kennedy, 2001). Hereafter, we refer to our manipulation of response sensitivity as '***feedback***' for clarity.

**Figure 6.9: Illustration of Response Sensitivity E-Service Recovery Technologies**






### 6.1.4 Measurement and Survey Questionnaires

The list of measurement items being employed in this study is summarized in Table 6.1.4.1. Apart from the standard e-service failure, e-service recovery and disconfirmed expectancy constructs, we included *controllability* as a manipulation check for our failure treatments and *realism* as a manipulation check for our recovery treatments.

***Controllability***: Controllability is the degree to which a consumer deems the cause of a service failure to be volitional or not (Hess et al., 2003). Attributions of controllability determine consumers' evaluations regarding the competency of vendors to prevent service failures from happening (Weiner, 2000). Bitner (1990) and Taylor (1994) discovered that negative reactions are more salient in consumers who attribute service failures to vendors' oversight. Likewise, Leong et al. (1997) found that consumers were more dissatisfied whenever vendors are perceived to exercise substantive control over the cause of service failures. As part of our failure manipulation, it is vital to ensure that participants deem our treatments to be controllable because otherwise, they may not regard it as an e-service failure and discount its impact.

***Realism***: We also verify the realism of our recovery manipulations. For our empirical findings to be valid and generalizable to e-commerce websites, we have to guarantee that our recovery treatments are comparable to what has been offered externally. Because we are interested to determine the extent to which existing recovery technologies on e-commerce websites are applicable to the alleviation of prevalent forms of e-service failures, it is imperative for our recovery treatments to be viewed by participants as identical to that offered by e-merchants.

With the exception of *controllability*, measurement items for the majority of latent variables are newly generated following standard psychometric procedures (Nunnally and Bernstein, 1994). This is not surprising given the novelty of the research topic. The phrasing of the measurement items were refined and validated from three rounds of pilot testing.

In developing the measurement items, we distinguished among constructs that were measured in the first survey questionnaire versus those that were measured in the second. Because informational failure, functional failure, system failure and controllability were manipulation checks for failure treatments, they were measured in the first survey questionnaire, but not the second. Conversely, compensation, affinity, response sensitivity and realism were manipulation checks for recovery treatments. Therefore, they were measured in the second survey questionnaire, but not the first. Only disconfirmed expectancy constructs were measured across both survey questionnaires as repeated measures. Further, to reduce instrumentation biases from contaminating the results, measurement items for e-service failure constructs were reverse coded. Because the e-service failure constructs assess the extent to which our treatments for informational, functional and system failures were successful (i.e., primary effects), the reverse coding of the measurement items guards against response bias by preventing participants from speculating about the phenomenon being investigated in the experiment and reacting in a fashion that they deem to be desirable.

**Table 6.5 List of Measurement Items [All items were measured using a 7-point Likert scale ranging from 'Strongly Agree' to 'Strongly Disagree']**

| Construct | Definition | Measures | 1st Survey Questionnaire | 2nd Survey Questionnaire |
|---|---|---|---|---|
| ***E-Service Failure Constructs*** **[Newly Created]** | | | | |
| **Informational Failure** | Extent to which information provided on an e-commerce website is incapable of adding value to consumers towards the achievement of their transactional objectives | Information provided on the website helps me in obtaining desired outcomes from the e-commerce transaction. (Reverse-Coded) | **Present** | **Absent** |
| | | Information provided on the website improves the outcomes I can attain from the e-commerce transaction. (Reverse-Coded) | **Present** | **Absent** |
| | | Information provided on the website is useful to me in getting preferred outcomes from the e-commerce transaction. (Reverse-Coded) | **Present** | **Absent** |
| **Functional Failure** | Extent to which functionalities provided on an e-commerce website are incapable of supporting consumers along the process of achieving their transactional objectives | Functionalities provide on the website support me in conducting the e-commerce transaction. (Reverse-Coded) | **Present** | **Absent** |
| | | Functions provide on the website make it easy for me to conduct the e-commerce transaction. (Reverse-Coded) | **Present** | **Absent** |
| | | Functions provided on the website assist me in conducting the e-commerce transaction. (Reverse-Coded) | **Present** | **Absent** |
| **System Failure** | Extent to which service content (i.e., information and functionalities) offered by an e-commerce website is not delivered in a efficient manner that facilitates consumers in the achievement of their transactional objectives | Service content on the website is readily accessible to me when conducting the e-commerce transaction. (Reverse-Coded) | **Present** | **Absent** |
| | | Service content on the website loads properly when conducting the e-commerce transaction. (Reverse-Coded) | **Present** | **Absent** |
| | | Service content on the e-government website is easy to access when conducting the e-commerce transaction. (Reverse-Coded) | **Present** | **Absent** |
| ***E-Service Recovery Constructs*** **[Newly Created]** | | | | |
| **Compensation** | Extent to which an e-commerce website offers services by which consumers can seek reimbursement for an e-service failure encountered | I can seek reimbursement for transactional problems I encountered on the website. | **Absent** | **Present** |
| | | I can seek to redress transactional problems I encountered on the website. | **Absent** | **Present** |
| | | I can seek compensation for transactional problems I encountered on the website. | **Absent** | **Present** |
| **Affinity** | Extent to which an e-commerce website offers services that empathize to consumers following an e-service failure encounter | Upon encountering transactional problems, the website tries to appease me. | **Absent** | **Present** |
| | | Upon encountering transactional problems, the website displays empathy with my situation. | **Absent** | **Present** |
| | | Upon encountering transactional | **Absent** | **Present** |

| Construct | Definition | Measures | 1st Survey Questionnaire | 2nd Survey Questionnaire |
|---|---|---|---|---|
| | | problems, the website is sympathetic to my plight. | | |
| **Responsive Sensitivity** | Extent to which an e-commerce website offers services that anticipate common concerns and provide mechanisms / guidelines to permit consumers to report and/or resolve an e-service failure encountered | The website prepares for future problems based on my feedback on the transactional problems I encountered. | **Absent** | **Present** |
| | | The website anticipates the potential transactional problems I could encounter by allowing me to provide feedback. | **Absent** | **Present** |
| | | The website plans for potential transactional problems I could encounter by being responsive to my feedback. | **Absent** | **Present** |
| ***Disconfirmed Expectancy Constructs*** **[Newly Created]** | | | | |
| **Disconfirmed Outcome Expectancy** | Extent to which the transactional outcome obtained from the e-commerce website is undesired by the consumer | The transactional outcome obtained from the e-commerce website is worse than what I expected. | **Present** | **Present** |
| | | My expectations about the transactional outcome obtained from e-commerce website are not met. | **Present** | **Present** |
| | | The transactional outcome obtained from the e-commerce website is below my expectations. | **Present** | **Present** |
| **Disconfirmed Process Expectancy** | Extent to which the transactional process on the e-commerce website does not proceed in a manner expected by the consumer | The transactional process on the e-commerce website is worse than what I expected. | **Present** | **Present** |
| | | My expectations about the transactional process on the e-commerce website are not met. | **Present** | **Present** |
| | | The transactional process on the e-commerce website is below my expectations. | **Present** | **Present** |
| **Disconfirmed Cost Expectancy** | Extent to which a consumer expends more resources than anticipated in transacting via an e-commerce website | The amount of effort I spent on transacting via the e-commerce website is more than I anticipated. | **Present** | **Present** |
| | | I expected the amount of effort I had spent on transacting via the e-commerce website to have been less. | **Present** | **Present** |
| | | The effort I spent on transacting via the e-commerce website is above my expectations. | **Present** | **Present** |
| ***Attribution & Realism*** | | | | |
| **Controllability** | Extent to which consumers view the cause of an e-service failure to be volitional or not [as adapted from Hess et al. (2007)] | The transactional problems I have encountered are controllable by the website. | **Present** | **Absent** |
| | | The transactional problems I have encountered are preventable by the website. | **Present** | **Absent** |
| | | The transactional problems I have encountered are avoidable by the website. | **Present** | **Absent** |
| **Realism** | Extent to which services | The website's response to the | **Absent** | **Present** |

| Construct | Definition | Measures | 1st Survey Questionnaire | 2nd Survey Questionnaire |
|---|---|---|---|---|
| | provided by an e-commerce website to address e-service failure are realistic and comparable to other e-commerce websites [Newly Created] | transactional problems I faced is realistic. | | |
| | | The website's response to the transactional problems I faced is similar to what other e-commerce websites would do. | **Absent** | **Present** |
| | | The website's response to the transactional problems I faced is believable. | **Absent** | **Present** |

## *6.2 Data Analysis*

Data was analyzed via a blend of ANOVA/MANOVA, one-sample *t*-tests and Dunnett's *t*-test. Whereas ANOVA/MANOVA provides a statistical test of mean differences across treatment groups, one-sample *t*-tests and Dunnett's *t*-test offer a way of comparing means from multiple treatment groups against a reference group or value.

***Data Sample***: A total of 644 participants were recruited for the experiment based on the aforementioned experimental procedures. Of these 644 participants, 69 responses were discarded due to data runs or for being outliners, resulting in an eventual sample of 575 data points for analysis. Table 6.6 summarizes the descriptive statistics for the sample pool of experimental participants. Paired *t*-tests between our sample and those documented in Cenfetelli et al.'s (2008) survey of 1,235 consumers on the service quality of e-commerce websites reveal no significant difference in demographic distribution (i.e., $t_{(15)} = 0.000$, $p = 1.000$).

**Table 6.6 Descriptive Statistics for Experimental Participants [Sample *N* = 575]**

| Demographic Characteristic | No. of Respondents [%] | Comparison | E-Commerce Transactions Frequency |
|---|---|---|---|
| **Gender** | | | |
| **Male** | **209 [36.35%]** | **34%** | **About once per month** |
| **Female** | **365 [63.48%]** | **66%** | **About once per month** |
| **Unwilling to disclose** | **1 [0.17%]** | **0%** | **Less than once per year** |
| **Age** | | | |
| **Age 19-29** | **78 [13.57%]** | **10%** | **About once per month** |
| **Age 30-49** | **266 [46.26%]** | **60%** | **About once per month** |

| Demographic Characteristic | No. of Respondents [%] | Comparison[2] | E-Commerce Transactions Frequency |
|---|---|---|---|
| Age 50-64 | 193 [33.57%] | 28% | About once per month |
| Age 65+ | 36 [6.26%] | 2% | About once per 3 months |
| Unwilling to disclose | 2 [0.35%] | 0% | About once per 3 months |
| Educational Level | | | |
| College education or higher | 439 [76.35%] | 87% | About once per month |
| Less than college education | 134 [23.30%] | 13% | About once per 3 months |
| Unwilling to disclose | 2 [0.35%] | 0% | About once per 3 months |
| Income | | | |
| $0-$29,999 | 196 [34.09%] | 15% | About once per 3 months |
| $30,000-$50,000 | 124 [21.57%] | 24% | About once per month |
| $50,000-$75,000 | 118 [20.52%] | 28% | About once per month |
| $75,000+ | 118 [20.52%] | 33% | About once per fortnight |
| Unwilling to disclose | 19 [3.30%] | 0% | About once per 3 months |

[2] Cenfetelli et al. (2008)

***Measurement Model***: All constructs were modeled reflectively. The test of our measurement model involves the estimation of internal consistency as well as the convergent and discriminant validity of the measurement items included in our survey instrument. We assessed the measurement properties of the reflective items in the model using Cronbach's alpha (Nunnally and Bernstein 1994), composite reliability, and the Average Variance Extracted (AVE) (Fornell and Larcker 1981). As illustrated in Table 6.7, all constructs far exceed recommended thresholds, thus supporting convergent validity.

**Table 6.7 Inter-Construct Correlation Matrix**

| | AVE [> 0.50] | Composite Reliability [> 0.70] | Cronbach's Alpha [> 0.70] | AFF | CP | CTR | FF | IF | PDCE | PDOE | PDPE | DCE | DOE | DPE | REA | RES | SF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **AFF** | **0.894** | **0.962** | **0.941** | **0.946** | | | | | | | | | | | | | |
| **CP** | **0.808** | **0.927** | **0.885** | 0.188 | **0.899** | | | | | | | | | | | | |
| **CTR** | **0.859** | **0.948** | **0.924** | 0.079 | 0.016 | **0.927** | | | | | | | | | | | |
| **FF** | **0.918** | **0.971** | **0.956** | 0.138 | 0.162 | -0.083 | **0.958** | | | | | | | | | | |
| **IF** | **0.936** | **0.978** | **0.966** | 0.147 | 0.110 | -0.018 | 0.516 | **0.967** | | | | | | | | | |
| **PDCE** | **0.792** | **0.919** | **0.870** | -0.171 | -0.143 | 0.192 | -0.318 | -0.249 | **0.890** | | | | | | | | |
| **PDOE** | **0.910** | **0.968** | **0.950** | -0.253 | -0.353 | 0.096 | -0.365 | -0.327 | 0.467 | **0.954** | | | | | | | |
| **PDPE** | **0.957** | **0.985** | **0.977** | -0.290 | -0.216 | 0.153 | -0.413 | -0.395 | 0.579 | 0.736 | **0.978** | | | | | | |

| | AVE [> 0.50] | Composite Reliability [> 0.70] | Cronbach's Alpha [> 0.70] | AFF | CP | CTR | FF | IF | PDCE | PDOE | PDPE | DCE | DOE | DPE | REA | RES | SF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DCE** | **0.757** | **0.903** | **0.846** | -0.142 | -0.243 | 0.099 | -0.284 | -0.246 | 0.587 | 0.454 | 0.466 | **0.870** | | | | | |
| **DOE** | **0.927** | **0.974** | **0.961** | -0.201 | -0.201 | 0.220 | -0.504 | -0.464 | 0.576 | 0.729 | 0.781 | 0.487 | **0.963** | | | | |
| **DPE** | **0.949** | **0.983** | **0.973** | -0.200 | -0.170 | 0.246 | -0.466 | -0.381 | 0.511 | 0.609 | 0.695 | 0.416 | 0.839 | **0.974** | | | |
| **REA** | **0.761** | **0.904** | **0.843** | 0.279 | 0.183 | -0.074 | 0.428 | 0.406 | -0.332 | -0.516 | -0.568 | -0.290 | -0.557 | -0.502 | **0.872** | | |
| **RES** | **0.838** | **0.939** | **0.904** | 0.234 | 0.165 | 0.095 | 0.182 | 0.187 | -0.181 | -0.278 | -0.285 | -0.192 | -0.259 | -0.150 | 0.252 | **0.915** | |
| **SF** | **0.845** | **0.942** | **0.908** | 0.144 | 0.136 | -0.092 | 0.507 | 0.431 | -0.285 | -0.344 | -0.384 | -0.289 | -0.481 | -0.400 | 0.444 | 0.180 | **0.919** |

AFF – Affinity; CP – Compensation; CTR – Controllability; FF – Functional Failure; IF – Informational Failure; PDCE – Post Disconfirmed Cost Expectancy; PDOE – Post Disconfirmed Outcome Expectancy; PDPE – Post Disconfirmed Process Expectancy; DCE – Pre Disconfirmed Cost Expectancy; DOE – Pre Disconfirmed Outcome Expectancy; DPE – Pre Disconfirmed Process Expectancy; REA – Realism; RES – Response Sensitivity; SF – System Failure

Barclay et al. (1995) put forward two criteria for determining discriminant validity. First, the square root of AVE for each construct should be greater than its correlations with any other construct. This indicates that the construct shares more variance with its own measures than it shares with other construct (Fornell and Larcker 1981). As can be seen from the inter-construct correlation matrix in Table 6.7, all construct display sufficient discriminant validity. Second, the factorial loading for an item should be higher for the construct it is supposed to measure than for any other construct. This criterion holds for the constructs in this study as verified by the factorial loadings and cross-loadings of measures shown in Table 6.8. A more stringent guideline was recommended by Gefen and Straub (2005), who maintained that a minimum difference of 0.10 between item loadings and cross-loadings is compulsory to state a claim of discriminant validity. As can be inferred from Table 6.8, all items satisfy this strict guideline for discriminant validity.

**Table 6.8 Loadings and Cross-Loadings of Measurement Items**

| | AFF | CP | CTR | DCE | DOE | DPE | FF | IF | PDCE | PDOE | PDPE | REA | RES | SF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **AFF1** | **0.911** | 0.170 | 0.088 | -0.103 | -0.148 | -0.154 | 0.065 | 0.092 | -0.165 | -0.211 | -0.234 | 0.219 | 0.168 | 0.102 |
| **AFF2** | **0.960** | 0.175 | 0.074 | -0.142 | -0.205 | -0.195 | 0.152 | 0.157 | -0.161 | -0.236 | -0.285 | 0.273 | 0.231 | 0.138 |
| **AFF3** | **0.964** | 0.188 | 0.066 | -0.151 | -0.207 | -0.210 | 0.159 | 0.156 | -0.162 | -0.263 | -0.295 | 0.288 | 0.252 | 0.161 |
| **CP1** | 0.180 | **0.893** | 0.019 | -0.230 | -0.221 | -0.166 | 0.163 | 0.135 | -0.144 | -0.345 | -0.235 | 0.181 | 0.178 | 0.171 |
| **CP2** | 0.179 | **0.911** | 0.014 | -0.204 | -0.143 | -0.149 | 0.135 | 0.074 | -0.108 | -0.295 | -0.163 | 0.132 | 0.119 | 0.086 |
| **CP3** | 0.144 | **0.893** | 0.007 | -0.214 | -0.158 | -0.138 | 0.129 | 0.072 | -0.124 | -0.297 | -0.166 | 0.171 | 0.133 | 0.086 |
| **CTR1** | 0.095 | 0.023 | **0.947** | 0.042 | 0.155 | 0.193 | -0.055 | 0.002 | 0.157 | 0.054 | 0.123 | -0.046 | 0.114 | -0.065 |
| **CTR2** | 0.037 | 0.005 | **0.922** | 0.126 | 0.264 | 0.271 | -0.092 | -0.036 | 0.220 | 0.123 | 0.177 | -0.097 | 0.078 | -0.107 |

| | AFF | CP | CTR | DCE | DOE | DPE | FF | IF | PDCE | PDOE | PDPE | REA | RES | SF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CTR3** | 0.062 | 0.007 | **0.912** | 0.149 | 0.247 | 0.259 | -0.102 | -0.035 | 0.187 | 0.124 | 0.152 | -0.086 | 0.055 | -0.105 |
| **DCE1** | -0.118 | -0.193 | 0.085 | **0.881** | 0.468 | 0.389 | -0.258 | -0.206 | 0.526 | 0.443 | 0.448 | -0.252 | -0.126 | -0.234 |
| **DCE2** | -0.132 | -0.262 | 0.105 | **0.914** | 0.461 | 0.400 | -0.275 | -0.244 | 0.522 | 0.425 | 0.441 | -0.309 | -0.226 | -0.306 |
| **DCE3** | -0.122 | -0.149 | 0.052 | **0.812** | 0.298 | 0.262 | -0.186 | -0.179 | 0.491 | 0.280 | 0.283 | -0.152 | -0.126 | -0.186 |
| **DOE1** | -0.172 | -0.198 | 0.194 | 0.456 | **0.955** | 0.781 | -0.476 | -0.446 | 0.548 | 0.703 | 0.741 | -0.551 | -0.279 | -0.471 |
| **DOE2** | -0.193 | -0.192 | 0.231 | 0.478 | **0.972** | 0.813 | -0.485 | -0.448 | 0.554 | 0.698 | 0.756 | -0.537 | -0.236 | -0.467 |
| **DOE3** | -0.216 | -0.190 | 0.211 | 0.472 | **0.961** | 0.829 | -0.496 | -0.445 | 0.561 | 0.703 | 0.759 | -0.520 | -0.232 | -0.451 |
| **DPE1** | -0.202 | -0.181 | 0.210 | 0.396 | 0.807 | **0.969** | -0.463 | -0.376 | 0.483 | 0.591 | 0.674 | -0.490 | -0.147 | -0.374 |
| **DPE2** | -0.186 | -0.144 | 0.247 | 0.413 | 0.822 | **0.977** | -0.450 | -0.369 | 0.513 | 0.586 | 0.679 | -0.486 | -0.152 | -0.394 |
| **DPE3** | -0.196 | -0.171 | 0.263 | 0.409 | 0.823 | **0.977** | -0.447 | -0.369 | 0.499 | 0.602 | 0.679 | -0.491 | -0.140 | -0.402 |
| **FF1** | 0.124 | 0.135 | -0.073 | -0.262 | -0.477 | -0.441 | **0.959** | 0.525 | -0.278 | -0.341 | -0.369 | 0.401 | 0.157 | 0.501 |
| **FF2** | 0.146 | 0.154 | -0.103 | -0.290 | -0.510 | -0.461 | **0.962** | 0.487 | -0.339 | -0.366 | -0.431 | 0.427 | 0.186 | 0.481 |
| **FF3** | 0.126 | 0.176 | -0.061 | -0.264 | -0.461 | -0.437 | **0.953** | 0.471 | -0.297 | -0.342 | -0.387 | 0.403 | 0.179 | 0.475 |
| **IF1** | 0.131 | 0.087 | -0.009 | -0.237 | -0.437 | -0.357 | 0.497 | **0.965** | -0.238 | -0.303 | -0.367 | 0.385 | 0.186 | 0.416 |
| **IF2** | 0.150 | 0.112 | -0.013 | -0.230 | -0.455 | -0.373 | 0.498 | **0.972** | -0.238 | -0.333 | -0.380 | 0.411 | 0.191 | 0.424 |
| **IF3** | 0.145 | 0.121 | -0.030 | -0.248 | -0.453 | -0.375 | 0.502 | **0.965** | -0.247 | -0.312 | -0.398 | 0.381 | 0.166 | 0.410 |
| **PDCE1** | -0.129 | -0.104 | 0.160 | 0.544 | 0.520 | 0.455 | -0.266 | -0.235 | **0.898** | 0.426 | 0.504 | -0.293 | -0.148 | -0.288 |
| **PDCE2** | -0.174 | -0.141 | 0.198 | 0.507 | 0.568 | 0.490 | -0.332 | -0.244 | **0.908** | 0.463 | 0.577 | -0.348 | -0.185 | -0.251 |
| **PDCE3** | -0.149 | -0.135 | 0.145 | 0.524 | 0.430 | 0.409 | -0.237 | -0.178 | **0.863** | 0.342 | 0.445 | -0.226 | -0.144 | -0.222 |
| **PDOE1** | -0.210 | -0.325 | 0.068 | 0.419 | 0.679 | 0.543 | -0.322 | -0.276 | 0.408 | **0.932** | 0.648 | -0.432 | -0.257 | -0.309 |
| **PDOE2** | -0.243 | -0.346 | 0.095 | 0.440 | 0.715 | 0.601 | -0.363 | -0.332 | 0.467 | **0.966** | 0.730 | -0.518 | -0.270 | -0.328 |
| **PDOE3** | -0.267 | -0.338 | 0.110 | 0.441 | 0.690 | 0.595 | -0.358 | -0.324 | 0.459 | **0.963** | 0.723 | -0.522 | -0.269 | -0.347 |
| **PDPE1** | -0.258 | -0.204 | 0.157 | 0.443 | 0.752 | 0.665 | -0.411 | -0.398 | 0.551 | 0.737 | **0.974** | -0.562 | -0.290 | -0.378 |
| **PDPE2** | -0.305 | -0.219 | 0.148 | 0.460 | 0.762 | 0.684 | -0.401 | -0.373 | 0.568 | 0.706 | **0.980** | -0.557 | -0.287 | -0.385 |
| **PDPE3** | -0.288 | -0.212 | 0.144 | 0.464 | 0.777 | 0.693 | -0.400 | -0.387 | 0.579 | 0.715 | **0.980** | -0.546 | -0.260 | -0.362 |
| **REA1** | 0.293 | 0.239 | -0.089 | -0.296 | -0.559 | -0.485 | 0.426 | 0.395 | -0.350 | -0.555 | -0.588 | **0.928** | 0.267 | 0.406 |
| **REA2** | 0.145 | -0.002 | -0.120 | -0.125 | -0.324 | -0.329 | 0.277 | 0.267 | -0.150 | -0.208 | -0.264 | **0.733** | 0.087 | 0.337 |
| **REA3** | 0.262 | 0.182 | -0.008 | -0.299 | -0.531 | -0.476 | 0.396 | 0.381 | -0.324 | -0.509 | -0.561 | **0.940** | 0.261 | 0.417 |
| **RES1** | 0.230 | 0.184 | 0.063 | -0.185 | -0.272 | -0.174 | 0.191 | 0.185 | -0.205 | -0.283 | -0.302 | 0.291 | **0.909** | 0.191 |
| **RES2** | 0.224 | 0.135 | 0.108 | -0.163 | -0.204 | -0.111 | 0.165 | 0.169 | -0.130 | -0.236 | -0.232 | 0.182 | **0.912** | 0.143 |
| **RES3** | 0.183 | 0.128 | 0.095 | -0.178 | -0.227 | -0.119 | 0.136 | 0.156 | -0.155 | -0.239 | -0.241 | 0.206 | **0.924** | 0.156 |
| **SF1** | 0.173 | 0.141 | -0.040 | -0.291 | -0.430 | -0.352 | 0.506 | 0.443 | -0.289 | -0.323 | -0.374 | 0.408 | 0.182 | **0.932** |
| **SF2** | 0.096 | 0.127 | -0.153 | -0.275 | -0.468 | -0.391 | 0.427 | 0.365 | -0.281 | -0.336 | -0.340 | 0.400 | 0.155 | **0.911** |
| **SF3** | 0.131 | 0.105 | -0.057 | -0.230 | -0.426 | -0.359 | 0.465 | 0.380 | -0.214 | -0.289 | -0.344 | 0.415 | 0.160 | **0.914** |

AFF – Affinity; CP – Compensation; CTR – Controllability; FF – Functional Failure; IF – Informational Failure; PDCE – Post Disconfirmed Cost Expectancy; PDOE – Post Disconfirmed Outcome Expectancy; PDPE – Post Disconfirmed Process Expectancy; DCE – Pre Disconfirmed Cost Expectancy; DOE – Pre Disconfirmed Outcome Expectancy; DPE – Pre Disconfirmed Process Expectancy; REA – Realism; RES – Response Sensitivity; SF – System Failure

### 6.2.1 Manipulations of E-Service Failures

Manipulation checks were performed for our failure treatments. To begin, we spilt the entire sample into the four failure treatments and the descriptive statistics for each treatment condition are summarized in Table 6.9.

**Table 6.9 Descriptive Statistics for E-Service Failure Constructs**

| Dependent Variable | Failure Treatment | *N* | Mean[2] | Std. Deviation |
|---|---|---|---|---|
| Informational Failure | No Failure | 23 | 2.2174 | 1.04803 |
| | Out-of-Stock | 184 | 4.2532 | 1.23079 |
| | Missing Comparison | 184 | 2.5527 | 1.35368 |
| | Delay | 184 | 2.4128 | 1.25157 |
| | Total | 575 | 3.0387 | 1.51981 |
| Functional Failure | No Failure | 23 | 2.3483 | 1.05638 |
| | Out-of-Stock | 184 | 2.8115 | 1.50415 |
| | Missing Comparison | 184 | 4.2320 | 1.20897 |
| | Delay | 184 | 2.5070 | 1.35145 |
| | Total | 575 | 3.1501 | 1.54358 |
| System Failure | No Failure | 23 | 2.2752 | 1.00891 |
| | Out-of-Stock | 184 | 2.8442 | 1.33520 |
| | Missing Comparison | 184 | 2.8132 | 1.41123 |
| | Delay | 184 | 4.2107 | 1.08945 |
| | Total | 575 | 3.2488 | 1.43825 |

ANOVA results indicate statistically significant differences in *informational failure* [$F_{(3)}$ = 82.96; $p$ = .000], *functional failure* [$F_{(3)}$ = 59.89; $p$ = .000] and *system failure* [$F_{(3)}$ = 52.59; $p$ = .000] among participants assigned to different failure treatments (see Table 6.10). This implies that there are substantial differences in how participants perceive the presence of informational, functional and system failures across the four treatment conditions.

**Table 6.10 ANOVA Results for E-Service Failure Constructs [Manipulation Checks]**

| Dependent Variable | Failure Treatment | Type III Sum of Squares | *df* | Mean Square | *F* | Sig. |
|---|---|---|---|---|---|---|
| Informational Failure | Between Groups | 402.462 | 3 | 134.154 | 82.959 | .000 |
| | Within Groups | 923.371 | 571 | 1.617 | | |
| | Total | 1325.834 | 574 | | | |

[2] Because measurement items for e-service failure constructs were reverse coded, a higher mean would correspond to participants' acknowledgement of the presence of an e-service failure.

| Dependent Variable | Failure Treatment | Type III Sum of Squares | *df* | Mean Square | *F* | Sig. |
|---|---|---|---|---|---|---|
| Functional Failure | Between Groups | 327.339 | 3 | 109.113 | 59.891 | .000 |
| | Within Groups | 1040.287 | 571 | 1.822 | | |
| | Total | 1367.626 | 574 | | | |
| System Failure | Between Groups | 257.058 | 3 | 85.686 | 52.593 | .000 |
| | Within Groups | 930.296 | 571 | 1.629 | | |
| | Total | 1187.354 | 574 | | | |

Although our ANOVA results detect significant variations among failure treatments with regards to participants' perception of the presence of informational, functional and system failures, the analysis is unable to pinpoint the exact treatment(s) that gives rise to these perceptual differences. Dunnett's *t*-test was thus conducted to compare perceptual differences between participants assigned to each of the three failure treatments and those allocated to the control group (see Table 6.11). Table 6.11 substantiates our failure manipulations through three observations: (1) participants assigned to the *out-of-stock* treatment condition reported a greater presence of *informational failure* as compared to the control group; (2) participants assigned to the *missing comparison* treatment condition reported a greater presence of *functional failure* as compared to the control group, and; (3) participants assigned to the *delay* treatment condition reported a greater presence of *system failure* as compared to the control group. It is also observable from Table 6.11 that there are traces of negative spillover effects from each treatment condition: each failure treatment generally results in a worse off evaluation for all aspects (i.e., informational, functional and system) of the service encounter as compared to the control group. This is especially true for the system aspects of the experimental websites whereby participants assigned to the *out-of-stock* and *missing comparison* treatment conditions reported a slightly greater presence of *system failure* as compared to the control group.

**Table 6.11 Dunnett *t*-Test (2-sided)[a] for E-Service Failure Constructs**

| Dependent Variable | (I) Failure Treatment | (J) Control | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| Informational Failure | Out-of-Stock | No Failure | 2.03582* | .000 |
| | Missing Comparison | No Failure | .33527 | .351 |
| | Delay | No Failure | .19543 | .671 |

| Dependent Variable | (I) Failure Treatment | (J) Control | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| Functional Failure | Out-of-Stock | No Failure | .46321 | .194 |
| | Missing Comparison | No Failure | 1.88370* | .000 |
| | Delay | No Failure | .15875 | .793 |
| System Failure | Out-of-Stock | No Failure | .56902+ | .076 |
| | Missing Comparison | No Failure | .53799+ | .097 |
| | Delay | No Failure | 1.93543* | .000 |

a. Dunnett t-tests treat one group as a control, and compare all other groups against it.

*. The mean difference is significant at the 0.05 level.

+. The mean difference is significant at the 0.10 level.

The validity of our failure manipulations is further corroborated by conducting Dunnett's T3 test, which compares and contrasts the four treatment conditions against one another (see Appendix E). As illustrated in Appendix E, each failure manipulation (i.e., *out-of-stock*, *missing comparison* and *delay*) has a statistically significant effect on participants' evaluation of its corresponding failure construct as compared to other treatment conditions.

Next, we performed a manipulation check on participants' perception of the controllability of our failure manipulations. Table 6.12 summarizes the descriptive statistics for controllability according to the different failure treatments.

**Table 6.12 Descriptive Statistics for Controllability**

| Failure Treatment | *N* | Mean | Std. Deviation |
|---|---|---|---|
| Out-of-Stock | 184 | 3.2954 | 1.31900 |
| Missing Comparison | 184 | 3.3912 | 1.24015 |
| Delay | 184 | 3.5054 | 1.25163 |
| Total | 552 | 3.3974 | 1.27133 |

We conducted a one-sample *t*-test against the neutral pivot value of *4.0* in our measurement scale (see Table 6.13): we tested the null hypothesis that controllability is unrelated to e-service failures. As illustrated in Table 6.13, participants assigned to the *out-of-stock* [$t_{(183)}$ = -7.246; $p$ = .000], *missing comparison* [$t_{(183)}$ = -6.659; $p$ = .000] and *delay* [$t_{(183)}$ = -5.360; $p$ = .000] treatment conditions reported a statistically significant mean difference in controllability, thereby attesting to participants' belief that our failure manipulations are controllable and can be avoided.

**Table 6.13 One-Sample *t*-Test for Controllability**

| Failure Treatment | Test Value = 4.000 | | | |
|---|---|---|---|---|
| | *t* | *df* | Sig. (2-tailed) | Mean Difference |
| Out-of-Stock | -7.246 | 183 | .000 | -.70457 |
| Missing Comparison | -6.659 | 183 | .000 | -.60880 |
| Delay | -5.360 | 183 | .000 | -.49457 |

Conversely, ANOVA results indicate statistically insignificant differences among failure treatments with regards to participants' perception of controllability [$F_{(2)} = 1.260$; $p = .285$] (see Table 6.14). This implies that participants do not regard one particular failure manipulation as being more controllable than others.

**Table 6.14 ANOVA Results for Controllability**

| Failure Treatment | Type III Sum of Squares | *df* | Mean Square | *F* | Sig. |
|---|---|---|---|---|---|
| Between Groups | 4.068 | 2 | 2.034 | 1.260 | .285 |
| Within Groups | 886.503 | 549 | 1.615 | | |
| Total | 890.570 | 551 | | | |

Our ANOVA results are further corroborated based on Dunnett's T3 test for controllability among failure treatments, which reveal insignificant mean differences across treatment conditions (see Table 6.15).

**Table 6.15 Dunnett T3 Test for Controllability**

| (I) Failure Treatment | (J) Failure Treatment | Mean Difference (I-J) | Sig. |
|---|---|---|---|
| Out-of-Stock | Missing Comparison | -.09576 | .854 |
| | Delay | -.21000 | .314 |
| Missing Comparison | Out-of-Stock | .09576 | .854 |
| | Delay | -.11424 | .761 |
| Delay | Out-of-Stock | .21000 | .314 |
| | Missing Comparison | .11424 | .761 |

### 6.2.2 Manipulations of E-Service Recoveries

Like e-service failures, manipulation checks were performed for our recovery treatments. Table 6.16 summarizes the descriptive statistics for each of the eight recovery treatment condition.

**Table 6.16 Descriptive Statistics for E-Service Recovery Constructs**

| Dependent Variable | Recovery Treatment | *N* | Mean | Std. Deviation |
|---|---|---|---|---|
| Compensation | No Recovery | 69 | 4.9180 | 1.48686 |
| | Feedback | 69 | 4.5703 | 1.37225 |
| | Apology | 69 | 4.6335 | 1.36414 |
| | Apology x Feedback | 69 | 4.6475 | 1.50609 |
| | Discount | 69 | 2.3722 | .93190 |
| | Discount x Feedback | 69 | 2.4203 | .94941 |
| | Discount x Apology | 69 | 2.4730 | .95557 |
| | Discount x Apology x Feedback | 69 | 2.5413 | 1.00678 |
| | Total | 552 | 3.5720 | 1.65508 |
| Affinity | No Recovery | 69 | 4.4539 | 1.70836 |
| | Feedback | 69 | 4.0001 | 1.76222 |
| | Apology | 69 | 2.7006 | .94484 |
| | Apology x Feedback | 69 | 2.2894 | 1.04928 |
| | Discount | 69 | 3.4296 | 1.97331 |
| | Discount x Feedback | 69 | 3.7346 | 2.17624 |
| | Discount x Apology | 69 | 2.3720 | .97909 |
| | Discount x Apology x Feedback | 69 | 2.0628 | 1.03113 |
| | Total | 552 | 3.1304 | 1.73249 |
| Response Sensitivity | No Recovery | 69 | 4.1065 | 1.83361 |
| | Feedback | 69 | 2.7775 | .97148 |
| | Apology | 69 | 4.2758 | 1.52770 |
| | Apology x Feedback | 69 | 2.4058 | 1.02557 |
| | Discount | 69 | 3.6136 | 1.73377 |
| | Discount x Feedback | 69 | 2.3671 | .98234 |
| | Discount x Apology | 69 | 3.6761 | 1.88099 |
| | Discount x Apology x Feedback | 69 | 2.4541 | 1.04006 |
| | Total | 552 | 3.2096 | 1.60153 |

MANOVA was performed to detect whether between-subject differences exist across different recovery treatment conditions (see Table 6.17). A series of observations can be made.

First, there are statistically significant differences in *compensation* [$F_{(1)} = 501.32$; $p = .000$], *affinity* [$F_{(1)} = 11.50$; $p = .001$] and *response sensitivity* [$F_{(1)} = 7.97$; $p = .005$] for the *discount* treatment condition. This indicates that participants assigned to the discount treatment condition

perceived the presence of compensation, affinity and response sensitivity differently from those who have not been exposed to the same recovery treatment.

Second, there is a statistically significant difference in *affinity* [$F_{(1)} = 358.41$; $p = .000$], but not in *compensation* [$F_{(1)} = 0.15$; $p = .695$] and *response sensitivity* [$F_{(1)} = 0.00$; $p = .960$] for the *apology* treatment condition. This indicates that participants assigned to the apology treatment condition perceived the presence of affinity differently from those who have not been exposed to the same recovery treatment.

Third, there is a statistically significant difference in *response sensitivity* [$F_{(1)} = 156.19$; $p = .000$], but not in *compensation* [$F_{(1)} = 0.00$; $p = .985$] and *affinity* [$F_{(1)} = 1.81$; $p = .179$] for the *feedback* treatment condition. This indicates that participants assigned to the feedback treatment condition perceived the presence of response sensitivity differently from those who have not been exposed to the same recovery treatment.

Finally, none of the interaction effects are statistically significant. Combining the four observations, it would seem to substantiate the validity of our recovery treatments.

**Table 6.17 Tests of Between-Subjects Effects for E-Service Recovery Constructs [Recovery Treatments ➔ E-Service Recovery Constructs]**

| Recovery Treatment | Dependent Variable | Type III Sum of Squares | *df* | Mean Square | *F* | Sig. | Partial Eta Squared | Observed Power |
|---|---|---|---|---|---|---|---|---|
| Discount | Compensation | 715.575 | 1 | 715.575 | 501.316 | .000 | .469 | 1.000 |
| | Affinity | 25.655 | 1 | 25.655 | 11.500 | .001 | .020 | .923 |
| | Response Sensitivity | 15.489 | 1 | 15.489 | 7.965 | .005 | .014 | .804 |
| Apology | Compensation | .220 | 1 | .220 | .154 | .695 | .000 | .068 |
| | Affinity | 358.407 | 1 | 358.407 | 160.657 | .000 | .221 | 1.000 |
| | Response Sensitivity | .005 | 1 | .005 | .002 | .960 | .000 | .050 |
| Feedback | Compensation | .001 | 1 | .001 | .001 | .985 | .000 | .050 |
| | Affinity | 4.041 | 1 | 4.041 | 1.812 | .179 | .003 | .269 |
| | Response Sensitivity | 303.725 | 1 | 303.725 | 156.191 | .000 | .216 | 1.000 |
| Discount x Apology | Compensation | .062 | 1 | .062 | .044 | .835 | .000 | .055 |
| | Affinity | 4.650 | 1 | 4.650 | 2.085 | .149 | .004 | .302 |
| | Response Sensitivity | .816 | 1 | .816 | .420 | .517 | .001 | .099 |
| Discount x Feedback | Compensation | .263 | 1 | .263 | .184 | .668 | .000 | .071 |
| | Affinity | 5.568 | 1 | 5.568 | 2.496 | .115 | .004 | .351 |

| Recovery Treatment | Dependent Variable | Type III Sum of Squares | *df* | Mean Square | *F* | Sig. | Partial Eta Squared | Observed Power |
|---|---|---|---|---|---|---|---|---|
| | Response Sensitivity | 5.263 | 1 | 5.263 | 2.706 | .100 | .005 | .376 |
| Apology x Feedback | Compensation | .012 | 1 | .012 | .008 | .928 | .000 | .051 |
| | Affinity | 2.556 | 1 | 2.556 | 1.146 | .285 | .002 | .188 |
| | Response Sensitivity | 3.039 | 1 | 3.039 | 1.563 | .212 | .003 | .239 |
| Discount x Apology x Feedback | Compensation | .354 | 1 | .354 | .248 | .619 | .000 | .079 |
| | Affinity | 2.140 | 1 | 2.140 | .959 | .328 | .002 | .165 |
| | Response Sensitivity | 3.354 | 1 | 3.354 | 1.725 | .190 | .003 | .259 |

Results from our Dunnett's *t*-test (see Table 6.18) and T3 test (see Appendix F) further corroborate our recovery manipulations in that participants' perception of a recovery construct coincides with its existence in a specific recovery treatment. As illustrated in Table 6.18, participants assigned to treatment conditions containing *discount*, *apology* and feedback reported a greater presence of *compensation*, *affinity* and *response sensitivity* respectively as compared to the control group. Although our Dunnett's *t*-test results reveal that there are other recovery treatments (i.e., *discount* and *discount x feedback*) besides those involving apology that give rise to participants' perception of the presence of affinity (see Table 6.18), our Dunnett's T3 test (see Appendix F) indicate that such perceptions are still stronger for the *apology* treatment condition as compared to any others.

**Table 6.18 Dunnett *t*-Test (2-sided)[a] for E-Service Recovery Constructs**

| Dependent Variable | (I) Type of Recovery | (J) Control | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| Compensation | Feedback | No Recovery | -.34768 | .387 |
| | Apology | No Recovery | -.28449 | .602 |
| | Apology x Feedback | No Recovery | -.27043 | .653 |
| | Discount | No Recovery | -2.54580* | .000 |
| | Discount x Feedback | No Recovery | -2.49768* | .000 |
| | Discount x Apology | No Recovery | -2.44493* | .000 |
| | Discount x Apology x Feedback | No Recovery | -2.37667* | .000 |
| Affinity | Feedback | No Recovery | -.45377 | .344 |
| | Apology | No Recovery | -1.75333* | .000 |
| | Apology x Feedback | No Recovery | -2.16449* | .000 |
| | Discount | No Recovery | -1.02435* | .001 |

| Dependent Variable | (I) Type of Recovery | (J) Control | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| | Discount x Feedback | No Recovery | -.71928* | .034 |
| | Discount x Apology | No Recovery | -2.08188* | .000 |
| | Discount x Apology x Feedback | No Recovery | -2.39116* | .000 |
| Response Sensitivity | Feedback | No Recovery | -1.32899* | .000 |
| | Apology | No Recovery | .16928 | .974 |
| | Apology x Feedback | No Recovery | -1.70072* | .000 |
| | Discount | No Recovery | -.49290 | .201 |
| | Discount x Feedback | No Recovery | -1.73942* | .000 |
| | Discount x Apology | No Recovery | -.43043 | .328 |
| | Discount x Apology x Feedback | No Recovery | -1.65246* | .000 |

a. Dunnett *t*-tests treat one group as a control, and compare all other groups against it.

*. The mean difference is significant at the 0.05 level.

Table 6.19 summarizes the descriptive statistics for realism according to the eight recovery treatments.

**Table 6.19 Descriptive Statistics for Realism**

| Recovery Treatment | *N* | Mean | Std. Deviation |
|---|---|---|---|
| Feedback | 69 | 2.9810 | 1.22998 |
| Apology | 69 | 3.1741 | 1.17789 |
| Apology x Feedback | 69 | 2.8941 | 1.32922 |
| Discount | 69 | 3.1883 | 1.24265 |
| Discount x Feedback | 69 | 3.3141 | 1.33191 |
| Discount x Apology | 69 | 2.8307 | 1.09001 |
| Discount x Apology x Feedback | 69 | 3.0678 | 1.05848 |
| Total | 483 | 3.0643 | 1.21574 |

To investigate participants' perception of the realism of our recovery manipulations, we conducted a one-sample *t*-test against the neutral pivot value of *4.0* in our measurement scale (see Table 6.20): we tested the null hypothesis that realism is unrelated to e-service recoveries. As illustrated in Table 6.20, participants assigned to the *discount* [$t_{(275)}$ = -12.530; $p$ = .000], *apology* [$t_{(275)}$ = -14.315; $p$ = .000] and *feedback* [$t_{(275)}$ = -12.482; $p$ = .000] treatment conditions reported a statistically significant mean difference in realism, thereby suggesting that participants' believe the recovery manipulations to be realistic and comparable to what has been offered in reality.

**Table 6.20 One-Sample *t*-Test for Realism**

| Recovery Treatment | Test Value = 4.000 | | | |
|---|---|---|---|---|
| | *t* | *df* | Sig. (2-tailed) | Mean Difference |
| Discount | -12.530 | 275 | .000 | -.89978 |
| Apology | -14.315 | 275 | .000 | -1.00833 |
| Feedback | -12.482 | 275 | .000 | -.93576 |

Conversely, ANOVA results indicate statistically insignificant differences among recovery treatments with regards to participants' perception of realism [$F_{(6)} = 1.410$; $p = .209$] (see Table 6.21). This implies that participants do not regard one particular recovery manipulation as being more realistic than others.

**Table 6.21 ANOVA Results for Realism**

| Recovery Treatment | Type III Sum of Squares | *df* | Mean Square | *F* | Sig. |
|---|---|---|---|---|---|
| Between Groups | 12.439 | 6 | 2.073 | 1.410 | .209 |
| Within Groups | 699.974 | 476 | 1.471 | | |
| Total | 712.413 | 482 | | | |

Our ANOVA results are also corroborated based on Dunnett's T3 test for realism among recovery treatments, which reveal insignificant mean differences across treatment conditions (see Table 6.22).

**Table 6.22 Dunnett T3 Test for Realism**

| (I) Type of Recovery | (J) Type of Recovery | Mean Difference (I-J) | Sig. |
|---|---|---|---|
| Response Sensitivity | Apology | -.19304 | 1.000 |
| | Apology x Feedback | .08696 | 1.000 |
| | Discount | -.20725 | 1.000 |
| | Discount x Feedback | -.33304 | .937 |
| | Discount x Apology | .15029 | 1.000 |
| | Discount x Apology x Feedback | -.08681 | 1.000 |
| Apology | Feedback | .19304 | 1.000 |
| | Apology x Feedback | .28000 | .986 |
| | Discount | -.01420 | 1.000 |
| | Discount x Feedback | -.14000 | 1.000 |
| | Discount x Apology | .34333 | .803 |
| | Discount x Apology x Feedback | .10623 | 1.000 |

| (I) Type of Recovery | (J) Type of Recovery | Mean Difference (I-J) | Sig. |
|---|---|---|---|
| Apology x Response Sensitivity | Feedback | -.08696 | 1.000 |
| | Apology | -.28000 | .986 |
| | Discount | -.29420 | .982 |
| | Discount x Feedback | -.42000 | .746 |
| | Discount x Apology | .06333 | 1.000 |
| | Discount x Apology x Feedback | -.17377 | 1.000 |
| Discount | Feedback | .20725 | 1.000 |
| | Apology | .01420 | 1.000 |
| | Apology x Feedback | .29420 | .982 |
| | Discount x Feedback | -.12580 | 1.000 |
| | Discount x Apology | .35754 | .789 |
| | Discount x Apology x Feedback | .12043 | 1.000 |
| Discount x Response Sensitivity | Feedback | .33304 | .937 |
| | Apology | .14000 | 1.000 |
| | Apology x Feedback | .42000 | .746 |
| | Discount | .12580 | 1.000 |
| | Discount x Apology | .48333 | .353 |
| | Discount x Apology x Feedback | .24623 | .995 |
| Discount x Apology | Feedback | -.15029 | 1.000 |
| | Apology | -.34333 | .803 |
| | Apology x Feedback | -.06333 | 1.000 |
| | Discount | -.35754 | .789 |
| | Discount x Feedback | -.48333 | .353 |
| | Discount x Apology x Feedback | -.23710 | .988 |
| Discount x Apology x Response Sensitivity | Feedback | .08681 | 1.000 |
| | Apology | -.10623 | 1.000 |
| | Apology x Feedback | .17377 | 1.000 |
| | Discount | -.12043 | 1.000 |
| | Discount x Feedback | -.24623 | .995 |
| | Discount x Apology | .23710 | .988 |

### 6.2.3 Hypotheses Testing

This section describes the results from our testing of hypotheses in the theoretical model.

***Impact of E-Service Failures***: As discovered in our first study, e-service failures are detrimental to online transactions through disconfirming consumers' expectations about transactional outcome, process and/or cost. Therefore, the first stage of our hypotheses testing is to validate the

causal relationships between e-service failures and their negative consequences as derived in our first study. Table 6.23 summarizes the descriptive statistics for the various disconfirmed expectancy constructs according to the four failure treatment conditions.

**Table 6.23 Descriptive Statistics for Disconfirmed Expectancy Constructs [by Failure Treatments]**

| Dependent Variable | Failure Treatment | *N* | Mean | Std. Deviation |
|---|---|---|---|---|
| Disconfirmed Outcome Expectancy | No Failure | 23 | 5.7530 | 1.01194 |
| | Out-of-Stock | 184 | 3.9510 | 1.43448 |
| | Missing Comparison | 184 | 4.7318 | 1.50839 |
| | Delay | 184 | 4.9584 | 1.51330 |
| | Total | 575 | 4.5953 | 1.54460 |
| Disconfirmed Process Expectancy | No Failure | 23 | 5.8404 | .91995 |
| | Out-of-Stock | 184 | 4.5581 | 1.66356 |
| | Missing Comparison | 184 | 4.1486 | 1.32778 |
| | Delay | 184 | 4.8786 | 1.58636 |
| | Total | 575 | 4.5809 | 1.55922 |
| Disconfirmed Cost Expectancy | No Failure | 23 | 5.1304 | 1.17979 |
| | Out-of-Stock | 184 | 4.4113 | 1.26906 |
| | Missing Comparison | 184 | 4.5326 | 1.14213 |
| | Delay | 184 | 4.0361 | 1.29688 |
| | Total | 575 | 4.3588 | 1.25964 |

To investigate the impact of informational, functional and system failures on participants' disconfirmed expectancies (i.e., hypotheses 1, 2 and 3), we performed ANOVA to compare between-subject differences among the four treatment conditions (see Table 6.24). Results indicate that there exist substantial differences in participants' evaluation of disconfirmed *outcome* [$F_{(3)} = 20.80$; $p = .000$], *process* [$F_{(3)} = 12.70$; $p = .000$] and *cost* [$F_{(3)} = 8.50$; $p = .000$] expectancy across the four treatment conditions.

**Table 6.24 ANOVA Test of Between-Subjects Effects [Failure Treatments ➔ Disconfirmed Expectancies]**

| Source | Dependent Variable | Type III Sum of Squares | *df* | Mean Square | *F* | Sig. | Partial Eta Squared | Observed Power[b] |
|---|---|---|---|---|---|---|---|---|
| Failure Treatments | Disconfirmed Outcome Expectancy | 134.893 | 3 | 44.964 | 20.797 | .000 | .099 | 1.000 |
| | Disconfirmed Process Expectancy | 87.275 | 3 | 29.092 | 12.698 | .000 | .063 | 1.000 |
| | Disconfirmed Cost Expectancy | 38.915 | 3 | 12.972 | 8.496 | .000 | .043 | .994 |

The next step is to conduct the Dunnett's *t*-test to compare between-subject differences for each disconfirmed expectancy construct between participants assigned to each of the three failure treatments and those allocated to the control group. Results of the Dunnett's *t*-test are summarized in Table 6.25. From Table 6.25, participants assigned to *out-of-stock*, *missing comparison* and *delay* treatment conditions reported higher levels of disconfirmed *outcome*, *process* and *cost* expectancies as compared to the control group. Yet, a closer inspection of participants' evaluation of disconfirmed expectancies based on multi-group comparisons via Dunnett's T3 test reveal that there is a dominant effect for each failure treatment (see Appendix G). Whereas all three failure treatments (i.e., out-of-stock, missing comparison and delay) impacts consumers' disconfirmed *outcome* expectancy as compared to the control group, the effect is the strongest for the *out-of-stock* treatment condition. The same goes for the failure treatments of missing comparison and delay: *missing comparison* has the strongest impact on participants' evaluation of disconfirmed *process* expectancy whereas *delay* has the strongest impact on participants' evaluation of disconfirmed cost expectancy. These results support hypotheses 1, 2 and 3.

**Table 6.25 Dunnett *t*-Test (2-sided)[a] for Disconfirmed Expectancy Constructs [by Failure Treatments]**

| Dependent Variable | (I) Failure Treatment | (J) Control | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| Disconfirmed Outcome Expectancy | Out-of-Stock | No Failure | -1.8020* | .000 |
| | Missing Comparison | No Failure | -1.0213* | .004 |
| | Delay | No Failure | -.7946* | .027 |
| Disconfirmed Process Expectancy | Out-of-Stock | No Failure | -1.2823* | .000 |
| | Missing Comparison | No Failure | -1.6918* | .000 |
| | Delay | No Failure | -.9618* | .008 |

| Dependent Variable | (I) Failure Treatment | (J) Control | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| Disconfirmed Cost Expectancy | Out-of-Stock | No Failure | -.7192* | .017 |
| | Missing Comparison | No Failure | -.5978+ | .052 |
| | Delay | No Failure | -1.0943* | .000 |

a. Dunnett *t*-tests treat one group as a control, and compare all other groups against it.

*. The mean difference is significant at the 0.05 level.

+. The mean difference is significant at the 0.10 level.

***Impact of E-Service Recoveries***: The remainder of this section will focus on the impact of e-service recoveries on participants' disconfirmed outcome, process and cost expectancies. Table 6.26 summarizes the descriptive statistics for the various pre- and post- disconfirmed expectancy constructs according to the eight recovery treatments.

**Table 6.26 Descriptive Statistics for Disconfirmed Expectancy Constructs [by Recovery Treatments]**

| Dependent Variable | Type of Recovery | *N* | Mean | Std. Deviation |
|---|---|---|---|---|
| Disconfirmed Outcome Expectancy | Feedback | 69 | 4.5848 | 1.53202 |
| | Apology | 69 | 4.4539 | 1.58651 |
| | Apology x Feedback | 69 | 4.7052 | 1.80556 |
| | Discount | 69 | 4.9035 | 1.40525 |
| | Discount x Feedback | 69 | 4.3190 | 1.62535 |
| | Discount x Apology | 69 | 4.7491 | 1.63100 |
| | Discount x Apology x Feedback | 69 | 4.7051 | 1.38555 |
| | Total | 483 | 4.6315 | 1.57369 |
| Post Disconfirmed Outcome Expectancy | Feedback | 69 | 4.6088 | 1.52743 |
| | Apology | 69 | 4.4348 | 1.51499 |
| | Apology x Feedback | 69 | 4.8406 | 1.76722 |
| | Discount | 69 | 5.4930 | 1.17097 |
| | Discount x Feedback | 69 | 5.3765 | 1.52527 |
| | Discount x Apology | 69 | 5.6670 | 1.12597 |
| | Discount x Apology x Feedback | 69 | 5.5703 | 1.06361 |
| | Total | 483 | 5.1416 | 1.47315 |
| Disconfirmed Process Expectancy | Feedback | 69 | 4.5800 | 1.64757 |
| | Apology | 69 | 4.5268 | 1.57860 |
| | Apology x Feedback | 69 | 4.3332 | 1.83901 |
| | Discount | 69 | 4.9906 | 1.33440 |
| | Discount x Feedback | 69 | 4.4054 | 1.70455 |
| | Discount x Apology | 69 | 4.5943 | 1.47057 |

| Dependent Variable | Type of Recovery | *N* | Mean | Std. Deviation |
|---|---|---|---|---|
| | Discount x Apology x Feedback | 69 | 4.4929 | 1.46039 |
| | Total | 483 | 4.5605 | 1.58653 |
| Post Disconfirmed Process Expectancy | Feedback | 69 | 4.8935 | 1.58572 |
| | Apology | 69 | 4.5409 | 1.55011 |
| | Apology x Feedback | 69 | 5.1690 | 1.63756 |
| | Discount | 69 | 5.0533 | 1.42770 |
| | Discount x Feedback | 69 | 5.0435 | 1.69485 |
| | Discount x Apology | 69 | 4.7970 | 1.41332 |
| | Discount x Apology x Feedback | 69 | 5.2946 | 1.30703 |
| | Total | 483 | 4.9702 | 1.53026 |
| Disconfirmed Cost Expectancy | Feedback | 69 | 4.1935 | 1.34136 |
| | Apology | 69 | 4.1299 | 1.40378 |
| | Apology x Feedback | 69 | 4.1642 | 1.35495 |
| | Discount | 69 | 4.5894 | 1.07116 |
| | Discount x Feedback | 69 | 4.2706 | 1.37138 |
| | Discount x Apology | 69 | 4.6330 | 1.03714 |
| | Discount x Apology x Feedback | 69 | 4.4686 | 1.04424 |
| | Total | 483 | 4.3499 | 1.24964 |
| Post Disconfirmed Cost Expectancy | Feedback | 69 | 4.0532 | 1.31966 |
| | Apology | 69 | 4.0870 | 1.29823 |
| | Apology x Feedback | 69 | 4.2372 | 1.52221 |
| | Discount | 69 | 4.2901 | 1.32220 |
| | Discount x Feedback | 69 | 4.2078 | 1.53933 |
| | Discount x Apology | 69 | 4.2951 | 1.39960 |
| | Discount x Apology x Feedback | 69 | 4.2703 | 1.03428 |
| | Total | 483 | 4.2058 | 1.35160 |

To investigate the impact of e-service recoveries on participants' evaluation of disconfirmed expectancies, we performed *repeated measures* MANOVA to compare within-subject differences between pre- and post- disconfirmed expectancies for the seven recovery treatment conditions (see Table 6.27). A series of observations can be made from Table 6.27.

First, there are statistically significant differences in participants' evaluation of disconfirmed *outcome* [$F_{(1)} = 103.66$; $p = .000$], *process* [$F_{(1)} = 66.25$; $p = .000$] and *cost* [$F_{(3)} = 7.58$; $p = .006$]

expectancy across time. This indicates that the introduction of e-service recovery in general cause variations to participants' evaluation of disconfirmed expectancies.

Second, there are statistically significant differences in participants' evaluation of disconfirmed *outcome* [$F_{(1)} = 88.00$; $p = .000$] and *cost* [$F_{(1)} = 4.63$; $p = .032$] expectancy, but not in their disconfirmed *process* [$F_{(1)} = 2.36$; $p = .125$] expectancy for the *discount* treatment condition. This indicates that participants assigned to the discount treatment condition perceived the disconfirmation of their outcome and cost expectancy differently as compared to those who have not been exposed to the same recovery treatment.

Third, there is a statistically significant difference in participants' evaluation of disconfirmed *process* [$F_{(1)} = 5.68$; $p = .017$] expectancy, but in their disconfirmed *outcome* [$F_{(1)} = 0.42$; $p = .516$] and *cost* [$F_{(1)} = 0.00$; $p = .992$] expectancy for the *apology* treatment condition. This indicates that participants assigned to the apology treatment condition perceived the disconfirmation of their process expectancy differently as compared to those who have not been exposed to the same recovery treatment.

Fourth, there is a statistically significant difference in participants' evaluation of disconfirmed *process* [$F_{(1)} = 42.95$; $p = .000$] expectancy, a marginally significant difference in their disconfirmed *outcome* [$F_{(1)} = 2.87$; $p = .091$] expectancy and no difference in disconfirmed *cost* [$F_{(1)} = 0.92$; $p = .337$] expectancy for the *feedback* treatment condition. This indicates that participants assigned to the feedback treatment condition perceived the disconfirmation of their process and outcome expectancy differently as compared to those who have not been exposed to the same recovery treatment

Finally, even though most interaction effects involving multiple e-service recoveries are statistically insignificant, there is a marginally significant difference in participants' evaluation of disconfirmed *outcome* [$F_{(1)} = 3.45$; $p = .064$] expectancy, but not in their disconfirmed *process* [$F_{(1)} = 1.89$; $p = .017$] and *cost* [$F_{(1)} = 0.93$; $p = .335$] expectancy for the *discount* x *apology* x *feedback*

treatment condition. This indicates that participants assigned to the treatment condition involving all three e-service recoveries perceived the disconfirmation of their outcome expectancy differently as compared to those who have not been exposed to the same recovery treatment.

**Table 6.27 Tests of Within-Subjects Contrasts for Disconfirmed Expectancy Constructs [Recovery Treatments ➔ Disconfirmed Expectancies]**

| Source | Measure | Time | Type III Sum of Squares | *df* | Mean Square | *F* | Sig. | Partial Eta Squared | Observed Power[a] |
|---|---|---|---|---|---|---|---|---|---|
| Time | Disconfirmed Outcome Expectancy | Linear | 56.749 | 1 | 56.749 | 103.655 | .000 | .155 | 1.000 |
| | Disconfirmed Process Expectancy | Linear | 36.630 | 1 | 36.630 | 66.253 | .000 | .105 | 1.000 |
| | Disconfirmed Cost Expectancy | Linear | 4.527 | 1 | 4.527 | 7.581 | .006 | .013 | .785 |
| Time * Discount | Disconfirmed Outcome Expectancy | Linear | 48.180 | 1 | 48.180 | 88.004 | .000 | .134 | 1.000 |
| | Disconfirmed Process Expectancy | Linear | 1.307 | 1 | 1.307 | 2.364 | .125 | .004 | .336 |
| | Disconfirmed Cost Expectancy | Linear | 2.765 | 1 | 2.765 | 4.630 | .032 | .008 | .575 |
| Time * Apology | Disconfirmed Outcome Expectancy | Linear | .232 | 1 | .232 | .423 | .516 | .001 | .100 |
| | Disconfirmed Process Expectancy | Linear | 3.140 | 1 | 3.140 | 5.679 | .017 | .010 | .662 |
| | Disconfirmed Cost Expectancy | Linear | 6.321E-5 | 1 | 6.321E-5 | .000 | .992 | .000 | .050 |
| Time * Feedback | Disconfirmed Outcome Expectancy | Linear | 1.570 | 1 | 1.570 | 2.868 | .091 | .005 | .394 |
| | Disconfirmed Process Expectancy | Linear | 23.748 | 1 | 23.748 | 42.953 | .000 | .070 | 1.000 |
| | Disconfirmed Cost Expectancy | Linear | .551 | 1 | .551 | .923 | .337 | .002 | .160 |
| Time * Discount * Apology | Disconfirmed Outcome Expectancy | Linear | .009 | 1 | .009 | .016 | .901 | .000 | .052 |
| | Disconfirmed Process Expectancy | Linear | .241 | 1 | .241 | .437 | .509 | .001 | .101 |
| | Disconfirmed Cost Expectancy | Linear | .529 | 1 | .529 | .885 | .347 | .002 | .156 |
| Time * Discount * Feedback | Disconfirmed Outcome Expectancy | Linear | .250 | 1 | .250 | .456 | .500 | .001 | .103 |
| | Disconfirmed Process Expectancy | Linear | .007 | 1 | .007 | .012 | .911 | .000 | .051 |
| | Disconfirmed Cost Expectancy | Linear | .714 | 1 | .714 | 1.196 | .275 | .002 | .194 |
| Time * Apology * Feedback | Disconfirmed Outcome Expectancy | Linear | .678 | 1 | .678 | 1.238 | .266 | .002 | .199 |

| Source | Measure | Time | Type III Sum of Squares | *df* | Mean Square | *F* | Sig. | Partial Eta Squared | Observed Power[a] |
|---|---|---|---|---|---|---|---|---|---|
| | Disconfirmed Process Expectancy | Linear | 1.260 | 1 | 1.260 | 2.279 | .132 | .004 | .326 |
| | Disconfirmed Cost Expectancy | Linear | .113 | 1 | .113 | .189 | .664 | .000 | .072 |
| Time * Discount * Apology * Feedback | Disconfirmed Outcome Expectancy | Linear | 1.887 | 1 | 1.887 | 3.446 | .064 | .006 | .458 |
| | Disconfirmed Process Expectancy | Linear | 1.045 | 1 | 1.045 | 1.890 | .170 | .003 | .279 |
| | Disconfirmed Cost Expectancy | Linear | .555 | 1 | .555 | .929 | .335 | .002 | .161 |

Although our MANOVA results detect significant variations among recovery treatments with regards to participants' evaluation of the disconfirmed expectancies, the analysis does not yield insights into whether these e-service recoveries alleviate or worsen failure consequences. To examine the impact of e-service recovery in general on participants' evaluation of disconfirmed expectancies, we conducted a one-sample *t*-test that compares within-subject differences against the value of *0.0* (see Table 6.28): we test the null hypothesis that e-service recoveries in general neither alleviates nor worsens failure consequences. As illustrated in Table 6.28, participants exposed to e-service recoveries in general reported an improvement in their disconfirmed *outcome* [$t_{(482)} = 9.25$; $p = .000$] and *process* [$t_{(482)} = 7.66$; $p = .000$] expectancy, but experienced a further boost to their disconfirmed *cost* [$t_{(482)} = -2.72$; $p = .000$] expectancy. This partially supports hypothesis 4.

**Table 6.28 One-Sample *t*-Test for E-Service Recovery Treatment**

| Dependent Variable | Test Value = 0.000 | | | |
|---|---|---|---|---|
| | *t* | *df* | Sig. (2-tailed) | Mean Difference |
| Disconfirmed Outcome Expectancy Difference | 9.251 | 482 | .000 | .50994 |
| Disconfirmed Process Expectancy Difference | 7.664 | 482 | .000 | .41551 |
| Disconfirmed Cost Expectancy Difference | -2.717 | 482 | .007 | -.15025 |

The same analytical procedures were applied to each of the seven recovery treatments and the results are summarized in Table 6.29. From Table 6.29, we can make four deductions. One, disconfirmed *outcome* expectancy can be improved through the provision of e-service recoveries

involving *discount* [$t_{(68)}$ = 4.30; $p$ = .000], *discount* and *feedback* [$t_{(68)}$ = 5.78; $p$ = .000], *discount* and *apology* [$t_{(68)}$ = 5.40; $p$ = .000] or all three (i.e., *discount*, *apology* and *feedback*) [$t_{(68)}$ = 5.86; $p$ = .000]. Two, disconfirmed *process* expectancy can be improved through the provision of e-service recoveries involving *feedback* [$t_{(68)}$ = 2.26; $p$ = .027], *apology* and *feedback* [$t_{(68)}$ = 4.43; $p$ = .000], *discount* and *feedback* [$t_{(68)}$ = 4.52; $p$ = .000] or all three (i.e., *discount*, *apology* and *feedback*) [$t_{(68)}$ = 4.71; $p$ = .000]. Third, none of the e-service recoveries improves disconfirmed *cost* expectancy. Rather, the provision of e-service recoveries involving *discount* [$t_{(68)}$ = -2.11; $p$ = .039] as well as *discount* and *apology* [$t_{(68)}$ = -2.05; $p$ = .044] only serve to further worsen disconfirmed *cost* expectancy. Lastly, of the seven recovery treatments, the provision of a mere *apology* has no effect consumers' disconfirmed outcome, process or cost expectancy.

**Table 6.29 One-Sample *t*-Test for Disconfirmed Expectancy Constructs [Test Value = 0.000]**

| Recovery Treatment | Disconfirmed Outcome | | Disconfirmed Process | | Disconfirmed Cost | |
|---|---|---|---|---|---|---|
| | Mean Difference | *t*-Test | Mean Difference | *t*-Test | Mean Difference | *t*-Test |
| Feedback | 0.024 | $t_{(68)}$ = 0.195 (p = 0.846) | **0.314** | **$t_{(68)}$ = 2.259 (p = 0.027)** | -0.140 | $t_{(68)}$ = -1.287 (p = 0.203) |
| Apology | -0.020 | $t_{(68)}$ = -0.249 (p = 0.804) | 0.014 | $t_{(68)}$ = 0.167 (p = 0.868) | -0.043 | $t_{(68)}$ = -0.311 (p = 0.757) |
| Apology x Feedback | 0.135 | $t_{(68)}$ = 1.534 (p = 0.130) | **0.836** | **$t_{(68)}$ = 4.428 (p = 0.000)** | 0.072 | $t_{(68)}$ = 0.455 (p = 0.651) |
| Discount | **0.589** | **$t_{(68)}$ = 4.293 (p = 0.000)** | 0.063 | $t_{(68)}$ = 0.673 (p = 0.503) | **-0.299** | **$t_{(68)}$ = -2.109 (p = 0.039)** |
| Discount x Feedback | **1.058** | **$t_{(68)}$ = 5.778 (p = 0.000)** | **0.638** | **$t_{(68)}$ = 4.518 (p = 0.000)** | -0.062 | $t_{(68)}$ = -0.463 (p = 0.645) |
| Discount x Apology | **0.918** | **$t_{(68)}$ = 5.398 (p = 0.000)** | 0.203 | $t_{(68)}$ = 1.743 (p = 0.086) | **-0.338** | **$t_{(68)}$ = -2.053 (p = 0.044)** |
| Discount x Apology x Feedback | **0.865** | **$t_{(68)}$ = 5.861 (p = 0.000)** | **0.802** | **$t_{(68)}$ = 4.713 (p = 0.000)** | -0.198 | $t_{(68)}$ = -1.323 (p = 0.190) |

Table 6.29 reveals the existence of multiple e-service recovery solutions for alleviating negative failure consequences. Dunnett's T3 test was hence performed on within-subject differences for disconfirmed expectancies among the seven recovery treatments to determine which of these solution(s) would be most effective in alleviating a particular form of disconfirmed expectancy. Appendix H presents the results from our Dunnett's T3 test and these results are summarized in Tables 6.2.3.8, 6.2.3.9 and 6.2.3.10 for disconfirmed outcome, process and cost expectancy respectively. As can be deduced from the Table 6.30, any e-service recovery involving *discount*

would mostly outperform if not comparable to any other recovery not involving *discount* in alleviating disconfirmed *outcome* expectancy. But concurrently, it is also clear from Table 6.30 that all four e-service recoveries that involve *discount* are comparable to one another in alleviating disconfirmed *outcome* expectancy. Combining these results with those from Table 6.29, we can conclude that no added value is gained from including *apology* and/or *feedback* over and above *discount* in alleviating disconfirmed *outcome* expectancy. This supports hypothesis 6.

**Table 6.30 Summary of Dunnett T3 Test for Disconfirmed Outcome Expectancy [Recovery Treatment Comparisons]**

| Recovery Treatment (B) / Recovery Treatment (A) | FED | APO | APO x FED | DIS | DIS x FED | DIS x APO | DIS x APO x FED |
|---|---|---|---|---|---|---|---|
| **Feedback [FED]** | – | | | | | | |
| **Apology [APO]** | A = B | – | | | | | |
| **Apology x Feedback [APO x FED]** | A = B | A = B | – | | | | |
| **Discount [DIS]** | **A > B** | **A > B** | A = B | – | | | |
| **Discount x Feedback [DIS x FED]** | **A > B** | **A > B** | **A > B** | A = B | – | | |
| **Discount x Apology [DIS x APO]** | **A > B** | **A > B** | **A > B** | A = B | A = B | – | |
| **Discount x Apology x Feedback [DIS x APO x FED]** | **A > B** | **A > B** | **A > B** | A = B | A = B | A = B | – |

A = B – Recovery treatment (A) is **comparable to** recovery treatment (B) in influencing disconfirmed outcome expectancy

A > B – Recovery treatment (A) is **better than** recovery treatment (B) in reducing disconfirmed outcome expectancy

A < B – Recovery treatment (A) is **worse than** recovery treatment (B) in reducing disconfirmed outcome expectancy

Table 6.31 summarizes the results from Dunnett's T3 test among the seven recovery treatments with regards to disconfirmed process expectancy. As can be deduced from the Table 6.31, any e-service recovery involving *feedback* would mostly outperform if not comparable to any other recovery not involving *feedback* in alleviating disconfirmed *process* expectancy. But concurrently, it is also clear from Table 6.31 that all four e-service recoveries that involve *feedback* are comparable to one another in alleviating disconfirmed *process* expectancy. Combining these results with those from Table 6.29, we can conclude that no added value is gained from including *discount* and/or *apology* over and above *feedback* in alleviating consumers' disconfirmed *process* expectancy. This supports hypothesis 7.

**Table 6.31 Summary of Dunnett T3 Test for Disconfirmed Process Expectancy [Recovery Treatment Comparisons]**

| Recovery Treatment (B) / Recovery Treatment (A) | FED | APO | APO x FED | DIS | DIS x FED | DIS x APO | DIS x APO x FED |
|---|---|---|---|---|---|---|---|
| **Feedback [FED]** | – | | | | | | |
| **Apology [APO]** | A = B | – | | | | | |
| **Apology x Feedback [APO x FED]** | A = B | **A > B** | – | | | | |
| **Discount [DIS]** | A = B | A = B | **A < B** | – | | | |
| **Discount x Feedback [DIS x FED]** | A = B | **A > B** | A = B | **A > B** | – | | |
| **Discount x Apology [DIS x APO]** | A = B | A = B | A = B | A = B | A = B | – | |
| **Discount x Apology x Feedback [DIS x APO x FED]** | A = B | **A > B** | A = B | **A > B** | A = B | A = B | – |

A = B – Recovery treatment (A) is **comparable to** recovery treatment (B) in influencing Disconfirmed Process expectancy

A > B – Recovery treatment (A) is **better than** recovery treatment (B) in reducing Disconfirmed Process expectancy

A < B – Recovery treatment (A) is **worse than** recovery treatment (B) in reducing Disconfirmed Process expectancy

Table 6.32 summarizes the results from Dunnett's T3 test among the seven recovery treatments with regards to disconfirmed cost expectancy. As can be deduced from the Table 6.32, there is no inherent advantage for any e-service recovery in alleviating disconfirmed *cost* expectancy. Combining these results with those from Table 6.29, we can conclude that no e-service recovery is effective in alleviating disconfirmed cost expectancy and in certain cases, recoveries may even exacerbate the situation (i.e., *discount* or *discount* and *apology*). Hypothesis 8 is not supported.

**Table 6.32 Summary of Dunnett T3 Test for Disconfirmed Cost Expectancy [Recovery Treatment Comparisons]**

| Recovery Treatment (A) \ Recovery Treatment (B) | FED | APO | APO x FED | DIS | DIS x FED | DIS x APO | DIS x APO x FED |
|---|---|---|---|---|---|---|---|
| **Feedback [FED]** | – | | | | | | |
| **Apology [APO]** | A = B | – | | | | | |
| **Apology x Feedback [APO x FED]** | A = B | A = B | – | | | | |
| **Discount [DIS]** | A = B | A = B | A = B | – | | | |
| **Discount x Feedback [DIS x FED]** | A = B | A = B | A = B | A = B | – | | |
| **Discount x Apology [DIS x APO]** | A = B | A = B | A = B | A = B | A = B | – | |
| **Discount x Apology x Feedback [DIS x APO x FED]** | A = B | A = B | A = B | A = B | A = B | A = B | – |

A = B – Recovery treatment (A) is **comparable to** recovery treatment (B) in influencing Disconfirmed Cost expectancy

A > B – Recovery treatment (A) is **better than** recovery treatment (B) in reducing Disconfirmed Cost expectancy

A < B – Recovery treatment (A) is **worse than** recovery treatment (B) in reducing Disconfirmed Cost expectancy

The aforementioned empirical results are further corroborated when the impact of e-service recoveries on disconfirmed expectancies were plotted graphically (see Appendix I). Three inferences can be drawn from Appendix I with regards to the impact of e-service recoveries in alleviating negative failure consequences. First, there is a statistically significant interaction effect between e-service recoveries and disconfirmed *outcome* expectancy [$F_{(1, 6)} = 10.936$; $p = .000$], implying that differences can be detected in disconfirmed *outcome* expectancy for e-service recoveries over time. Further, upward slopes can be observed for the recovery treatments of *discount*, *discount* and *apology*, *discount* and *feedback* as well as *discount*, *apology* and *feedback* on disconfirmed *outcome* expectancy[3]. thereby indicating that these four types of e-service recovery are effective in alleviating disconfirmed *outcome* expectancy. Likewise, there is a statistically significant interaction effect between e-service recoveries and disconfirmed *process* expectancy [$F_{(1, 6)} = 6.043$; $p = .000$], implying that differences can be detected in disconfirmed *process* expectancy for e-service recoveries over time. Also, upward slopes can be observed for the recovery treatments of *feedback*, *discount* and

[3] Because measurement items for disconfirmed expectancies are phrased negatively and the Likert scale ranges from 'Strongly Agree' to 'Strongly Disagree', an upward slope would imply an improvement in participants' disconfirmed expectancies when e-service recoveries are introduced.

*feedback*, *apology* and *feedback* as well as *discount*, *apology* and *feedback* on disconfirmed *process* expectancy, thereby indicating that these four types of e-service recovery are effective in alleviating disconfirmed *process* expectancy. Conversely, the interaction effect between e-service recoveries and disconfirmed *cost* expectancy is not statistically significant [$F_{(1, 6)} = 0.912$; $p = .486$], implying that differences cannot be detected in disconfirmed *cost* expectancy for e-service recoveries over time.

Results of our hypotheses testing are summarized Table 6.33.

**Table 6.33 Summary of Hypotheses Testing**

| Hypothesis | Support | Additional Insights |
|---|---|---|
| **H1**: Informational failure on an e-commerce website will result in the disconfirmation of consumers' outcome expectancy. | Supported | While informational failure has the strongest impact on disconfirmed outcome expectancy, it also negatively affects disconfirmed process and cost expectancy. |
| **H2**: Functional failure on an e-commerce website will result in the disconfirmation of consumers' process expectancy. | Supported | While functional failure has the strongest impact on disconfirmed process expectancy, it also negatively affects disconfirmed outcome and cost expectancy. |
| **H3**: System failure on an e-commerce website will result in the disconfirmation of consumers' cost expectancy. | Supported | While functional failure has the strongest impact on disconfirmed cost expectancy, it also negatively affects disconfirmed outcome and process expectancy. |
| **H4**: The presence of any e-service recovery technology (compensation, response sensitivity or affinity) will negatively moderate the positive relationship between an e-service failure and consumers' disconfirmed expectancy | Partially Supported | While the presence of an e-service recovery alleviates disconfirmed outcome and process expectancy, it negatively affects disconfirmed cost expectancy. |
| **H5**: Compensatory e-service recovery technology will have a stronger negative moderating effect on the positive relationship between an e-service failure and consumers' disconfirmed outcome expectancy as compared to response sensitivity and affinity recovery technologies. | Supported | While the provision of any e-service recovery involving compensatory mechanisms will alleviate disconfirmed outcome expectancy, there is no inherent advantage to be gained from including affinity and response sensitivity recovery technologies over and above compensation. |
| **H6**: Response sensitivity e-service recovery technology will have a stronger negative moderating effect on the positive relationship between an e-service failure and consumers' disconfirmed process expectancy as compared to compensatory and affinity recovery technologies. | Supported | While the provision of any e-service recovery involving response sensitivity mechanisms will alleviate disconfirmed process expectancy, there is no inherent advantage to be gained from including compensatory and affinity recovery technologies over and above response sensitivity. |
| **H7**: Affinity e-service recovery technology will have a stronger negative moderating effect on the positive relationship between an e-service failure and consumers' disconfirmed cost expectancy as compared to compensatory and response sensitivity recovery technologies. | Not Supported | None of the e-service recoveries can alleviate disconfirmed cost expectancy with some (i.e., compensation or compensation and affinity) even making it worse. |

## *6.3 Discussion*

The absence of a cohesive theory of e-service failure has thwarted academic efforts to expand research in the area and stymied practitioners' attempts to roll out effective recovery technologies to alleviate negative consequences arising from failure occurrences. This second study therefore

represents a small but significant step in that direction. We begin by drawing on the Expectation Disconfirmation Theory (EDT) to delineate negative consequences of e-service failures into those affiliated with consumers' outcome, process and cost expectations. Then, subscribing to consumers' counterfactual thinking process in the event of e-service failures, we derived a working definition of e-service recovery. Next, we reviewed contemporary frameworks of service recovery and identified Smith et al's (1999) typology as the most comprehensive and parsimonious theoretical framework from which to theorize the effectiveness of specific recovery technologies in moderating negative failure consequences. An integrated theory of e-service failure and recovery together with testable hypotheses was subsequently constructed through the assimilation of the preventive and corrective research streams within extant literature. The theory is tested via an online experiment that cross-matches different categories of e-service failures (i.e., *informational*, *functional* and *system* failures) with different types of recovery technologies (i.e., *compensation*, *response sensitivity* and *affinity*) to determine their interactional effects on consumers' disconfirmed expectancies. Experimental findings raise several points of interest.

First, our findings reaffirm that e-service failures have an adverse influence on consumers' outcome, process and cost expectations with respect to an e-commerce transaction. As uncovered in our experimental study, different forms of e-service failure have a domineering effect on one of three expectancies harbored by consumers: (1) informational failure has the strongest impact on consumers' disconfirmed outcome expectancy; (2) functional failure has the strongest impact on consumers' disconfirmed process expectancy, and; (3) system failure has the strongest impact on consumers' disconfirmed cost expectancy. Further, experimental findings also reveal the existence of negative spillover effects from every form of e-service failure.

Second, our experimental study indicates that the mere presence of an e-service recovery has a heterogeneous impact on consumers' disconfirmed expectancies. Whereas e-service recoveries in general tend to alleviate consumers' disconfirmed outcome and process expectancy, their presence

may also contribute to a further increase in consumers' disconfirmed cost expectancy. A probable reason behind such an observation may be due to the inherent nature of e-service recoveries. Though e-service recoveries—in the form of compensatory and response sensitivity mechanisms—can alleviate negative outcome and process consequences of e-service failures, consumers will still have to expend considerable resources to effectively utilize these mechanisms in order to extract their benefit, thereby contributing to a deterioration in disconfirmed cost expectancy.

Third, our findings demonstrate that the effectiveness of different e-service recovery technologies vary depending on which consumers' expectation is being disconfirmed. Whereas e-service recoveries involving compensation are suited to the alleviation of disconfirmed outcome expectancy, those involving response sensitivity are better at alleviating disconfirmed process expectancy. Further, experimental findings illustrate that having compensation and response sensitivity as standalone recovery solutions would be sufficient in alleviating consumers' disconfirmed outcome and process expectancy and the inclusion of additional recovery technologies do not compound their effectiveness.

Finally, the experiment study claims that none of the e-service recovery technologies are effective at alleviating consumers' disconfirmed cost expectancy. In fact, the provision of compensation or compensation and affinity recoveries made it worse by boosting consumers' disconfirmed cost expectancy. A probable reason for this observation has been raised by Bitner (1990), Wirtz and Mattila (2004), who insinuated that compensations may imply an admission of guilt on the part of vendors, thereby leading consumers to view service failures as being avoidable and unnecessary. Similar sentiments were expressed by Weiner (2000) for apologies in that if phrased improperly, apologies could be interpreted as vendors' confession of responsibility. If consumers were to be led into thinking that e-service failures are preventable, then it could be that they are likely to view any extra cost expended during online transactions to be redundant, even if such costs are incurred from the utilization of recovery technologies to rectify the failure.

### 6.3.1 Implications for Research

The second study contributes to extant literature on e-service failure and recovery in four ways. First, we advance a theory with hypotheses that explain and predict consequences of e-service failures from consumers' perspective. To the best of our knowledge, there is no prior study that explores consequences of e-service failures. Specifically, we draw a distinction among consumers' expectations with regards to transactional outcome, process, and cost, and postulate that different categories of e-service failure will disconfirm these expectations in distinctive ways. These hypothesized relationships between e-service failures and disconfirmed expectancies were then scrutinized via an online experiment. Based on our experimental findings, we establish disconfirmed outcome, process and cost expectancy as prominent consequences of informational, functional and system failure respectively. Further, our empirical evidence attests to the existence of negative spillover effects from e-service failures. This is a significant development because to the best of our knowledge, this experiment is the first academic study to systematically investigate and corroborate the existence of negative spillover effects for service failures despite similar claims being made in practitioner literature (Forrester Consulting, 2009; Harris Interactive, 2006).

Second, our empirical findings expand on the previous work of McColl-Kennedy et al. (2003), who contended that the presence of any manner of service recovery is better than inaction in the event of service failures. By delineating disconfirmed expectancies into those associated with transactional outcome, process and cost, our study reveals that the benefits of e-service recovery is not necessarily homogeneous as claimed by McColl-Kennedy et al. (2003): even though e-service recovery in general may decrease consumers' disconfirmed outcome and process expectancy, it has the opposite effect on their disconfirmed cost expectancy.

Third, by subscribing to Smith et al.'s (1999) typology in conceptualizing and investigating the effectiveness of e-service recoveries, we are able to identify the range of recovery solutions that may be appropriate for moderating a particular form of disconfirmed expectancy experienced by consumers in the event of an e-service failure. We discovered that having compensation and response

sensitivity alone would suffice in alleviating consumers' disconfirmed outcome and process whereas no e-service recovery technology would be able to neutralize the disconfirmation of consumers' cost expectation. This study is thus novel in that it not only furthers knowledge on the effectiveness of different combinations of e-service recovery technologies in alleviating negative failure consequences (see Table 6.29), it also yields insights into the most parsimonious recovery solution for a given consumer expectation, which has been disconfirmed by the occurrence of an e-commerce transactional failure.

Finally, our study reveals that certain combinations of e-service recovery technologies (i.e., compensation, compensation and apology) can lead to a further deterioration in consumers' disconfirmed cost expectancy. In a way, we build on empirical findings from previous studies—which allude to consumers' tendency to view compensation and apology as an admission of guilt (e.g., Bitner, 1990; Weiner, 2000; Wirtz and Mattila, 2004)—by establishing compensatory and affinity mechanisms as having an added detrimental effect on consumers' cost expectancy over and above the negative influence of e-service failures. Consequently, this study sheds light on the necessity of achieving equilibrium between the provision of commensurable e-service recoveries and its diverse impact on consumers' disconfirmed expectancies.

### 6.3.2 Implications for Practice

This study should be of interest to both e-merchants and online consumers for three reasons. First, e-merchants can definitely benefit from an in-depth appreciation of the negative consequences that may arise from different categories of e-service failures. By delineating consequences into disconfirmed outcome, process, and cost expectancies, we provide clarity to the consequences of various categories of e-service failures. That is, while the occurrence of an e-service failure will always result in the disconfirmation of consumers' expectations about the outcome, process and cost of e-commerce transaction, there are dominant effects for each category of e-service failure. This information could enable e-merchants to effectively channel resources to improve high priority e-

services. For instance, it can be deduced from our study that the transactional process may be compromised when an e-commerce website is lacking functionalities that cater to needs recognition, alternatives identification, alternatives evaluation, acquisition and/or post-purchase activities. Since Olsen (2003) noted that 66% of consumers are dissuaded from making purchases due to problems at various stages of the online transactional process, it may be wise for e-merchants to first focus on securing the delivery of functionalities that support the preceding activities.

Second, depending on the form of consumer expectation which has been compromised by the occurrence of an e-service failure, our experimental study illustrates that different types of e-service recovery may be desirable. For this reason, there is urgency for e-merchants to better diagnose the cause of an e-service failure such that commensurable and prudent recovery solutions may be offered. This allows e-merchants to conserve resources by providing targeted e-service recoveries that are shown to be effective. Online consumers would also benefit from the provision of commensurable e-service recoveries since they can be assured of better recovery from e-commerce transactional failures.

Finally, in aligning our manipulations of e-service recoveries with practical examples from actual e-commerce websites, we supply concrete evidence that attest to the effectiveness of these recovery technologies in alleviating negative failure consequences. Because e-commerce websites are still lacking in the provision of commensurable e-service recoveries to counter failure occurrences (Holloway and Beatty, 2003), our adaptation of Smith et al.'s (1999) typology, while simplistic, does yield actionable design principles that may be leveraged by e-merchants to implement recovery solutions that would be effective in alleviating negative failure consequences in accordance with our empirical findings.

### 6.3.3 Limitations

Findings from this experimental study should be interpreted conservatively. As deducible from Table 2.4, we have only extracted a small subset of e-service failures to serve as treatment conditions in our experiment. Although we have endeavored to be representational in our failure

treatments by manipulating one form of e-service failure from each of the three primary categories of informational, functional and system failure, we acknowledge that our conclusions on failure consequences should be interpreted with caution when dealing with other failure events beyond what has been investigated in the experiment.

Conversely, our empirical findings on e-service recoveries are more credible in that as long as one is able to diagnose the failure consequence experienced by consumers, commensurable recovery technologies may be offered. The only caveat in our recovery treatments lies in the restrictive set of e-service recovery technologies being investigated. Despite incorporating the most pervasive types of e-service recovery technologies into our experimental design, we are aware that there are other web-enabled recovery solutions (e.g., FAQs and Live Help), which have escaped notice in this thesis.

### 6.3.4 Summary

This chapter outlines the design and execution of an online experiment that investigates: (1) negative consequences of e-service failures, and; (2) the effectiveness of e-service recovery technologies to alleviate these consequences. Empirical findings from the experiment suggest that e-service failures should be avoided due to the presence of direct and indirect effects on consumers' disconfirmed expectancies. This is especially problematic when such failures disconfirm consumers' cost expectancy since there appears to be no recovery solution to moderate the situation based on our empirical investigation. The next chapter, Chapter 7, will summarize the key findings of the thesis and provide directions for future research.

# CHAPTER 7 – CONCLUSION AND DISCUSSION

While research into e-service failure and recovery is still in its infancy, appeals from both academic and practitioner communities for a better appreciation of e-service failure and recovery have attested to the urgency of advancing knowledge on: (1) the causes of e-service failures; (2) their impact on online consumers, and; (3) the range of recovery measures or technologies that can be exploited by e-merchants to facilitate consumers in overcoming these unpleasantries (e.g., Holloway and Beatty, 2003; Forrester Consulting, 2009). More often than not, it is not the occurrence of e-service failures that frustrate consumers, but rather, the absence or incommensurability of recourse channels, which led to unwarranted customer exits. This thesis therefore endeavors to contribute to an in-depth appreciation of the phenomenon by: (1) uncovering technological deficiencies responsible for the manifestation of e-service failures; (2) deciphering consumers' reactions to these failure events, and; (3) prescribing matching e-service recovery technologies that may be harnessed by e-merchants to deal with each form of failure. Specifically, we endeavor to provide answers to the two research questions stated in Chapter 1:

1. ***How do e-service failures manifest on e-commerce websites and what is their impact on online consumer behavior?***

To answer the aforementioned question, we begin by building on the EDT to derive a working definition of e-service failure. We then synthesize e-service and system success research streams to advance a novel typology of e-service failure that captures failure events exclusive to e-commerce transactions. It is a primary contention of this thesis that when transacting online, consumers are exceedingly vulnerable to informational (e.g., out-of-stock products), functional (e.g., missing comparison matrix), and system (e.g., delays) failures. Utilizing the CIT, we solicited descriptive accounts of e-service failures to validate the suitability of our proposed typology in classifying failure instances for e-commerce transactions as compared to contemporary frameworks. Empirical findings suggest that our proposed typology of e-service failure is not only more comprehensive than contemporary frameworks in classifying e-service failures by delineating failure

causes into a series of informative dimensions, but it is also more parsimonious than others by precluding any dimensions which do not coincide with actual failure events that manifest within e-commerce transactions.

Next, we distinguish consequences of e-service failures among those that relate to the disconfirmation of consumers' outcome, process and cost expectations. We posit that informational, functional and system failure will result in consumers' disconfirmed outcome, process and cost expectancy respectively. These causal relationships between e-service failures and negative consequences were tested via an online experiment in which we found that not only were our hypotheses validated, but the existence of negative spillover effects were detected as well. This implies that e-service failures are 'contagious' in adversely affecting consumers' evaluations of service encounters. Interestingly, such negative spillover effects for e-service failures have not been empirically corroborated in any systematic academic investigation despite hints of their existence in practitioner surveys.

**2.** ***How can information technology be leveraged to design effective e-service recovery mechanisms for addressing various forms of e-service failure?***

Subscribing to Smith et al.'s (1999) typology of service recovery modes, we introduce a classification of e-service recovery technologies that, in the event of service failures for e-commerce websites, empower consumers to: (1) seek reimbursement for the trouble they faced (i.e., compensation); (2) regain social resources lost due to the failure occurrence (affinity); (3) provide feedback regarding their negative transactional experience (i.e., response sensitivity), and; (4) reflect on various aspects of their recent transaction to identify service concerns, which might have otherwise escape notice (i.e., initiative). A review of pragmatic e-commerce websites also testifies to the pertinence of our proposed typology of e-service recovery in that the spectrum of recovery technologies on existing sites can be matched to one of the four dimensions in the typology. We then construct an integrated theory of e-service failure and recovery together with testable hypotheses, which were investigated via an online experiment. Experimental findings offer insights into the

effectiveness and parsimony of e-service recovery solutions in alleviating negative failure consequences. We discovered that while compensation and response sensitivity can exist as standalone e-service recovery technologies in alleviating consumers' disconfirmed outcome and process expectancy, there is no recovery solution in our investigation which may be effective in overcoming consumers' disconfirmed cost expectancy.

### *7.1 Implications for Research and Practice*

A major contribution of this thesis resides in the advancement of a novel typology of e-service failure that exemplifies the unique characteristics of e-commerce transactional environments. Forsaking contemporary frameworks of service failures for the reasons covered in Chapter 2, our proposed e-service failure typology represents a deductive adaptation of e-service and system success literatures to draw emphasis to actionable technological prescriptions for the design of e-commerce website. While the validity of several dimensions of our proposed e-service failure typology have received corroboration from past studies in end-user computing (i.e., informational and system failures), they have not been tested within an e-commerce setting. Coupled with the fact that certain constructs of the typology have not been subjected to empirical validation in the past (i.e., functional failures), a thorough examination of whether each dimension actually corresponds to the manifestation of an e-service failure in reality is warranted. Further, because this thesis contends that our proposed typology of e-service failure should be superior to contemporary frameworks of service failures in its explanatory and predictive powers with respect to e-commerce transactions, it should outperform other typologies (i.e., Bitner et al., 1990, 1994; Holloway and Beatty, 2003; Kelley et al., 1993) in the classification of failure events. From our exploratory study, we conclude that not only is our proposed typology of e-service failure representative of a parsimonious collection of theoretically-grounded failure dimensions which are useful for deriving conceptual explanations and predictions, but it also embodies valuable benchmarks for practitioners to be vigilant against possible technological deficiencies that may exist on e-commerce websites.

Another contribution of this thesis stems from its derivation of distinct e-service failure consequences. Drawing on the EDT, we identified three predominant consequences of e-service failures and these are: (1) the obtainment of transactional outcomes which are undesirable to consumers (i.e., disconfirmed outcome expectancy); (2) the disruption of transactional process which hinders the natural flow of e-commerce transactions (i.e., disconfirmed process expectancy), and; (3) the expenditure of additional resources beyond what is expected to complete e-commerce transactions (i.e., disconfirmed cost expectancy). We uncovered that each of these consequences is salient to a particular category of e-service failure even though spillover effects do exist as alluded to by practitioners. In this sense, we bear a word of caution for e-merchants in that 'prevention may be better than cure' in the case of e-service failures due to their contagious nature.

Finally, by affirming the effectiveness of the three types of e-service recovery technologies (i.e., compensation, affinity and responsiveness) as well as their combinations on each of the three failure categories (i.e., informational, functional and system), this thesis not only sheds light on the exact e-service recovery solution to be deployed in conjunction with the negative consequence that originates from a specific category of failure, but it also illustrates how these recovery mechanisms can be implemented technologically on e-commerce websites. While Smith et al. (1999) have previously investigated the interactional effects between service failure and recovery for offline services, they have not gone beyond theorizing failure as a monolithic construct. Conceivably, this study is the first of its kind to examine different e-service failure categories and recovery technologies in tandem, thereby bridging existing gaps between preventive and corrective streams of literature. For this reason, this thesis holds promise for practitioners in three ways. First, it contributes to an optimal allocation of resources by enabling e-merchants to tailor their e-service recovery technologies to target failures that are most pronounced for e-commerce transactions. Second, it enlightens practitioners on the technological design of e-service recovery solutions. Third, it offers e-merchants

a glimpse into the adequacy of their existing e-service recovery technologies in catering to various forms of failures.

### *7.2 Future Research*

Our study lays the groundwork for opening up an entirely new line of research into e-services. Subsequent empirical investigations should be undertaken to further refine and validate our theory.

While we have endeavored to be representative in our investigation of e-service failures for both studies, it is still cross-sectional in nature. There is still much to be explored about the frequency and longitudinal effects of e-service failures on online consumer behaviors. Previous studies of offline service failures show that consumers react much more unfavorably towards failure events that have a higher rate of recurrence (e.g., Folkes et al. 1987; Leong et al. 1997). Future research can therefore investigate whether consumers react differently to: (1) the frequency with which a particular form of e-service failure recurs, and; (2) the time duration between two consecutive recurrences of the same failure.

Attribution Theory claims that individuals are rational information processors whose behaviors are directed by their causal inferences (Folkes, 1984). Whenever an e-service failure occurs, it is likely to trigger a cognitive attribution process that involves an assessment of the losses incurred (Bearden and Teel, 1983) and an attribution of blame for the ensuing problem (Bitner 1990; Folkes 1984). Because past studies have shown a strong correlation between consumers' causal attributions of service failures and their evaluations of service encounters (e.g., Hess et al. 2007), it is worth investigating whether the different forms of e-service failures in our typology result in different causal attributions, and the impact of such attributions on online consumer behaviors and loyalty towards e-merchants.

Future research into e-service recovery might also look into resolutions for the service recovery paradox. As explained by Andreassen (2001), the service recovery paradox is founded on the assumption that the potential benefits a firm reaps from the manifestation of service failures

complemented with excellent recovery mechanisms is greater than that in a scenario absolutely devoid of service failures throughout the entire transaction. Empirical evidence however, produces mixed conclusions (e.g., Andreassen, 2001; McCollough et al., 2000; Smith and Bolton, 1998; Tax et al., 1998). It is hence interesting to explore this paradox in future investigations to unravel the extent to which effective recovery technologies can induce positive evaluations among consumers in the event of e-service failures. Intuitively, there may be a marked difference in the conditions of the online transactional environment that could possibly challenge the legitimacy of this paradox. For example, due to the possibility of boosted expectations towards e-service recoveries as documented by Holloway and Beatty (2003), it can be the case that it is difficult if not impossible to fashion recovery technologies in ways which are acceptable to consumers. Consequently, the extent to which e-service recovery technologies drive consumers' positive behavioral intentions may be negligible. Conversely, Voorhees and Brady (2005) illustrated that responsiveness towards service failures is positively correlated with future intentions, thereby suggesting that the strategic leveraging of technology in creating e-service recovery solutions may be critical in retaining consumers following failure occurrences.

## *7.3 Conclusion*

In summary, this thesis contributes to extant literature by developing typologies of the various manifestations of e-service failures for e-commerce websites and the technological artifacts (i.e., recovery technologies) to be harnessed by e-merchants in aiding consumers to overcome transactional difficulties. Then, constructing an integrated theory of e-service failure and recovery, this thesis outlines the design and execution of two empirical studies to clarify the negative impact on online consumers that is brought about by the manifestations of varying failure occurrences and the exact recovery solution, which is effective in addressing negative failure consequence. In light of our empirical findings, it should be emphasized this thesis is but a preliminary step in understanding the causes of e-service failures and prescribing viable countermeasures that can be undertaken by e-

merchants to alleviate negative failure consequences. Concerted research efforts are still very much needed in the future to expand on this foundation in hope of creating a seamless e-commerce transactional experience for online consumers.

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## APPENDIX A – CATEGORIZATION OF EXTANT E-SERVICE LITERATURE

| Author(s) | *Informational Attributes* | | | | *Functional Attributes* | | | | | *System Attributes* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **ACC** | **COM** | **REL** | **TIM** | **NER** | **AID** | **ALE** | **ACQ** | **POP** | **AES** | **NAV** | **ADT** | **SPD** | **SEC** |
| Agarwal and Venkatesh (2002) | | X | X | X | X | | | | X | X | X | X | | |
| Barnes and Vidgen (2001) | X | | | X | X | | | | X | X | X | X | X | X |
| Cai and Jun (2003) | X | X | | X | | | | | X | X | X | | | |
| Cenfetelli et al. (2008) | | | | | X | X | | X | X | X | X | X | X | |
| Childers et al. (2001) | | | | | X | | | | | X | X | | X | |
| Collier and Bienstock (2003, 2006) | X | X | | X | | | | X | X | X | X | | | X |
| Devaraj et al. (2002) | X | | | X | X | | X | | X | X | X | X | | X |
| Douglas et al. (2003) | X | X | X | X | | X | | | X | X | X | | | X |
| Evanschitzky et al. (2004) | X | X | | | | X | X | | | X | X | | X | X |
| Fassnacht and Koese (2006) | X | X | X | X | X | X | | X | | X | X | | X | X |
| Gefen (2002) | | | | | | | | X | X | X | | X | | X |
| Gounaris and Dimitriadis (2003) | | | | | X | | | X | X | | | | | X |
| Gummerus et al. (2004) | | | | | X | | | | | X | X | | | X |
| Janda et al. (2002) | X | | | | | | | X | | X | | | | X |
| Jiang et al. (2002) | | | | | | | | | X | X | | X | | X |
| Kim and Lim (2001) | X | X | X | X | | | | | | X | | | X | |
| Kim and Stoel (2004) | | | X | | | | | X | | | X | | X | X |
| Kim et al. (2004) | X | | | | X | X | | X | X | X | X | X | | X |
| Kim et al. (2006) | X | | | | X | | | X | X | X | X | X | X | X |
| Loiacono et al. (2002) | | X | X | | X | X | X | | | X | X | | X | X |
| McKinney et al. (2002) | X | X | X | X | | | | X | | X | X | | | |
| Meliàn-Alzola and Padron-Robaina (2006) | | | | | X | X | | X | | | X | | | |
| O'Neill et al. (2001) | | | | | | | | | X | X | X | X | | X |
| Palmer (2002) | X | X | | | X | | | | X | X | X | X | X | |
| Parasuraman et al. (2005) | | | | | | | | X | | X | | | X | X |
| Ribbink et al. (2004) | | | | | X | | | | | X | X | X | | X |
| Rosen and Purinton (2004) | | | | | | | X | | | X | X | | | |
| Santos (2003) | | X | | | X | | | | X | X | X | | X | X |
| Schubert (2002) | | | X | | | | | | | X | | | | X |
| Semeijn et al. (2005) | X | | | | X | | | | | | X | X | | X |
| Shchiglik and Barnes (2004) | X | X | X | | | X | | X | X | X | X | | | |
| Shim et al. (2002) | X | | | | | X | X | | X | X | | | | |
| Singh (2002) | | | | | | X | | X | X | X | | | | X |
| Srinivasan et al. (2002) | | | | | X | | X | | X | X | | X | | X |
| Surjadjaja et al. (2003) | X | | | X | X | | | X | X | X | X | X | X | X |

| Author(s) | *Informational Attributes* | | | | *Functional Attributes* | | | | | *System Attributes* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **ACC** | **COM** | **REL** | **TIM** | **NER** | **AID** | **ALE** | **ACQ** | **POP** | **AES** | **NAV** | **ADT** | **SPD** | **SEC** |
| Wolfinbarger and Gilly (2003) | | | | | | | | X | X | X | X | | | X |
| Zeithaml (2002); Zeithaml et al. (2002) | | X | | X | | | | X | | X | X | | | X |
| Zhang and von Dran (2001) | | | X | X | X | X | | X | | | | | | |

ACC – Accuracy; COM – Completeness; REL – Relevance; TIM – Timely; NER – Needs Recognition; AID – Alternatives Identification; ALE – Alternatives Evaluation; ACQ – Acquisition; POP – Post-Purchase; AES – Accessibility; NAV – Navigability; ADT – Adaptability; SPD – Speed; SEC – Security

## APPENDIX B – DETAILED BREAKDOWN OF CLASSIFICATIONS OF E-SERVICE FAILURE INCIDENTS

**Table B-1: Typology of Service Encounter Failures [as adapted from Bitner et al. (1990) and/or Bitner et al. (1994)] [Sample *N* = 374]**

| Construct | Definition (Event in which...) | Incident Coding | | |
|---|---|---|---|---|
| | | No. Unique Incidents* [%] | No. Common Incidents[+] [%] | Inter-Judge Reliability[‡] |
| ***Failure of Service Delivery System*** **[as adapted from Bitner et al. (1990) and Bitner et al. (1994)]** | | | | |
| **Unavailable Service** | E-merchant fails to provide services that are normally available or expected | 19 [5.08%] | 2 [0.53%] | 0.11 |
| **Unreasonably Slow Service** | E-merchant is slow in servicing customers | 25 [6.68%] | 13 [3.48%] | 0.52 |
| **Other Core Service Failure** | E-merchant fails to meet basic performance standards for other aspects of the core service (apart from its absence or slowness) | 150 [40.11%] | 39 [10.43%] | 0.26 |
| ***Failure to Meet Customer Needs and Requests*** **[as adapted from Bitner et al. (1990) and Bitner et al. (1994)]** | | | | |
| **Failure to Meet 'Special Needs' Customers** | E-merchant fails to recognize and accommodate customers' special demographical, physical and/or sociological needs (e.g., disabilities) | 24 [6.42%] | 7 [1.87%] | 0.29 |
| **Failure to Meet Customer Preferences** | E-merchant fails to recognize and accommodate customers' preferences that run contrary to standard practices | 83 [22.19%] | 17 [4.55] | 0.20 |
| **Failure to Address Admitted Customer Error** | E-merchant fails to resolve problems that arise from customers' admitted errors | 6 [1.60%] | 4 [1.07%] | 0.67 |
| **Failure to Manage Disruptive Others** | E-merchant fails to deal appropriately with disruptive customers | 0 [0.00%] | 0 [0.00%] | 0.00 |
| ***Unprompted and Unsolicited Service Behaviors*** **[as adapted from Bitner et al. (1990) and Bitner et al. (1994)]** | | | | |
| **Failure to Pay Attention to Customer** | E-merchant fails to pay sufficient attention to customers during service encounters | 44 [11.76%] | 14 [3.74%] | 0.32 |
| **Failure due to Out-of-the Ordinary Service Behavior** | E-merchant fails to perform in an expected manner and culminates in adverse consequences for customers | 177 [47.33%] | 82 [21.93%] | 0.46 |
| **Failure to be Sensitive to Cultural Norms** | E-merchant fails to observe cultural norms during service encounters | 24 [6.42%] | 7 [1.87%] | 0.29 |
| **Gestalt Evaluation Failure** | E-merchant fails to prevent isolated failures from affecting other related services | 17 [4.55%] | 0 [0.00%] | 0.00 |
| **Failure to Perform Under Adverse Circumstances** | E-merchant fails to perform efficaciously under unfavorable circumstances | 7 [1.87%] | 4 [1.07%] | 0.57 |
| ***Failure to Address Problematic Customer Behavior*** **[as adapted from Bitner et al. (1994)]** | | | | |
| **Failure to Address Drunk Customers** | E-merchant fails to deal with intoxicated customers who are causing troubles | 0 [0.00%] | 0 [0.00%] | 0.00 |

| Construct | Definition (Event in which...) | Incident Coding | | |
|---|---|---|---|---|
| | | No. Unique Incidents* [%] | No. Common Incidents+ [%] | Inter-Judge Reliability‡ |
| **Failure to Address Verbal and Physical Abuse** | E-merchant fails to deal with customers who engage in physical and/or verbal abuses | 0 [0.00%] | 0 [0.00%] | 0.00 |
| **Failure to Address Customers Breaking Company Laws or Policies** | E-merchant fails to deal with customers who refuse to comply with company rules and regulations | 0 [0.00%] | 0 [0.00%] | 0.00 |
| **Failure to Address Uncooperative Customers** | E-merchant fails to deal with customers who are generally rude, uncooperative and/or unreasonably demanding | 0 [0.00%] | 0 [0.00%] | 0.00 |
| ***Informational Failure*** | | | | |
| **Informational Failure** | E-merchant fails to provide quality information to customers in making transactional decisions | 10 [2.67%] | 4 [1.07%] | 0.40 |

* Total number of unique incidents assigned to each category by both judges

\+ Total number of identical incidents assigned to each category by both judges

‡ Number of identical incidents divided by number of unique incidents

**Table B-2: Typology of Retail Failures [as adapted from Kelley et al. (1993)] [Sample *N* = 374]**

| Construct | Definition (Event in which...) | Incident Coding | | |
|---|---|---|---|---|
| | | No. Unique Incidents* [%] | No. Common Incidents+ [%] | Inter-Judge Reliability‡ |
| ***Failure of Service Delivery System and/or Product*** | | | | |
| **Policy Failure** | E-merchant fails to enact service policies that are deemed to be just among customers | 19 [5.08%] | 10 [2.67%] | 0.53 |
| **Slow / Unavailable Service** | E-merchant fails to provide services that are normally available or expected and/or is slow in servicing customers | 221 [59.09%] | 164 [43.85%] | 0.74 |
| **System Pricing Failure** | E-merchant erroneously price listed products | 45 [12.03%] | 12 [3.21%] | 0.27 |
| **Packaging Errors** | E-merchant fails to properly package purchased products and/or label packages correctly | 32 [8.56%] | 20 [5.53%] | 0.63 |
| **Product Defects** | Purchased products fail to function as they are supposed to | 10 [2.67%] | 3 [0.80%] | 0.30 |
| **Out-of-Stock** | E-merchant fails to supply accurate information on the inventory levels of listed products | 12 [3.21%] | 6 [1.60%] | 0.50 |
| **Hold Disasters** | E-merchant fails to guarantee that products waiting to be claimed by customers do not become lost or damaged | 1 [0.27%] | 1 [0.27%] | 1.00 |
| **Alteration and Repairs Failure** | E-merchant fails ensure that product alterations or repairs are performed in a precise and speedy fashion | 1 [0.27%] | 0 [0.00%] | 0.00 |
| **Bad Information** | E-merchant misinforms customers in making transactional decisions | 8 [2.14%] | 2 [0.53%] | 0.25 |
| ***Failure to Meet Customer Needs and Requests*** | | | | |
| **Special Order / Request Failure** | E-merchant fails to fulfill special or unique requests that were promised to customers | 9 [2.41%] | 0 [0.00%] | 0.00 |
| **Failure to Address Admitted Customer Error** | E-merchant fails to resolve problems that arise from customers' admitted errors | 8 [2.14%] | 3 [0.80%] | 0.38 |
| ***Unprompted and Unsolicited Service Behaviors*** | | | | |
| **Mischarging** | E-merchant charges customers more than necessary for product purchases | 5 [1.34%] | 0 [0.00%] | 0.00 |
| **Wrongful Accusation of Customers** | E-merchant wrongfully accuses customers of inappropriate actions and/or places them under excessive surveillance during service encounters | 0 [0.00%] | 0 [0.00%] | 0.00 |
| **Failure due to Service-Induced Embarrassment** | E-merchant embarrasses customers due to insensitivity or mistakes during service encounters | 10 [2.67%] | 0 [0.00%] | 0.00 |
| **Attention Failures** | E-merchant fails to pay sufficient attention to customers during service encounters | 107 [28.61%] | 39 [10.43%] | 0.36 |

* Total number of unique incidents assigned to each category by both judges

\+ Total number of identical incidents assigned to each category by both judges

‡ Number of identical incidents divided by number of unique incidents

**Table B-3: Typology of Online Service Failures [as adapted from Holloway and Beatty (2003)] [Sample *N* = 374]**

| Construct | Definition (Event in which...) | Incident Coding | | |
|---|---|---|---|---|
| | | No. Unique Incidents* [%] | No. Common Incidents[+] [%] | Inter-Judge Reliability[‡] |
| ***Delivery Problems*** | | | | |
| **Purchase Arrived Later than Promised** | E-merchant is late in delivering purchased products to customers | 3 [0.80%] | 0 [0.00%] | 0.00 |
| **Purchase Never Delivered** | E-merchant fails to deliver purchased products to customers | 22 [5.88%] | 15 [4.01%] | 0.68 |
| **Wrong Item Delivered** | E-merchant delivers products that are different from what were purchased | 10 [2.67%] | 6 [1.60%] | 0.60 |
| **Wrong Size Product Delivered** | E-merchant delivers products with different specifications from what were purchased | 7 [1.87%] | 4 [1.07%] | 0.57 |
| **Purchase Damaged During Delivery** | E-merchant fails to properly package purchased products to avoid damage during delivery | 2 [0.53%] | 2 [0.53%] | 1.00 |
| ***Website Design Problems*** | | | | |
| **Navigational Problems at Site** | E-merchant fails to offer easy accessibility to service content offered | 90 [24.06%] | 33 [8.82%] | 0.37 |
| **Product Poorly Presented at Site** | E-merchant fails to supply relevant information on product specifications | 8 [2.14%] | 1 [0.27%] | 0.13 |
| **Insufficient Information Provided at Site** | E-merchant fails to supply sufficient information on transactional activities | 38 [10.16%] | 17 [4.55%] | 0.45 |
| **Products Incorrectly Listed at Site as in Stock** | E-merchant fails to supply accurate information on the inventory levels of listed products | 10 [2.67%] | 7 [1.87%] | 0.70 |
| **Incorrect Information Provided at Site** | E-merchant fails to supply correct information that aid customers in making transactional decisions | 3 [0.80%] | 2 [0.53%] | 0.67 |
| ***Customer Service Problems*** | | | | |
| **Poor Customer Service Support** | E-merchant fails to meet customers' service expectations when performing online transactions | 186 [49.73%] | 83 [22.19%] | 0.45 |
| **Poor Communication with the Company** | E-merchant fails to provide communication channels for customers to seek assistance | 22 [5.88%] | 13 [3.48%] | 0.59 |
| **Unfair Return Policies** | E-merchant compels customers to return purchased products under unjust terms | 6 [1.60%] | 0 [0.00%] | 0.00 |
| **Unclear Return Policies** | E-merchant fails to supply unambiguous information for returning purchased products | 1 [0.27%] | 0 [0.00%] | 0.00 |
| ***Payment Problems*** | | | | |
| **Credit Card Overcharged** | E-merchant charges customers more than necessary for product purchases | 8 [2.14%] | 5 [1.34%] | 0.63 |
| **Website Purchasing Process Confusing** | E-merchant fails to offer a straightforward product purchasing process for customers | 18 [4.81%] | 2 [0.53%] | 0.11 |
| **Difficulties Experienced While Paying** | E-merchant fails to provide payment options desired by customers | 20 [5.35%] | 5 [1.34%] | 0.25 |
| **Problems with Product Quality** | Purchased products fail to function as they are supposed to | 5 [1.34%] | 2 [0.53%] | 0.40 |
| **Consumer Dissatisfied with Product Quality** | Customers are disappointed with the way purchased products function | 0 [0.00%] | 0 [0.00%] | 0.00 |

| Construct | Definition (Event in which...) | Incident Coding | | |
|---|---|---|---|---|
| | | No. Unique Incidents* [%] | No. Common Incidents+ [%] | Inter-Judge Reliability‡ |
| ***Security Problems*** | | | | |
| **Credit Card Fraud** | E-merchant charges customers for unauthorized purchases | 4 [1.07%] | 1 [0.27%] | 0.25 |
| **Misrepresented Merchandise** | E-merchant misinforms customers into purchasing products with unlisted specifications | 2 [0.53%] | 0 [0.00%] | 0.00 |
| **Email Address Released to E-Marketers** | E-merchant releases customers' disclosed email addresses to e-marketers without proper authorization | 2 [0.53%] | 2 [0.53%] | 1.00 |
| ***Miscellaneous*** | | | | |
| **Failure to Address Unintentional Customer Mistakes** | E-merchant fails to resolve problems that arise out of unintentional mistakes on the part of customers | 5 [1.34%] | 3 [0.80%] | 0.60 |
| **Retailer Charged Some Customers More than Others** | E-merchant charges certain customers more than others for purchasing exact same products | 0 [0.00%] | 0 [0.00%] | 0.00 |
| **Lack of Personalized Information at Site** | E-merchant fails to tailor transactional information to meet customers' requirements | 56 [14.79%] | 17 [4.55%] | 0.30 |

* Total number of unique incidents assigned to each category by both judges

\+ Total number of identical incidents assigned to each category by both judges

‡ Number of identical incidents divided by number of unique incidents

**Table B-4: Proposed E-Service Failure Typology [Sample *N* = 374]**

| Construct | Definition (Event in which…) | Incident Coding | | |
|---|---|---|---|---|
| | | No. Unique Incidents* [%] | No. Common Incidents[+] [%] | Inter-Judge Reliability[‡] |
| ***Informational Failures*** | | | | |
| **Inaccurate Information** | Information provided on an e-commerce website contains errors that misinform consumers in making transactional decisions | 37 [9.89%] | 28 [7.49%] | 0.76 |
| **Incomplete Information** | Information provided on an e-commerce website is insufficient to aid consumers in making transactional decisions | 27 [7.22%] | 20 [5.35%] | 0.74 |
| **Irrelevant Information** | Information provided on an e-commerce website cannot be utilized by consumers in making transactional decisions | 11 [2.94%] | 9 [2.41%] | 0.82 |
| **Untimely Information** | Information provided on an e-commerce website is not updated to support consumers in making transactional decisions | 25 [6.68%] | 20 [5.35%] | 0.80 |
| ***Functional Failures*** | | | | |
| **Needs Recognition Failure** | Functionalities of an e-commerce website are incapable of assisting consumers to formulate their needs and preferences for products and/or services | 3 [0.80%] | 3 [0.80%] | 1.00 |
| **Alternatives Identification Failure** | Functionalities of an e-commerce website are incapable of assisting consumers to gather information on and source for interested products and/or services | 8 [2.14%] | 8 [2.14%] | 1.00 |
| **Alternatives Evaluation Failure** | Functionalities of an e-commerce website are incapable of assisting consumers to draw comparisons among interested products and/or services | 1 [0.27%] | 1 [0.27%] | 1.00 |
| **Acquisition Failure** | Functionalities of an e-commerce website are incapable of assisting consumers to place orders for desired products and/or services | 63 [16.84%] | 52 [13.90%] | 0.83 |
| **Post-Purchase Failure** | Functionalities of an e-commerce website are incapable of assisting consumers to: (1) obtain purchased products and/or services; (2) solicit advice on ways to maximize the utility of purchased products and/or services, and; (3) dispose of unwanted products and/or services. | 26 [6.95%] | 21 [5.61%] | 0.81 |
| ***System Failures*** | | | | |
| **Inaccessibility** | Services of an e-commerce website are not accessible | 73 [19.52%] | 64 [17.11%] | 0.88 |
| **Non-Adaptability** | Services of an e-commerce website are unable to accommodate diverse content and usage patterns | 18 [4.81%] | 17 [4.55%] | 0.94 |
| **Non-Navigability** | Services of an e-commerce website are difficult to navigate | 28 [7.49%] | 21 [5.61%] | 0.75 |
| **Delay** | Services of an e-commerce website are inordinately slow in access | 33 [8.82%] | 30 [8.02%] | 0.91 |
| **Insecurity** | Services of an e-commerce website are not safeguarded against unsanctioned access by unauthorized individuals | 7 [1.87%] | 7 [1.87%] | 1.00 |

| Construct | Definition (Event in which…) | Incident Coding | | |
|---|---|---|---|---|
| | | No. Unique Incidents* [%] | No. Common Incidents+ [%] | Inter-Judge Reliability‡ |
| ***Non-Transaction-Oriented Failures*** | | | | |
| **Mischarging** | E-commerce website charges the consumer for unauthorized or unfulfilled purchases | 9 [2.41%] | 5 [1.34%] | 0.56 |
| **Product Delivery Problems** | Product(s) purchased on an e-commerce website is not delivered or damaged during delivery | 31 [8.29%] | 15 [4.01%] | 0.48 |
| **Unresponsive to Customer Enquiries** | Responses to online customer enquiries are not forthcoming | 18 [4.81%] | 9 [2.41%] | 0.50 |

* Total number of unique incidents assigned to each category by both judges

\+ Total number of identical incidents assigned to each category by both judges

‡ Number of identical incidents divided by number of unique incidents

## APPENDIX C – CLASSIFICATION OF EXEMPLARY E-SERVICE FAILURE INCIDENTS

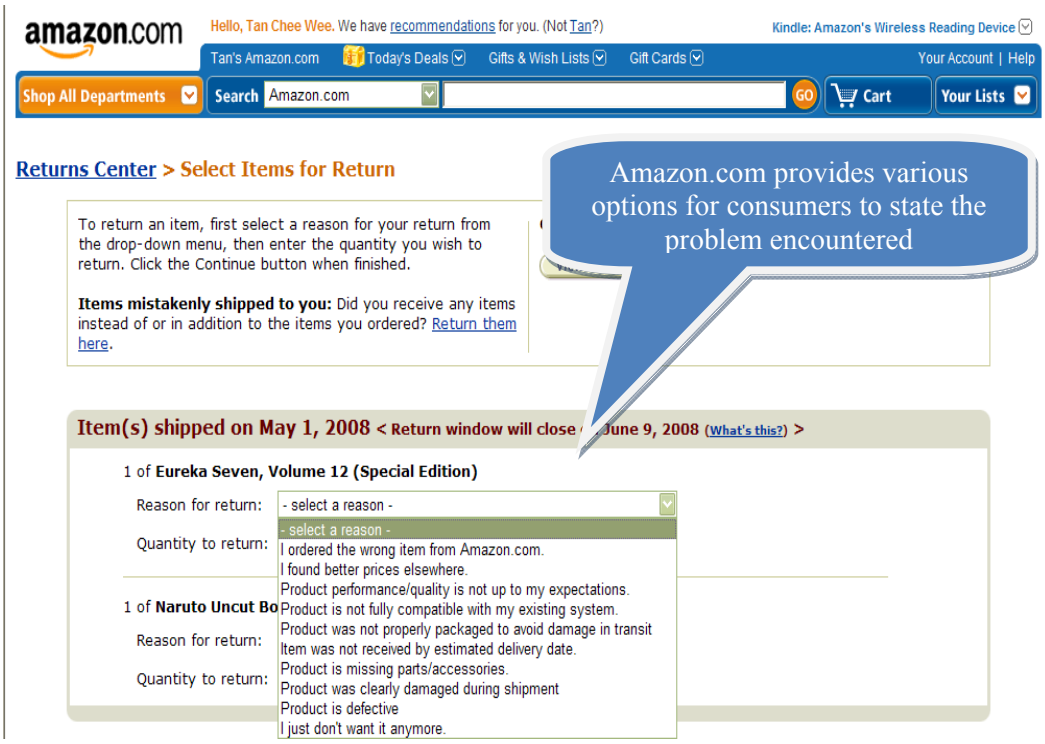
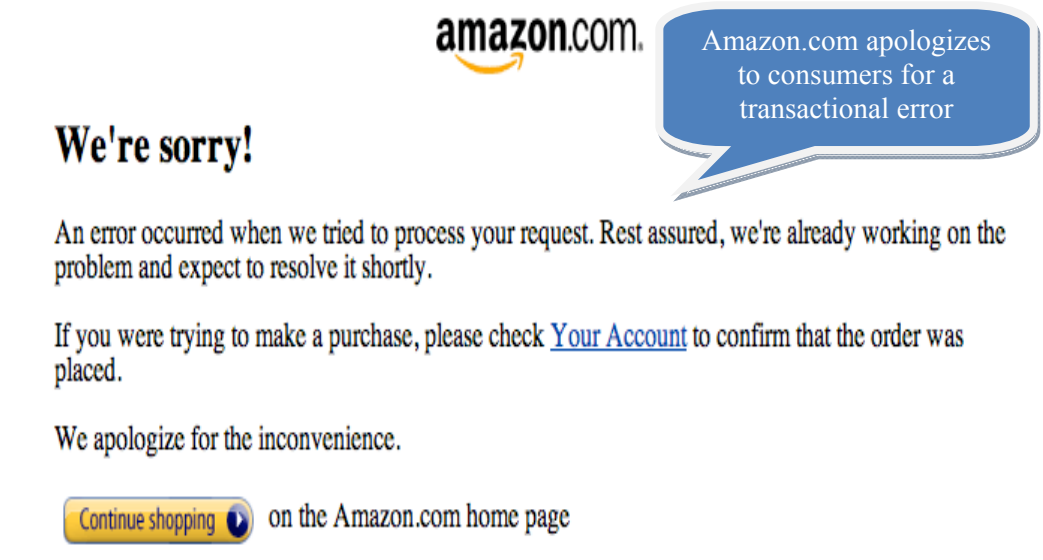
| Failure Incident | Proposed E-Service Failure Typology | | Bitner's (1990, 1994) Typology | | Holloway & Beatty's (2003) Typology | | Kelley et al.'s (1993) Typology | |
|---|---|---|---|---|---|---|---|---|
| | 1st Judge | 2nd Judge | 1st Judge | 2nd Judge | 1st Judge | 2nd Judge | 1st Judge | 2nd Judge |
| **Incident 1**: You must be registered to be a member and pay a fee and usually through internet processors such as PayPal or clickbank...with a full refund policy within thirty days or so, but they never pay me back. So the information offered on the site is not accurate. | Inaccurate Information | Inaccurate Information | Incorrect Information Provided at Site | Incorrect Information Provided at Site | Failure to Meet Customer Preferences | Other Core Service Failure | Bad Information | Special Order / Request Failure |
| **Incident 2**: A few times, I was looking to buy some hair products online. After spending a lot of time adding products to shopping carts and entering my contact information, I was informed that the companies did not mail orders to places outside of US. This was never made known to me before I initiated the transaction. | Incomplete Information | Incomplete Information | Lack of Personalized Information at Site | Insufficient Information Provided at Site | Failure to Meet 'Special Needs' Customers | Informational Failure | Policy Failure | Policy Failure |
| **Incident 3**: In the past, I had been able to view more organized information about products, but recently, the website began providing me with less detailed/off-center image information, which no longer meets my needs. | Irrelevant Information | Irrelevant Information | Product Poorly Presented at Site | Poor Customer Service Support | Failure due to Out-of-the Ordinary Service Behavior | Failure due to Out-of-the Ordinary Service Behavior | Bad Information | Slow / Unavailable Service |
| **Incident 4**: I wanted to buy a plane ticket. I was able to choose the destination, date, and started placing the order, then to realize later that the price changed during the time i was completing the order. | Untimely Information | Untimely Information | Website Purchasing Process Confusing | Website Purchasing Process Confusing | Failure due to Out-of-the Ordinary Service Behavior | Failure due to Out-of-the Ordinary Service Behavior | System Pricing Failure | System Pricing Failure |
| **Incident 5**: Looking to buy something online and searching for the item I wanted, I can't find it because the website cannot help me to pinpoint the item I am looking for. | Needs Recognition Failure | Needs Recognition Failure | Lack of Personalized Information at Site | Lack of Personalized Information at Site | Failure to Meet Customer Preferences | Failure to Pay Attention to Customer | Slow / Unavailable Service | Attention Failures |
| **Incident 6**: I visited Amazon.com to search for a DVD I wanted to purchase. I have often searched for and found things on Amazon.com successfully, but because this DVD turned out to be out of print, it made it harder to find at a decent price. The only DVDs for sale I could find were over $50, which I was not willing to spend. I couldn't imagine that out of all the sellers on Amazon, there wasn't a used DVD for cheaper. After shuffling and searching around for a very long time, I was able to dig deeper than the first search | Alternatives Identification Failure | Alternatives Identification Failure | Navigational Problems at Site | Poor Customer Service Support | Other Core Service Failure | Failure to Meet Customer Preferences | Slow / Unavailable Service | System Pricing Failure |

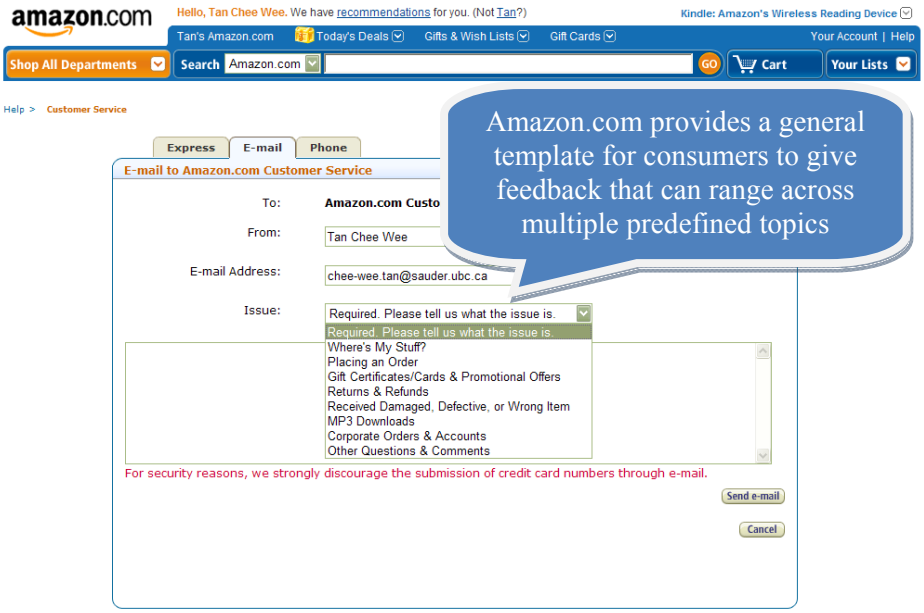
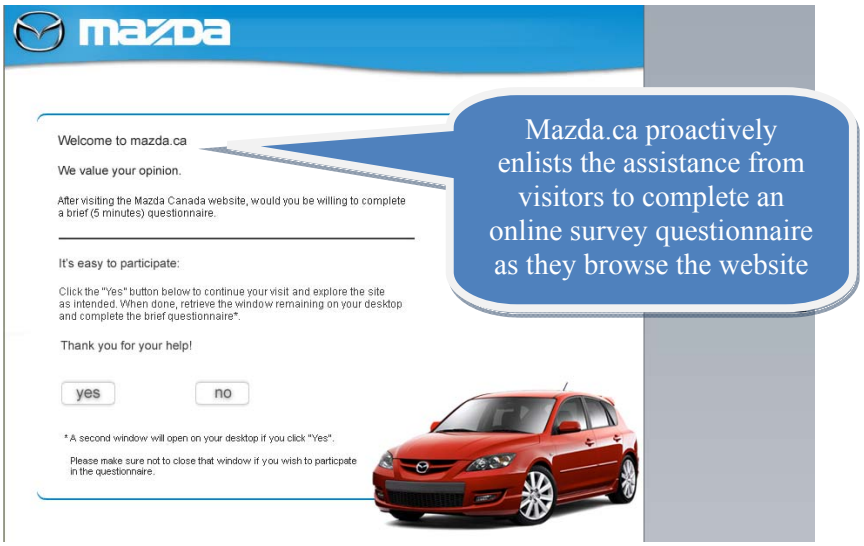
| Failure Incident | Proposed E-Service Failure Typology | | Bitner's (1990, 1994) Typology | | Holloway & Beatty's (2003) Typology | | Kelley et al.'s (1993) Typology | |
|---|---|---|---|---|---|---|---|---|
| | 1st Judge | 2nd Judge | 1st Judge | 2nd Judge | 1st Judge | 2nd Judge | 1st Judge | 2nd Judge |
| results and find a DVD for $30. I think the search function is poorly designed. I should have been able to find the cheaper DVD without taking such a long time to search. | | | | | | | | |
| **Incident 7**: I recently tried to order several items from a retail store via their website, www.kohls.com. After choosing several products and entering the desired quantities, I decided to visit Overstock.com to compare prices for similar items before placing the order with Kohl's. Before switching websites, I created a username and password on the Kohl's website, assuming that my "basket" contents would be saved. However, after navigating to the Overstock website and then returning to Kohls.com, my basket contents had been cleared. Other shopping sites that I've used tend to be very sticky with my basket contents even when I am not logged in as a user. As long as I'm entering from the same IP address, my shopping basket contents are usually retained. But this was not the case on the Kohl's site. I did not recreate my online order with them. | Alternatives Evaluation Failure | Alternatives Evaluation Failure | Lack of Personalized Information at Site | Poor Customer Service Support | Failure to Meet Customer Preferences | Failure to Meet Customer Preferences | Attention Failures | Attention Failures |
| **Incident 8**: I wanted to purchase cinema tickets online. I could find the movie, theatre, and time. However, when I got to the credit card payment, the (externally-powered) transaction module failed to validate my transactions. I pay with that card very often on other Websites so I don't think it was due to my card or me entering the wrong info. I tried 4 times to reprocess the payment but it never managed to process it. | Acquisition Failure | Acquisition Failure | Poor Customer Service Support | Difficulties Experienced While Paying | Other Core Service Failure | Failure due to Out-of-the Ordinary Service Behavior | Slow / Unavailable Service | Slow / Unavailable Service |
| **Incident 9**: I wanted to order a video game through Amazon.ca, which I had successfully done. I was able to add the item to my cart and successfully check out. A couple hours later, I realized that I had forgotten to order another item. Amazon had the option to amend orders before they were processed, but when I returned to my account; my order had already been processed. My original order was over $39, which qualified it for free shipping, but the second item that I wanted to order was not. I did not want to place another order and have to pay for shipping, | Post-Purchase Consultation Failure | Post-Purchase Consultation Failure | Failure to Address Unintentional Customer Mistakes | Insufficient Information Provided at Site | Failure to Address Admitted Customer Error | Failure to Address Admitted Customer Error | Failure to Address Admitted Customer Error | Attention Failures |

| Failure Incident | Proposed E-Service Failure Typology | | Bitner's (1990, 1994) Typology | | Holloway & Beatty's (2003) Typology | | Kelley et al.'s (1993) Typology | |
|---|---|---|---|---|---|---|---|---|
| | 1st Judge | 2nd Judge | 1st Judge | 2nd Judge | 1st Judge | 2nd Judge | 1st Judge | 2nd Judge |
| when I could have just added the second item to go with the first, and get free shipping for both items. In the end, I decided not to order the second item. | | | | | | | | |
| **Incident 10**: I went to Amazon.com to purchase a present for my husband. I got almost the whole way through the checkout process before the website malfunctioned on my browser and I lost my order. | Inaccessibility | Inaccessibility | Poor Customer Service Support | Poor Customer Service Support | Failure due to Out-of-the Ordinary Service Behavior | Gestalt Evaluation Failure | Slow / Unavailable Service | Slow / Unavailable Service |
| **Incident 11**: When I went to send an email to inquiry about my purchase order, the website asked for my name, address, account number, etc. I could not proceed further because when it came time to enter my STATE I couldn't because it was an American site and the STATE section could only be filled out from a pre-installed list. I am from Canada and I couldn't override it. | Non-Adaptability | Non-Adaptability | Lack of Personalized Information at Site | Lack of Personalized Information at Site | Failure to Meet Customer Preferences | Failure to Meet Customer Preferences | Slow / Unavailable Service | Attention Failures |
| **Incident 12**: I had accessed the main page and navigated through it to the product I was interested in. At that point I tried to use the button allowing me to get more information but despite continued attempts using the button the required page failed to load and I got an error message stating the requested page was unavailable. I attempted several times to go back to the home page and re-navigate to this spot but the requested page failed to load | Non-Navigability | Non-Navigability | Poor Customer Service Support | Product Poorly Presented at Site | Other Core Service Failure | Other Core Service Failure | Slow / Unavailable Service | Slow / Unavailable Service |
| **Incident 13**: I choose the laptop I wanted to buy. Then I was redirected on the site for the credit card payment. I entered my credit card information, number and expiry date, and clicked on PROCESS. Nothing happened. 5 minutes later I clicked again on PROCESS. Nothing happened again. I clicked again 5 minutes later and it worked. | Delay | Delay | Navigational Problems at Site | Website Purchasing Process Confusing | Unreasonably Slow Service | Failure due to Out-of-the Ordinary Service Behavior | Slow / Unavailable Service | Slow / Unavailable Service |
| **Incident 14**: I logged on to my account and was hijacked to a site to enter a sweepstakes instead that had the terms and conditions to participate in several levels of "reward programs". These seem to lead to endless and expensive participations. | Insecurity | Insecurity | Lack of Personalized Information at Site | Lack of Personalized Information at Site | Failure due to Out-of-the Ordinary Service Behavior | Failure to Pay Attention to Customer | Attention Failures | Slow / Unavailable Service |

| Failure Incident | Proposed E-Service Failure Typology | | Bitner's (1990, 1994) Typology | | Holloway & Beatty's (2003) Typology | | Kelley et al.'s (1993) Typology | |
|---|---|---|---|---|---|---|---|---|
| | 1st Judge | 2nd Judge | 1st Judge | 2nd Judge | 1st Judge | 2nd Judge | 1st Judge | 2nd Judge |
| **Incident 15**: I was on bearshare.com wanting to join so i could download some music. I was to pay $60 for the year after i put in the information and my card was charged, the page would not finish submitting and I received no membership to download music and was out by $60 and have not heard from the web site. I have complained to the website and requested my money back. | Mischarging | Mischarging | Purchase Never Delivered | Purchase Never Delivered | Failure to Pay Attention to Customer | Failure due to Out-of-the Ordinary Service Behavior | Policy Failure | Policy Failure |
| **Incident 16**: I buy things from them several times a year and have done so for years. One of the items was meant to be a gift and according to the shipping estimate would have arrived in plenty of time. The week the item was scheduled to be delivered I received every other item I have ordered except the gift. What failed was Amazon NOT informing that an item is being shipped or not available on the date promised. | Product Delivery Problems | Product Delivery Problems | Purchase Never Delivered | Purchase Never Delivered | Other Core Service Failure | Other Core Service Failure | Packaging Errors | Packaging Errors |
| **Incident 17**: I was able to easily find the product that I wanted to purchase. I saw that there was an area on the website where I could ask a question to which I submitted my query. I submitted my query and after two days, had not received a response. I submitted another query, and waited an additional two days and still nothing. | Unresponsive to Customer Enquiries | Unresponsive to Customer Enquiries | Poor Communication with the Company | Poor Communication with the Company | Failure to Pay Attention to Customer | Unreasonably Slow Service | Attention Failures | Attention Failures |

## APPENDIX D – ILLUSTRATIVE EXAMPLES OF E-SERVICE RECOVERY TECHNOLOGY IN PRACTICE

| E-Service Recovery | Technological Implementation |
|---|---|
| **Compensation** | Offer ***Self-Serving Help Centers*** (see example below) for consumers to seek compensation for negative transactional experiences<br>  |
| **Affinity** | Offer ***Apology*** (see example below) to consumers regarding any negative transaction experience<br>  |

| E-Service Recovery | Technological Implementation |
|---|---|
| **Response Sensitivity** | Offer ***Evaluation/Inquiry Forms*** (see example below) for consumers to provide feedback regarding any negative transaction experience<br>  |
| **Initiative** | Offer ***Proactive Feedback Mechanisms*** (see example below) to prompt consumers to reflect on various aspects of their transactional experience in order to identify unreported areas of concern<br>  |

## APPENDIX E – DUNNETT T3 TEST FOR E-SERVICE FAILURE MANIPULATIONS [FAILURE TREATMENT COMPARISONS]

| Dependent Variable | (I) Failure Treatment | (J) Failure Treatment | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| Informational Failure | No Failure | Informational Failure | -2.03582* | .000 |
| | | Missing Comparison | -.33527 | .659 |
| | | Delay | -.19543 | .954 |
| | Out-of-Stock | No Failure | 2.03582* | .000 |
| | | Missing Comparison | 1.70054* | .000 |
| | | Delay | 1.84038* | .000 |
| | Missing Comparison | No Failure | .33527 | .659 |
| | | Informational Failure | -1.70054* | .000 |
| | | Delay | .13984 | .885 |
| | Delay | No Failure | .19543 | .954 |
| | | Informational Failure | -1.84038* | .000 |
| | | Missing Comparison | -.13984 | .885 |
| Functional Failure | No Failure | Informational Failure | -.46321 | .336 |
| | | Missing Comparison | -1.88370* | .000 |
| | | Delay | -.15875 | .985 |
| | Out-of-Stock | No Failure | .46321 | .336 |
| | | Missing Comparison | -1.42049* | .000 |
| | | Delay | .30446 | .225 |
| | Missing Comparison | No Failure | 1.88370* | .000 |
| | | Informational Failure | 1.42049* | .000 |
| | | Delay | 1.72495* | .000 |
| | Delay | No Failure | .15875 | .985 |
| | | Informational Failure | -.30446 | .225 |
| | | Missing Comparison | -1.72495* | .000 |
| System Failure | No Failure | Informational Failure | -.56902 | .110 |
| | | Missing Comparison | -.53799 | .153 |
| | | Delay | -1.93543* | .000 |
| | Out-of-Stock | No Failure | .56902 | .110 |
| | | Missing Comparison | .03103 | 1.000 |
| | | Delay | -1.36641* | .000 |
| | Missing Comparison | No Failure | .53799 | .153 |
| | | Informational Failure | -.03103 | 1.000 |
| | | Delay | -1.39745* | .000 |
| | Delay | No Failure | 1.93543* | .000 |
| | | Informational Failure | 1.36641* | .000 |

| Dependent Variable | (I) Failure Treatment | (J) Failure Treatment | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| | | Missing Comparison | 1.39745* | .000 |

The mean difference is significant at the 0.05 level.

## APPENDIX F – DUNNETT T3 TEST FOR E-SERVICE RECOVERY MANIPULATIONS [RECOVERY TREATMENT COMPARISONS]

| Dependent Variable | (I) Type of Recovery | (J) Type of Recovery | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| Compensation | No Recovery | Feedback | .34768 | .988 |
| | | Apology | .28449 | .999 |
| | | Apology x Feedback | .27043 | 1.000 |
| | | Discount | 2.54580* | .000 |
| | | Discount x Feedback | 2.49768* | .000 |
| | | Discount x Apology | 2.44493* | .000 |
| | | Discount x Apology x Feedback | 2.37667* | .000 |
| | Feedback | No Recovery | -.34768 | .988 |
| | | Apology | -.06319 | 1.000 |
| | | Apology x Feedback | -.07725 | 1.000 |
| | | Discount | 2.19812* | .000 |
| | | Discount x Feedback | 2.15000* | .000 |
| | | Discount x Apology | 2.09725* | .000 |
| | | Discount x Apology x Feedback | 2.02899* | .000 |
| | Apology | No Recovery | -.28449 | .999 |
| | | Feedback | .06319 | 1.000 |
| | | Apology x Feedback | -.01406 | 1.000 |
| | | Discount | 2.26130* | .000 |
| | | Discount x Feedback | 2.21319* | .000 |
| | | Discount x Apology | 2.16043* | .000 |
| | | Discount x Apology x Feedback | 2.09217* | .000 |
| | Apology x Feedback | No Recovery | -.27043 | 1.000 |
| | | Feedback | .07725 | 1.000 |
| | | Apology | .01406 | 1.000 |
| | | Discount | 2.27536* | .000 |
| | | Discount x Feedback | 2.22725* | .000 |
| | | Discount x Apology | 2.17449* | .000 |
| | | Discount x Apology x Feedback | 2.10623* | .000 |
| | Discount | No Recovery | -2.54580* | .000 |
| | | Feedback | -2.19812* | .000 |
| | | Apology | -2.26130* | .000 |
| | | Apology x Feedback | -2.27536* | .000 |
| | | Discount x Feedback | -.04812 | 1.000 |
| | | Discount x Apology | -.10087 | 1.000 |
| | | Discount x Apology x Feedback | -.16913 | 1.000 |

| Dependent Variable | (I) Type of Recovery | (J) Type of Recovery | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| | Discount x Feedback | No Recovery | -2.49768* | .000 |
| | | Feedback | -2.15000* | .000 |
| | | Apology | -2.21319* | .000 |
| | | Apology x Feedback | -2.22725* | .000 |
| | | Discount | .04812 | 1.000 |
| | | Discount x Apology | -.05275 | 1.000 |
| | | Discount x Apology x Feedback | -.12101 | 1.000 |
| | Discount x Apology | No Recovery | -2.44493* | .000 |
| | | Feedback | -2.09725* | .000 |
| | | Apology | -2.16043* | .000 |
| | | Apology x Feedback | -2.17449* | .000 |
| | | Discount | .10087 | 1.000 |
| | | Discount x Feedback | .05275 | 1.000 |
| | | Discount x Apology x Feedback | -.06826 | 1.000 |
| | Discount x Apology x Feedback | No Recovery | -2.37667* | .000 |
| | | Feedback | -2.02899* | .000 |
| | | Apology | -2.09217* | .000 |
| | | Apology x Feedback | -2.10623* | .000 |
| | | Discount | .16913 | 1.000 |
| | | Discount x Feedback | .12101 | 1.000 |
| | | Discount x Apology | .06826 | 1.000 |
| Affinity | No Recovery | Feedback | .45377 | .972 |
| | | Apology | 1.75333* | .000 |
| | | Apology x Feedback | 2.16449* | .000 |
| | | Discount | 1.02435* | .038 |
| | | Discount x Feedback | .71928 | .587 |
| | | Discount x Apology | 2.08188* | .000 |
| | | Discount x Apology x Feedback | 2.39116* | .000 |
| | Feedback | No Recovery | -.45377 | .972 |
| | | Apology | 1.29957* | .000 |
| | | Apology x Feedback | 1.71072* | .000 |
| | | Discount | .57058 | .874 |
| | | Discount x Feedback | .26551 | 1.000 |
| | | Discount x Apology | 1.62812* | .000 |
| | | Discount x Apology x Feedback | 1.93739* | .000 |
| | Apology | No Recovery | -1.75333* | .000 |
| | | Feedback | -1.29957* | .000 |
| | | Apology x Feedback | .41116 | .369 |

| Dependent Variable | (I) Type of Recovery | (J) Type of Recovery | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| | | Discount | -.72899 | .168 |
| | | Discount x Feedback | -1.03406* | .013 |
| | | Discount x Apology | .32855 | .720 |
| | | Discount x Apology x Feedback | .63783* | .006 |
| | Apology x Feedback | No Recovery | -2.16449* | .000 |
| | | Feedback | -1.71072* | .000 |
| | | Apology | -.41116 | .369 |
| | | Discount | -1.14014* | .001 |
| | | Discount x Feedback | -1.44522* | .000 |
| | | Discount x Apology | -.08261 | 1.000 |
| | | Discount x Apology x Feedback | .22667 | .997 |
| | Discount | No Recovery | -1.02435* | .038 |
| | | Feedback | -.57058 | .874 |
| | | Apology | .72899 | .168 |
| | | Apology x Feedback | 1.14014* | .001 |
| | | Discount x Feedback | -.30507 | 1.000 |
| | | Discount x Apology | 1.05754* | .004 |
| | | Discount x Apology x Feedback | 1.36681* | .000 |
| | Discount x Feedback | No Recovery | -.71928 | .587 |
| | | Feedback | -.26551 | 1.000 |
| | | Apology | 1.03406* | .013 |
| | | Apology x Feedback | 1.44522* | .000 |
| | | Discount | .30507 | 1.000 |
| | | Discount x Apology | 1.36261* | .000 |
| | | Discount x Apology x Feedback | 1.67188* | .000 |
| | Discount x Apology | No Recovery | -2.08188* | .000 |
| | | Feedback | -1.62812* | .000 |
| | | Apology | -.32855 | .720 |
| | | Apology x Feedback | .08261 | 1.000 |
| | | Discount | -1.05754* | .004 |
| | | Discount x Feedback | -1.36261* | .000 |
| | | Discount x Apology x Feedback | .30928 | .865 |
| | Discount x Apology x Feedback | No Recovery | -2.39116* | .000 |
| | | Feedback | -1.93739* | .000 |
| | | Apology | -.63783* | .006 |
| | | Apology x Feedback | -.22667 | .997 |
| | | Discount | -1.36681* | .000 |
| | | Discount x Feedback | -1.67188* | .000 |

| Dependent Variable | (I) Type of Recovery | (J) Type of Recovery | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| | | Discount x Apology | -.30928 | .865 |
| Response Sensitivity | No Recovery | Feedback | 1.32899* | .000 |
| | | Apology | -.16928 | 1.000 |
| | | Apology x Feedback | 1.70072* | .000 |
| | | Discount | .49290 | .949 |
| | | Discount x Feedback | 1.73942* | .000 |
| | | Discount x Apology | .43043 | .994 |
| | | Discount x Apology x Feedback | 1.65246* | .000 |
| | Feedback | No Recovery | -1.32899* | .000 |
| | | Apology | -1.49826* | .000 |
| | | Apology x Feedback | .37174 | .564 |
| | | Discount | -.83609* | .019 |
| | | Discount x Feedback | .41043 | .333 |
| | | Discount x Apology | -.89855* | .017 |
| | | Discount x Apology x Feedback | .32348 | .812 |
| | Apology | No Recovery | .16928 | 1.000 |
| | | Feedback | 1.49826* | .000 |
| | | Apology x Feedback | 1.87000* | .000 |
| | | Discount | .66217 | .399 |
| | | Discount x Feedback | 1.90870* | .000 |
| | | Discount x Apology | .59971 | .678 |
| | | Discount x Apology x Feedback | 1.82174* | .000 |
| | Apology x Feedback | No Recovery | -1.70072* | .000 |
| | | Feedback | -.37174 | .564 |
| | | Apology | -1.87000* | .000 |
| | | Discount | -1.20783* | .000 |
| | | Discount x Feedback | .03870 | 1.000 |
| | | Discount x Apology | -1.27029* | .000 |
| | | Discount x Apology x Feedback | -.04826 | 1.000 |
| | Discount | No Recovery | -.49290 | .949 |
| | | Feedback | .83609* | .019 |
| | | Apology | -.66217 | .399 |
| | | Apology x Feedback | 1.20783* | .000 |
| | | Discount x Feedback | 1.24652* | .000 |
| | | Discount x Apology | -.06246 | 1.000 |
| | | Discount x Apology x Feedback | 1.15957* | .000 |
| | Discount x Feedback | No Recovery | -1.73942* | .000 |
| | | Feedback | -.41043 | .333 |

| Dependent Variable | (I) Type of Recovery | (J) Type of Recovery | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| | | Apology | -1.90870* | .000 |
| | | Apology x Feedback | -.03870 | 1.000 |
| | | Discount | -1.24652* | .000 |
| | | Discount x Apology | -1.30899* | .000 |
| | | Discount x Apology x Feedback | -.08696 | 1.000 |
| | Discount x Apology | No Recovery | -.43043 | .994 |
| | | Feedback | .89855* | .017 |
| | | Apology | -.59971 | .678 |
| | | Apology x Feedback | 1.27029* | .000 |
| | | Discount | .06246 | 1.000 |
| | | Discount x Feedback | 1.30899* | .000 |
| | | Discount x Apology x Feedback | 1.22203* | .000 |
| | Discount x Apology x Feedback | No Recovery | -1.65246* | .000 |
| | | Feedback | -.32348 | .812 |
| | | Apology | -1.82174* | .000 |
| | | Apology x Feedback | .04826 | 1.000 |
| | | Discount | -1.15957* | .000 |
| | | Discount x Feedback | .08696 | 1.000 |
| | | Discount x Apology | -1.22203* | .000 |

*. The mean difference is significant at the 0.05 level.

## APPENDIX G – DUNNETT T3 TEST FOR IMPACT OF E-SERVICE FAILURES ON DISCONFIRMED EXPECTANCIES [FAILURE TREATMENT COMPARISONS]

| Dependent Variable | (I) Failure Treatment | (J) Failure Treatment | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| Disconfirmed Outcome Expectancy | No Failure | Out-of-Stock | 1.8020* | .000 |
| | | Missing Comparison | 1.0213* | .001 |
| | | Delay | .7946* | .012 |
| | Out-of-Stock | No Failure | -1.8020* | .000 |
| | | Missing Comparison | -.7808* | .000 |
| | | Delay | -1.0074* | .000 |
| | Missing Comparison | No Failure | -1.0213* | .001 |
| | | Out-of-Stock | .7808* | .000 |
| | | Delay | -.2266 | .624 |
| | Delay | No Failure | -.7946* | .012 |
| | | Out-of-Stock | 1.0074* | .000 |
| | | Missing Comparison | .2266 | .624 |
| Disconfirmed Process Expectancy | No Failure | Out-of-Stock | 1.2823* | .000 |
| | | Missing Comparison | 1.6918* | .000 |
| | | Delay | .9618* | .001 |
| | Out-of-Stock | No Failure | -1.2823* | .000 |
| | | Missing Comparison | .4095 | .055 |
| | | Delay | -.3205 | .306 |
| | Missing Comparison | No Failure | -1.6918* | .000 |
| | | Out-of-Stock | -.4095 | .055 |
| | | Delay | -.7300* | .000 |
| | Delay | No Failure | -.9618* | .001 |
| | | Out-of-Stock | .3205 | .306 |
| | | Missing Comparison | .7300* | .000 |
| Disconfirmed Cost Expectancy | No Failure | Out-of-Stock | .7192 | .060 |
| | | Missing Comparison | .5978 | .157 |
| | | Delay | 1.0943* | .002 |
| | Out-of-Stock | No Failure | -.7192 | .060 |
| | | Missing Comparison | -.1214 | .913 |
| | | Delay | .3751* | .031 |
| | Missing Comparison | No Failure | -.5978 | .157 |
| | | Out-of-Stock | .1214 | .913 |
| | | Delay | .4965* | .001 |
| | Delay | No Failure | -1.0943* | .002 |
| | | Out-of-Stock | -.3751* | .031 |

| Dependent Variable | (I) Failure Treatment | (J) Failure Treatment | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| | | Missing Comparison | -.4965* | .001 |

## APPENDIX H – DUNNETT T3 TEST FOR IMPACT OF E-SERVICE RECOVERIES ON DISCONFIRMED EXPECTANCIES [RECOVERY TREATMENT COMPARISONS]

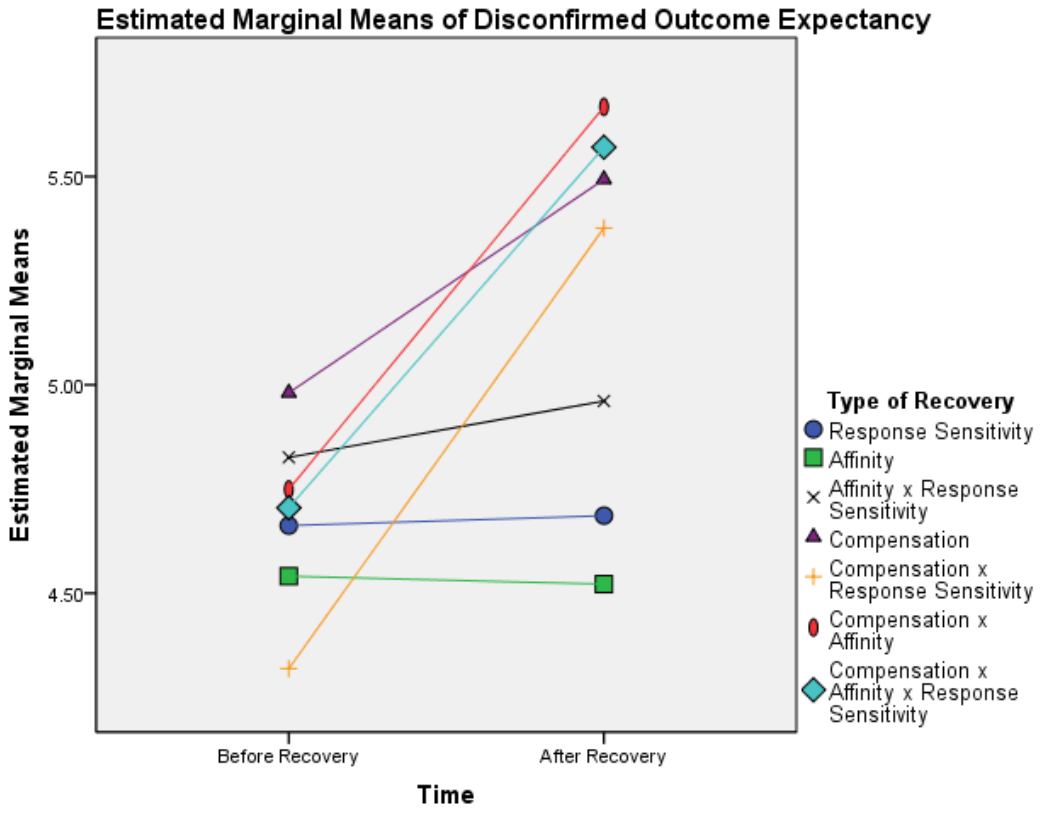
| Dependent Variable | (I) Type of Recovery | (J) Type of Recovery | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| Disconfirmed Outcome Expectancy Difference | Feedback | Apology | .0438 | 1.000 |
| | | Apology x Feedback | -.1113 | 1.000 |
| | | Discount | -.5654 | .054 |
| | | Discount x Feedback | -1.0339* | .000 |
| | | Discount x Apology | -.8936* | .001 |
| | | Discount x Apology x Feedback | -.8407* | .001 |
| | Apology | Feedback | -.0438 | 1.000 |
| | | Apology x Feedback | -.1551 | .986 |
| | | Discount | -.6091* | .004 |
| | | Discount x Feedback | -1.0777* | .000 |
| | | Discount x Apology | -.9374* | .000 |
| | | Discount x Apology x Feedback | -.8845* | .000 |
| | Apology x Feedback | Feedback | .1113 | 1.000 |
| | | Apology | .1551 | .986 |
| | | Discount | -.4541 | .122 |
| | | Discount x Feedback | -.9226* | .000 |
| | | Discount x Apology | -.7823* | .002 |
| | | Discount x Apology x Feedback | -.7294* | .001 |
| | Discount | Feedback | .5654 | .054 |
| | | Apology | .6091* | .004 |
| | | Apology x Feedback | .4541 | .122 |
| | | Discount x Feedback | -.4686 | .585 |
| | | Discount x Apology | -.3283 | .945 |
| | | Discount x Apology x Feedback | -.2754 | .978 |
| | Discount x Feedback | Feedback | 1.0339* | .000 |
| | | Apology | 1.0777* | .000 |
| | | Apology x Feedback | .9226* | .000 |
| | | Discount | .4686 | .585 |
| | | Discount x Apology | .1403 | 1.000 |
| | | Discount x Apology x Feedback | .1932 | 1.000 |
| | Discount x Apology | Feedback | .8936* | .001 |
| | | Apology | .9374* | .000 |
| | | Apology x Feedback | .7823* | .002 |
| | | Discount | .3283 | .945 |
| | | Discount x Feedback | -.1403 | 1.000 |

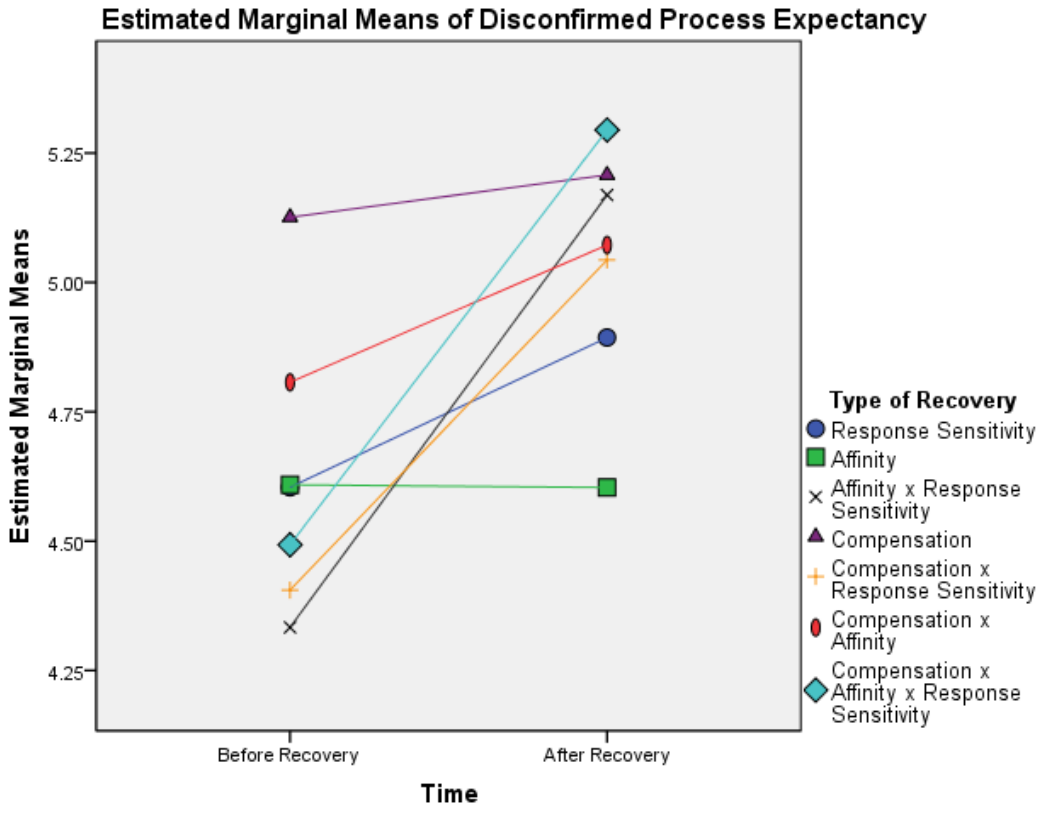
| Dependent Variable | (I) Type of Recovery | (J) Type of Recovery | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| | | Discount x Apology x Feedback | .0529 | 1.000 |
| | Discount x Apology x Feedback | Feedback | .8407* | .001 |
| | | Apology | .8845* | .000 |
| | | Apology x Feedback | .7294* | .001 |
| | | Discount | .2754 | .978 |
| | | Discount x Feedback | -.1932 | 1.000 |
| | | Discount x Apology | -.0529 | 1.000 |
| Disconfirmed Process Expectancy Difference | Feedback | Apology | .2991 | .765 |
| | | Apology x Feedback | -.5223 | .433 |
| | | Discount | .2507 | .946 |
| | | Discount x Feedback | -.3242 | .889 |
| | | Discount x Apology | .1106 | 1.000 |
| | | Discount x Apology x Feedback | -.4884 | .436 |
| | Apology | Feedback | -.2991 | .765 |
| | | Apology x Feedback | -.8214* | .003 |
| | | Discount | -.0484 | 1.000 |
| | | Discount x Feedback | -.6233* | .006 |
| | | Discount x Apology | -.1886 | .987 |
| | | Discount x Apology x Feedback | -.7875* | .002 |
| | Apology x Feedback | Feedback | .5223 | .433 |
| | | Apology | .8214* | .003 |
| | | Discount | .7730* | .008 |
| | | Discount x Feedback | .1981 | 1.000 |
| | | Discount x Apology | .6329 | .101 |
| | | Discount x Apology x Feedback | .0339 | 1.000 |
| | Discount | Feedback | -.2507 | .946 |
| | | Apology | .0484 | 1.000 |
| | | Apology x Feedback | -.7730* | .008 |
| | | Discount x Feedback | -.5749* | .019 |
| | | Discount x Apology | -.1401 | 1.000 |
| | | Discount x Apology x Feedback | -.7391* | .005 |
| | Discount x Feedback | Feedback | .3242 | .889 |
| | | Apology | .6233* | .006 |
| | | Apology x Feedback | -.1981 | 1.000 |
| | | Discount | .5749* | .019 |
| | | Discount x Apology | .4348 | .323 |
| | | Discount x Apology x Feedback | -.1642 | 1.000 |
| | Discount x Apology | Feedback | -.1106 | 1.000 |

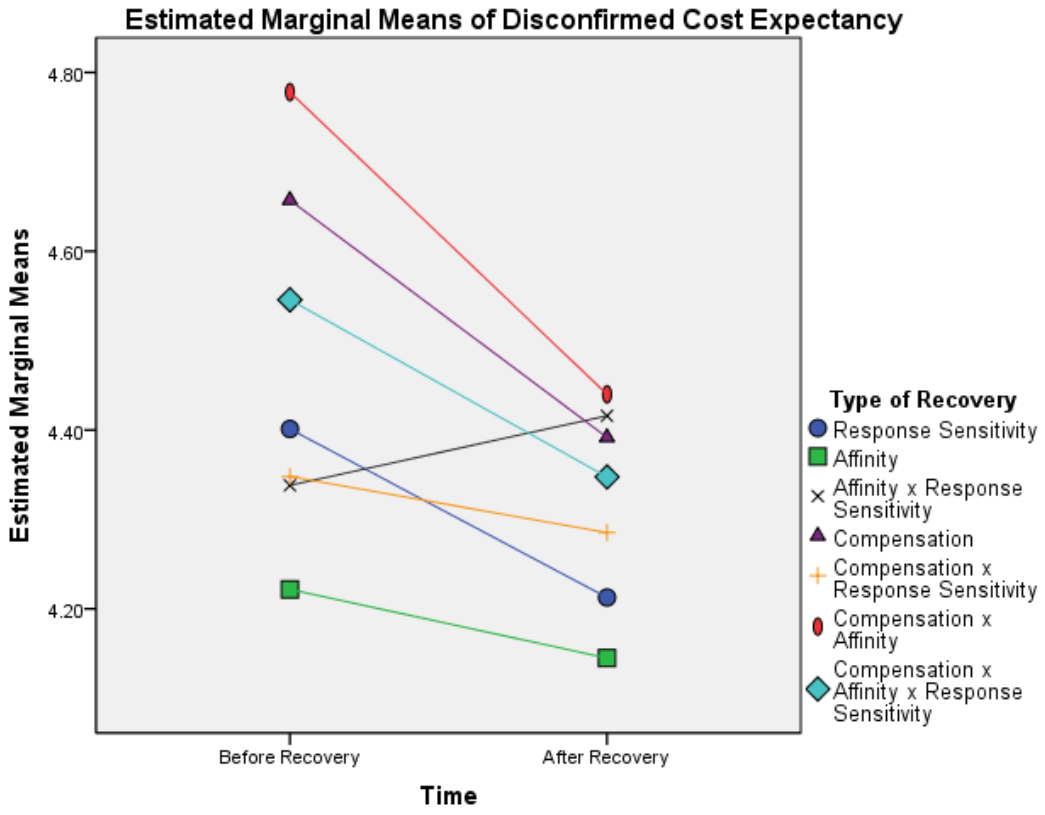
| Dependent Variable | (I) Type of Recovery | (J) Type of Recovery | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| | | Apology | .1886 | .987 |
| | | Apology x Feedback | -.6329 | .101 |
| | | Discount | .1401 | 1.000 |
| | | Discount x Feedback | -.4348 | .323 |
| | | Discount x Apology x Feedback | -.5990 | .087 |
| | Discount x Apology x Feedback | Feedback | .4884 | .436 |
| | | Apology | .7875* | .002 |
| | | Apology x Feedback | -.0339 | 1.000 |
| | | Discount | .7391* | .005 |
| | | Discount x Feedback | .1642 | 1.000 |
| | | Discount x Apology | .5990 | .087 |
| Disconfirmed Cost Expectancy Difference | Feedback | Apology | -.0965 | 1.000 |
| | | Apology x Feedback | -.2122 | .998 |
| | | Discount | .1594 | 1.000 |
| | | Discount x Feedback | -.0775 | 1.000 |
| | | Discount x Apology | .1978 | 1.000 |
| | | Discount x Apology x Feedback | .0583 | 1.000 |
| | Apology | Feedback | .0965 | 1.000 |
| | | Apology x Feedback | -.1157 | 1.000 |
| | | Discount | .2559 | .989 |
| | | Discount x Feedback | .0190 | 1.000 |
| | | Discount x Apology | .2943 | .978 |
| | | Discount x Apology x Feedback | .1548 | 1.000 |
| | Apology x Feedback | Feedback | .2122 | .998 |
| | | Apology | .1157 | 1.000 |
| | | Discount | .3716 | .826 |
| | | Discount x Feedback | .1346 | 1.000 |
| | | Discount x Apology | .4100 | .793 |
| | | Discount x Apology x Feedback | .2704 | .993 |
| | Discount | Feedback | -.1594 | 1.000 |
| | | Apology | -.2559 | .989 |
| | | Apology x Feedback | -.3716 | .826 |
| | | Discount x Feedback | -.2370 | .994 |
| | | Discount x Apology | .0384 | 1.000 |
| | | Discount x Apology x Feedback | -.1012 | 1.000 |
| | Discount x Feedback | Feedback | .0775 | 1.000 |
| | | Apology | -.0190 | 1.000 |
| | | Apology x Feedback | -.1346 | 1.000 |

| Dependent Variable | (I) Type of Recovery | (J) Type of Recovery | Mean Difference (I-J) | Sig. |
|---|---|---|---|---|
| | | Discount | .2370 | .994 |
| | | Discount x Apology | .2754 | .988 |
| | | Discount x Apology x Feedback | .1358 | 1.000 |
| | Discount x Apology | Feedback | -.1978 | 1.000 |
| | | Apology | -.2943 | .978 |
| | | Apology x Feedback | -.4100 | .793 |
| | | Discount | -.0384 | 1.000 |
| | | Discount x Feedback | -.2754 | .988 |
| | | Discount x Apology x Feedback | -.1396 | 1.000 |
| | Discount x Apology x Feedback | Feedback | -.0583 | 1.000 |
| | | Apology | -.1548 | 1.000 |
| | | Apology x Feedback | -.2704 | .993 |
| | | Discount | .1012 | 1.000 |
| | | Discount x Feedback | -.1358 | 1.000 |
| | | Discount x Apology | .1396 | 1.000 |

## APPENDIX I – GRAPHICAL PLOTS OF IMPACT OF E-SERVICE RECOVERIES ON DISCONFIRMED EXPECTANCIES

| Dependent Variable | Graphical Plot |
|---|---|
| Disconfirmed Outcome Expectancy |  |

| Dependent Variable | Graphical Plot |
|---|---|
| Disconfirmed Process Expectancy |  |

| Dependent Variable | Graphical Plot |
|---|---|
| Disconfirmed Cost Expectancy |  |