

## A Taxonomy of Service Failures in Electronic Retailing

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### Abstract

*Service failure and recovery have been extensively investigated in the bricks-and-mortar environment, and there is a growing body of empirical research exploring service failure and recovery in the electronic environment. The present study addresses a gap in the literature by developing a taxonomy of failures applicable to both product-oriented transactions (e.g., online purchasing of books, apparel, electronics) and service-oriented transactions (e.g., online banking, online stock trading, online reservation services). Using the critical incident technique (CIT), we content-analyzed 243 customer-reported unsatisfactory incidents to refine a deductive taxonomy of failures identified from the literature. The final taxonomy developed in this study offers insights into the types of failures that are applicable to product-oriented and service-oriented transactions.*

### 1. Introduction

Failures (e.g., hotel room not clean, slow service in a restaurant, unavailable help when calling a help desk) are bound to occur in transactions between customers and even exceptional vendors. Researchers have observed that vendor failures have a stronger effect on customer dissatisfaction than vendor successes have on customer satisfaction [2, 6, 32]. Keaveney [20], for instance, found that customers switched vendors mostly because of service failures and their ineffective responses to such failures. Consequently, the need to investigate online transaction failures becomes vital for online vendors.

Service failures, however, do not necessarily lead to customer dissatisfaction, depending on how the vendor responds to such failures [5, 16, 20, 33]. Furthermore, given that it is more costly for vendors to recruit new customers than to retain current ones [15, 40], vendor response to service failures is especially critical for retaining existing customers. The vendor response to a service failure can either reinforce customer relationship or exacerbate the failure [17, 39].

In fact, a "recovery paradox" may occur where customers rate a firm higher after it effectively recovers from a service failure than they would have rated the firm prior to the failure [15, 21, 27, 43].

The service-classification literature points to inherent differences between products and services [24, 35]. The research on service failure and recovery in electronic retailing has mostly focused on product-oriented transactions or failed to adequately specify the type of online transaction precipitating the service failure event. Consequently, the e-service failure taxonomies that exist may or may not comprehensively represent the range of service failures that can occur in electronic retailing.

Thus, the research on service failure and recovery in the online context has not truly investigated potential commonalities or differences between product-oriented transactions (e.g., online purchasing of books, apparel, electronics) and service-oriented transactions (e.g., online banking, online stock trading, online reservation services). This study therefore examines online service failures for a wide variety of online transactions. In doing so, we sought to develop a comprehensive, yet parsimonious, taxonomy of service failures applicable to a broad range of product-oriented and service-oriented transactions in electronic retailing [8, 23].

### 2. Background

Mittal and Lassar [31] suggest that most retailing includes a service component (i.e., intangible) and most service businesses include a product component (i.e., tangible). In their study of the Web as a distribution channel, Chatterjee and Narasimhan [7] defined *product complexity* as the level of service characteristics in the product. They classified three levels of *product complexity*: *pure product*, *service-enhanced product*, and *service*, suggesting a continuum of transactions with one extreme being pure-products, the other extreme being pure-services, and most of the products and services falling in between.

We see, then, that a continuum of product complexity or blended product/service transaction types

exists. Given the potentially ambiguous distinction between product- and service- oriented transactions, it should be useful to develop a comprehensive taxonomy of service failures that online retailers can use to evaluate their performance, yet include requisite granularity in the description to diagnose whether there are systemic relationships between online transaction type and category of service failure.

Despite the potential for ambiguity identified above, for the purposes of the present study, the term *product-oriented transaction* suggests that the transaction contained a greater degree of product (i.e., tangible) than of service (i.e., intangible) whereas the term *service-oriented transaction* suggests the opposite.

### 2.1. Product-oriented transactions vs. service-oriented transactions

The service-classification literature provided us with a theoretical framework that helped determine the types of transactions to investigate for this study. The service-classification literature provides various taxonomies used to classify transactions along several dimensions. We reviewed several taxonomies developed within both the bricks-and-mortar context [24, 38, 45] and the electronic context [22, 35]. Most of these taxonomies have many dimensions in common. One dimension, however, was deemed to be very important in the online context: *the degree of tangibility of the service*. Based on this dimension, we identified two types of transactions to investigate for this study: product-oriented transactions and service-oriented transactions. A *product-oriented transaction* suggests that the transaction contains a greater degree of product (i.e., tangible) than of service (i.e., intangible) whereas a *service-oriented transaction* suggests the opposite. This conceptualization of the types of transactions is similar to that adopted by previous researchers [7, 31].

### 2.2. Online service failures

Ahmad [1] studied online service failures and its effect on customer defection. Ahmad [1] reports that online failures included *late delivery, defective product, phone card not working, wrong product, partial order, and not receiving the product ordered*. While the respondents were allowed to report on any type of online transaction, the categories developed by Ahmad [1] primarily represented product-oriented transactions.

Similarly, Holloway and Beatty [18] investigated service failures online. After analyzing 295 customer-reported incidents, they identified six general categories of online service failures: *Delivery problems* (46.6%), *Web site design problems* (16.6%), *customer service problems* (13.8%), *payment problems* (12.2%), *product*

*quality* (5.3%), *security problems* (3.8%), and other types of problems (2.3%). Holloway and Beatty [18] do not specify the types of online transactions customers reported. The sub-categories in the *delivery problems* category (i.e., *purchase arrived later than promised, purchase never delivered, wrong item delivered, wrong size product delivered, purchase damaged during delivery*) suggest that the incidents reported by respondents were primarily associated with product-oriented transactions.

Using Bitner and colleagues' [5] taxonomy as a foundation, Forbes and colleagues [11] identified three major categories (i.e., *response to service delivery system/product failure, response to customer needs and requests, and unprompted and unsolicited actions*) and 17 sub-categories of service failures (see table 1). Forbes and colleagues [11], however, collected critical incidents about product-oriented transactions, including books, electronics, and clothing.

Other researchers have indirectly explored service failures in their studies, without classifying the types of online service failures. Matilla & Mount [26], for instance, explored the effects of customer characteristics and response time on satisfaction with e-complaint and intentions to return. Using an experimental design, Harris and colleagues [13, 14] explored the differences in recovery strategies as well as consumer attributions and expectations between the online and the offline context. Holloway and colleagues [19], on the other hand, explored the effect of cumulative online purchasing experience on service failure and recovery.

For the present study, we use Forbes and colleagues' [11] taxonomy as a starting point because it is comprehensive and subsumes the categories developed in other studies (see Table 1).

## 3. Method and data elicitation

Data were collected using the critical incident technique via a self-administered online survey. The critical incident technique (CIT) is a systematic procedure for collecting events and behaviors that lead to the success or failure of a specific task [5, 10, 12, 36]. An incident is defined as an activity that is sufficiently complete in itself as to allow predictions and inferences about the person performing the act [5, 10, 46]. A critical incident is one that contributes significantly, positively or negatively, to the general aim of the activity [5, 10, 12]. Data collected using the critical incident technique have proven to be valid and reliable [3, 25, 29, 37].

CIT has inherent qualities that make it well suited to provide explanations to the research problem expressed in this paper. The critical incident technique uses content analysis to analyze people's rich stories about favorable and unfavorable experiences. Since respondents use their

own terms and language in describing specific events of their experiences, the researcher catches a glimpse of how respondents think. Nyquist and Booms [34] call it "pure" consumer data as opposed to forcing respondents into a given framework or leading them in a given direction.

**Table 1. Deductive taxonomy of failures**

Category	Subcategory
1. Response to service delivery system/product failure	A. Policy failure
	B. Slow/unavailable service
	C. System pricing
	D. Packaging errors
	E. Out of stock
	F. Product defect
	G. Hold disaster
	H. Alterations and repairs
	I. Bad information
	J. Web site system failure
2. Response to customer needs and requests	A. Special order/request
	B. Customer error
	C. Size variation
3. Unprompted and unsolicited actions	A. Mischarged
	B. Accused of shoplifting
	C. Embarrassments
	D. Attention failures

Furthermore, CIT allows the researcher to explore the complexities of the transactions between customers and service providers where it is difficult to predetermine all the variables affecting the phenomenon. In other words, the critical incident technique allows a holistic approach to collecting data that are very context dependent [44]. CIT also takes advantage of the fact that respondents recall more vividly incidents that were particularly satisfying or unsatisfying than incidents that were more mundane in nature. Stauss and Hentschel [41], for instance, learned that respondents were able to recall critical incidents with car dealers that dated back more than 10 years.

**3.1. Questionnaire format**

The purpose of our research was to develop a taxonomy of failures. Hence, we collected memorable experiences of very unsatisfactory incidents. A typical open-ended survey consisted of the following format: Respondents were asked to *think back to a time when they had what they believe to be a particularly unsatisfying experience in the last three months with [online book purchasing, online banking, online stock trading, etc.]*. During the course of the survey,

respondents were probed for breadth, depth, and clarity about the incident they were reporting using the follow-up questions below:

1. When did the incident occur?
2. What circumstances led to the incident?
3. What happened exactly?
4. Who was involved?
5. How did the incident end?
6. Why did the respondent believe the incident to be unsatisfying?

The above questions helped us collect fairly thorough reconstructions of the events and details surrounding an incident. This allowed us to then draw inferences, abstractions, and conclusions based on respondent narratives [5, 20]. Typical incidents ranged from 300 to 1,200 words.

The study respondents were solicited online using various listservs, newsgroups, and online research panelists on the Web. These mailing lists and newsgroups were publicly available (e.g., liszt.com, Yahoo.com, Google.com, Tile.net). Furthermore, students from several universities were also polled to participate in the study.

**4. Data analysis**

**4.1. Data analysis framework**

The data analysis was guided by the use of an analytical framework for data analysis as outlined by Miles and Huberman [30]. We began the data analysis process by reading the incident to get a general sense of the different aspects of the incident the respondents were describing. The framework then suggests identifying the data to be analyzed, coding or tagging the data, and identifying patterns in order to provide an explanatory framework. Here, we intently read the respondent's description of the incident to identify words, phrases, or sentences (i.e., utterances) that expressed the respondent's perception of failures in a transaction with an online vendor. Once identified, they were assigned codes or labels, which were meaningful names.

The preliminary taxonomy (see Table 1) was used as a guide in analyzing the data. Through a deductive/inductive iterative process, the authors generated and refined categories and sub-categories in the taxonomy. Note that not all respondents' descriptions were related to their perceptions of failures in online transactions. There was some contextual information that was also coded (e.g., name of service provider, type of business).

The deductive-inductive process consisted of the following overlapping phases:

- An initial deductive approach to determine if each behavior, feature, event, situation, perception, and

so forth described in each critical incident fit into a category of the preliminary taxonomy of failures identified from the literature.

- An inductive approach as new categories appeared and irrelevant categories were discarded from the taxonomy as critical incidents were collected and analyzed.
- The deductive-inductive iterations continued until saturation of categories of failures was reached.

#### 4.2. Coding reliability testing

To ensure integrity of data analysis, two inter-judge coding reliability tests were performed. Specifically, we computed the percentage agreement index (PAI), which is defined as the proportion of the number of classification decisions that were in agreement compared to the total number of decisions made [30, 42]. The first reliability test was conducted to ensure that the researchers were reliably coding the relevant failure-related utterances described in respondents' incidents. After content-analyzing 100 incidents, a preliminary taxonomy of service failures was created. From these 100 incidents, 10 incidents were randomly selected and were given to a second coder who had been trained on the general purpose of the study. For the first test, the coder was instructed to first label all the utterances that expressed respondents' perception of service failures within all the 10 incidents. Using the developing coding scheme, the coder was then instructed to see whether the identified utterance had a pre-defined code. If a pre-defined code existed within the coding scheme, the coder was instructed to replace the label by the pre-defined code. The first reliability test in the study resulted in a 90% inter-coder agreement, which is above the recommended 85% [4, 5, 16, 20, 29].

The second reliability test was conducted to check the robustness of the final taxonomy generated after the content analysis of 243 critical incidents had been completed. A random sample of 100 coded utterances was given to a third coder, who again had been trained about the general purpose of the study. The coder was then instructed to code each utterance according to the final coding scheme. The inter-coder agreement for this test was 92%.

### 5. Results

#### 5.1. Description of study sample

We collected 243 complete and usable customer-reported unsatisfactory incidents (125 product-oriented and 118 service-oriented). The study sampling technique was designed to seek nearly equal representation of the types of transactions in order to increase the generalizability of the results. 42% of the study

respondents (n=102) were male whereas 58% (n=141) were female. The following table shows the breakdown of other pertinent demographic information.

**Table 2. Demographics of the respondents who participated in the study**

Age		Education	
	n (%)		n (%)
18-29	78 (32%)	High School	19 (8%)
30-39	81 (33%)	Some College	84 (35%)
40-49	67 (28%)	Associate Degree	21 (9%)
50 +	17 (7%)	Bachelor's Degree	76 (31%)
		Graduate Degree	40 (16%)
		Other	3 (1%)
<b>Total</b>	<b>243</b>	<b>Total</b>	<b>243</b>

Furthermore, 95% (230 of 243) of our study respondents reported residing in the United States (US). We polled the current literature on US online shopping population [9] to ascertain our sample representativeness to the population.

**Table 3. Comparison of respondents with US online shoppers**

	Study Sample	US Online Shoppers [9]
Gender	42% (Males)	40% (Males)
	58% (Females)	60% (Females)
Education	31%	35%
	(4-Year College)	(4-Year College)
Average Age	35	42

Table 3 shows that our sample represents the US population fairly well, even though the average age of our study respondents was slightly younger.

#### 5.2. Service failures

Using as a guide the deductive taxonomy of failures identified from the literature, we content-analyzed the 243 respondent-described unsatisfactory incidents to identify the types of online failures. To help orient the reader, Figure 1 presents a summary of the taxonomy of failures in online transactions developed in this study.

The taxonomy of failures developed in the study is applicable to both product-oriented and service-oriented transactions, thereby increasing its generalizability. In the following sub-sections, we elaborate on the two meta-categories (i.e., *core service failures* and *vendor failures*) by providing definitions and some examples.

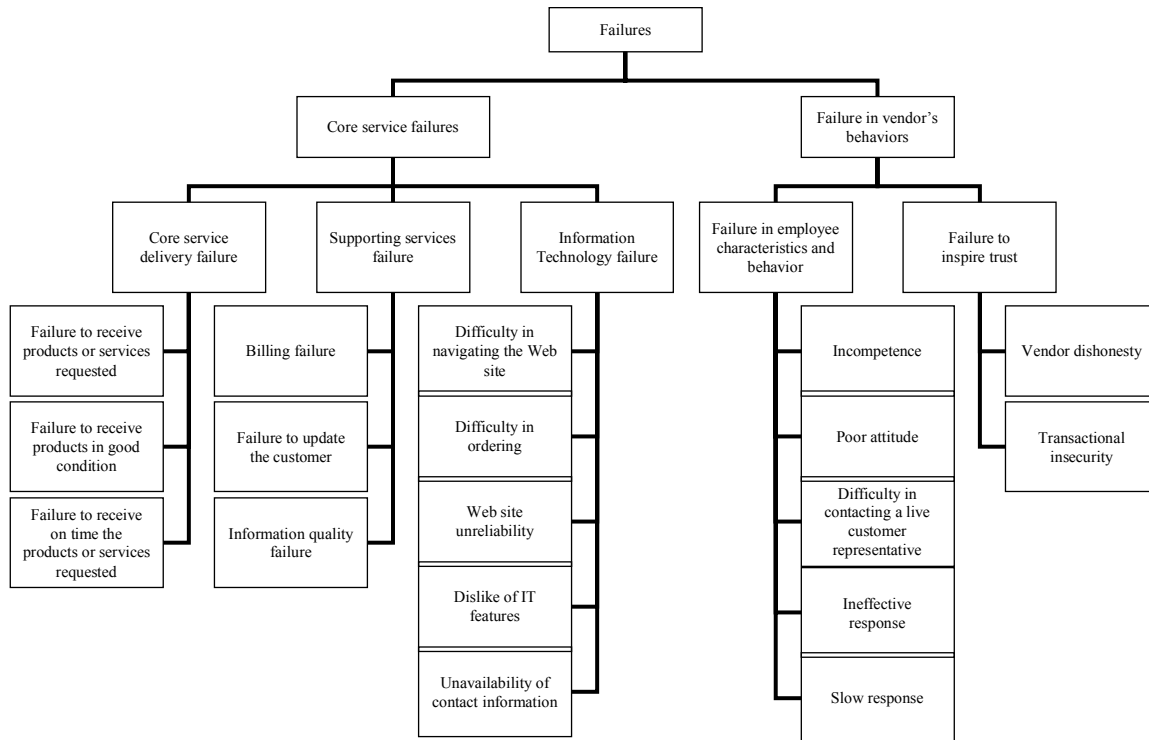


Figure 1. Taxonomy of failures

**5.2.1. Core service delivery failure.** The core service delivery failure category included three sub-categories: *failure to receive the products or services requested*, *failure to receive the products in good condition*, and *failure to receive on time the products or services requested*. This category is general enough to account for service-oriented transactions (e.g., online stock trading) and product-oriented transactions (e.g., online book purchasing). This category also accounts for failures when customers receive damaged products (e.g., damaged checkbooks, damaged paper tickets) after engaging in service-oriented transactions (e.g., online banking, online travel services).

Table 4 provides a sampling of respondent quotes that were coded as one of the aforementioned three sub-categories.

As evidenced in Table 5, in the present study, respondents who described service-oriented transactions did not identify *failure to receive the products in good condition* as one of the *core service delivery failures*. Such failures do occur and could include customers receiving damaged products (e.g., damaged checkbooks, damaged paper tickets) after engaging in service-oriented transactions (e.g., online banking, online travel services). It is unclear whether the respondents in the present study did not experience such failures or whether they did not perceive such failures as falling under service-oriented transactions.

Table 4. Sub-categories within the core service delivery failure category

Sub-Category	Examples (Product-Oriented Transactions)	Examples (Service-Oriented Transactions)
Failure to receive the products or services requested	"When I opened the box, to my surprise it was the wrong faucet!"	"A bank misapplied a second mortgage payment of mine."
Failure to receive the products in good condition	"When Christmas arrived and he opened the box it was apparent that the book had a bent cover."	None reported.
Failure to receive on time the products or services requested	"[company name] said the book was shipped within 3 days, but it didn't arrive until a month later"	"When it came time to sell, the transaction was not immediate. It took another business day for our transaction to be reflected ..." [online stock trading]

Table 5 provides a summary of the frequencies for each sub-category in the *core service delivery failure* category for product-oriented and service-oriented transactions. Table 5 indicates that in 100 product-

oriented incidents, there were 118 instances of *core service delivery failure*. This implies that many respondents reported more than one type of *core service delivery failure* in a single incident; consequently, a unique incident is one that included at least one type of failure within the *core service delivery failure* category.

**Table 5. Summary of frequencies within the core service delivery failure category**

Core Service Delivery Failure	Product-Oriented (n=125)	Service Oriented (n=118)
	Freq.	Freq.
Failure to receive the products or services requested	59	88
Failure to receive the products in good condition	18	-
Failure to receive on time the products or services requested	41	7
<i>Column Subtotal</i>	<i>118</i>	<i>95</i>
<i>Unique Incidents</i>	<i>100</i>	<i>95</i>

Recall that 125 product-oriented unsatisfactory incidents and 118 service-oriented unsatisfactory incidents were collected for the study. Based on Table 5, the percentage of *core service delivery failures* reported in incidents is approximately the same for product-oriented (80%, 100 of 125) and service-oriented (81%, 95 of 118) transactions.

Furthermore, *failure to receive the products or services requested* was the most frequently reported failure (47%, 59 of 125), followed by *failure to receive on time the products requested* (33%, 41 of 125) and *failure to receive the products in good condition* (14%, 18 of 125) for product-oriented transactions. Similarly, *failure to receive the products or services requested* was the most frequently reported failure (75%, 88 of 118) for service-oriented transactions. Note that henceforth the percentages do not add up to 100. An incident may be counted in more than one sub-category because there were more than one failure reported in the incident.

**5.2.2. Supporting services failure.** Analyses of the 243 incidents also revealed the presence of what we labeled *supporting services failure*. The *supporting services failure* category comprised *billing failure*, *failure to update the customer*, and *information quality failure*.

Table 6 provides a sampling of respondent quotes that were coded as one of the aforementioned three sub-categories.

**Table 6. Sub-categories within the supporting services failure category**

Sub-Category	Examples (Product-Oriented Transactions)	Examples (Service-Oriented Transactions)
Billing failure	"Received the watch, but they ended up billing me twice."	"When the credit card statement arrived we noticed that there were 2 identical charges..." [airline tickets]
Failure to update the customer	"The vendor made no attempts to contact me or inform me that the product was on back order."	"AND, if you're going to put a hold on deposits or implement a new policy, LET THE ACCOUNT HOLDER KNOW!!!"
Information quality failure (e.g., incomplete, outdated, inconsistent)	"They did not update their website to accurately depict the fact that they were sold out of the particular shoes."	"I found a hotel at a reasonable price, and the pictures looked good. But when we arrived ... the hotel looked very squalid. The internet information was VERY misleading."

The percentage of *supporting services failures* reported in incidents was higher for product-oriented (46%, 57 of 125) than for service-oriented (32%, 38 of 118) transactions. Furthermore, *information quality failure* was the most frequently reported failure (21%, 26 of 125), followed by *billing failure* (18%, 22 of 125) and *failure to update the customer* (12%, 15 of 125) for product-oriented transactions. On the other hand, *billing failure* was the most frequently reported failure (19%, 22 of 118), followed by *failure to update the customer* (13%, 15 of 118) and *information quality failure* (9%, 11 of 118) for service-oriented transactions.

**5.2.3. Information technology interface failure.** The information technology interface failure category refers to failures related to Web site features and includes *difficulty in navigating the Web site*, *difficulty in ordering*, *Web site unreliability*, *dislike of IT features*, and *unavailability of contact information*.

Table 7 provides a sampling of respondent quotes that were coded as one of the aforementioned five sub-categories.

The percentage of *information technology interface failures* reported in incidents was higher for service-oriented (24%, 28 of 118) than for product-oriented transactions (11%, 14 of 125). *Web site unreliability* was the most frequently reported failure (12%, 14 of 118) for service-oriented transactions.

*Information technology interface failures* were more prevalent in service-oriented transactions. This may suggest that customers perceive an inherent difference between the Web sites of vendors offering products vis-

à-vis services. Based on the study data, it appears that vendors design Web sites more adequately for product-oriented transactions than for service-oriented transactions. Given the intrinsically complex nature of services, it appears that designing high-quality Web sites for service-oriented transactions is inherently more difficult than for product-oriented transactions. Perhaps, Web site designers need to rethink the design principles and approaches for service-oriented Web sites, not simply mimic the design of product-oriented Web sites.

### 5.3 Failure in vendor's behaviors

The *failure in vendor's behaviors* meta-category refers to failures related to the features and behaviors displayed by the vendor. The study data suggested that respondents mostly perceived an employee whom they dealt with as being the vendor and *vice versa*. Thus, this class of failure comprised the following two categories: *failure in employee characteristics and behaviors* and *failure to inspire trust*.

**5.3.1. Failure in employee characteristics and behaviors.** The failure in employee characteristics and behaviors category comprised five sub-categories: *incompetence*, *poor attitude*, *difficulty in contacting a live customer representative*, *ineffective response*, and *slow response*.

Table 8 provides a sampling of respondent quotes that were coded as one of the aforementioned five sub-categories. The percentage of *failures in employee characteristics and behaviors* reported in incidents was relatively similar for product-oriented (51%, 64 of 125) and for service-oriented (47%, 56 of 118) transactions. *Ineffective response* was the most frequently reported failure (25%, 31 of 125), followed by *poor attitude* (13%, 16 of 125) for product-oriented transactions. On the other hand, *poor attitude* was the most frequently reported failure (28%, 33 of 118), followed by *ineffective response* (21%, 25 of 118) for service-oriented transactions.

**Table 7. Sub-categories within the *information technology interface failure* category**

Sub-Category	Examples (Product-Oriented Transactions)	Examples (Service-Oriented Transactions)
Difficulty in navigating the Web site	"Websites are supposed to be easy to get around, and instead, it took about a 1/2 hour to find just one book."	"I had a difficult time finding rates & hotel information, not user friendly."
Difficulty in ordering	"The whole process of ordering was confusing and not explained clearly." [printer paper]	
Web site unreliability	"Also I encountered problems with their website it was very difficult to go from one page to another."	"... their site is slow always some problem."
Dislike of IT features	"I was trying to buy DVD's on the net. The site kept going back to my basket being empty when I changed screens. You would begin at a place like General, try to move to another category and the basket would come back empty. I did not want to buy only on one screen category."	"Because of the frequent password change requirements I was using the wrong password (had forgotten that I had changed it from my most commonly used password). My account locked up and I was not able to access it because of incorrect password."
Unavailability of contact information	"There are no phone numbers available to talk to a live person"	"I also wish there was a phone number listed on the site ..."

**5.3.2. Failure to inspire trust.** The *failure to inspire trust* category refers to the unwillingness of the respondent to become vulnerable to the vendor [28] because they perceived aspects of *vendor dishonesty* and *transactional insecurity*. Table 9 provides a sampling of respondent quotes that were coded as one of the aforementioned two sub-categories.

**Table 8. Sub-categories within the failure in employee characteristics and behaviors category**

Sub-Category	Examples (Product-Oriented Transactions)	Examples (Service-Oriented Transactions)
Incompetence	"When I called the number, the customer assistance rep didn't sound like she really knew the answer anyway." [books]	"The woman I spoke with was very uninformed and had a really hard time understanding what had happened." [airline ticket]
Poor attitude (e.g., unfriendly, unprofessional, unpleasant, impolite, uncaring, unhelpful)	"The customer service agent I spoke with said it was an unfortunate event but there was nothing they could do." [apparel]	"When I called customer service and spoke to a supervisor, not only was she rude but she refused to help." [hotel reservation]
Difficulty in contacting a live customer representative	"Every time I called the company I had to wait at least an hour to talk to somebody." [books]	"To make matters worse, when I call the customer service number listed on the bill, I am told by the automated system that they are too busy to take my call." [airline tickets]
Ineffective response (e.g., did not answer every concern, did not answer at all)	"I contacted customer service; they e-mail me back giving me information that had nothing to do with my problem." [apparel]	"[I] sent repeated emails for action but there was no response." [stock trading]
Slow response	"It would be several days after I contacted them before I received a response." [videos]	"I contacted the company and asked the status. I received no response in over a week so I sent a second and a third with a little more force two days later." [airline tickets]

The percentage of *failure to inspire trust* reported in incidents was relatively similar for product-oriented (18%, 22 of 125) and for service-oriented (13%, 15 of 118) transactions. Furthermore, *vendor dishonesty* was the most frequently reported failure for both product-oriented and service-oriented transactions.

### 5.4 Comparison with Previous Studies

At first glance, the failures identified in the present study appear to be similar to the ones identified in previous research [1, 18]. The category of *core service delivery failure* identified in the present study, for

**Table 9. Sub-categories within the failure to inspire trust category**

Sub-Category	Examples (Product-Oriented Transactions)	Examples (Service-Oriented Transactions)
Vendor dishonesty	"Customer service lied about when the package was sent." [apparel]	"I feel I was tricked in the hopes I'd pay extra (which in away I still did - \$5)." [airline ticket]
Transactional insecurity	"I was leery about giving away personal information about myself and especially my credit card number." [perfume]	"I was a little hesitant to send the money without the tickets in hand." [concert tickets]

instance, included failures identified by Ahmad [1] (e.g., late delivery, defective products, partial order) and by Holloway and Beatty [18] (e.g., delivery problems). The difference between the findings in this study and those of previous research, however, is that the categories created in previous research appeared to be tailored solely to product-oriented types of transactions, whereas the categories created in the present study were more inclusive and applicable to product-oriented and service-oriented transactions. Kwasnik recommends that a taxonomy should be descriptive, explanatory, elegant, parsimonious, and robust [23]. Consequently, instead of creating a taxonomy for each type of transaction, we developed a parsimonious taxonomy applicable to both types of transactions. One overall taxonomy of service failures is likely to be more amenable to academic improvement and augmentation while also being easier for practitioners to follow.

### 6. Limitations of the study

This study was not without its limitations. The generalizability of the study findings is limited because we only sought service failures in the electronic retailing domain. In our sampling technique, we did not seek online failures where respondents did not purchase products or services (e.g., search engines, free online newspapers). Thus, the findings do not necessarily apply to failures in non-commercial domains. Furthermore, we investigated failures in online business-to-customer transactions and, as a result, the findings of the present study might not be applicable to failures in online business-to-business transactions.

This study relied on people volunteering to participate in the survey. As a result, people self-selected, and this may have been a bias in the study. It is possible that some respondents may have participated in the study to use it as a venue to vent about negative experiences and, in doing so, described incidents in such



a way as to blame the service providers for the failures that occurred. However, we are hopeful that the size of the sample corrects for this type of bias. Lastly, the sample consisted mostly of US residents and thus may be US-centric in its findings and implications. We did not have enough international participation to test for systemic differences between U.S. and non-U.S. participants.

## 7. Implications and Conclusions

The taxonomy of failures developed in this study identified a comprehensive taxonomy applicable to product-oriented and service-oriented transactions, leading to theoretical and practical implications.

From a theoretical perspective, the taxonomy provides a deeper understanding of the service failures in product-oriented and service-oriented transactions between customers and online vendors. This enhanced taxonomy can be further tested for robustness and generalizability in future studies. The taxonomy may also serve as a starting framework for future research to explore other characteristics of the core service and online vendor that contribute to service failures in online transactions.

From a practical perspective, online vendors can implement appropriate procedures and policies capable of dealing with a variety of specific failures. Research has shown that unsatisfactory transactions due to service delivery failures can be transformed into satisfactory ones given the proper employee response [4, 5, 33]. By implementing the proper policies and procedures to deal with these kinds of situations, employees can have the freedom to act in order to transform unsatisfactory transactions into satisfactory ones. Online vendors will also be able to improve their employee training programs. They may, for example, provide employees with hypothetical situations based on the taxonomy that will allow employees to build the skills and knowledge necessary to deal with realistic scenarios and to take the necessary actions to satisfy their customers.

Previous research has identified the negative consequences of service failures: switching behavior and negative word-of-mouth. For the present study, we surprisingly discover that failures negatively affect not only the vendors directly involved but also the larger community of online retailers. When failures occur, respondents are reluctant to purchase online again, as illustrated by the following quotes:

*After this experience I did not order online and this happened about 2 or more years ago.*

*It [the incident] ended with me deciding to avoid web purchasing*

*Because of my bad experience, I haven't bought any item from the web. I do not trust any items from the web.*

When buyers experience failures during their first online purchase, they may become so averse to the online experience that they decide never to engage in online transactions again. This potential loss of customers can be damaging in today's global, albeit shrinking market share. The *reluctance to purchase online again* is salient only to the online medium, as a matching sentiment has not been reported in any of the bricks-and-mortar studies reviewed for this study.

## 8. References

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