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# Understanding E-Service Failures: Formation, Impact and Recovery

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## ABSTRACT

Despite the ‘dangers’ posed by e-service failures, there has not been a study to-date that explores how failures emerge within an online transactional environment and what can be done to address them. An integrated model of e-service failure and recovery is constructed together with testable propositions. Essentially, the model serve to inform both academics and practitioners on: (1) how different types of e-service failure manifest on e-commerce websites; (2) the impact of these failures on consumers’ expectations about transactional outcome, process and cost, and; (3) what kind of e-service recovery technology would be beneficial in alleviating negative failure consequences.

## Keywords

E-service failure, e-service recovery, disconfirmed expectancy, service quality, system success.

## INTRODUCTION

An e-service failure arises whenever an e-commerce website lacks the technological capabilities essential for a consumer to accomplish his/her intended transactional activities (Zeithaml et al., 1993). Service failures have been credited for a host of undesirable consumer behaviors, such as negative word of mouth and vendor switching (Bitner et al., 2000). When service failures occur, consumers expect vendors to be competent in offering appropriate recovery measures. Empirically, Smith et al. (1999) affirmed that it is possible to recover from almost any kind of service failure, regardless of its type and magnitude, so long as the recovery measure is commensurate with the failure experienced by consumers. As noted by Spreng et al. (1996), service recovery offsets the negativism of failure incidents 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. Yet, e-service recoveries are generally inadequate or inequitable relative to the failures experienced on e-commerce websites (Holloway and Beatty, 2003).

This paper develops a theoretical model that *explains* and *predicts* consumers’ behavioral reactions to e-service

failures and recoveries. By drawing on the service and system success literatures to derive a novel taxonomy of e-service failures that highlights failure events unique to e-commerce settings, we undertake a deductive approach in systematically categorizing e-service failures. Further, we subscribe to Smith et al.’s (1999) taxonomy of three service recovery modes in prescribing actionable design principles to cope with failure incidents on e-commerce websites. In so doing, this paper endeavors to answer the following research questions:

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

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

## AN OVERVIEW OF EXTANT LITERATURE ON E-SERVICE FAILURE AND RECOVERY

E-service failures are damaging to e-commerce transactions by decreasing consumers’ likelihood of attaining predetermined goals (Bitner 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. An integrated model of e-service failure and recovery is therefore necessary for two reasons. First, an integrated model of e-service failure and recovery is desirable as a step towards unraveling the interactional effect between failure events and recovery technologies in directing 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, an integrated model 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).

To construct our integrated model of e-service failure and recovery, 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.

**A SYSTEM-ORIENTED TYPOLOGY OF E-SERVICE FAILURES**

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. 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. Subscribing to the EDT (Hess et al., 2007), we define **e-service failure** as an event whereby the performance of an e-service on an e-commerce websites falls short of consumers’ expectations.

Next, we synthesize service quality and system success literature to advance a novel typology of that delineates e-service failures into those associated with the **informational, functional, or system** aspects of e-commerce websites:

- a. **Informational Failure** occurs whenever information provided on an e-commerce website is incapable of guiding consumers in the accomplishment of their transactional activities such as the provision of inaccurate, incomplete and/or irrelevant information (e.g., incorrectly listing an out-of-stock product as being available).
- b. **Functional Failure** occurs whenever functionalities provided on an e-commerce website are incapable of supporting consumers in the accomplishment of their transactional activities such as missing ordering and payment functions (e.g., lack of payment options).
- c. **System Failure** occurs 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 such as navigational complexities or a lack of interactivity (e.g., unacceptable delays in loading webpages).

**A PROPOSED TYPOLOGY 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, 1997).

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). In evaluating any service failure event, 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) (McColl-Kennedy and Sparks, 2003).

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, 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.

Smith et al. (1999) likened a service encounter to a social exchange. If a service failure is not reimbursed in kind through service recovery on the part of the vendor, the social exchange cannot be equalized, hence affecting the willingness of the consumer to further participate in the exchange relationship. Applying the SET, Smith et al. (1999) proposed three modes of service recovery, namely **compensation, response sensitivity** and **affinity**. We hence propose that e-service recovery technologies can be structured through: (1) **compensation** whereby tangible economic resources are reimbursed; (2) **affinity** whereby rapport is fostered, and/or (3) **response sensitivity** whereby measures anticipating common errors and offering guidance on their resolution are made available (see Table 1).

E-Service Recovery	Developmental Implications for E-Commerce Websites	Example from Actual E-Commerce Websites
Compensation	Offer <b>Self-Serving Help Centers</b> for consumers to seek compensation for negative transactional experiences	Amazon.com provides a self-help return center for consumers to return and/or replace defective products

Affinity	Offer <i>Apology</i> to consumers regarding any negative transaction experience	Amazon.com apologizes to consumers whenever transactional error(s) occur
Response Sensitivity	Offer <i>Evaluation/Inquiry Forms</i> for consumers to provide feedback regarding any negative transaction experience	Amazon.com provides a general template for consumers to give feedback on a variety of predefined topics

Table 1. Developmental Implications and Illustrative Examples of Proposed E-Service Recovery Typology

**AN INTEGRATED MODEL 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.

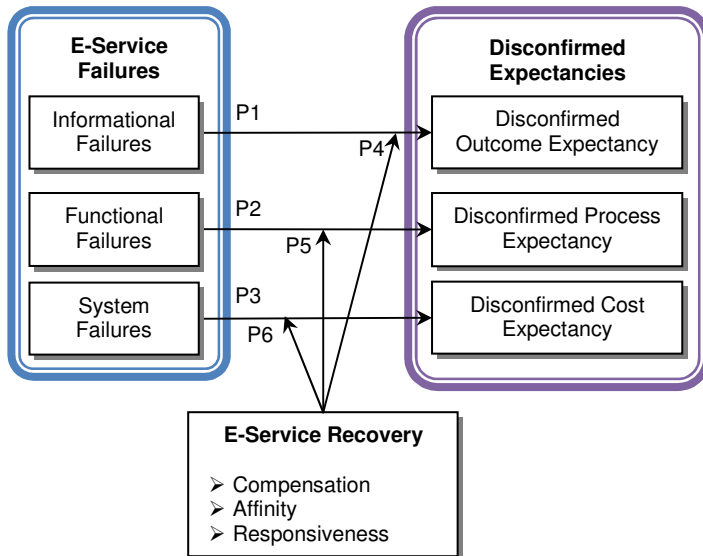


Figure 1. An Integrated Theoretical Model of E-Service Failure and Recovery

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

Expectations are principal determinants of consumers’ attitudes towards e-commerce websites because they are the baseline from which evaluative judgments about focal e-services are formulated. 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 (Parasuraman and Grewal 2000). Embodied within the concept of value is an inference to cost-benefit analysis (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.

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, 2006). 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:

- a. *Disconfirmed outcome expectancy* manifest whenever *the transactional outcome(s) obtained from the e-commerce website is not what is desired by the consumer,*
- b. *Disconfirmed process expectancy* manifest whenever *the transactional process on the e-commerce website does not proceed in a manner expected by the consumer, and;*
- c. *Disconfirmed cost expectancy* manifest whenever *a consumer expends more resources than anticipated in transacting via an e-commerce website.*

**Consequences of Informational Failures**

As confirmed through existing studies of consumer satisfaction and service quality, the information employed by customers in making choice decisions impacts outcome predictability (e.g., Zeithaml et al., 1993). Because the saliency of informational attributes in influencing task outcomes is well documented within system success (e.g., DeLone and McLean, 2003) and service failure (e.g., Holloway and Beatty, 2003) literatures, we propose that:

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

**Consequences of Functional Failures**

Functional failures cause dissonance to manifest in e-commerce transactional processes. 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. 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; Tan et al., 2010), we propose that:

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

### **Consequences of System Failures**

Because system attributes affect the efficiency with which consumers can access service content on an e-commerce website (DeLone and McLean, 2003), the presence of system failures lowers consumers' effort-performance expectancy (Holloway and Beatty, 2003). For instance, 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 (e.g., Sears et al., 2000). We therefore propose that:

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

### **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 could have taken steps to improve the situation (McCull-Kennedy and Sparks, 2003). The suitability of recovery technologies would depend on whether they conform to measures that consumers anticipate to be present on e-commerce websites. Smith et al (1999) observed that consumers prefer recoveries that are *commensurate* with the form and magnitude of failure consequence experienced.

#### *Moderating Effect of Compensation*

Compensation is a standard recovery procedure in which consumers are reimbursed for any losses they may have suffered as a consequence of service failures (Smith et al., 1999). Tax et al. (1998) claimed that compensation is particularly advantageous in assisting consumers to recover from undesirable service outcomes. Since e-commerce transactions take place virtually, 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. We therefore propose that:

**Proposition 4:** *Compensatory 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.*

#### *Moderating Effect of Response Sensitivity*

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). A well-timed and fitting response to service failures has been observed to improve consumers' assessment of service encounters (Kelley et al., 1993). Conceivably, response sensitivity is the most appropriate mode of recovery whenever transactional processes are abruptly disrupted because swift and targeted responses should be imminent to: (1) provide ready answers to common transactional queries (e.g., step-by-step tutorials on how to order and pay for a product), or; (2) offer 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:

**Proposition 5:** *Response sensitivity 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.*

#### *Moderating Effect of Affinity*

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 (Kelley et al. 1993). Costs incurred by consumers for e-service failures vary considerably on an individual basis. An apology could thus be a 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). We therefore propose that:

**Proposition 6:** *Affinity 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.*

## **CONCLUSION**

This paper proposes an integrated model of e-service failure and recovery that not only entails typologies of failure categories and recovery modes exclusive to e-commerce transactions, but also encompasses predictions concerning the impact of these failure categories and recovery technologies on online consumer behaviors.

### **Theoretical Contributions**

First, we assimilate service and system success research streams in deriving a novel typology of e-service failure exclusive to e-commerce transactional environments. Through the identification of generic and representational

failure categories common to e-commerce websites (i.e., *informational, functional and system failures*), our typology embodies theoretically-grounded failure dimensions that uniquely characterize online transactions and gives equal prominence to both service and system success research streams. Second, given the absence of prior work on e-service recovery, we adapt Smith et al.'s (1999) typology of three service recovery modes (i.e., *compensation, response sensitivity and affinity*) as the guiding framework for capturing the spectrum of e-service recovery technologies. Finally, we advance a theoretical model that showcases the core constructs influencing consumers' behavioural reactions to e-service failure and recovery (see Figure 1). Specifically, we build on the EDT and Counterfactual Thinking in positing that (1) the presence of e-service failures disconfirms consumers' service expectations, and; (2) these disconfirmed expectancies may be mitigated via the provision of commensurable e-service recoveries.

### Pragmatic Implications

First, the typologies of e-service failure and recovery serve as benchmarks for e-merchants to: (1) pinpoint design flaws in e-commerce websites that may deter consumers from revisiting the websites, and; (2) ascertain whether they have included suitable recovery technologies to cope with the range of failures that may possibly arise on e-commerce websites. Second, by advancing an integrated model that disentangles the interactional effects between e-service failures and recoveries, this paper not only reveals that different failure categories may give rise to different types of negative consequences, but it also suggests that certain recovery technologies may be more appropriate than others when confronted with a particular failure consequence. E-merchants can therefore leverage on the model to strategize the design of e-commerce websites.

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