

## **The Effect of Perceived Error Stability, Brand Perception, and Relationship Norms on Consumer Reaction to Data Breaches**

### **Abstract**

The issue of data breaches has received increasing attention in the hospitality industry. Companies' efforts to fix such errors affect consumers' evaluations and behavioral intentions toward those companies. This study investigates the impact of perceived error stability on hotel guests' intentions to spread positive word-of-mouth (WOM) about a hotel. The findings reveal that when a data breach occurs, consumers are likely to spread positive WOM about a company that is typically considered competent if the consumers perceive the error stability to be low rather than high. Consumers have similar reactions to companies with which they have communal relationships. This research suggests that hotels should strategically allocate their resources on the basis of brand perception in the minds of their target consumers as well as their relationships with their target markets.

### **Keywords**

error stability; brand perception; relationship norms; data breach; word-of-mouth

### **Introduction**

Cyber security has become a critical issue globally (Culnan & Williams, 2009; Von Solms & Van Niekerk, 2013). The past few years have witnessed a growing number of data breaches reported by multiple hotel companies, such as Choice Hotels and Marriott International. In 2018, Marriott International announced that a breach of its Starwood guest reservation database resulted in the exposure of the personal information of up to 500 million guests. Information including the guests' credit card numbers, names, mailing addresses, phone numbers, email addresses, and passport numbers were accessed by hackers (O'Flaherty, 2019). It took Marriott several months to start the investigation. However, it seems that the company remains uncertain of the breach source. However, another major breach, the Equifax data breach, was publicly announced on September 7, 2017. By mid-September, the company had revealed the cause of its massive breach and stated that criminals exploited the vulnerability of a website application (Gressin, 2017).

In hospitality literature, research efforts on data breaches remain limited with few exceptions. For instance, Berezina et al. (2012) tested hotel guests' reactions toward negative, neutral, and positive data breach scenarios, but they did not examine the boundary conditions, such as guests' relationship with the company. Wei et al. (2017) examined a hotel's error management culture on customer engagement behaviors, yet they only assessed one of the characteristics of error; namely, controllability. Zhang et al. (2019) found an interactional effect between the level of error management and the locality of data breaches but did not investigate the underlying mechanisms. In an effort to bridge these gaps and to add to the knowledge base of data breach studies in hospitality, the present research addresses some important unanswered questions: How important is it for companies to quickly identify and fix errors? How does error management impact consumers' behaviors? Do boundary conditions on such an effect exist?

When a service failure such as a data breach occurs, dissatisfied customers may engage in negative word-of-mouth (WOM) and be motivated to search for the causes of the problems/failures (Anderson, 1998; Tam et al., 2014). However, prior research has indicated that a company may become aware that its data has been breached without knowing the content or the cause of the breach (Goode et al., 2017). Thus, understanding how the unknown situation impacts consumer behaviors and what the boundary conditions are is necessary. In addition, according to the service recovery paradox, a successful recovery from service failure can increase customer satisfaction and willingness to spread positive WOM (Smith & Bolton, 1998). This study concentrates on consumers' willingness to spread positive WOM because WOM is an important indicator of consumers' reactions to failure and the recovery of services (Blodgett et al., 1995; Maxham, 2001; Smith & Bolton, 1998). Building on the service failure, error management, and branding literatures, this research proposes a framework that integrates the effects of error stability, brand perception (warmth vs. competence), and relationship norms (communal vs. exchange). In this study, error stability is determined by whether customers perceive a service failure as either temporary or persistent and whether this service failure influences the customers' future expectations of similar events (Folkes, 1984). According to the attribution theory, error stability is considered as one of the three dimensions, besides controllability and locus of control, of the causes of a failure (Weiner, 1980). We argue that together with the stability of a breach, consumers also rely on cues such as brand perception and relationship norms to form their evaluations of the event. Warmth and competence are two fundamental dimensions of a company's brand indicating how warm/approachable/trustworthy and how capable a company is (Aaker et al., 2004, 2010, 2012; Kervyn et al., 2012). Consumer-brand relationship norms are used to describe whether a relationship involves benefitting others with the intent of receiving something in return (i.e., exchange) or simply attending to others' needs (i.e., communal; Aggarwal, 2004). This research aims to develop a better understanding of consumer brand perceptions and their impact on service recovery in the context of data breaches. Specifically, this research examines a model with error stability as the independent variable, brand perception and relationship norms as moderators, and positive WOM as the dependent variable.

The next section reviews the literature on the concepts of a data breach, error stability, consumer brand perceptions, and behavioral consequences. Following the review, the hypothesis development is presented. To test the hypotheses, two experiments are conducted. This article concludes by discussing the theoretical and practical implications. It also offers directions for future research.

## **Literature Review**

### ***Data Breach as Service Failure***

The increasing popularity of e-commerce provides companies and customers with substantial benefits. For example, online transactions have become a main source of revenue for companies. Although many service firms benefit from online marketing and online sales, they also bear data breach risks. Strongly influenced by digitalization, hospitality and tourism companies are especially vulnerable to cyber risks, which can result in economic losses (Arcuri et al., 2020; Chen & Jai, 2019).

Data security issues started to emerge in the 1970s (Berezina et al., 2012). Hard/software malfunctions and intentional unauthorized actions by third parties may lead to problems such as the loss of information or data transmission errors. A data breach refers to the malpractice of unauthorized access and the use or disclosure of private information (Berezina et al., 2012; Culnan & Williams, 2009; Goode et al., 2017). This information may consist of corporate internal data, a trading partner's data, or individual consumers' data (Goode et al., 2017). This research focuses on personal information generated by consumer transactions (Culnan & Williams, 2009).

A data breach is a type of online service failure (Goode et al., 2017; Holloway & Beatty, 2003). Such a failure differs from traditional service failures because of the online environment and technology-based service encounters (Meuter et al., 2000). Traditional service failures are mostly caused by human elements, while online service failures are concerned with e-service and technology such as information security, privacy, and e-service delivery (Holloway & Beatty, 2003). It can be considered a violation of trust and may affect consumers' perceptions of service quality in the long term (Gijzenberg et al., 2015; Malhotra & Malhotra, 2011). Consumers' perceived service quality may be impaired if they feel their information is insecure with a company (Berezina et al., 2012). This can result in significant costs to the firm, such as customer loss and negative WOM (Bitner et al., 2000).

Previous research on service failure and service recovery has focused on how service performance affects perceived service quality and customer satisfaction (Gijzenberg et al., 2015). This research argues that depending on their brand perceptions of and relationship norms with a company, consumers demonstrate different behavioral intentions given various levels of error stability.

### ***Perceived Error Stability***

When a service failure arises, customers are motivated to search for the causes of the problems/failures (Tam et al., 2014). According to the attribution theory, individuals attribute the cause of errors using three dimensions: locus, controllability, and stability (the attribution theory) (Hess et al., 2003; Weiner, 1979). Locus indicates whether the error is internal or external; controllability is the extent to which customers consider the error to have been preventable by the company; and stability refers to whether an error is perceived to be temporary or permanent (Hess et al., 2003; Weiner, 2000). The present study focuses on data breach stability and a company's resolution to such a data breach in relation to consumers' perceptions and evaluations, as the effects of the other dimensions are well established in the literature (i.e., Choi & Mattila, 2008; Wei et al., 2017; Zhang et al., 2019). Previous research has led to different understandings of stability. Some researchers have focused on error stability itself and argued that stable errors transpire more frequently than unstable errors do. Consumers who feel an error is stable will avoid the provider and spread negative WOM about the provider (Blodgett, 1995). Wirtz and Mattila (2004) argued that stability is related to uncertainty that predicts future performance. As such, when consumers consider a failure to be less stable, they are less likely to think the failure will recur. However, other researchers have used stability to refer to the cause of an error. In this case, if the cause of an error is stable, consumers will feel a higher level of certainty and have more favorable service evaluations than if the

cause is unstable (Swanson & Kelley, 2001). This study follows the former definition and suggests that higher stability indicates that an error may persist over time, whereas lower stability denotes that an error is temporary.

Considering the inevitability of errors, completely eliminating errors is impossible (Wei et al., 2017). Therefore, hospitality companies are encouraged to adopt approaches and strategies to proactively prevent errors from happening (Guchait et al., 2014). Consumers anticipate various service recoveries and form future service expectations based on the stability of errors (Folkes, 1984; Swanson & Kelley, 2001). In the context of a data breach, if the company can quickly identify the cause of a data breach and devote resources to resolving the issue (i.e., low error stability), consumers will perceive it as a one-time incident and be willing to forgive the firm. Yet if the cause of data breach is not identified and the problem is not fixed (i.e., high error stability), consumers may assume that they are likely to experience similar events in the future and consequently discontinue purchasing from the company (Goode et al., 2017). To advance the current understanding of this phenomenon, this study hypothesizes that the impact of error stability on consumers is likely to be moderated by brand perception.

### ***Brand Perceptions of Warmth and Competence***

Warmth and competence are two fundamental dimensions of individuals' perceptions of a person, a country, a brand, or a company (Aaker et al., 2010, 2012; Cuddy et al., 2009; Fiske et al., 2007; Kervyn et al., 2012; Scott et al., 2013). The dimension of warmth captures traits such as care, helpfulness, sincerity, friendliness, trustworthiness, and kindness, whereas the dimension of competence reflects perceptions of intelligence, efficiency, effectiveness, ability, and competitiveness (Fiske et al., 2007; Kervyn et al., 2012). The correlation between warmth and competence varies across contexts, but the two dimensions are often conceptualized as orthogonal (Aaker et al., 2010; Cuddy et al., 2004).

The stereotype content model (SCM) suggests that warmth and competence generate distinct emotions of admiration, contempt, envy, and pity, as well as cognitive and behavioral reactions such as helping, harassing, cooperating, and neglecting (Cuddy et al., 2008). Particularly in consumer research, those behavioral reactions manifest as a willingness to buy, loyalty, and WOM (Aaker et al., 2010; Hassey, 2019; Kervyn et al., 2012). Built on the SCM, the brands as intentional agents framework (BIAF) suggests that human social perceptions of warmth and competence translate to consumer–brand relationships (Kervyn et al., 2012). According to BIAF, consumers' assessments of a brand's warmth and competence elicit distinct emotions and drive differential brand behaviors. For example, warm brands elicit emotions such as admiration and pity, whereas competent brands make individuals feel envy and contempt. Firms' reputations are also judged on the basis of such warmth and competence perceptions (Aaker et al., 2010). Warm brands and competent brands generate more trust, sales, and loyalty than cold brands and incompetent brands do (Aaker et al., 2004; Kervyn et al., 2012). Warmth and competence have been manipulated as two primary brand perceptions in recent research (Hassey, 2019).

## **Hypothesis Development**

### ***Moderating Effect of Brand Perception***

The SCM suggests that the warmth and competence dimensions of brand perception are nearly orthogonal, although the correlation between them varies across stimuli (Aaker et al., 2010; Fiske et al., 2007). Recent research has also demonstrated that customers' perceptions of a brand's warmth or competence elicit various expectations regarding brand performance (Hassey, 2019). Following this stream of literature, the current research investigates two SCM conditions: "cold and competent" and "warm and incompetent." Competence impacts consumers' emotional responses to service encounters (Price et al., 1995). For example, Goldsmith et al. (2000) found that high levels of competence signal to consumers that companies offer high-quality products and services. Contributing to the service failure literature, Blodgett et al. (1995) argued that after a service failure, if consumers perceive a company to be competent, they are likely to patronize the company and spread positive WOM, given that the complainants are likely to perceive the problem to be less stable and less controllable. Similarly, Wirtz and Mattila (2004) revealed that a service recovery that is executed immediately signals firm competency. Consequently, consumers will perceive the failure to be less stable (i.e., low error stability) and react positively. Meanwhile, expectancy disconfirmation theory (Oliver, 1988) suggests that failing to meet a service expectation will result in dissatisfaction and negative consequences. When a company is perceived to be competent, consumers expect it to solve a problem efficiently. If the company cannot meet such an expectation (i.e., high error stability), the disconfirmation will negatively impact consumers' evaluations of the company. Fundamentally, when a company is perceived as competent, low error stability (i.e., quick identification and fixing of errors) leads to more positive reactions than high error stability.

Although it is considered positive if a company is judged as warm, this judgment also implies that consumers do not have high expectations for the company's capability or efficiency to recover from a service failure (Aaker et al., 2010). Barbarossa et al. (2016; 2018) found that when a brand's country of origin is perceived as warm, consumers put less blame on the brand when product failures occur; however, when a brand's country of origin is perceived as competent, consumers put more blame on the brand and decrease their purchasing intentions. As such, regardless of error stability, consumers do not expect a warm company to identify and fix a data breach as efficiently as they expect a competent company to do so.

This study focuses on positive WOM as a common type of reaction after service failure and recovery. This study hypothesizes that through successful error management, a company can demonstrate its efforts to fix a data breach issue. Consequently, consumers will be likely to spread positive WOM about the company. WOM is an action that results from customer satisfaction (Anderson, 1998; Ranaweera & Menon, 2013). In the case of a service failure, customer satisfaction is affected by the disconfirmation between expected versus actual treatment received, and customers are thus less likely to spread positive WOM (Harun et al., 2019; Liao, 2007; Ranaweera & Menon, 2013).

Taken together, the following hypotheses are proposed:

*H1. When a company is perceived as competent, consumers are more likely spread positive WOM in the condition of low (vs. high) error stability.*

*H2. When a company is perceived as warm, consumers' likelihood of spreading positive WOM is similar regardless of the condition of error stability.*

### ***The Moderating Effect of Relationship Norms***

Errors typically negatively affect customer perceptions of a firm (Smith & Bolton, 1998). However, consumers may react distinctively to errors and recovery due to different relationship norms they share with a particular firm (Mattila, 2001).

Individuals make decisions differently on the basis of relationship norms. Communal relationships are usually based on friendship, whereas exchange relationships are regarded as impersonal (Wan et al., 2011). Specifically, the distinction between communal and exchange relationships is the norms that govern the giving and receiving of benefits (Clark & Mils, 1979, 1993). In communal relationships, individuals provide benefits in response to needs or in order to demonstrate general concern, whereas in exchange relationships, benefits are provided with the expectation of receiving comparable benefits in return.

When a communal relationship norm is salient, customers expect a company to play the role of a friend or a family member and display certain behaviors, such as showing genuine care toward the customers (Li et al., 2019). Prior research has suggested that strong relationships magnify consumers' negative responses to a service failure and heighten their expectations regarding recovery efforts (Pizzutti dos Santos & Basso, 2012). For instance, Goodman et al. (1995) found that when a service failure occurs, involved consumers express greater dissatisfaction with the company than less involved consumers do. According to group-value theory, if their involvement in and commitment to a relationship are high, individuals feel that their self-identity and self-worth are threatened when they experience dissatisfaction (Brockner et al., 1992). Additionally, Lewis and Spyropoulos (2001) uncovered that customers with longer relationships with their service providers are more demanding during service recovery. Thus, customers' heightened expectations of service recovery decrease their likelihood of spreading positive WOM if the companies fail to detect and fix errors (i.e., high error stability).

Meanwhile, Wan et al. (2011) argued that consumers' expectations for a company with which they are in a communal relationship can vary "depending on whether the individuals view the relationship from the perspective of their own needs or from the perspective of the other party" (p. 261). During a data breach, consumers expect a company to be responsive to data security concerns from the consumers' own perspective, yet they also understand the difficulties with fixing the issue from the perspective of the company. Thus, if a company can demonstrate that such an error is temporary (i.e., low error stability) via quick detection and efficient recovery, it will exceed customers' expectations and make them feel that the company is willing to exert great efforts to satisfy the consumers' needs. As such, the consumers will be more likely to spread positive WOM than they would in face of high error stability.

When an exchange relationship norm prevails, consumers tend to see service failures merely as unfulfilled business contracts and react less negatively when errors cannot be fixed than they would in a communal relationship (Pizzutti dos Santos & Basso, 2012). When companies quickly detect and fix the errors, consumers simply

perceive their exchange partners as having fulfilled their obligations; this perception does not necessarily lead to positive evaluations of the firms (Tsai et al., 2014). Thus, consumers' intentions to spread positive WOM are similar regardless of relationship norms. The effect of stability is attenuated. As such, this study formulates H3 and H4 as follows:

*H3. When communal norms are salient, consumers are more likely to spread positive WOM in the condition of low (vs. high) error stability.*

*H4. When exchange norms are salient, consumers' likelihood of spreading positive WOM is similar regardless of the condition of error stability.*

The researchers conducted two experiments to test the hypotheses. Study 1 examined the moderating role of brand perception (warm vs. competent). Study 2 examined the moderating effect of relationship norms (communal vs. exchange). Figure 1 presents the conceptual model.

[Insert Figure 1 here]

## **Pretests**

Two pretests, one for Study 1 and one for Study 2, were conducted to ensure the effectiveness and realism of the manipulations. The results indicated that the manipulation of stability ( $M_{\text{high}} = 5.14$ ,  $M_{\text{low}} = 3.70$ ,  $t = 6.57$ ,  $p < .001$ ) was successful, but the manipulation of brand perception ( $M_{\text{warmth}} = 4.09$ ,  $M_{\text{competence}} = 3.88$ ,  $t = -.89$ ,  $p = .375$  on competence;  $M_{\text{warmth}} = 5.19$ ,  $M_{\text{competence}} = 3.72$ ,  $t = -7.20$ ,  $p < .001$  on warmth) and the manipulation of relationship norms ( $M_{\text{exchange}} = 5.71$ ,  $M_{\text{communal}} = 5.76$ ,  $t = .31$ ,  $p = .76$  on exchange;  $M_{\text{exchange}} = 5.10$ ,  $M_{\text{communal}} = 5.57$ ,  $t = 3.27$ ,  $p < .01$  on communal) needed to be strengthened. Based on the pretest results, we modified the scenarios for the main survey by changing the wording and highlighting the keywords.

## **Study 1**

### **Method**

#### *Research design*

The researchers conducted a scenario-based experiment with a 2 (error stability: high vs. low) x 2 (brand perception: warmth vs. competence) design to test H1 and H2 empirically. The researchers developed scenarios according to the error stability and brand perception definitions, study context, and stimuli employed in prior research (e.g., Wei et al., 2017; Zhang et al., 2019). After the introduction, the manipulation of brand perception was employed (adopted from Bernritter, Verlegh, & Smit, 2016). Participants in the warmth condition were told

You recently stayed in Hotel A. Hotel A is an upper upscale hotel (4-star) and you have stayed there a few times. Your overall impression of Hotel A is that it is a warm, friendly, and generous brand. This brand is largely seen as consistently acting with the public's best interest in mind and having good intentions toward ordinary people (e.g., most of the front-line staff is well paid). Hotel A is also seen as being unskilled and ineffective at achieving its goals and lacking the ability to implement its intentions (e.g., its total revenue is ranked bottom 3 among the competitors in the U.S.).

Their counterparts in the competence condition read

You recently stayed in Hotel A. Hotel A is an upper upscale hotel (4-star) and you have stayed there a few times. Over the years, Hotel A has always been considered a brand who is skilled and effective at achieving its goals and having the ability to implement its intentions (e.g., its total revenue is ranked No. 3 among the top 10 hotel brands in the U.S.). But Hotel A is also seen as consistently acting without the public's best interests in mind and lacking good intentions toward ordinary people (e.g., most of the front-line staff are not well paid).

Next, the participants were told that they were surfing online and came across a local news article on a recent information security breach incident related to Hotel A. Participants in the high error stability condition read

On March 13, 2019, Hotel A was a target of a cyber-attack that may have put some of the customers' personal information at risk. Hotel A has begun the investigation of this breach; however, they are still uncertain of the cause at this point. Hotel A suggests that customers who have stayed with them recently should be alert to signs of any possible misuse of their information. Should you identify yourself as a potential victim of this incident, please contact the hotel, the credit card company, and your local police department.

Meanwhile, the participants in the low error stability condition read

On March 13, 2019, Hotel A was a target of a cyber-attack that may have put some of the customers' personal information at risk. After its investigation, Hotel A discovered that the criminals exploited the vulnerability of a website application. A patch has been issued to fix the problem. Hotel A suggests that customers who have stayed with them recently should be alert to signs of any possible misuse of their information. Should you identify yourself as a potential victim of this incident, please contact the hotel, the credit card company, and your local police department.

### *Participants*

The researchers recruited prospective participants using Amazon Mechanical Turk. After deleting the surveys of prospective participants who failed the attention check questions, 205 participants' completed surveys remained for the analysis. Of the 205 participants, the majority were Caucasian (72.7%), college-educated (50.7%), and between 26 and 35 years old (50.2%). Most of them reported having a household income



between \$20,000 and \$39,999 (28.3%). The gender distribution of the participants was close to even (male: 56.6%; see Table 1).

[Insert Table 1 here]

### *Measures*

Participants' intentions to spread positive WOM were measured as the dependent variable ("I will tell my family and friends about Hotel A in a positive way"; Cronbach's  $\alpha = .952$ ), anchoring "very unlikely - very likely, inclined not to - inclined to, and definitely will not - definitely will" (adopted from Wei et al., 2017). The perceived severity of the data breach was similarly measured and used as a covariate. The participants were asked to indicate how severe they considered the described data breach incident to be (adopted from Wei et al., 2017; Cronbach's  $\alpha = .913$ ), anchoring "minor problem - major problem, small inconvenience - big inconvenience, and minor aggravation - major aggravation." All items were measured on a 7-point Likert scale. Finally, two attention check questions were embedded in the survey. The participants who failed the attention check questions were excluded from the analysis. Demographic information was collected from the participants as well.

### *Manipulation checks*

To check the manipulation of brand perception, participants were instructed to indicate their general perception of Hotel A on warmth ("extremely cold - extremely warm, extremely unfriendly - extremely friendly";  $r = .825$ ,  $p < .01$ ) and competence ("extremely incompetent - extremely competent, extremely incapable - extremely capable";  $r = .849$ ,  $p < .01$ ; adopted from Gao & Mattila, 2014). The participants were also asked to indicate their perception of Hotel A after this particular data breach incident using the same scale (warmth:  $r = .842$ ,  $p < .01$ ; competence:  $r = .894$ ,  $p < .01$ ). The results indicated that the participants in the warmth condition responded more positively to the first two items than the participants in the competence condition did (general:  $M_{\text{warmth}} = 5.13$ ,  $M_{\text{competence}} = 4.11$ ,  $t = -5.82$ ,  $p < .001$ ; context-specific:  $M_{\text{warmth}} = 4.57$ ,  $M_{\text{competence}} = 3.84$ ,  $t = -3.80$ ,  $p < .001$ ). In addition, the participants in the competence condition responded more positively to the last two items than the participants in the warmth condition did (general:  $M_{\text{warmth}} = 3.99$ ,  $M_{\text{competence}} = 4.52$ ,  $t = 2.61$ ,  $p < .05$ ; context-specific:  $M_{\text{warmth}} = 3.04$ ,  $M_{\text{competence}} = 3.66$ ,  $t = 2.65$ ,  $p < .01$ ). Thus, the manipulation of brand perception was considered successful.

The manipulation of error stability was verified by asking participants to indicate their level of agreement with two statements: "Hotel A quickly detected and handled the errors" and "Hotel A identified the cause of the data breach and fixed the issue" (adopted from Wei et al., 2017;  $r = .690$ ,  $p < .01$ ). The results indicated that the participants in the low error stability condition reported higher ratings than the participants in the high error stability condition did ( $M_{\text{high}} = 3.10$ ,  $M_{\text{low}} = 4.83$ ,  $t = 8.59$ ,  $p < .001$ ). As such, the manipulation of error stability was considered successful as well.

## *Results*

To test H1 and H2 empirically, the researchers first conducted an ANCOVA analysis with brand perception and error stability as the independent variables, intentions to spread positive WOM as the dependent variable, and perceived severity as the covariate. The results indicated that the interaction effect of brand perception and error stability was significant on the participants' intentions to spread positive WOM ( $F = 4.09$ ,  $p < .05$ ) with severity as a covariate ( $F = 28.14$ ,  $p < .001$ ). Planned contrasts showed that for those participants in the competence condition, low error stability (vs. high) led to a positive effect on their positive WOM intentions ( $M_{\text{high}} = 2.63$ ,  $M_{\text{low}} = 3.77$ ,  $t = 3.38$ ,  $p < .01$ ) than high error stability did. Meanwhile, for the participants in the warmth condition, the difference between low error stability and high error stability was not significant ( $M_{\text{high}} = 3.00$ ,  $M_{\text{low}} = 3.27$ ,  $t = .85$ ,  $p = .40$ ; see Figure 2).

[Insert Figure 2 here]

## **Study 2**

### **Method**

#### *Research design*

A different scenario-based experiment with a 2 (error stability: high vs. low) x 2 (relationship norm: exchange vs. communal) design was employed in Study 2 in order to test H3 and H4. The manipulation of relationship norms was adopted from Aggarwal (2004). Participants in the communal relationship condition were told

You have been staying with Hotel XYZ for the last ten years. You have stayed at various properties of Hotel XYZ and have been very happy with their warmth and the quality of their services. The rooms are always cozy, and the people are fun. They understand what you need and make extra effort to fulfill it. When you were in college, your parents always stayed at a XYZ hotel every time they visited you. Your sibling also got married in a XYZ hotel nearby. Whenever you have visited a XYZ hotel, you have had a very pleasant and warm experience. In fact, you have been liking them for so long that they feel like family to you—someone who is there for you. Each time you visit Hotel XYZ you appreciate them even more. Their prices are a bit above the average, but their genuine and warm interaction with you is beyond just money. Overall, your experience with Hotel XYZ has been memorable.

Their counterparts in the exchange condition read

You have been staying with Hotel XYZ for the last ten years. You have stayed at various properties of Hotel XYZ and have been very happy with their efficiency and the quality of their services. The rooms are always clean and organized. The employees are polite and prompt in responding to your needs. Their prices are a bit above the average, but then they always give you an even exchange for your money. In fact, the place provides you more than a fair value for your money. They know that it makes for good business to treat their customers well. Hotel

XYZ also periodically makes some offers (e.g., vacation packages) to you that appear to be of great value. You tend to think of Hotel XYZ as a good business partner—well-trained people, good service and nice rooms. Overall, your experience with Hotel XYZ has been excellent.

All participants were told that they had recently stayed in Hotel XYZ. Following the manipulation of relationship norms, the same scenarios used in Study 1 were employed to manipulate error stability.

### *Participants*

As in Study 1, in Study 2, the researchers recruited prospective participants using Amazon Mechanical Turk. After deleting the surveys of the prospective participants who failed the attention check questions, 215 participants' completed surveys remained for the analysis. The majority of the participants were Caucasian (68.8%), college-educated (53.5%), and between 26 and 35 years old (49.3%). Most of the participants reported having a household income between \$40,000 and \$59,999 (25.1%). The gender distribution of the participants was close to even, with slightly more male than female participants (male: 57.7%; see Table 2).

[Insert Table 2 here]

### *Measures*

This study used the same set of measurement scales as Study 1. Intentions to spread positive WOM were measured as the dependent variable (adopted from Wei et al., 2017; Cronbach's  $\alpha = .929$ ). Perceived severity of the data breach was measured as the covariate (adopted from Wei et al., 2017; Cronbach's  $\alpha = .880$ ). All items were measured on a 7-point Likert scale. Moreover, two attention check questions were employed. The participants who failed the attention check questions were excluded from the analysis. Demographic information was collected from the participants as well.

### *Manipulation checks*

To check the manipulation of relationship norms, two sets of scales were used (adopted from Aggarwal, 2004). Three items were used to capture an exchange relationship ("I think Hotel XYZ: is good value for money; gives service to get business; you get money's worth"; Cronbach's  $\alpha = .888$ ). Six items were used to capture a communal relationship ("I think Hotel XYZ: helps in terms of need; has warm feelings; treats me special; cares about me; likes me; you care for them"; Cronbach's  $\alpha = .911$ ). The participants in the exchange condition reported a higher level of agreement with the items capturing an exchange relationship than those in the communal condition did ( $M_{\text{exchange}} = 5.91$ ,  $M_{\text{communal}} = 5.63$ ,  $t = 2.01$ ,  $p < .05$ ). In contrast, the participants in the communal condition exhibited a higher level of agreement with the items describing a

communal relationship than those in the exchange condition did ( $M_{\text{exchange}} = 5.06$ ,  $M_{\text{communal}} = 5.56$ ,  $t = -3.40$ ,  $p < .01$ ).

The manipulation of error stability was checked using the same scales as those used in Study 1 (adopted from Wei et al., 2017;  $r = .623$ ,  $p < .01$ ). The results indicated that the participants in the low error stability condition reported higher ratings than the participants in the high error stability condition ( $M_{\text{high}} = 4.16$ ,  $M_{\text{low}} = 5.74$ ,  $t = 8.69$ ,  $p < .001$ ). Thus, the manipulations of relationship norms and error stability were considered successful.

### *Results*

To test H3 and H4, the researchers performed an ANCOVA analysis with relationship norms and error stability as the independent variables, intentions to spread positive WOM as the dependent variable, and perceived severity as the covariate. The results indicated that a significant interaction effect of relationship norms and error stability on participants' intentions to spread positive WOM ( $F = 3.95$ ,  $p < .05$ ) with severity as a covariate ( $F = .722$ ,  $p = .40$ ). Planned contrasts showed that for those participants in the communal condition, low error stability (vs. high) had a positive effect on their positive WOM intentions ( $M_{\text{high}} = 4.92$ ,  $M_{\text{low}} = 5.78$ ,  $t = 3.73$ ,  $p < .001$ ). For the participants in the exchange condition, the difference between low error stability and high error stability was not significant ( $M_{\text{high}} = 5.04$ ,  $M_{\text{low}} = 5.18$ ,  $t = .55$ ,  $p = .58$ ; see Figure 3).

[Insert Figure 3 here]

### **General Discussion**

According to a study conducted by the Ponemon Institute, there was an average of 130 successful data breaches per company in 2017. This represents a 27% increase from 2016 and translates to an average cost of \$11.7 million per organization to recover from the cybercrime attacks (Marcus, 2018). When data breaches occur at hotel properties, they harm hotels' reputations and increase consumers' privacy concerns; they also damage the relationships between hotels and their guests (Chen & Jai, 2019). Thus, hotel companies should pay attention to the confidentiality, integrity, and availability of their guest data (Cobanoglu & Demicco, 2007). Drawing upon the attribution theory as our overarching theoretical framework, this study demonstrates the significance of error stability in influencing people's evaluations of a data breach. When an incident is perceived as either temporary or persistent, consumers' future expectations of similar events change as well. Further, results of this research show that brand perception and relationship norms play significant roles as moderators between perceived error stability and positive WOM intentions.

Specifically, the results of Study 1 reveal that, as hypothesized, when a hotel is perceived as competent, low error stability (i.e., quick detection and solution) has a more positive effect on guests' positive WOM intentions than high error stability (i.e., failure

to detect/solve the error) does. In contrast, when a hotel is perceived as warm, no significant difference is found between the low error stability and high error stability conditions. This indicates that when a firm is perceived as competent, customers focus more on how it solves the problem. It is the solution that matters. In this case, the quick detection and solving of errors after a data breach strengthens a company's competence image, which result in positive outcomes. However, when a firm is perceived as warm, whether and if so, how, it addresses a data breach incident (i.e., error stability) does not seem to matter.

The findings of Study 2 reveal that when guests perceive themselves to be in a communal relationship with a hotel, low error stability has a more positive effect on their positive WOM intentions than high error stability does. However, when guests perceive themselves to be in an exchange relationship with a hotel, error stability has no significant impact on the guests' intentions to spread positive WOM after the hotel's reaction to a data breach. These findings provide interesting insight. Guests in a communal relationship with a hotel likely perceive themselves as members of a collective group built upon friendship (Wan et al., 2011), and they thus have higher expectations for what they receive. In the event of a data breach, these guests may place more weight on the hotel's proper handling of the incident. Guests in an exchange relationship with a hotel, however, tend to perceive the hotel as a business entity and are less emotionally engaged because such exchange relationships are impersonal (Wan et al., 2011). In the event of a data breach, these guests may show more understanding from a business perspective because their decision-making is guided by utility-maximizing considerations under the logic of consequences (Heide & Wathne, 2006). How the hotel reacts to the data breach makes no difference in guests' likelihood to spread positive WOM because the damage has already been done; hence, the consequences remain. Ultimately, these findings empirically support that the reasoning of "people make decisions differently based on relationship norms" is applicable to a consumer-business context after a service error.

In Study 1, participants' positive WOM intentions remained low across all conditions (lower than 4 on a 7-point Likert scale). By contrast, in Study 2, participants' positive WOM intentions remained relatively high across all conditions (higher than 4.9 on a 7-point Likert scale). One possible explanation is that in Study 1, the participants were primed to focus on a hotel's brand perception; they were thus manipulated to think about the hotel as a business. As such, their tolerance level for business mistakes might be lower. In Study 2, the participants were primed to focus on the relationship they have with the hotel; they were thus influenced to treat the hotel more as a person (i.e., family member, friend, or businessperson). As such, their understanding of the hotel making mistakes might be salient.

### **Theoretical Implications**

Drawing on the service recovery paradox, attribution theory, BIAF, expectancy disconfirmation theory, and the theory of communal and exchange relationships, the current research closed the gaps in understanding how consumer-perceived error stability, brand perception, and relationship norms influence consumers' WOM intentions after a

data breach. It advances these theories and contributes new knowledge to academia in the following ways.

First, it expands the service failure and recovery literature. A data breach represents a unique type of service failure that occurs in an online environment and often in technology-based service encounters (Arcuri et al., 2020; Chen & Jai, 2019; Meuter et al., 2000). Whereas extant literature on service failure and service recovery focuses on how service performance affects perceived service quality and customer satisfaction (Gijzenberg et al., 2015; McCollough et al., 2000), the present research adopted a unique theoretical angle: it explored how perceived error stability, as signaled by a hotel's actions after a data breach, changes consumers' WOM intentions. It advances the attribution theory by showing the effect of error stability in the online data breach context and by demonstrating the downstream consequence of error management. The results reveal that if companies can quickly identify the cause of the breach and devote resources to resolving the issue (low error stability), they can benefit from consumers' favorable behavioral response (e.g. spreading positive WOM). These findings contribute meaningfully to scholars' understanding of error stability's impact on consumer reaction and provide evidence of the relationship between error stability and consumer reaction. Academics can apply the findings to other types of error management in the online environment and examine consumer reactions toward the error recovery strategies.

Second, this research extends marketing literature by applying some of its key concepts in the large-scale crisis context of data breaches in order to identify the contingencies of the effects of such data breaches. The past few years have witnessed an increase in research on data breaches and their influence on corporate reputation (Confente, Siciliano, Gaudenzi, & Eickhoff, 2019; Syed, 2019), customers' perceptions (Chatterjee, Gao, Sarkar, & Uzmanoglu, 2019; Chen & Jai, 2019; Zou & Schaub, 2019), and technology development (Noor, Anwar, Malik, Khan, & Saleem, 2019). The current research shows that the impact of data breaches, particularly on customer behaviors, does not only depend on how a hotel responds to a data breach (i.e., error stability) but is also contingent upon two significant factors rooted in marketing: the brand perception of a hotel and the prevailing relationship norm. Previous research has demonstrated that communal relationships emphasize a brand's warmth, whereas exchange relationships emphasize competence (Aaker et al., 2010; Bolton & Mattila, 2015; Fournier & Alvarez, 2012). This research examined the specific effects of brand perception and relationship norms on consumer WOM intentions. The findings advance prior research by providing empirical evidence that in the event of a data breach, consumers' perceptions of a warm brand versus a competent brand influences the consumers' behavioral reactions (Cuddy et al., 2008; Kervyn et al., 2012). Relationship norms are another salient factor in a business–consumer context that contribute to consumers' different interpretations of hotels' reactions to a data breach.

### **Managerial Implications**

This research has unique managerial implications. Data breaches can be harmful to organizations and their customers. However, the results of the present research empirically suggest that if, during a data breach, a company takes the proper actions, the

company can turn the adverse situation into an impression making opportunity. If data breaches are handled properly, hotels can increase their consumers' positive WOM intentions. Therefore, hotel companies are encouraged to appoint an error management team to identify potential errors, update and communicate potential cyberattack issues, and develop error management protocols.

Nevertheless, when it comes to solving a data breach error, there is no “one size fits all” solution. The effect of quickly identifying and fixing such errors on guests' behavioral intentions was found to be contingent upon two factors: namely, consumers' brand perceptions of a hotel and the relationship norms consumers perceive as governing their relationship with the hotel. Studies 1 and 2 indicated that when consumers perceived a hotel to be competent (vs. warm) or perceived themselves to be in a communal (vs. exchange) relationship with a hotel, low error stability (i.e., the quick detection and resolution of a data breach) had a more positive effect on guests' positive WOM intentions than high error stability (i.e., failure to detect/resolve the error) did. Companies are encouraged to respond to and fix data breach errors quickly and effectively because according to the results, the failure to do so has a negative impact on consumer reactions. Such findings also suggest that instead of following the same steps taken by other companies, hotel managers should strategically allocate their resources on the basis of brand perception in the minds of their target consumers, as well as their relationship with their target market. For example, hotels can utilize marketing strategies to showcase their competence by advertising high rankings or awards received or by communicating a competent image in the company vision (e.g. Niccolo Hotels' “We will become a leader in contemporary urban hospitality”). Hotel managers can also emphasize a communal relationship in their communications (e.g., Hyatt's “We Are Family” tagline) or build a communal relationship with consumers by engaging them in loyalty or corporate social responsibility programs. Specifically, to build communal relationships with customers, hotel loyalty programs can provide non-financial loyalty rewards such as organizing loyalty members' friends and family events. Hotels can also collaborate with non-profit organizations or participate in charitable activities in order to build a sense of community with existing and potential customers.

On the other hand, these findings suggest that as part of their data breach notifications, hotels may wish to direct their audiences' attention to the companies' competence and personableness for error recovery actions to be effective. Companies can utilize technologies such as social networking services (SNS) and online concierges to develop instant communication and feedback programs. For example, the Marriott hotel in downtown Charlotte, North Carolina, allows guests to press beta buttons or use iPads in the hotel to provide instant feedback on every aspect of their stays. By using these programs, a company can communicate with consumers efficiently and send consumers updates on the measures it has taken to solve a data breach incident and its strategies for protecting consumers' data privacy from future data breaches.

### **Limitations and Future Research**

This research has certain limitations that open up promising avenues for future studies. First, the researchers adopted an experimental design to maximize the internal

validity of this exploratory study. Although such a design was deemed appropriate for meeting the research objectives and overcoming biases caused by memory loss commonly seen when using a recall-based approach, the authors acknowledge that their selection of dependent and outcome variables was limited by the experimentally manipulated scenarios. Future studies considering consumers' actual experiences might be performed to increase external validity and incorporate additional outcome variables, such as customers' coping behaviors and defensive consumption behaviors. For instance, Zou and Schaub (2019) investigated potential reasons for consumers' inaction after a data breach. Second, while this research fills a void in the existing literature by focusing on the hospitality industry, future researchers are encouraged to compare the results across industries. For instance, Confente et al. (2019) examined how distinct data breaches influence the perceptions of customers across industries. Following their approach, researchers might explore how consumers' responses to data breaches in the healthcare and hospitality industries vary, given the different natures of the industries' respective services, products, and consumer data. Third, this study tackled the effectiveness of hotels' post-error actions in various situations. Given that a data breach presents threats to customers' personal information, the current solutions for handling these incidents are woefully inadequate and more proactive solutions are required (Marcus, 2018). Future studies on data breaches examining the effectiveness of different proactive measures in boosting consumers' promoting pro-company behaviors are recommended as a means of expanding the extant literature. Fourth, future researchers might investigate the joint effects of brand perceptions and relationship norms to further understand the effects on WOM after a data breach. Ultimately, other dimensions related to the attribution of errors, such as locus and controllability, could also be considered in future research.



## References

- Aaker, J. L., Garbinsky, E. N., & Vohs, K. D. (2012). Cultivating admiration in brands: Warmth, competence, and landing in the “golden quadrant”. *Journal of Consumer Psychology*, 22(2), 191-194.
- Aaker, J., Fournier, S., & Brasel, S. A. (2004). When good brands do bad. *Journal of Consumer Research*, 31(1), 1-16.
- Aaker, J., Vohs, K. D., & Mogilner, C. (2010). Nonprofits are seen as warm and for-profits as competent: Firm stereotypes matter. *Journal of Consumer Research*, 37(2), 224-237.
- Aggarwal, P. (2004). The effects of brand relationship norms on consumer attitudes and behavior. *Journal of Consumer Research*, 31(1), 87-101.
- Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological bulletin*, 84(5), 888.
- Anderson, E. W. (1998). Customer satisfaction and word of mouth. *Journal of service research*, 1(1), 5-17.
- Arcuri, M. C., Gai, L., Ielasi, F., & Ventisette, E. (2020). Cyber attacks on hospitality sector: stock market reaction. *Journal of Hospitality and Tourism Technology*. Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/JHTT-05-2019-0080>
- Bagozzi, R. P. (1981). Attitudes, intentions, and behavior: A test of some key hypotheses. *Journal of personality and social psychology*, 41(4), 607.
- Barbarossa, C., De Pelsmacker, P., & Moons, I. (2018). Effects of country-of-origin stereotypes on consumer responses to product-harm crises. *International Marketing Review*.
- Barbarossa, C., De Pelsmacker, P., Moons, I., & Marcati, A. (2016). The influence of country-of-origin stereotypes on consumer responses to food safety scandals: The case of the horsemeat adulteration. *Food Quality and Preference*, 53, 71-83.
- Berezina, K., Cobanoglu, C., Miller, B. L., & Kwansa, F. A. (2012). The impact of information security breach on hotel guest perception of service quality, satisfaction, revisit intentions and word-of-mouth. *International journal of contemporary hospitality management*, 24(7), 991-1010.
- Bernritter, S. F., Verlegh, P. W., & Smit, E. G. (2016). Why nonprofits are easier to endorse on social media: The roles of warmth and brand symbolism. *Journal of Interactive Marketing*, 33, 27-42.
- Bitner, M. J., Brown, S. W., & Meuter, M. L. (2000). Technology infusion in service encounters. *Journal of the Academy of marketing Science*, 28(1), 138-149.
- Blodgett, J. G., Wakefield, K. L., & Barnes, J. H. (1995). The effects of customer service on consumer complaining behavior. *Journal of services Marketing*, 9(4), 31-42.
- Bolton, L. E., & Mattila, A. S. (2015). How does corporate social responsibility affect consumer response to service failure in buyer–seller relationships?. *Journal of Retailing*, 91(1), 140-153.

- Brockner, J., Tyler, T. R., & Cooper-Schneider, R. (1992). The influence of prior commitment to an institution on reactions to perceived unfairness: The higher they are, the harder they fall. *Administrative Science Quarterly*, 241-261.
- Brown, T. J., Barry, T. E., Dacin, P. A., & Gunst, R. F. (2005). Spreading the word: Investigating antecedents of consumers' positive word-of-mouth intentions and behaviors in a retailing context. *Journal of the academy of marketing science*, 33(2), 123-138.
- Chatterjee, S., Gao, X., Sarkar, S., & Uzmanoglu, C. (2019). Reacting to the scope of a data breach: The differential role of fear and anger. *Journal of Business Research*, 101, 183–193.
- Chen, H. S., & Jai, T.-M. (Catherine). (2019). Cyber alarm: Determining the impacts of hotel's data breach messages. *International Journal of Hospitality Management*, 82, 326–334.
- Choi, S., & Mattila, A. S. (2008). Perceived controllability and service expectations: Influences on customer reactions following service failure. *Journal of Business Research*, 61(1), 24-30.
- Clark, M. S., & Mills, J. (1979). Interpersonal attraction in exchange and communal relationships. *Journal of personality and social psychology*, 37(1), 12.
- Clark, M. S., & Mills, J. (1993). The difference between communal and exchange relationships: What it is and is not. *Personality and social psychology bulletin*, 19(6), 684-691.
- Cobanoglu, C., & Demicco, F. J. (2007). To be secure or not to be: Isn't this the question? A critical look at hotel's network security. *International journal of hospitality & tourism administration*, 8(1), 43-59.
- Confente, I., Siciliano, G. G., Gaudenzi, B., & Eickhoff, M. (2019). Effects of data breaches from user-generated content: A corporate reputation analysis. *European Management Journal*, 37(4), 492–504.
- Cuddy, A. J., Fiske, S. T., & Glick, P. (2004). When professionals become mothers, warmth doesn't cut the ice. *Journal of Social issues*, 60(4), 701-718.
- Cuddy, A. J., Fiske, S. T., & Glick, P. (2008). Warmth and competence as universal dimensions of social perception: The stereotype content model and the BIAS map. *Advances in experimental social psychology*, 40, 61-149.
- Cuddy, A. J., Fiske, S. T., Kwan, V. S., Glick, P., Demoulin, S., Leyens, J. P., ... & Htun, T. T. (2009). Stereotype content model across cultures: Towards universal similarities and some differences. *British Journal of Social Psychology*, 48(1), 1-33.
- Culnan, M. J., & Williams, C. C. (2009). How ethics can enhance organizational privacy: lessons from the choicepoint and TJX data breaches. *Mis Quarterly*, 673-687.
- Fiske, S. T., Cuddy, A. J., & Glick, P. (2007). Universal dimensions of social cognition: Warmth and competence. *Trends in cognitive sciences*, 11(2), 77-83.

- Folkes, V. S. (1984). Consumer reactions to product failure: An attributional approach. *Journal of consumer research*, 10(4), 398-409.
- Fournier, S., & Alvarez, C. (2012). Brands as relationship partners: Warmth, competence, and in-between. *Journal of Consumer Psychology*, 22(2), 177-185.
- Gijzenberg, M. J., Van Heerde, H. J., & Verhoef, P. C. (2015). Losses loom longer than gains: Modeling the impact of service crises on perceived service quality over time. *Journal of Marketing Research*, 52(5), 642-656.
- Goldsmith, R. E., Lafferty, B. A., & Newell, S. J. (2000). The impact of corporate credibility and celebrity credibility on consumer reaction to advertisements and brands. *Journal of advertising*, 29(3), 43-54.
- Goode, S., Hoehle, H., Venkatesh, V., & Brown, S. A. (2017). User compensation as a data breach recovery action: An investigation of the Sony PlayStation Network breach. *MIS Quarterly*, 41(3).
- Goodman, P. S., Fichman, M., Lerch, F. J., & Snyder, P. R. (1995). Customer-firm relationships, involvement, and customer satisfaction. *Academy of management Journal*, 38(5), 1310-1324.
- Gressin, S. (2017). The equifax data breach: What to do. *Federal Trade Commission*, 8.
- Guchait, P., Paşamehmetoğlu, A., & Dawson, M. (2014). Perceived supervisor and co-worker support for error management: Impact on perceived psychological safety and service recovery performance. *International Journal of Hospitality Management*, 41, 28-37.
- Harun, A., Rokonzaman, M., Prybutok, G., & Prybutok, V. R. (2019). Determinants of banking consumers' engagement in post service failure positive word-of-mouth: Examining mediating mechanisms. *International Journal of Bank Marketing*, 37(2), 621-645.
- Hassey, R. V. (2019). How brand personality and failure-type shape consumer forgiveness. *Journal of Product & Brand Management*.
- Heide, J. B., & Wathne, K. H. (2006). Friends, businesspeople, and relationship roles: A conceptual framework and a research agenda. *Journal of Marketing*, 70(3), 90-103.
- Hess Jr, R. L., Ganesan, S., & Klein, N. M. (2003). Service failure and recovery: the impact of relationship factors on customer satisfaction. *Journal of the Academy of Marketing Science*, 31(2), 127-145.
- Hocutt, M. A., Bowers, M. R., & Todd Donavan, D. (2006). The art of service recovery: fact or fiction?. *Journal of services Marketing*, 20(3), 199-207.
- Holloway, B. B., & Beatty, S. E. (2003). Service failure in online retailing: A recovery opportunity. *Journal of service research*, 6(1), 92-105.
- Kau, A. K., & Wan-Yiun Loh, E. (2006). The effects of service recovery on consumer satisfaction: a comparison between complainants and non-complainants. *Journal of Services Marketing*, 20(2), 101-111.

- Kervyn, N., Fiske, S. T., & Malone, C. (2012). Brands as intentional agents framework: How perceived intentions and ability can map brand perception. *Journal of Consumer Psychology*, 22(2), 166-176.
- Lewis, B. R., & Spyropoulos, S. (2001). Service failures and recovery in retail banking: the customers' perspective. *International Journal of Bank Marketing*, 19(1), 37-48.
- Li, X., Chan, K. W., & Kim, S. (2019). Service with emoticons: How customers interpret employee use of emoticons in online service encounters. *Journal of Consumer Research*, 45(5), 973-987.
- Liao, H. (2007). Do it right this time: The role of employee service recovery performance in customer-perceived justice and customer loyalty after service failures. *Journal of applied psychology*, 92(2), 475.
- Lin, H. H., Wang, Y. S., & Chang, L. K. (2011). Consumer responses to online retailer's service recovery after a service failure. *Managing Service Quality: An International Journal*.
- Malhotra, A., & Kubowicz Malhotra, C. (2011). Evaluating customer information breaches as service failures: An event study approach. *Journal of Service Research*, 14(1), 44-59.
- Marcus, D. J. (2018). The Data Breach Dilemma: Proactive Solutions for Protecting Consumers' Personal Information. *Duke Law Journal*, 68(3), 556-593.
- Mattila, A. S. (2001). The impact of relationship type on customer loyalty in a context of service failures. *Journal of Service Research*, 4(2), 91-101.
- Maxham III, J. G. (2001). Service recovery's influence on consumer satisfaction, positive word-of-mouth, and purchase intentions. *Journal of business research*, 54(1), 11-24.
- McCollough, M. A., Berry, L. L., & Yadav, M. S. (2000). An empirical investigation of customer satisfaction after service failure and recovery. *Journal of service research*, 3(2), 121-137.
- Meuter, M. L., Ostrom, A. L., Roundtree, R. I., & Bitner, M. J. (2000). Self-service technologies: understanding customer satisfaction with technology-based service encounters. *Journal of marketing*, 64(3), 50-64.
- Modi, S. B., Wiles, M. A., & Mishra, S. (2015). Shareholder value implications of service failures in triads: The case of customer information security breaches. *Journal of Operations Management*, 35, 21-39.
- Noor, U., Anwar, Z., Malik, A. W., Khan, S., & Saleem, S. (2019). A machine learning framework for investigating data breaches based on semantic analysis of adversary's attack patterns in threat intelligence repositories. *Future Generation Computer Systems*, 95, 467-487.
- O'Flaherty, K. (2019). Retrieved from:  
<https://www.forbes.com/sites/kateoflahertyuk/2019/03/11/marriott-ceo-reveals-new-details-about-mega-breach/#6ac9214c155c>

- Oliver, R. L., & DeSarbo, W. S. (1988). Response determinants in satisfaction judgments. *Journal of consumer research*, 14(4), 495-507.
- Pizzutti dos Santos, C., & Basso, K. (2012). Do ongoing relationships buffer the effects of service recovery on customers' trust and loyalty?. *International Journal of Bank Marketing*, 30(3), 168-192.
- Price, L. L., Arnould, E. J., & Deibler, S. L. (1995). Consumers' emotional responses to service encounters: the influence of the service provider. *International Journal of Service Industry Management*, 6(3), 34-63.
- Ranaweera, C., & Menon, K. (2013). For better or for worse? Adverse effects of relationship age and continuance commitment on positive and negative word of mouth. *European Journal of Marketing*, 47(10), 1598-1621.
- Rasoulilian, S., Grégoire, Y., Legoux, R., & Sénécal, S. (2017). Service crisis recovery and firm performance: Insights from information breach announcements. *Journal of the Academy of Marketing Science*, 45(6), 789-806.
- Scott, M. L., Mende, M., & Bolton, L. E. (2013). Judging the book by its cover? How consumers decode conspicuous consumption cues in buyer–seller relationships. *Journal of Marketing Research*, 50(3), 334-347.
- Smith, A. K., & Bolton, R. N. (1998). An experimental investigation of customer reactions to service failure and recovery encounters: paradox or peril?. *Journal of service research*, 1(1), 65-81.
- Swanson, S. R., & Kelley, S. W. (2001). Attributions and outcomes of the service recovery process. *Journal of Marketing Theory and Practice*, 9(4), 50-65.
- Syed, R. R. (2019). Enterprise reputation threats on social media: A case of data breach framing. *Journal of Strategic Information Systems*, 28(3), 257–274.
- Tam, J., Sharma, P., & Kim, N. (2014). Examining the role of attribution and intercultural competence in intercultural service encounters. *Journal of services marketing*.
- Tam, J., Sharma, P., & Kim, N. (2014). Examining the role of attribution and intercultural competence in intercultural service encounters. *Journal of services marketing*, 28(2), 159-170.
- Tsai, C. C., Yang, Y. K., & Cheng, Y. C. (2014). Does relationship matter?—Customers' response to service failure. *Managing Service Quality*, 24(2), 139-159.
- Von Solms, R., & Van Niekerk, J. (2013). From information security to cyber security. *computers & security*, 38, 97-102.
- Wan, L. C., Hui, M. K., & Wyer Jr, R. S. (2011). The role of relationship norms in responses to service failures. *Journal of Consumer Research*, 38(2), 260-277.
- Wei, W., Hua, N., Fu, X., & Guchait, P. (2017). The impacts of hotels' error management culture on customer engagement behaviors (CEBs). *International Journal of Contemporary Hospitality Management*, 29(12), 3119-3137.

- Weiner, B. (1979). A theory of motivation for some classroom experiences. *Journal of educational psychology*, 71(1), 3.
- Weiner, B. (2000). Attributional thoughts about consumer behavior. *Journal of Consumer research*, 27(3), 382-387.
- Wirtz, J., & Mattila, A. S. (2004). Consumer responses to compensation, speed of recovery and apology after a service failure. *International Journal of service industry management*, 15(2), 150-166.
- Zhang, L., Wei, W., & Hua, N. (2019). Impact of data breach locality and error management on attitude and engagement. *International Journal of Hospitality Management*, 78, 159-168.
- Zou, Y. & Schaub, F. (2019). Beyond Mandatory: Making Data Breach Notifications Useful for Consumers. *Sociotechnical Security & Privacy*, 1(2), 67-72.