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A Double-Edged Sword of Involvement: On the Tension Between Customers' Group Value and Self-Interest in Data Breach Response Processes

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Completed Research Paper

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Abstract

As data breaches continue to rise, customers exhibit heterogeneous expectations regarding the company's response. Universal responses can show backfire effects since they fail to meet the expectations. Thus, the challenge arises that customer expectations must be known to mitigate the consequences while time is limited to publish the data breach announcement. By drawing on service failure, data breach, and justice research, we theorize that customer involvement provides a viable approach to this challenge. We argue that active customer involvement allows customers to formulate their expectations. Thus, enabling companies to leverage these expectations to provide tailored data breach responses. We test our hypotheses in a digital experiment (n=304). Our results provide a first indication that active customer involvement in a data breach drives positive group value and negative self-interest effects. We contribute to the data breach literature by revealing that customer involvement constitutes a suitable mechanism for identifying customer expectations.

Keywords: Data breach response, customer involvement, customer expectations

Introduction

Data breaches in which sensitive customer information is compromised have become an everyday challenge for companies. During the past year, the average cost per data breach has risen to $4.24 million (Ponemon Institute 2021). For customers, data breaches pose a tremendous risk because data breaches cannot be recovered. Once exposed, sensitive personal information remains vulnerable to misuse for years after the breach has occurred (Hoehle et al. 2022), e.g., through identity theft or fraud. As a result, customers lose trust in the company's services or products and are inclined to switch to competitors (Malhotra and Kubowicz Malhotra 2011; Martin et al. 2017). Companies try to counteract these negative effects with preventive measures (Kwon and Johnson 2018). However, a priori measures, such as firewalls or

encryption, are effective but fail to completely prevent data breaches (Goode et al. 2017; Kwon and Eric Johnson 2013). Accordingly, companies are compelled to address the response to data breaches. In addition to internal measures, such as the data breach containment (Ahmad et al. 2021), the communicative response, i.e. the data breach response process in which the company interacts with the customer, constitutes a central means of remediating the negative repercussions (Choi et al. 2016). To implement a successful communicative response, companies must develop customer-centric strategies tailored to their customers' specific needs (Goode et al. 2017).

This strategic customer-centricity is attributable to the uncertainty of data breaches. In particular, adverse consequences such as the risk of future information can never be excluded (Choi et al. 2016). Consequently, the magnitude of this risk is individual-specific and depends on the subjectively perceived severity (Martin et al. 2017). Thus, when determining the company's response effort, the expected exchange value differs from customer to customer. Accordingly, assessing a customer's expectations in terms of a company's response is vital in ensuring the success of the communicative response strategy (Masuch et al. 2021). In this context, Goode et al. (2017) examine compensation as a response strategy. Only if the company's compensation meets customer expectations can the relationship with the customer be stabilized (Hoehle et al. 2022). Consequently, universal "throw money at the problem" (Hoehle et al. 2022, p. 300) strategies are discouraged (Bansal and Zahedi 2015; Gwebu et al. 2018). In other words, customers are sensitive to the company's response and weigh it against their expectations to determine their satisfaction (Masuch et al. 2021).

Yet, the problem arises that it would be necessary for companies to know customers' expectations prior to a data breach to respond appropriately (Goode et al. 2017; Masuch et al. 2021). However, a preemptive identification of expectations is not compatible with data breach communication since customers only learn about a data breach when the company notifies them (Janakiraman et al. 2018). Accordingly, implementing active customer participation in the ongoing data breach response process is critical to identify the fundamentally individual expectations (Brown et al. 2012). This input would allow customers to voice their expectations and thereby articulate opinions about the data breach response process. Companies, in turn, can leverage this information to provide tailored responses, thus increasing customer satisfaction. Consequently, a customer involvement process is required, which permits an evaluation of customer expectations. Accordingly, we argue that active customer involvement is an essential first step in designing effective response strategies. While active customer involvement has been studied in related disciplines (Dong et al. 2008; Karande et al. 2007; Van Vaerenbergh et al. 2018), contextualizing this involvement considering the boundary conditions of data breach responses (e.g., the uncertainty of data breaches) has not yet been performed. Against this background, we ask the following research questions (RQ):

RQ: How does customer involvement affect the data breach response process?

To answer these research questions, we expand on the research streams of service failure, data breaches, and procedural justice. The related literature on service failure, utilized as a lens for data breaches (Malhotra and Kubowicz Malhotra 2011), provides us with an initial approach to active customer involvement. Service failure research has successfully demonstrated that active customer involvement leads to a more effective service failure recovery (Dong et al. 2008). In this context, we integrate data breach literature and suggest that unique nuances of data breaches must be considered when adopting these involvement conceptualizations. As a theoretical framework, procedural justice forms our understanding of the effects of customer involvement. Procedural justice theory holds that the degree of individuals' perceived fairness towards procedures, such as customer involvement, constitutes a determinant of outcomes (e.g., satisfaction) (Tyler 1989).

To evaluate the identified conceptualization in empirical terms, we draw on the procedural feature of voice to contextualize customer involvement. We conduct a vignette study (2x1) through an online experiment. Participants (n=304) receive a virtual data breach notification as part of the experiment. In answering our **RQ**, we reveal that customer involvement in data breaches has differential effects in terms of group value and self-interest. As in service failures, a positive effect arises from the socializing group-value aspects of procedural justice. Additionally, we identify a direct adverse self-interest effect of voice on customer satisfaction in the context of data breaches, which does not occur in service failures. Through these opposing effects we find first indications that a unique tension is present in the data breach response process with respect to customer involvement. Thus, our findings stress that data breaches have distinct contextual nuances that demand specific customer involvement requirements. By providing a way to identify customer

expectations, we suggest a possible answer to ongoing research challenges. Thus, we provide a first approach for comprehensively satisfying individual customer expectations, improving the effectiveness of response strategies. Practitioners are encouraged to involve customers, especially in cases of severe data breaches.

Research Background

Reviewing Customer Involvement in Service Failure Responses

Due to the adverse effects of data breaches[1] on customer satisfaction (Wang and Huff 2007), companies are challenged to develop mitigation measures. Preventive measures provide one way to do so. However, these cannot provide comprehensive protection (Gwebu et al. 2018). Accordingly, companies must expect data breaches to occur (Baskerville et al. 2014). As a poor or non-response "[...] has the potential to either reinforce a strong customer bond or transform a seemingly minor distraction into a major incident" (Dong et al. 2008, p. 125), managing incidents like data breaches have become imperative. In particular, regulations compel companies to notify affected customers after a data breach (Knight and Nurse 2020). This process of communicative interaction with the customer and the provision of information to customers is hereinafter referred to as the data breach response process. Based on this conclusion, a domain-spanning literature stream of response strategies has been established in the last decades (Gelbrich and Roschk 2011; Kude et al. 2017; Maxham and Netemeyer 2002). For instance, in addition to compensation, i.e., offering products, services, or monetary payments to customers (Bitner 1990; Goode et al. 2017), issuing an apology is identified as a possible response strategy that may be implemented in the response process (Bansal and Zahedi 2015; Roschk and Kaiser 2013). The literature demonstrates that adverse effects can be diminished by the appropriate choice of strategic approaches (Smith et al. 1999).

In particular, it can be observed that the data breach literature adopts strategic responses to service failure, i.e., when the performance of a provided service is no longer compatible with established customer expectations (Goode et al. 2017; Holloway and Beatty 2003). This rationale is based on Malhotra and Kubowicz Malhotra (2011), which view data breaches as a violators of customers' trust and privacy. The violation of these two service perceptions disrupts the provision of the initial service (Hoehle et al. 2022; Malhotra and Kubowicz Malhotra 2011). Thus, when notified about a data breach, customers will change their perception of a provided service, and a service failure occurs (Hoehle et al. 2022). Numerous studies have leveraged this lens and highlighted the commonalities of service failure and data breaches (e.g., Choi et al. 2016; Janakiraman et al. 2018; Kude et al. 2017; Rasoulian et al. 2017). Corresponding views reflect that data breaches and service failure can be tackled by common strategies (Goode et al. 2017). Accordingly, it can be argued that elements of a successful strategy in both areas resemble each other.

Service research emphasizes that customer involvement is an important element in service failure responses in this context. During the last decades, ubiquitous service provision has shifted the role of customers. Rather than just consuming, customers have turned into value-adding collaborative partners (Vargo and Lusch 2004). A key driver of successful services has become customer involvement at every level of production and delivery (Lusch et al. 2007). Karande et al. (2007) expanded on this notion and were the first to illustrate that the concept of customer involvement also holds merit in response to a service failure. In an experimental setting, they explored the effects of providing a voice to customers. Voice was contextualized as input and opinion into the service failure response process. This allowed the customer to participate in the service failure handling actively. The study of Karande and colleagues revealed that responding in a participatory manner leads to increased response fairness and satisfaction.

Subsequently, numerous studies underpinned and leveraged these findings. Notably, Dong et al. (2008) demonstrated in a self-service context of customer-created service failures that a collaborative response positively affects the intention to co-create in the future. Roggeveen et al. (2012) extended these findings to company-created service failure. Four empirical studies indicate the relevance of customer involvement in a response process. In their practical evaluation of service managers, the authors further show that customer involvement is implemented in practice (Roggeveen et al. 2012). Xu et al. (2014) further illustrate

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[1] We follow Choi et al. 2016 (p. 905) and view a data breach as "the theft, loss, or other forms of compromise of personally identifiable information such as credit card and Social Security numbers."

that customer involvement originating from the company increases customer satisfaction and the perceived fairness of the response. Other studies emphasize the strategic relevance of this response element in different scopes, e.g., online service failure (Gohary et al. 2016) and service co-creation (Bagherzadeh et al. 2020). In identifying solely positive or neutral effects, Van Vaerenbergh et al.'s (2018) meta-analysis of 21 studies indicates the strategic business value of customer involvement in service failure responses. Hence, practitioners are advised to involve customers proactively (Van Vaerenbergh et al. 2018).

Contextual Differences between Service Failure and Data Breaches

Expanding on the service failure lens of data breaches in recent literature (Goode et al. 2017; Hoehle et al. 2022; Malhotra and Kubowicz Malhotra 2011), the concept of customer involvement emerging in the service failure domain provides an initial conceptualization approach for our research endeavor. In this context, service failure literature considers customer involvement an essential component of a successful response strategy. However, while data breaches and service failure share inherent similarities, establishing customer involvement is context-sensitive and contingent on situational aspects (Heidenreich et al. 2015; Vázquez-Casielles et al. 2017). Therefore, it is vital to identify boundary conditions and contextual differences which may limit the transferability of existing customer involvement concepts to the data breach domain. Hence, in the following, we will delineate the contextual differences between service failure and data breaches by referring to the real-word examples from Table 1. These characteristics help us to understand what unique presumptions and aspects are present in the data breach response process. The cases of Meta and Audi illustrate that three nuances exist that distinguish both events.

Meta's Service Failure (2021)	**Audi's Data Breach (2021)**
In **October 2021**, Meta suffered an **outage of its services** lasting several hours. Users could not access either Instagram, WhatsApp, or Facebook networks for an unusually prolonged period (Madory 2021). Customer grievances and online complaints followed. In response to this initial customer reaction, Meta apologized to its users only **two hours after the service failure**: "To the huge community of people and businesses around the world who depend on us: we're sorry" (Meta 2021). **Shortly after this announcement**, the failure was resolved. Social networks **were accessible** again.	In June 2021, car manufacturer Audi **announced** a data breach affecting U.S. and Canadian customers. According to the company, it learned of a hacking attack **three months ago**. An **internal investigation** was carried out to confirm the breach. The reason is said to have been a non-secured interface. Over three million individuals were affected. Customer information such as **social security or insurance numbers** was accessed. Compensation was offered "to the individuals whose more sensitive information was included" (Audi 2021). **Investigations are still ongoing**. To date, the attacker has not yet been identified.

Table 1. Real-world examples of service failures and data breaches

First, service failure and data breaches diverge regarding the ***induced impact on the customer***. Service failures result in the inability to use the service to the expected extent. Traditionally, literature examines failed hotel bookings, restaurant orders, or flights as service failures (Bitner 1990; Smith and Bolton 1998). These result in exposure to a short-term impact (c.f. Hess et al., 2003). However, caused by the service as an intermediary (Vargo and Lusch 2004), this impact is indirect. Companies are able to recover the initial service (Gelbrich and Roschk 2011). Negation of the damage proceeds swiftly (c.f. Smith et al. 1999). At Meta, for example, networks were back up and running after 6 hours of downtime. While users were temporarily unable to access the service, no lingering effects emerged (Madory 2021). This contrasts with the impacts that arise in a data breach. Even with identity theft protection services, as in Audi's case, the possibility of data misuse remains. A risk follows that persists over an indefinably long period (Martin et al. 2017). Hence, breached companies can mitigate but not neutralize the damage incurred (Hoehle et al. 2022). Returning to the pre-data breach state becomes an impossible task. Ultimately, when misuse is conducted, direct losses follow, e.g., through credit card fraud (Sen and Borle 2015).

Second, data breaches and service failures differ in terms of their ***awareness and response order***. Service failures are usually first recognized by customers (e.g., Karande et al. 2007). In Meta's case, customers were using the platforms when access was abruptly unavailable (Madory 2021). Recovery activities were initiated subsequently. By re-establishing services, companies like Meta can negate the impact on customers by fixing the failure (Hoehle et al. 2022). A contrasting procedure unfolds in the case of data breaches. Companies first become aware of attacks (Janakiraman et al. 2018). Containment, recovery, and forensic efforts are then performed to isolate the data breach (Ahmad et al. 2021). External communication should only commence when a company sufficiently understands the breach (Knight and

Nurse 2020). Therefore, customers will not be notified about the data breach until these measures have been completed. Eventually, the data breach is remediated by, for instance, providing compensation (Goode et al. 2017).

Third, the incidents diverge in their ***time frame***. Due to delays in the internal response to data breaches, external responses may not be provided for several months (Foerderer and Schuetz 2022; Gwebu et al. 2018). Audi, for example, informed its customers three months after the data breach became known and almost two years after it occurred (Audi 2021). Conversely, service failure forces companies to communicate rapidly due to the awareness order (Hoffman et al. 1995). Customers often already know about the failure, leaving the response from the company pending (Hess et al. 2003). Unlike data breaches, these activities are performed in a concise time frame (Dong et al. 2008). Especially in non-digital service failures, customer awareness, company awareness, response, and recovery converge (Smith and Bolton 1998).

In summary, our review reveals three key contextual differences between service failure and data breaches: the kind of impact, the response and awareness order, and the time frame (see Table 2).
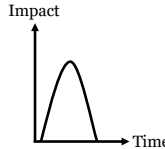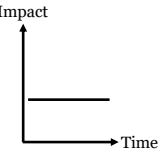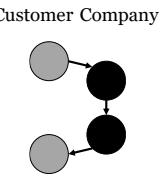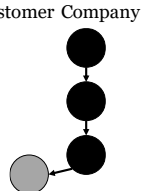
	Service Failures	**Data Breaches**
Impact Traits	Short-term–immediate impact, Swift negation, Indirect (e.g., outage)	Long-term–persistent impact, Negation unlikely, Direct (e.g., misuse)
Response and Awareness Order	1. Customer awareness 2. Company awareness 3. External & internal response 4. Impact negation	1. Company awareness 2. Internal response 3. External response 4. Customer awareness and impact remediation
Time Frame	Ranging from minutes to days, Rapid external communication	Ranging from weeks to years, Delayed external communication
Table 2. Comparison of Service Failures and Data Breaches		

A Customer Involvement Perspective on Data Breach Responses

Our review indicates that customer involvement in service failures provides a fruitful avenue for data breaches. However, attention must be paid to the nuances of both events. To conceptualize customer involvement, we further draw on justice theory as a theoretical lens. This is due to two reasons. First, both data breach and service failure literature highlight that "justice perceptions connect customers' disconfirmation and outcomes" (Hoehle et al. 2022, p. 315; Gelbrich and Roschk 2011; Choi et al. 2016). Second, the implementation of customer involvement is linked to the perception of overall fair procedures provided by the company (Bagherzadeh et al. 2020; Joosten et al. 2017; Van Vaerenbergh et al. 2018). Specifically, procedural justice has been shown to mediate the impact of customer involvement on satisfaction with the service failure response (Cheung and To 2016; Karande et al. 2007).

Procedural justice is defined as an individual's perceived fairness towards the procedures an organization implements during and after decision-making (Lind and Tyler 1988). In the event of an incident involving customers, these procedures can be considered the organizational processes involved (Choi et al. 2016; Gelbrich and Roschk 2011), aiming to remedy the errors that have occurred (Tax et al. 1998). Although outcome-related factors that precede the ultimate decision influence perceptions of procedural fairness (Thibaut and Walker 1975), social determinants serve as the main contributors to procedural justice (Lind et al. 1990; Tyler et al. 1985). Individuals strive for long-term social relationships with institutions (e.g., companies) and recognition within these (Tyler 1989). They derive their function in groups (e.g., customer-company relationships) based on association, esteem, and social structure (Lind and Tyler 1988). The group-value model integrates these views and assumes that procedural justice is mainly influenced by the

aspect of socialization (Lind and Tyler 1988). Lind and Tyler (1988) describe procedures as pivotal components in an individual's social life, going beyond the achievement of a favorable outcome. High procedural justice is accordingly grounded in an individual's perception that they are a "fully-fledged member of the group" (Earley and Lind 1987). That is, procedural justice is not solely determined by outcome-related but rather symbolic-related procedures (Tyler et al. 1985).

Providing a voice constitutes the most elementary and consistent way of establishing actual customer involvement through procedural justice (Lind and Tyler 1988). Voice is defined as the involvement in the decision-making process through the individual's actions (Lawler 1975). Conceptualizing voice can be performed through, for example, written feedback (Avery and Quiñones 2004), interacting directly with individuals via verbal means (Lind et al. 1990), or providing opportunities for voice through digital tools, e.g., forums, comment boards, or hotlines (Wu and Wang 2013). In a customer-facing setting, we can describe this concept as the customers' ability to share thoughts or opinions with a company on a related incident (Goodwin and Ross 1992; Karande et al. 2007). Voice may, for instance, serve to influence the provided compensation (Goodwin and Ross 1992). Accordingly, contextualizing voice in the data breach domain offers an opportunity to obtain feedback on the data breach response process. This implementation would allow affected customers to provide input and views on the data breach response. Active involvement and the assessment of expectations of customers are achieved.

By receiving the possibility to voice an opinion, one's role and importance in the group are underpinned (Conlon 1993). Regardless of the expected influence, the mere presence of a voice conveys a value that is considered rewarding (Tyler et al. 1985). Thus, providing a voice indicates symbolic group affiliations and respect, elevating the perceived social in-group standing (Goodwin and Ross 1992; Lind and Tyler 1988). Inversely conceptualized, not offering an opinion to voice suggests that individuals are group members that cannot contribute any value to the decision-making process (Lind and Earley 1992). Thus, when given a voice, individuals feel part of the social group and become more connected to it, thus increasing their perceived procedural justice through socialization (Lind and Tyler 1988). In this regard, voice has been shown to positively impact procedural justice even when marginal influence on the outcome is present (Tyler et al. 1985). In examining pre- and post-decisional voice compared to no voice, Lind et al. (1990) further illustrate the conceptualization of the group value model and voice as a critical determinant of procedural justice. They demonstrate that pre-and post-decisional voice increases procedural fairness, while no voice fails to do so. Similar findings are identified in the domains of service failure (Hui and Au 2001) and complaint handling (Joosten et al. 2017).

Considering that exchanging information between customers and companies in a service setting resembles a social agreement (Hoehle et al. 2022; Malhotra and Kubowicz Malhotra 2011), we argue that the relationship between voice and procedural justice also holds in a data breach context. Customers assume a cooperative role in the context of a service, thus co-producing the resulting service value (Vargo and Lusch 2004). In particular, service providers rely on customers' willingness to share their personal information (Lusch et al. 2007). Additionally, individuals are generally more inclined to share information with companies they are loyal to, familiar with, or trust (Cichy et al. 2021; Jai and King 2016; Slyke et al. 2006). In the event of a data breach, this fundamental relationship between the customer and the company is violated (Malhotra and Kubowicz Malhotra 2011). Correspondingly, we reason that rebuilding this relationship is pivotal. Hence, when provided a voice that symbolically reflects that they are part of the group, customers' procedural justice will increase through the process of socialization:

> **Hypothesis 1**: Providing customers with the possibility to voice opinions about a data breach response increases customers' perceptions of procedural justice of the response process.

Customers establish personal severity perceptions during encounters with failures (Oliver 1996). The perceived severity of a service failure is subject-specific and pertinent to assessing a failure's criticality (Mattila 2001). This personal severity is assumed to be high when individuals sense a direct or indirect personal loss resulting from an incident (Chatterjee 2018). This relationship can be attributed to a more angry or fearful response by customers to severe failures, causing a more intense relation to the failure (Roehm and Brady 2007). As customers feel a heightened sense of personal loss from this intensity, their demand for the company's response efforts increases (Chatterjee 2018; Goodwin and Ross 1992; Weun et al. 2004). Accordingly, customers experience an inequality in (service) exchange which challenges their relationship with the company (Homburg et al. 2010; Mattila 2001). Procedural justice in the group-value model can be viewed as a means to reduce this inequality through socialization (Lind and Tyler 1988). As

higher perceived severity causes the inequality to increase (Hess et al. 2003), it concurrently raises the desire to decrease such inequality through provisioned procedures. Thus, mechanisms of procedural effects are reinforced in incidents with increased perceived severity (Lind and Tyler 1988). In particular, these include the intention to voice or express opinions (Rohden and Matos 2022; Thøgersen et al. 2009).

We assume a similar relationship in the data breach context. Individuals perceive data breaches as severe due to varying subjective characteristics (Bansal and Zahedi 2015), such as the degree of physical or psychological damage to themselves (Siponen et al. 2014). We argue that customers who perceive the data breach to be more severe will express concerns about the relationship with the company due to higher perceived inequality. Accordingly, the socialization effect through voice has a correspondingly more substantial effect on procedural fairness with increased perceived severity. We hypothesize:

> **Hypothesis 2**: The relationship between the possibility to voice an opinion and procedural justice of the response process is moderated by the customers' perceived severity of the data breach, such that the relationship is greater at a higher level of perceived data breach severity.

As a determinant of various behavioral intentions in failures, satisfaction represents a central measurement instrument for a customer's perception of a company (Oliver 1996). According to a substantial body of literature, the perceived fairness of procedures enhances customer satisfaction (Gelbrich and Roschk 2011). This can be attributed to two aspects. First, higher perceived procedural fairness affects the perceived level of problem-solving interest on behalf of the company (Lind and Tyler 1988; Tax et al. 1998). As a result, the relationship between the parties is strengthened by fostering continued exchange, thereby increasing overall satisfaction with incident handling (Lind and Tyler 1988; Maxham and Netemeyer 2002; Thibaut and Walker 1975). Second, procedural means shape the outcome achieved (Thibaut and Walker 1975). When individuals view these procedural means as fair, they perceive that their received outcome can be enhanced (Karande et al. 2007; Lind and Earley 1992). Thus, perceived justice increases satisfaction by influencing the perception of achieved outcomes (Maxham and Netemeyer 2002). Following recent literature on data breaches that identifies procedural justice as a determinant of response outcomes and satisfaction (Choi et al. 2016; Hoehle et al. 2022), we hypothesize the following:

> **Hypothesis 3**: Procedural justice of the response process increases customers' satisfaction with the data breach response.
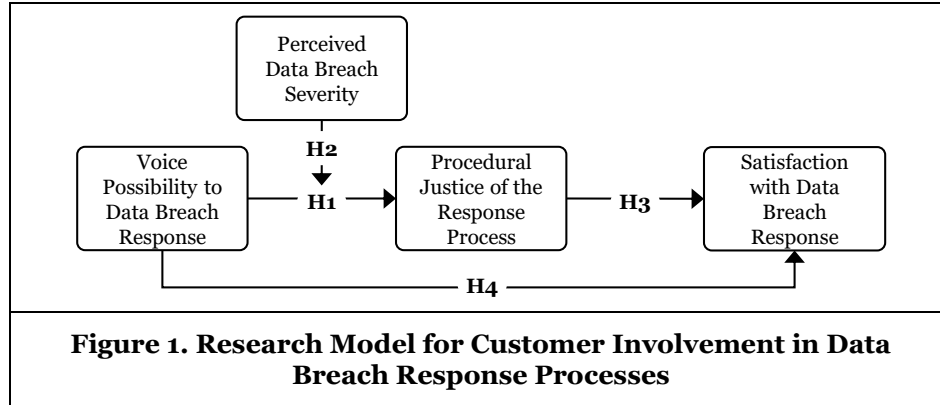
While the group-value aspects of providing a voice are positive (**H1**), we argue that allocating a voice to customers can trigger undesired adverse effects in a data breach context. Following the provision of a voice opportunity, doubts may be raised about the honesty of the supplied procedures (Lind and Tyler 1988). This perception ensues when the recipient considers the voice to be insubstantial, thus concluding "that they were allowed only "sham" participation" (Goodwin and Ross 1992, p. 156). In this case, procedures for resolving the service failure are assumed to be provided merely out of the provider's self-interest, so the voice is recognized as a distraction of fairness instead of a genuine effort to seek input (Cohen 1985; Lind and Tyler 1988). As a result, personal interest is assumed to be masked by this voice, prompting an adverse reaction (Lind and Tyler 1988). Hence, the voice recipient perceives that a decision has already been made (Potter 2006). This perception of the possibility to voice leads to a negative view of the incident and conflict management, thus decreasing satisfaction (Folger et al. 1979; McCollough et al. 2000).

Lind and Tyler (1988) conclude that an adverse reaction will occur when apparent cues exist that "sham" participation is present. These cues are typically absent in conventional voice research, and observed effects are mainly positive (Folger 1977; Kulik and Clark 1993; Lind and Tyler 1988). However, given the unique nuances of data breaches in the context of **(i)** impact traits, **(ii)** response and awareness order, and **(iii)** time frame, we argue the opposite in our use case (see Table 2). **(i)** The impact and risk caused by a data breach are persistent and can only be minimized, not negated (Hoehle et al. 2022). Irrespective of what customers seek as a response from the company, the compromised information will continue to affect the customer. Resolving the data breach entirely via reaching a common outcome is not possible. Accordingly, the opportunity to voice is only a constrained means of resolving the incident. **(ii)** Customers do not become aware of the data breach until late in the response process. Corresponding company-internal incident handling measures have already been completed. Consequently, the notification represents the final communication on the data breach (Knight and Nurse 2020). Thus, achieving a change through voice is challenging by design. **(iii)** The time frame of a data breach ranges from weeks to years. The delay between origination, response, and customer notification signifies the inflexible nature of a data breach. A

reinforcing effect on the response and awareness order arises. As this protracted time frame is apparent before an opinion is voiced, customers will consider the procedure insubstantial. In summary, based on the nuances of data breaches, we argue that the negative effect of a voice, as in "sham" voice opportunities, persists in the context of a data breach response. Thus, customers assume that their self-interest is not adequately addressed. Against this background, we hypothesize:

Hypothesis 4: Providing customers with the possibility to voice an opinion on a data breach response decreases customer satisfaction with the data breach response.

Drawing on the literature on customer involvement in a service failure, procedural justice, and voice and enriching this view by the unique nuances of data breaches, we propose the following research model:

Figure 1. Research Model for Customer Involvement in Data Breach Response Processes

Research and Experimental Design

To validate the derived hypotheses, we conducted a vignette study (2x1) in an online scenario experiment. We opted for a scenario-based experiment, as these experiments are particularly suitable for investigating critical and sensitive use cases, e.g., data breaches (c.f. Bansal & Zahedi 2015). As a result, experimental research in the context of data breaches enables us to investigate novel concepts whilst not inducing any actual detrimental effects on customers or companies. Furthermore, we decided to adopt a data breach scenario in a healthcare setting. Health data can be considered particularly sensitive (Anderson and Agarwal 2011; Sen and Borle 2015), ensuring that participants perceive the scenario as a personal data breach and thus to better empathize with the study's setting. The participants surveyed were students, employees, and acquaintances in a university setting.

After reviewing the manipulation and attention checks, 56 participants were removed. The final sample contained 304 survey responses. The average age of the participants was 32 years (SD= 10.50), of which 57.23% were men and 38.15% were women. 4.62% did not indicate their gender. 72.36% of the respondents hold a bachelor's or master's degree. Furthermore, 79.27% accept the digitization of the health care system in the context of health information management. In addition to surveying constructs, we obtained control variables, and demographic information (age, gender, familiarity with EPR, economic status, and education). Manipulation and attention checks were performed to ensure participants could relate to the scenario. The survey was conducted in February 2022.

Following the introductory scenario, all participants were presented with the data breach scenario, including a data breach notification by the virtual company "InsurHealth" (see Table 3). Actual notifications have been used as a template to ensure a realistic scenario (e.g., Audi 2021). We decided to include an apology in this notification due to two aspects. First, an apology is one of the most common strategy components (Goode et al. 2017), thus enhancing the realism of the scenario through its utilization. Furthermore, an apology is considered a versatile and efficient strategy component (Bansal and Zahedi 2015) that is widely recognized in security research (Goode et al. 2017; Masuch et al. 2021; Rasoulian et al. 2017). This notification mirrors our control group without the opportunity to voice.

Conversely, the customer involvement group possesses a voice option (see Table 3). We conceptualized voice in the context of data breaches by leveraging actual data breaches as well as extant data breach and

voice research (Audi 2021; Hui and Au 2001; Janakiraman et al. 2018; Karande et al. 2007). Participants were randomly assigned to one of the response scenarios groups.

Introductory and Data Breach Scenario

Since 2021, all people with statutory health insurance can access an electronic patient record (EPR) from their health insurers, in which medical findings and information from previous examinations and treatments can be stored comprehensively across practice and hospital boundaries. You use the mobile EPR-app of your health insurance company - InsurHealth, where you now store your medical and physician history. As part of this, your personal health information is recorded. The following information, which has accrued as a result of your visits to the doctor during this period, has been stored in your EPR: personal doctor's findings, medication plans, blood values, previous illnesses, and allergies.

You now log in to your EPR-app and receive the following notification: "*On May 20, 2021, InsurHealth experienced a data security incident that prevented users from accessing the EPR-app and data. InsurHealth determined that personal information and protected health information belonging to certain individuals were acquired without authorization as part of the incident. The types of information potentially accessed varied by individual but may have included Member and health insurance ID numbers, treatment/diagnosis information, dates of service, medication plans, patient account number(s), and medical record number(s)...*

Data Breach Response Scenarios

Customer Involvement Group *(Voice)*

...We deeply regret any inconvenience or concern this incident may cause. We would like to know from you what we can do to rectify the situation. To do so, please send us an email to rectification@insurhealth.com or use the form below."

First Name	Last Name
E-Mail	
Message	

Control Group *(No Voice)*

...We deeply regret any inconvenience or concern this incident may cause."

Table 3. Scenario Setting

Data Analysis and Results

We tested our research model and the derived hypotheses through the partial least squares structural equation modeling (PLS-SEM) approach (Hair et al. 2011). In recent years, this approach has been gaining considerable attention in the Information Systems literature (Hair et al. 2017; Trenz et al. 2020). PLS-SEM is particularly suitable for explaining target constructs in a predictive context (Hair et al. 2017; Hair, Sarstedt, et al. 2019), exhibiting advantages over the covariance-based approach in this scope (Reinartz et al. 2009). As our study aims to reveal the existence of relationships rather than determining the degree of those relationships (Goodhue et al. 2012), we argue that PLS-SEM is a suitable approach to achieve our research goal. Moreover, despite smaller sample sizes, it allows the analysis of complex models of varying dimensions (Fombelle et al. 2016). We employed the software Smart-PLS 3.0 (Hair et al. 2021).

Measurement Model Results

The voice manipulation was integrated into the measurement model as a binary variable. All other independent and dependent variables were measured through reflective constructs through items on a 7-point Likert-scale. Before analyzing the structural model, the validity and reliability of the measurement model are assessed (Fornell and Larcker 1981). Thus, ensuring indicator reliability, internal consistency reliability, convergent validity, and discriminant validity.

To warrant indicator reliability, we verified that the indicators of the constructs explain more variance than the measurement error, i.e., factor loadings ought to equal at least 0.708 (Hair, Risher, et al. 2019). This is given for all items except one (see Table 4). Following outer loading relevance testing based on internal consistency reliability and convergent validity (Hair et al. 2021), we argue for retaining this item for the completeness of the underlying measurement theory. Internal consistency reliability is established by examining Cronbach's alpha (α) and composite reliability (CR), and both measurement criteria are fulfilled if the threshold of 0.7 is met (Hair et al. 2021; Nunnally and Bernstein 1994). Moreover, convergent validity is assessed by measuring the average variance extracted (AVE). As with indicators, constructs should explain at least 50% of the variance, resulting in applying a threshold of 0.5 (Henseler et al. 2009). Table 4 highlights the reliability and convergent validity of our model.

Constructs and Items	Loadings
Procedural Justice of the Response Process (α = .942, CR = .954, AVE = .777) (Karande et al. 2007)	
I was able to influence the process used to solve the data breach.	.907
I was able to express my views and feelings in this situation.	.825
I was able to influence the outcomes arrived at in this situation.	.911
InsurHealth was willing to adapt its data breach incident handling procedures to satisfy my needs.	.884
The procedures used gave me more control over how well the data breach was solved.	.906
Overall, the procedures used by InsurHealth were fair.	.850
Satisfaction with Data Breach Response (α = .940, CR = .961, AVE = .892) (Maxham and Netemeyer 2002)	
In my opinion, InsurHealth provided a satisfactory resolution to the data breach on this particular occasion.	.952
Regarding this particular data breach, I am satisfied with InsurHealth.	.940
I am not satisfied with InsurHealth's handling of this particular data breach. (reversed)	.941
Perceived Data Breach Severity (α = .750, CR = .837, AVE = .635) (Weun et al. 2004)	
I consider the data breach to be: (not very severe – severe – very severe)	.763
The data breach is making me feel: (not very angry – angry – very angry)	.686
The data breach is unpleasant to me.	.923
α – Cronbach's alpha, CR – Composite Reliability, AVE – Average Variance Extracted. Unless indicated otherwise, items were measured on a 7-point Likert scale (1 = Strongly disagree, 7 = Strongly agree).	
Table 4. Construct Measurement, Reliability, and Convergent Validity	

In line with the current IS literature (Karwatzki et al. 2022), we subsequently controlled for discriminant validity by applying the Fornell and Larcker (1981) criterion (FL) and the heterotrait-monotrait ratio (HTMT) (Hair et al. 2021). The FL-criterion is met if the squared AVE of each construct is greater than the correlations with all other constructs of the measurement model (Hair et al. 2021). The HTMT is fulfilled if the values are below the conservative threshold of 0.85 (Henseler et al. 2015). Table 5 demonstrates that the discriminant validity of our model holds. We additionally tested for the existence of a common method bias (CMB). We followed the method suggested by Kock (2015) and employed a threshold of 5.0 for the variance inflation factor (VIF) (Kline 1998). As all VIF values met this criterion, no issue with CMB could be identified.
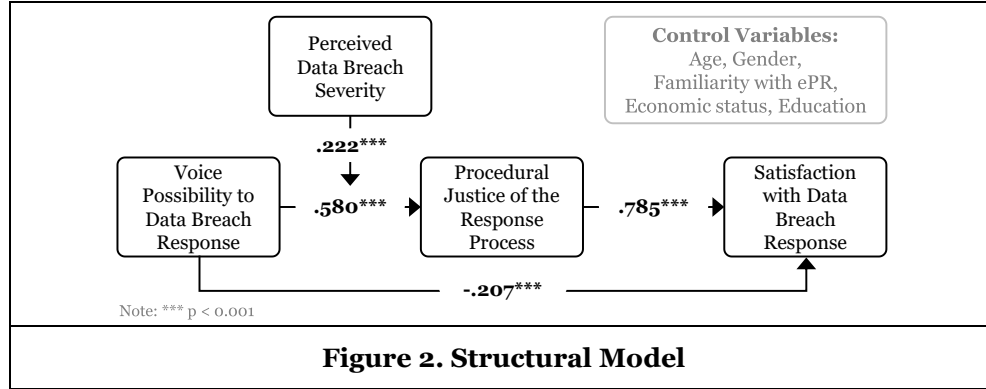
	Procedural Justice	Satisfaction	Perceived Severity
Procedural Justice	**0.881**	*0.704*	*0.171*
Satisfaction	0.666	**0.945**	*0.488*
Perceived Severity	-0.166	-0.434	**0.797**
FL-criterion in bold, HTMT in italics			
Table 5. Discriminant Validity			

Testing the Structural Model

To test our measurement model and analyze path significances, we employed the bootstrapping method with 10,000 subsamples (Hair et al. 2021). We additionally tested for control variables (age, gender, familiarity with EPR, economic status, and education) and found no impact on the significance of the main paths. However, significant relationships include age on procedural justice of the response process (β=.268, p<.001) and familiarity with EPR on procedural justice of the response process (β=.111, p=.018).
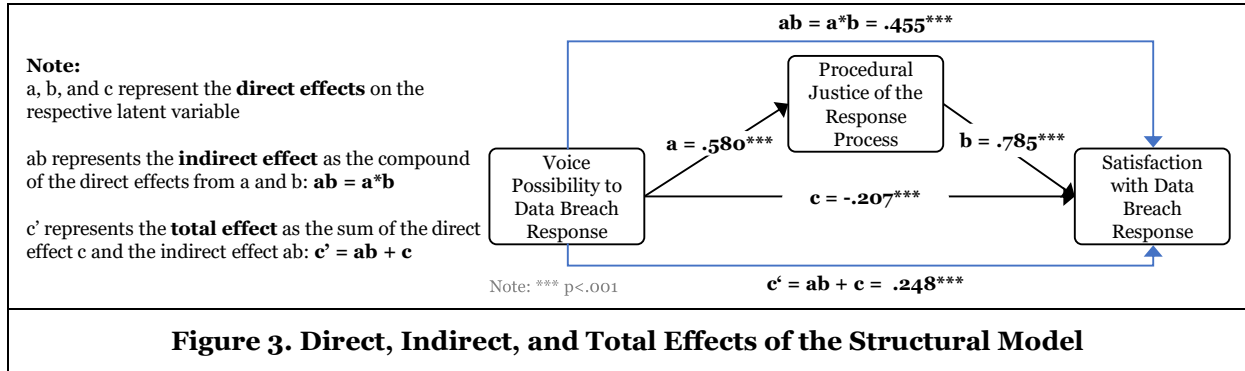
Figure 2 shows the results of our structural model. The model explained 48.3% of the variance in data breach response satisfaction (41.3% without control variables) and 51.1% of the variance in procedural justice of the response process (47.2% without control variables). The results lend support to all four of our

established hypotheses. The structural model shows that providing customers the possibility to voice positively influences procedural justice of the response process (β=.580, p<.001), thus **supporting H1**. Furthermore, we observe that this voice effect is positively amplified when customers perceive the data breach as more severe (β=.222, p<.001). Hence, offering empirical **support for H2**. Moreover, the structural model suggests that perceived procedural fairness of the response process increases customer satisfaction with the data breach response (β=.785, p<.001). Consequently, **H3 is supported**. Finally, we find empirical support for the partially negative influence of voice in data breaches (β=-.207, p<.001). **As hypothesized (H4)**, providing an opportunity to voice significantly decreases the response satisfaction.

Figure 2. Structural Model

Post Hoc Analysis

Previous studies have mainly identified no or complementary relationships between voice on customer satisfaction when exploring voice opportunities (Goodwin and Ross 1992; Karande et al. 2007; Lind and Earley 1992). However, our conceptualization of voice within data breach responses shows contrasting relationships. While differentiating these effects was not the focus of this study, a post-hoc analysis was performed to understand voice's specific impacts in the context of a data breach. In this scope, the relationship between the positive effect and the negative effect is paramount. To differentiate the individual impact, we analyzed the indirect and total effects (see Figure 3).

Figure 3. Direct, Indirect, and Total Effects of the Structural Model

In particular, the indirect effect refers to the mediation of voice on satisfaction via procedural fairness. This effect is positively significant and emphasizes the relevance of procedural justice in the analysis of voice (β=.455, p<.001). By confirming H4, we previously evidenced a direct negative effect of voice on satisfaction (β=-.207, p<.001). Based on these observations, we note that the mediation involved is a competitive mediation. In other words, opposing effects exist, negating each other under certain conditions (Hair et al. 2021). The indirect mediation and direct effects must be aggregated to assess the total effect of voice on satisfaction with the data breach response in our study. Therefore, the total effect considers the influence of various latent variables and is suited for our case (Hair et al. 2021). Depending on the magnitude of indirect and direct effects, the total effect may be negatively significant, positively significant, or not significant (Zhao et al. 2010). Figure 3 reveals that the total effect is significantly positive in our setting (β=.248, p<.001). This implies that despite the direct negative impact of voice on satisfaction, the positive mediation effect via procedural justice prevails.

Discussion

Prior literature focuses on the relevance of customer expectations without addressing the importance of their identification. We theorize that expectations can only be identified through active customer involvement, and it is necessary to adopt theoretical findings into action. In this light, this study aimed to investigate active customer involvement in data breach responses and explore its effects. We incorporate unique data breach nuances and their implications on the adoption of customer involvement in data breach responses. In the following, we discuss the implications for research. We further outline how our study can be leveraged by practitioners and point out limitations and future research opportunities.

Implications for Research

Our study contributes to data breach, and service failure literature in several ways. First, we advance the data breach research stream by providing a mechanism to assess customer expectations in practice. Prior research has been based on ex-post identification of expectations or highlights a-priori measurement of expectations (Goode et al. 2017; Hoehle et al. 2022). Yet, those expectations that arise during a data breach correspond to the actual desired outcome for customers (Masuch et al. 2021). Accordingly, the application of earlier results in practice was somewhat limited. The results of our study shed light on the issue of how these expectations can be pinpointed. We observe that customer involvement provides a vehicle for gathering expectations and opinions during the response process. As this involvement has a differentiated but overall positive effect, research can leverage our results to design response strategies that prevent customers from receiving a response outside their zone of expectations. Thus, we lay a foundation for the in-response process evaluation of expectations. Indeed, actual expectations can be matched against the responses provided. Therefore, increasing the possibility of meeting customer expectations and, in turn, positively impacting customers' behavioral intention and satisfaction.

Second, by identifying voice as a promising strategy component in severe data breaches, we contribute to the research stream of data breach response strategies. Previous data breach research generally considers severity a negative determinant (Janakiraman et al. 2018; Martin et al. 2017). For instance, the justification component has been identified to decrease the perceived severity of a data breach (Gwebu et al. 2018). Indeed, related service failure literature also illustrates that compensation is less adequate for more severe incidents (Smith et al. 1999). Nevertheless, contextualized by voice, customer involvement represents a strategy component that leverages this severity. The more severe a data breach is perceived to be, the more likely customers want to be actively integrated into the data breach response process. Accordingly, we introduce a different perspective on severity, shifting it from an exclusively negative view to an exploitable determinant. Subdividing severity into finer-grained levels allows strategy components and their effects to be evaluated and applied more individually.

Third, we advance research on customer involvement in service failures. Previous research identified customer involvement in a service response process as exclusively positive (Dong et al. 2008; Karande et al. 2007; Van Vaerenbergh et al. 2018). We find competitive effects by contextualizing customer involvement into the data breach response context through voice and thus bearing in mind the unique nuances of data breaches. In particular, we delineate between the group value, the mediated effect via procedural fairness of the response process, and the self-interest effect, the direct effect on customer satisfaction with the data breach response. We illustrate that customer involvement in the context of data breaches yields a positive socializing group value effect via procedural fairness. However, we equally reveal that a negative direct self-interest effect on satisfaction exists. This highlights that customer involvement is a double-edged sword, especially in the data breach context. Related incident response literature can benefit from these findings. Any adverse effects that may arise from similarly uncertain incidents like data breaches must be considered and evaluated.

Implications for the Management of Data Breach Responses

From a practical point of view, our findings can be harnessed by companies operating in industries leveraging sensitive customer data. First, the communicative data breach response management can benefit from our research. We demonstrate that integrating customers into this process can indeed be advantageous. However, considering the contradictory effects, dynamic changes need to be considered. Especially in the increasingly frequent large-scale data breaches, which affect millions of customers and an

array of sensitive information (Ponemon Institute 2021), practitioners should embrace customer involvement through voice. This is due to its heightened effectiveness under high-severity conditions. Companies can gain strategic advantages by tactically employing customer involvement as a response component by positively influencing customer satisfaction. Accordingly, our findings advocate companies to advance active customer integration in the communicative response to data breaches.

Second, our research suggests that procedural justice of the response process is a profound driver of customer satisfaction. In addition to offering voice, numerous procedural features may generate customer satisfaction (Tax et al. 1998). Generally, our research indicates that the fairer a data breach response is designed in terms of procedures, the more satisfied customers are with the response. This expands the basic outcome-based notion, which companies frequently adopt through compensation (Goode et al. 2017; Hoehle et al. 2022). An interpersonal, social perspective, which we introduce through this study, represents a cornerstone in successfully responding to data breaches. Therefore, companies are encouraged to establish a skill set to ensure that processes related to customer interactions following a data breach are aligned with customer expectations.

Third, the results of this study stress that an overarching response management approach for heterogeneous incidents can lead to erroneous inferences. Our findings demonstrate that, at a minimum, a distinction must be made between managing service failure and data breach incidents. While in the former, customer involvement is exclusively positive (Van Vaerenbergh et al. 2018), adverse effects may occur in the latter. An isolated adoption of previous practices from the service area should be scrutinized and evaluated against this background. Response management practitioners must implement individualized strategic solutions for responding to data breaches to satisfy customers. These individualized strategies must consider the prevalent perceived personal severity of the data breach from the customer's perspective when evaluating the incorporation of active involvement. Different severity conditions can result in a situation in which customer involvement may not be solely positive. Accordingly, companies must respond in a situation-specific manner.

Limitations and Future Research Directions

Our study also has limitations that need to be explored in future research. We revealed that due to the characteristics of a data breach, negative perceptions towards the outcome-related aspects of customer involvement are already present. Nonetheless, the opportunity to voice suggests that the input is, to some extent, heeded by the company (Goodwin and Ross 1992). When customers genuinely feel that this involvement is contradicted, adverse effects can arise (Lind and Tyler 1988). Hence, future research should investigate to which degree the (dis)confirmation of these voice expectations may result in diminished satisfaction. In this context, the way in which the voice opportunity is framed should also be considered as a limitation of our study. Based on existing research, we opted for involvement in relation to rectification. However, this approach of initiating involvement may vary. Future research should examine the extent to which this framing affects the impact of customer involvement and the degree to which it affects the customer's actual interaction with the company. Furthermore, we did not assess how customers value active involvement in our study. Yet, research indicates that individuals perceive involvement opportunities differently (Avery and Quiñones 2004). While some seek this involvement, others refuse or ignore it (Avery and Quiñones 2004). Future studies should examine how a moderating effect may arise on the positive and negative factors of customer involvement. Although our results may be extended to other domains, the health context we adopted limits their scope. Further investigations should replicate our results and extend them to different contexts, such as finance or retail (Goode et al. 2017; Ponemon Institute 2021).

Conclusion

Informed by research on data breaches, service failure, and procedural justice, this study aimed to explore how customer involvement can be leveraged to assess customer expectations in data breach responses. Conceptualized as voice, we examined the influences of customer involvement in a vignette study (n=304). Our findings show that customer involvement leads to an overall positive effect in data breach responses. Thus, we provide future researchers with a mechanism to identify actual expectations and offer an avenue in addressing the challenge of implementing individual-specific data breach response strategies. We further suggest that the specific context of data breaches results in impacts that do not hold in related domains. Indeed, our results provide a first hint that active customer involvement yields a positive group value and a

negative self-interest effect. Particularly because of these distinctive features, customer involvement in data breaches should not be considered a panacea. Hence, practitioners should resort to customer involvement when confronted with severe data breaches. This study provides insights into how both practitioners and researchers can exploit customer involvement in data breaches.

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