

Understanding the cascade effect: the role of emotions in opportunistic product recall outcomes

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Abstract

Purpose – An increasing number of product recalls globally has compelled companies to rethink strategies for addressing the negative implications of recalls, especially those that influence customers' relationships with brands. Anchored in affective events theory, this study examines customers' emotional, attitudinal and behavioral responses to opportunistic product recalls, focusing on how anger, regret and brand hate mediate negative outcomes like protest behavior and revenge.

Design/methodology/approach – Data from 425 US car owners were analyzed using structural equation modeling and one-way analysis of variance (ANOVA) to assess the roles of emotions and demographics in shaping post-recall responses.

Findings – Regret emerged as a stronger predictor than anger of negative behavioral responses. Serial mediation paths revealed that anger, regret and brand hate sequentially influence protest and revenge behaviors. Importantly, the results show that even low-intensity emotional responses, often overlooked by managers, can accumulate over time and provoke resistance behaviors. Additionally, occupation significantly affected protest behavior, with full-time employees being most likely to protest.

Research limitations/implications – Findings are specific to the automotive sector. Future studies should explore other industries.

Practical implications – Recall strategies should address occupation-specific concerns and mitigate customer regret. Managers must also recognize that seemingly mild emotional reactions, such as regret, are not trivial, and if left unaddressed, they can cause negative behavioral outcomes from customers. This highlights the need for proactive emotional management during recalls.

Originality/value – This study highlights the critical roles of regret and occupation in shaping consumer-brand relationships during events such as opportunistic product recalls.

Keywords Product recall, Opportunistic product recall, Brand hate, Affective events theory, Serial mediation, Structural equation modeling

Paper type Research paper

1. Introduction

Product recalls are among the most recurrent and damaging events for organizations, posing serious threats to operational continuity and brand integrity (Gong, 2024). In 2024 alone, 1,073 safety recalls were issued in the USA, affecting more than 35 million vehicles and related equipment, including over 29 million vehicles, and many of these vehicles remain unrepaired despite the identified safety risks (NHTSA, 2025). This issue is not new, and there has been a lot of research around the dimensions of this issue, including firm value (Chen *et al.*, 2009), operations (Shah *et al.*, 2017), legal risk (Hall and Johnson-Hall, 2021) and reputation (Gibson *et al.*, 2006; Hussain *et al.*, 2025). However, limited attention has been paid

to the cascade of emotional, attitudinal and behavioral responses they elicit, particularly when recalls are perceived as opportunistic. Such perceptions amplify reputational damage and complicate stakeholder management (Veil *et al.*, 2016).

While vehicle recalls are essential for addressing safety defects, industry data indicates that dealerships often view recall visits as opportunities to promote additional services. Although framed as a customer engagement strategy, this

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practice has raised broader discussions around ethical boundaries and customer trust in post-recall interactions. According to J.D. Power's (2023) Customer Service Index study, customer satisfaction drops 23 points when a vehicle is brought in for a recall repair rather than for routine maintenance, with recall-related visits negatively affecting Net Promoter Score ratings, particularly for premium brands (Power, 2023). This indicates that rather than fostering stronger customer relationships, aggressive upselling during recall appointments may develop perceptions of opportunism among customers, leading to negative behavioral outcomes such as protest behavior and even revenge.

In addition, data from Recall Master, a US-based provider of comprehensive recall solutions, reveals that 54% of customers who visit for recall-related repairs end up purchasing additional services, suggesting that recalls often serve as sales funnels for dealerships rather than purely corrective actions (Reyes, 2025). While some dealerships may justify this as an opportunity to educate customers on preventive maintenance, the practice raises ethical concerns, particularly when customers are pressured into nonessential repairs or misled into unnecessary expenses. These tactics align with opportunistic product recalls, where recalls are strategically framed as customer-centric but serve underlying business objectives. In this case, the risk of customer skepticism, dissatisfaction and long-term brand distrust highlights the importance of distinguishing genuine recalls from those perceived as opportunistic.

Research on product recalls has largely examined their antecedents, consequences and firms' strategic responses (Cockrell *et al.*, 2024; Kashmiri and Brower, 2016). Empirical work in marketing can be broadly categorized into three streams: the causes of recalls, their outcomes and the strategic interventions firms adopt to influence this cause–outcome relationship (Astvansh, 2024). Within this literature, foundational studies on product-harm crises have established both how firms should respond strategically and how customers react under heightened risk (Siomkos and Shrivastava, 1993; Siomkos and Kurzbard, 1994). Building on this base, marketing research has demonstrated that crises erode brand equity and that consumer expectations critically shape post-crisis evaluations (Dawar and Pillutla, 2000). Subsequent work further shows how pre-crisis equity and communication levers condition recovery trajectories (Cleeren *et al.*, 2008) and synthesizes when and why crisis effects persist or attenuate across stakeholders (Cleeren *et al.*, 2017). Despite these insights, relatively limited attention has been paid to the emotional, cognitive and behavioral consequences of recalls for consumer-brand relationships. Addressing this gap, the present research investigates how opportunistic product recalls shape these relationships through a cascade of emotional and attitudinal responses, ultimately influencing customer behavior.

Opportunistic product recalls arise from the interplay between firm motivation and the recall timing. Recalls are classified as voluntary – issued proactively to preempt reputational or legal risks, or involuntary (mandatory) – initiated under regulatory enforcement (Astvansh *et al.*, 2022; Yakut and Bayraktaroglu, 2021; Byun *et al.*, 2020; Borah and Tellis, 2016). Involuntary recalls can paradoxically yield more favorable firm value outcomes (Chen *et al.*, 2009), whereas voluntary recalls often preserve brand image (Souiden and Pons, 2009). Yet voluntary recalls perceived as strategic maneuvers to protect company

interests rather than customer welfare may trigger perceptions of opportunism. Drawing on the work of Souiden and Pons (2009) and affective events theory (Weiss and Cropanzano, 1996), this study argues that such recalls can provoke emotional and attitudinal backlash from customers. Although this study focuses on the automotive sector, similar dynamics have been observed across industries, including food (Seo and Jang, 2021), medical devices (Goswami *et al.*, 2025) and multicategory product settings (Raithel *et al.*, 2024), highlighting the broader relevance of opportunistic recall dynamics in shaping consumer-brand relationships.

A recall may reflect opportunistic behavior, particularly when car dealerships use recall visits to upsell additional services for revenue generation (Magno, 2012; Moore, 2017). This research proposes that both voluntary and involuntary recalls, when coupled with dealership-level opportunism attributed to the brand, can trigger a cascade of customer reactions, such as anger and regret, leading to brand hate and ultimately, protest and revenge. Therefore, this study investigates how opportunistic product recalls trigger emotional responses (anger, regret), shape attitudinal outcomes (brand hate) and ultimately influence negative behavioral reactions (protest, revenge). By examining these cascading effects, this research extends affective events theory to consumer-brand relationships and highlights the significance of even low-intensity emotions in shaping such relationships.

The findings of this study align with affective events theory's proposition that emotionally salient, even if moderate, events can produce enduring affect that shapes attitudes and behavior, and regret's self-referential quality makes it especially consequential. The results show that opportunistic product recalls elicit complex emotions, with regret exerting a stronger effect than anger due to its introspective nature (Schmitt *et al.*, 2004). The findings also highlight distinct emotional pathways, revealing serial mediation via anger, regret, brand hate to protest and revenge. In addition, occupation emerged as the only significant demographic predictor of protest behavior, with full-time employees more likely to protest than others. These insights highlight the need for occupation-specific and empathetic recall strategies, extending work in crisis management, anti-consumption and consumer-brand relationships.

2. Theoretical background

The phenomenon of product recalls has garnered increasing attention in consumer behavior research in recent years due to its significant impact on emotions, brand perception and purchase decisions (Pagiavlas *et al.*, 2022; Chakraborty *et al.*, 2023; Astvansh, 2024; Hussain *et al.*, 2025). Particularly in high-stakes industries like automotive (Power, 2016), recalls influence not only operational outcomes but also consumer psychology (Wei *et al.*, 2023). Managing these events effectively is critical for sustaining customer trust and loyalty. This review of literature focuses on opportunistic product recalls and their role in shaping customer emotions (anger, regret), attitudes (brand hate) and behaviors (protest, revenge).

2.1 Affective events theory

The affective events theory (Weiss and Cropanzano, 1996) explains how specific events trigger emotional responses that

shape attitudes and behavior. Initially applied in workplace settings, it now informs consumer behavior research, emphasizing the impact of emotionally charged events on decision-making (Hussain, 2021; Hussain *et al.*, 2022). In organizations, management style or team dynamics can influence employee attitudes via emotion. Similarly, in consumer contexts, events like opportunistic product recalls can evoke emotions, particularly anger and regret, which shape attitudes such as brand hate and behaviors like protest and revenge. Transposing affective events theory to product recalls reveals conceptual parallels in terms of the nature and framing of recalls, that is, voluntary, involuntary or opportunistic, which can spark significant emotional reactions (Kang *et al.*, 2023). While prior studies in marketing and tourism have used this theory (Chang and Hung, 2022; Lee *et al.*, 2021; Luo and Chea, 2018; Stylos *et al.*, 2022), its application to recall contexts remains limited.

Several theories explain customer reactions to corporate misconduct, but they offer limited insight into the emotional intensity of such responses. For example, attribution theory emphasizes cognitive blame assignment (Martinko, 1995; Munyon *et al.*, 2019), justice theory highlights fairness perceptions (Liu *et al.*, 2021; Kumar and Shankar, 2024) and expectation violation theory focuses on disconfirmed expectations (Burgoon and Hale, 1988; Hussain *et al.*, 2025). While informative, these frameworks understate the discrete emotions central to customer backlash. In contrast, affective events theory (Weiss and Cropanzano, 1996) captures the depth, strength and persistence of emotional responses to salient events (Goto and Schaefer, 2017), making it particularly suited to explain how opportunistic recalls provoke anger or regret and lead to outcomes such as protest and revenge.

The affective events theory is uniquely positioned to explain the emotional trajectory from opportunistic product recalls to retaliatory consumer behavior. It allows for modeling the mediating role of emotions like anger and regret in the relationship between perceived opportunism and behavioral outcomes such as brand hate, protest and revenge. This approach enables a more comprehensive understanding of customer response mechanisms.

By extending affective events theory to the automotive industry, this study emphasizes the value of affective framing in understanding post-recall behavior. It highlights the importance of emotions in shaping consumer-brand relationships. It contributes to literature by demonstrating how opportunistic motives behind product recalls can lead to a cascade of emotional, attitudinal and behavioral responses. This theoretical alignment offers both empirical rigor and practical relevance in addressing corporate accountability and customer trust following emotionally salient events.

2.2 Product recalls and opportunistic product recalls

Product recalls are defined as manufacturer-led actions to remove defective or unsafe products from the market (Agrawal *et al.*, 2022). Though costly and potentially damaging to brand reputation, they are essential for customer safety (Mollenkopf *et al.*, 2022; Wowak *et al.*, 2022). In the automotive sector, recalls are especially common due to complex production and usage. Existing literature spans three key areas: managerial strategies (Chen *et al.*, 2009; Cleeren *et al.*, 2013), customer responses (Munyon *et al.*, 2019; Li *et al.*, 2023) and recall

antecedents and outcomes (Kashmiri and Brower, 2016; Li *et al.*, 2022). Recalls often reduce trust, sales and generate negative word-of-mouth, particularly for brands with strong equity (Martins and Pires, 2023), while also affecting stock performance, moderated by blame attribution (Bernon *et al.*, 2018). Although proactive recalls may enhance quality (Tse *et al.*, 2019), they can also signal deeper organizational issues (Chen *et al.*, 2009), emphasizing the role of brand history and strategy in shaping stakeholder reactions. Consistent with this body of work, recalls can be understood as crisis events with systematic effects on customer learning, brand equity and competitive dynamics, however, our study focuses specifically on opportunistic recall perceptions of customer as the trigger for their emotional-attitudinal-behavioral cascade (Siomkos and Kurzbard, 1994; Dawar and Pillutla, 2000; Cleeren *et al.*, 2017).

Despite extensive literature on recalls, studies focused on opportunistic product recalls remain sparse. Opportunistic recalls occur when firms frame recalls as strategic moves for image, compliance, or revenue instead of customer protection (Magno, 2012; Astvansh *et al.*, 2022; Hussain *et al.*, 2025). In such cases, dealerships may exploit recall visits to upsell additional services (Hussain *et al.*, 2025). Unlike corrective recalls, these are seen as self-serving and may erode customer trust, prompting backlash such as protest or revenge behavior. While well-managed recalls can enhance brand equity, those perceived as opportunistic often produce the opposite effect (Magno, 2012).

While regular product recalls are reactive measures to address safety defects, opportunistic product recalls are often strategically initiated to serve broader corporate interests (Astvansh *et al.*, 2024; Hussain *et al.*, 2025). The primary distinction lies in intent, execution and customer implications. Regular recalls focus on safety and regulatory compliance, ensuring hazardous products are withdrawn from the market (Souiden and Pons, 2009). Conversely, opportunistic recalls, while presented as customer-centric, may aim to boost revenue, enhance brand perception (Hussain *et al.*, 2025), manage inventory or deflect regulatory attention. These recalls often involve vague justifications or benefit dealerships under the guise of customer care (Akrouf and Mrad, 2023). While regular recalls may strengthen trust, opportunistic ones risk damaging consumer-brand relationships by triggering perceptions of manipulation, leading to protest behaviors and decreased repurchase intent (Raithel *et al.*, 2024; Hussain *et al.*, 2025).

Although some manufacturers use recalls to signal responsibility and maintain satisfaction (Pagiavlas *et al.*, 2022; Wei *et al.*, 2023), poorly handled recalls can cause customer frustration and reputational harm. Yet, existing research has largely prioritized organizational motivations and market outcomes rather than the customer reactions that unfold. Therefore this study examines the emotional (anger, regret), attitudinal (brand hate) and behavioral (protest, revenge) responses to opportunistic product recalls, a relatively underexplored dimension in recall research.

2.3 Customer protest and desire for revenge

Negative emotional responses such as anger and regret, particularly following opportunistic product recalls, can lead to protest behavior, which is a socially expressive reaction to perceived corporate irresponsibility (Grappi *et al.*, 2013; Rahimah

et al., 2023). Unlike private actions (e.g., boycott or avoidance), protest is distinguished by its public dimension, that is, collective disapproval or vocal dissent toward brand (Kozinets and Handelman, 2004). Recent research shows that opportunistic recalls can provoke such public criticism and resistance, with customers openly questioning the brand, and withdrawing repurchase intention (Haase *et al.*, 2022; Hussain *et al.*, 2025). Similarly, boycott studies highlight that customers increasingly turn to collective actions, such as targeted boycotts or coordinated campaigns, as a protest strategy to pressure brands into accountability (Jedicke *et al.*, 2025). These forms of protest indicate the socially visible and morally charged nature of customer resistance in the aftermath of opportunistic recalls. This research explores how emotional and attitudinal responses shape negative behavioral outcomes. Protest behavior differs from private actions like boycotts, as it involves publicly shared emotions and collective disapproval (Kozinets and Handelman, 2004). It often emerges when customers perceive brands as self-serving, as in the case of opportunistic recalls (Rahimah *et al.*, 2023). When customers perceive that a brand has acted in a self-serving or exploitative manner, as in the opportunistic product recalls, protest behavior becomes a salient outlet for expressing moral discontent. In short, and consistent with affective events theory's view that event-evoked emotions precipitate behavioral expression, the perception of opportunism should increase socially expressive protest. Therefore, following hypothesis is proposed:

H1. Opportunistic product recall positively influences customers' protest behavior.

In parallel, revenge or vengeful behavior reflects a more punitive posture, which is customers' intent to retaliate against a brand for perceived misconduct (Shahrasbi *et al.*, 2024; Haase *et al.*, 2022). Revenge stems from the belief that firms should be held accountable and that harm must be reciprocated (Weitzl *et al.*, 2024; Yang *et al.*, 2022). Contemporary studies show that when customers feel betrayed, dissatisfaction may escalate into vindictive forms of retaliation, including vindictive complaining and retaliatory public confrontation (Wen-Hai *et al.*, 2019; Shahrasbi *et al.*, 2024). Other recent work distinguishes between direct revenge, where customers aggressively complain to frontline staff or engage in confrontational behaviors, and indirect revenge, such as posting negative online reviews, spreading damaging electronic word-of-mouth or mobilizing peers to avoid the brand (Shahrasbi *et al.*, 2024). These indirect responses, often carried out in digital environments, are particularly damaging because they can spread rapidly and erode brand reputation beyond initial customer base. Accordingly, the following hypothesis is proposed:

H2. Opportunistic product recall positively influences customers' vengeful behavior or revenge.

While protest and revenge both reflect unfavorable customer responses, the difference lies in intensity and intent, that is, protest signals moral disapproval publicly, whereas revenge seeks punitive retaliation, sometimes escalating to more confrontational or reputationally damaging behaviors. To understand why these outcomes occur, subsection 2.4

examines the emotional and attitudinal mechanisms that precede them.

2.4 Anger, regret and brand hate

Affective events theory (Weiss and Cropanzano, 1996) posits that emotionally salient events provoke affective reactions that shape subsequent attitudes and behaviors. In the context of opportunistic product recalls, anger is a key emotional response triggered when customers perceive the firm's actions as unjust, harmful or trust-violating (Mantovani *et al.*, 2018). Anger is typically directed toward a specific agent (e.g., the automaker) and is associated with high certainty and a strong motivation to act. These characteristics make anger a powerful driver of retaliatory responses such as complaints, protests and negative word-of-mouth (Khan *et al.*, 2019; Weitzl *et al.*, 2024; Grégoire *et al.*, 2009). Affective events theory helps explain how this emotional reaction emerges from the appraisal of an event and leads to targeted behavioral expressions.

Regret, in contrast, is a self-reflective emotion that arises when customers perceive they have made a poor decision, such as choosing a product later revealed to be compromised. This introspective state is often accompanied by personal disappointment and perceived responsibility (Brooks and Reddon, 2003; Buchanan *et al.*, 2016). Within the affective events theory framework, regret can be understood as an effective response to the realization of a negative outcome, especially when a firm's behavior violates expected norms. Regret leads to long-term withdrawal from a brand, negative word-of-mouth or avoidance behavior (Kurtoğlu *et al.*, 2021; Wen-Hai *et al.*, 2019; Schmitt *et al.*, 2004; Yi and Baumgartner, 2004). It may also function as a defensive response to self-perceived inadequacy.

Brand hate, within consumer-brand relationships, is defined as a strong aversion or opposition to a brand, leading to adverse behavioral intentions (Johnson *et al.*, 2011). It is conceptualized as a multidimensional construct (Fetscherin, 2019; Zhang and Laroche, 2020; Akrou and Mrad, 2023), comprising emotional (Aziz and Rahman, 2022; Sameeni *et al.*, 2024), attitudinal (Kucuk, 2018; Odoom *et al.*, 2024) and behavioral (Bayarassou *et al.*, 2020; Kucuk, 2018) dimensions. This study conceptualizes brand hate as an attitude, following literature that defines it as a persistent negative brand evaluation (Kucuk, 2019; Bayarassou *et al.*, 2020). Unlike emotions, attitudes are stable and better predictors of behavior (Ajzen, 1991; Hussain *et al.*, 2022), making this conceptualization particularly relevant to understanding protest and revenge behaviors (Zarantonello *et al.*, 2016; Rasouli *et al.*, 2025; Chahal and Dolkar, 2024).

This study conceptualizes brand hate as an attitudinal construct, defined as a stable, negative evaluation of a brand rooted in perceived violation of customer expectations or values. This framing contrasts with studies treating brand hate as transient emotion (Aziz and Rahman, 2022) or outcome behavior like boycott or revenge (Bayarassou *et al.*, 2020), aligning instead with work viewing it as a long-term, cognitively anchored appraisal (Kucuk, 2018; Zarantonello *et al.*, 2016). Attitudes are more enduring than emotions and are well-established predictors of behavioral intentions (Ajzen, 1991), making this framing especially appropriate for modeling how brand hate mediates between negative affect (e.g., anger and regret) and customer actions (e.g., protest and revenge). By

distinguishing between immediate emotional arousal and longer-term attitudinal stance, this conceptualization allows us to capture the temporal and psychological dynamics that occur following opportunistic product recalls.

This attitudinal framing of brand hate offers key insights into how affective responses, such as anger and regret, evolve into intentional behavioral reactions like protest and revenge. Specifically, brand hate intensifies when customers perceive brand actions (e.g., product recalls) as personally relevant or morally offensive, reinforcing their negative stance and motivating retaliation (Kumar *et al.*, 2023; Romani *et al.*, 2012). Prior research also highlights that brand hate can be particularly virulent in high-involvement categories such as automotive, where customer expectations of safety, reliability and integrity are especially high (Bryson and Atwal, 2019).

Recent literature highlights the differential roles of anger and regret in shaping brand hate. Anger, as an outwardly directed emotion, motivates confrontational behaviors toward brands perceived as harmful (Haase *et al.*, 2022; Weitzl *et al.*, 2024). Regret, in contrast, emerges from self-reflection and leads to avoidance or brand switching (Shi *et al.*, 2025; Zhang *et al.*, 2024; Fetscherin, 2019; Kurtoglu *et al.*, 2021). In the case of opportunistic product recalls, these emotional triggers consolidate into a lasting negative evaluation, that is, brand hate, which drives behavioral responses over time. Recent research confirms its key mediating role in consumer-brand dynamics. For instance, Brandão *et al.* (2023) found that prior brand love moderates the effect of corporate misconduct on brand hate, which mediates outcomes like reduced patronage (Rodrigues *et al.*, 2021). Other studies (Pinto and Brandão, 2021; Japutra *et al.*, 2021; Aziz and Rahman, 2022; Bayarassou *et al.*, 2020; Weitzl *et al.*, 2024) also reinforce this role.

Most of the existing research explains and also confirms that both emotional responses of anger and regret direct people to indulge in a behavior to eliminate the situation that causes these emotions, that is, emotional reactions directly cause behavioral responses (Wen-Hai *et al.*, 2019; Zhang and Laroche, 2020; Liu *et al.*, 2023; Sultana *et al.*, 2023; Elhajjar, 2022; Sthapit *et al.*, 2024; Kaabachi *et al.*, 2024). However, the available literature lacks confirmation of whether any attitudinal change follows these strong emotions before triggering any negative behavioral response. This study argues whether the emotional responses of anger and regret, before initiating any behavioral outcomes, generate the negative attitudinal response of brand hate. To take this argument further, this study tests whether opportunistic product recall affects protest and revenge through serial mediation by anger, regret and brand hate. Therefore, the following hypotheses are presented:

- H3. The influence of opportunistic product recall on customer protest behavior is serially mediated first by the emotional response of anger, and subsequently by brand hate.
- H4. The impact of opportunistic product recall on customer protest behavior is serially mediated first by the emotional response of regret, and subsequently by brand hate.
- H5. The influence of opportunistic product recall on customers' vengeful behavior (i.e., revenge) is serially

mediated first by the emotional response of anger, and subsequently by brand hate.

- H6. The influence of opportunistic product recall on customers' vengeful behavior (i.e., revenge) is serially mediated first by the emotional response of regret, and subsequently by brand hate.

3. Methodology

3.1 Sample and data collection

The study targeted US car owners who had experienced and complied with a vehicle recall, given the country's high car ownership and 1,073 recalls, affecting over 35 million vehicles in 2024 (NHTSA, 2025). Data were collected via Amazon Mechanical Turk (MTurk), a cost-effective and reliable platform (Anson, 2018; Kennedy *et al.*, 2020), between January and February 2023. Quality was ensured through attention checks and demographic quotas. Eligibility required car ownership, recall experience within four years and compliance through a registered dealership. A sample of 425 respondents was analyzed, which exceeds the required sample of 384 for 95% confidence (Krejcie and Morgan, 1970). G*Power analysis confirmed strong statistical power (0.999 at $\alpha = 0.05$; Faul *et al.*, 2009). All procedures in this study were approved by the Human Research Ethics Committee at Edith Cowan University and conducted in accordance with the National Statement on Ethical Conduct in Human Research (2023), Australia. Participation was voluntary, and informed consent was obtained from all respondents prior to beginning the survey.

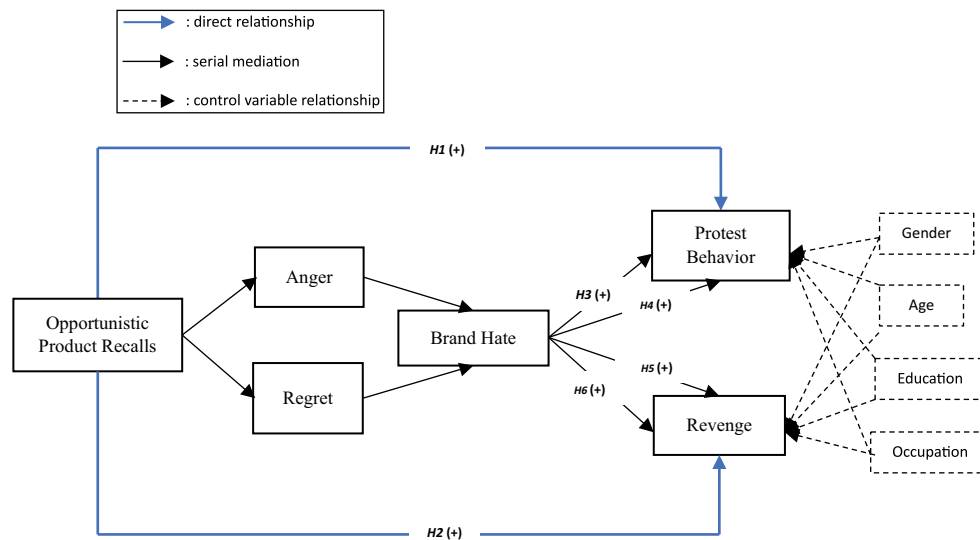
3.2 Measurement of constructs

The study adapted measurement items for all constructs (Figure 1) from established literature and tested them for reliability and validity (Table 1). The scale for opportunistic product recall was drawn from Magno (2012) and Mansor and Kader Ali (2017), while anger and regret scales were sourced from Gelbrich (2010) and Inman and Zeelenberg (2002). Brand hate, protest behavior and revenge were measured using scales from Hegner *et al.* (2017), Grappi *et al.* (2013) and Haase *et al.* (2022), respectively. All the constructs were assessed on a seven-point Likert scale. The questionnaire was reviewed by four academic experts and pretested. Following minor wording changes, a pilot study with 40 US-based MTurk respondents was conducted via Edith Cowan University's Qualtrics portal. Cronbach's alpha for all the constructs exceeded 0.7 (Table 1), confirming reliability (Nunnally, 1978). The sample was diverse, with most respondents being male, aged 25–45, holding a bachelor's degree, employed full time and earning \$50,001–\$75,000 annually. Full demographic details are provided in Table 2. Common method bias was examined via full collinearity assessment (Kock and Lynn, 2012) and all variance inflation factor values were below 5.0 (Table 3), reflecting no collinearity issue in the model.

3.3 Data analysis and results

This study used Partial Least Squares Structural Equation Modeling (PLS-SEM) to test the proposed framework, which involved multiple serial mediation paths (Hair *et al.*, 2021). PLS-SEM was chosen due to its robustness with complex

Figure 1 Conceptual framework model



Source: Authors' own work

Table 1 Measurement model assessment

Constructs	Items	Factor loadings	CR	AVE	Mean	SD	Sources
Opportunistic product recall	I think my car company is trying to make me buy new part(s) for my car	0.921	0.940	0.807	2.44	1.48	(Mansor and Kader Ali, 2017)
	I think, through the product recall my car company is trying to increase their brand awareness	0.801					
	I think the product recall is an opportunistic measure taken by my car company	0.889					
	I think my car company is trying to make me buy one of their new car devices	0.945					
Anger	I think the product recall is a means of advertisement for my car company	0.927	0.972	0.947	2.74	1.85	(Gelbrich, 2010)
	I felt angry with my car company employees	0.975					
	I felt mad with my car company employees	0.968					
	I felt furious about my car company and its employees	0.975					
Regret	You regret your decision to stay with your car company	0.951	0.957	0.921	2.44	1.62	(Inman and Zeelenberg, 2002)
	If you could do it again, you would change your decision	0.967					
	You would have been happier if you had made a different decision	0.961					
Brand hate	I am disgusted by the brand of my car company	0.925	0.954	0.816	2.1	1.41	(Hegner et al., 2017)
	I do not tolerate my car company and its brand	0.928					
	The world would be a better place without the brand of my car	0.916					
	I am totally angry about the brand of my car	0.791					
	My car brand is awful	0.924					
	I hate the brand of my car	0.930					
Protest behavior	I participated in boycotting the company	0.945	0.971	0.852	1.94	1.35	(Grappi et al., 2013)
	I blogged against the company	0.946					
	I participated in picketing the company	0.943					
	I participated in actions of resistance against the company (e.g., try to stop the company from selling its products)	0.950					
	I supported legal actions against the company	0.913					
	I joined collective movements against the company	0.953					
Revenge	I complained to the company	0.804	0.947	0.862	1.97	1.49	(Haase et al., 2022)
	I took actions to get revenge on the car company	0.935					
	I considered ways to seek revenge against the car company	0.941					
	I took actions to attempt to damage the reputation of the car company	0.927					
	I thought about ways to damage the reputation of the car company	0.911					

Note(s): CR = composite reliability; AVE = average variance extracted

Source(s): Authors' own work

Table 2 Profile of the respondents

Variables	Categories	Frequency	%
Gender	Male	281	66.1
	Female	144	33.9
Age	18–24	1	0.2
	25–35	146	34.4
	36–45	177	41.6
	46–55	58	13.6
	56–65	40	9.4
	66 and above	3	0.7
Marital status	Married and living with partner and children	153	36.0
	Married and living with partner without children	73	17.2
	Separated/divorced (with children)	17	4.0
	Separated/divorced (without children)	30	7.1
	Not married	150	35.3
	Prefer not to say	2	0.5
	Prefer not to say	2	0.5
Annual household income	0–\$25,000	21	4.9
	\$25,001–\$50,000	102	24.0
	\$50,001–\$75,000	169	39.8
	\$75,001–\$100,000	60	14.1
	\$100,001–\$125,000	16	3.8
	\$125,001–\$150,000	10	5.4
	\$150,001–\$175,000	10	2.4
	\$175,001–\$200,000	13	3.1
	\$200,001–\$225,000	1	0.2
	\$225,001+	7	1.6
Education	PhD	9	2.1
	Postgraduate/master's degree	32	7.5
	Bachelor's degree	307	72.2
	Higher secondary/intermediate	63	14.8
	Matriculation	5	1.2
	Middle school	1	0.2
Occupation	Primary school	8	1.9
	Student	1	0.2
	Part-time employee	19	4.5
	Full-time employee	365	85.9
	Retired	9	2.1
	Unemployed	4	0.9
	Self-employed	24	5.6
	Other	3	0.7

Source(s): Authors' own work

models and non-normally distributed perceptual data. The analysis was conducted in two steps. First, the measurement model was assessed for reliability and validity. Then, the structural model was examined using nonparametric bootstrapping (10,000 subsamples), an established approach in PLS-SEM, to test the hypothesized relationships. The results of both phases are reported in the following sections.

3.4 Measurement model assessment

To evaluate the measurement model, it was assessed whether the items used in each construct were reliable and valid. This involved checking how consistently the items measured their

Table 3 Full collinearity analysis

Variable	VIF value
Opportunistic product recall	1.664
Anger	1.480
Regret	2.157
Brand hate	4.428

Source(s): Authors' own work

respective constructs (internal consistency), whether they truly reflected the intended concept (convergent validity) and whether the constructs were distinct from each other (discriminant validity). Internal consistency was confirmed using Cronbach's alpha. As shown in Table 1, the measures exceeded the commonly accepted threshold of 0.70 for all the constructs, indicating good reliability. Convergent validity was supported by factor loadings above 0.70 for all the items and acceptable values of average variance extracted, in line with guidelines by Hair *et al.* (2021). To test discriminant validity, the heterotrait-monotrait ratio (HTMT) was used, which compares how strongly items correlate across different constructs. This method is considered more accurate than traditional approaches (Henseler *et al.*, 2015). All HTMT values were below 0.85, as shown in Table 4, indicating that the constructs were distinguishable. The analysis also confirmed these results using the Fornell-Larcker criterion, which is presented in Appendix.

3.5 Structural model assessment

The structural model was evaluated to examine how well it explains the relationships among the study variables. This was done by assessing its explanatory power using the coefficient of determination (R^2), predictive relevance using Q^2 and the significance of path coefficients. PLS-SEM was used, and a bootstrapping procedure with 10,000 subsamples was used to estimate the strength and significance of the paths in the model. The R^2 values, calculated using the PLS algorithm, reflect how much variance is explained in each key outcome variable. As shown in Table 5, the three predictors, opportunistic product recall, anger and regret, jointly explain 62.5% of the variance in brand hate, indicating a moderate level of explanatory power. Brand hate, in turn, explains 59.1% of the variance in protest behavior and 46.3% in revenge, suggesting it plays a substantial role in shaping these behavioral responses.

The model's predictive relevance was tested using the Q^2 values derived from the blindfolding procedure. Consistent with the guidelines by Urbach and Ahlemann (2010), all Q^2 values were above zero, supporting the model's ability to predict the outcomes. Specifically, Q^2 values were 0.505 for brand hate, 0.497 for protest behavior and 0.395 for revenge, indicating strong predictive relevance for these constructs (Table 5).

All direct and indirect (mediated) relationships in the model were statistically significant. Opportunistic product recall had a stronger direct effect on protest behavior ($\beta = 0.389$, $t = 10.221$, $p < 0.001$) than on revenge ($\beta = 0.339$, $t = 9.418$, $p < 0.001$). The strongest serial mediation was observed from opportunistic product recall to protest behavior, sequentially mediated by regret and brand hate ($\beta = 0.334$, $t = 9.145$, $p < 0.001$), followed by a similar mediation path to revenge

Table 4 Discriminant validity (HTMT)

Constructs	Anger	Brand hate	Opportunistic product recall	Protest behavior	Regret	Revenge
Anger						
Brand hate	0.589					
Opportunistic product recall	0.370	0.661				
Protest behavior	0.519	0.796	0.820			
Regret	0.590	0.810	0.668	0.726		
Revenge	0.401	0.712	0.753	0.797	0.622	

Source(s): Authors' own work

Table 5 Structural model results

Relationships	Path coefficients	t-values	p-values	R ²	Q ²	Decision
Total and direct effects						
H1 Opportunistic product recall → Protest behavior	0.384	10.221	$p < 0.001$	0.625 (Brand Hate)	0.505 (Brand Hate)	Supported
H2 Opportunistic product recall → Revenge	0.339	9.418	$p < 0.001$			Supported
Serial mediation results						
H3 Opportunistic product recall → Anger → brand hate → Protest behavior	0.05	3.181	$p < 0.01$	0.463 (Revenge)	0.395 (Revenge)	Supported
H4 Opportunistic product recall → Regret → brand hate → Protest behavior	0.334	9.145	$p < 0.001$	0.591 (Protest behavior)	0.497 (Protest behavior)	Supported
H5 Opportunistic Product recall → Anger → Brand hate → Revenge	0.044	3.169	$p < 0.01$			Supported
H6 Opportunistic product recall → Regret → Brand hate → Revenge	0.295	8.508	$p < 0.001$			Supported
Control variables						
Gender → Customer protest behavior	0.034	0.629	$p \geq 0.05$			
Gender → Revenge	−0.072	1.057	$p \geq 0.05$			
AGE → Customer protest behavior	−0.091	1.381	$p \geq 0.05$			
AGE → Revenge	0.128	1.601	$p \geq 0.05$			
Education → Customer protest behavior	0.437	1.267	$p \geq 0.05$			
Education → Revenge	0.006	0.026	$p \geq 0.05$			
Occupation → Customer protest behavior	−0.250	2.128	$p < 0.05$			
Occupation → Revenge	−0.119	0.797	$p \geq 0.05$			

Source(s): Authors' own work

($\beta = 0.295$, $t = 8.508$, $p < 0.001$). Serial mediation via anger and brand hate was also significant, although the effects were weaker: protest behavior ($\beta = 0.05$, $t = 3.181$, $p < 0.01$) and revenge ($\beta = 0.044$, $t = 3.169$, $p < 0.01$). These empirical patterns are consistent with affective events theory's mechanism, that is, emotionally charged events (such as opportunistic recalls) engender discrete emotions that harden into attitudes (brand hate in the present case) and, ultimately, into behavioral responses.

3.6 Additional analysis: post hoc analysis of occupation and protest behavior

In addition, a one-way ANOVA was conducted to assess variations in protest behavior across occupational groups, including students, part-time and full-time employees, retirees, unemployed individuals and others (Table 6). Because the group sizes were unequal, Welch's ANOVA (see Appendix) was used, as it provides more accurate results under such conditions. This analysis showed significant differences

[$F(5, 14.7) = 13.2$, $p < 0.001$], highlighting occupation as a key demographic factor influencing how individuals respond to opportunistic product recalls. Among all demographic variables tested (gender, age, education and occupation), only occupation showed a statistically significant effect, which justified the use of post hoc testing. This approach is consistent with established recommendations for conducting post hoc tests following significant group differences (Hair et al., 2021).

3.6.1 Post hoc analysis

The Games–Howell post hoc analysis (see Table 6) revealed significant differences in protest behavior across employment categories. Full-time employees reported significantly higher levels of protest behavior than retired individuals (mean difference = 0.745, $p = 0.006$), self-employed individuals (mean difference = 0.7649, $p < 0.001$) and those in the “Other” category (mean difference = 0.920, $p = 0.004$). These findings suggest that full-time employment is associated with a greater propensity for protest behavior than forms of non-traditional or

Table 6 Games–Howell post hoc test–protest behavior

Occupation		Part-time employee	Full-time employee	Retired	Unemployed	Self-employed	Other
Part-time employee	Mean difference	–	0.0754	0.820	0.340	0.8402	0.995
	p-value	–	1.000	0.374	0.991	0.321	0.167
Full-time employee	Mean difference	–	–	0.745**	0.265	0.7649***	0.920**
	p-value	–	–	0.006	0.989	<0.001	0.004
Retired	Mean difference	–	–	–	–0.480	0.0198	0.175
	p-value	–	–	–	0.909	1.000	0.906
Unemployed	Mean difference	–	–	–	–	0.5000	0.655
	p-value	–	–	–	–	0.887	0.758
Self-employed	Mean difference	–	–	–	–	–	0.155
	p-value	–	–	–	–	–	0.875
Other	Mean difference	–	–	–	–	–	–
	p-value	–	–	–	–	–	–

Note(s): ** $p < 0.01$; *** $p < 0.001$

Source(s): Authors' own work

flexible employment. No other pairwise comparisons reached statistical significance, indicating that protest behavior did not vary meaningfully among the remaining groups.

4. Discussion and implications

In today's diverse consumer market, product recalls are increasingly common, causing serious consequences for both consumers and companies. Often triggered by defects or safety concerns, recalls lead to financial losses, reputational damage, loss of customer trust, legal liabilities and regulatory investigations (Souiden and Pons, 2009; Deloitte, 2020). Recent empirical work reinforces this view. For example, Hussain *et al.* (2025), in the context of automotive services, showed that dealerships using safety recall visits to upsell are perceived as exploitative and provoke strong consumer backlash, including protest behaviors and reduced repurchase intention.

Drawing on affective events theory, which posits that specific incidents like product recalls evoke emotional reactions that shape attitudes and behaviors, this study explores how opportunistic product recalls influence protest and revenge through serial mediation involving anger, regret and brand hate. The findings support all the proposed hypotheses, confirming that opportunistic recalls significantly predict both anger and regret, which in turn foster brand hate and elicit protest and revenge. This convergence with affective events theory strengthens the interpretation that even moderate emotional activation can have practically meaningful downstream effects. Recent work by Nguyen *et al.* (2022) similarly found that crisis-induced emotions significantly amplify negative word-of-mouth and weaken loyalty intentions. These effects are especially relevant for high-recall industries like automotive, where recall incidents are frequent. The results highlight the need for companies to consider not only the financial implications of recalls but also their emotional and reputational consequences, while also establishing mechanisms to gauge the intensity of customer reactions in such events.

Beyond direct effects, this study tested serial mediation paths, illustrating how opportunistic recalls shape emotions that subsequently influence customer attitudes and behavior.

Protest and revenge were both sequentially mediated by anger, regret and brand hate, with brands perceived as opportunistic during recalls being especially vulnerable to this cascade. Four hypotheses were examined, two for anger and two for regret and all were supported. Notably, mediation paths involving regret were stronger than those involving anger, suggesting that regret, as a more self-reflective and enduring emotion, may exert a greater influence on negative customer responses than the more reactive emotion of anger. This is in line with affective events theory's emphasis on the durability of affect and regret's introspective nature that makes it more likely to persist and guide subsequent judgments and actions. Also, this aligns with earlier findings emphasizing the personal depth of regret (Buchanan *et al.*, 2016) and helps explain why regret may trigger stronger brand hate, sustained protest and even vengeful actions. Regret often reflects a perceived loss or missed opportunity, more closely tied to a customer's identity than anger. It can lead to prolonged rumination and negative word-of-mouth (Nguyen *et al.*, 2022), thereby amplifying negative brand associations. Regret is also associated with betrayal and disappointment (Sameeni *et al.*, 2022), particularly when trusted brands fail to meet expectations (Tan *et al.*, 2021), damaging loyalty more profoundly than anger.

Brand hate, the emotional midpoint in the cascade, has also been shown to intensify retaliatory behaviors. Recent evidence by Sameeni *et al.* (2024) confirms that brand hate significantly predicts boycott, sabotage and revenge intentions, particularly when accompanied by intense negative word-of-mouth. These findings reinforce the emotional and reputational risks, especially in the context of the present study, which is likely to trigger the feeling of hate against brands. In addition, post hoc analysis revealed that full-time employees in the sample exhibited significantly higher levels of protest behavior compared to part-time, unemployed or self-employed individuals. This may reflect a greater financial or emotional investment of full-time employees in their vehicles or stronger expectations of fair treatment. While further investigation is warranted, this finding highlights occupation as a potentially relevant demographic factor, suggesting that recall response strategies may need to be tailored by customer profile.

4.1 Theoretical contributions

This study offers several crucial theoretical implications for the literature on consumer-brand relationships and emotional responses to product recalls. First, it emphasizes the significance of opportunistic product recall in shaping customer emotions, attitudes and behaviors, which is a domain still nascent in existing research. The study highlights the profound impact of opportunistic product recall in triggering complex emotional reactions such as anger and regret, which sequentially mediate behavioral outcomes like brand hate, protest behavior and revenge. This finding enriches the understanding of the nuanced ways in which negative corporate actions affect customer perceptions and actions.

Second, the study contributes to the literature by highlighting the differential effects of anger and regret – emotions often overlooked in the context of opportunistic product recall. While prior research notes customer emotions in negative events, this study shows that regret, being deeper and more personal, exerts a stronger impact on adverse attitudinal and behavioral outcomes than anger. This insight expands the affective events theory by incorporating a more detailed analysis of specific emotions and their consequences in a product recall scenario.

Third, the study breaks new ground by illustrating the serial mediation paths between opportunistic product recall and customer reactions. Prior research has predominantly focused on direct effects or simple mediation models (Hegner *et al.*, 2017; Rodrigues *et al.*, 2021; Souiden and Pons, 2009). In contrast, this study's serial mediation model offers a comprehensive view of how opportunistic product recall shapes emotional and behavioral responses, deepening understanding of consumer-brand dynamics in the post-recall scenario.

Finally, the findings provide a vital theoretical basis for companies, particularly in industries prone to product recalls like the auto sector, to understand the full spectrum of customer reactions to opportunistic product recall. It urges a shift in corporate strategies during recall events, emphasizing the importance of addressing not just the financial and operational aspects but also the psychological impacts on customers. This perspective encourages businesses to develop more empathetic and customer-centric approaches to managing recalls, contributing to corporate crisis management (Chandrasekar and Rehman, 2023) and consumer-brand relationships literature.

4.2 Managerial implications

This study offers three critical managerial implications. First, the findings highlight the importance of understanding and managing customer emotions in an event of product recall. Companies, especially in high-risk sectors like automotive, need to recognize the potential for opportunistic product recall to trigger strong emotional reactions like anger and regret, which can severely damage brand perception and loyalty. To mitigate these negative outcomes, firms must develop empathetic and transparent communication strategies that address not only the logistical aspects of a recall but also the emotional needs of affected customers. In practice, this means explicitly communicating the issue, the fix, and the brand's accountability in plain language, while assuring customers that recall services will be provided at no cost and without any

upselling during recall compliance appointments. Training frontline staff in empathy-driven communication, including scripts tailored to anger (validation and immediate resolution) and regret (reassurance about fix quality, extended warranties and goodwill credits), can further help reduce emotional escalation.

Second, this study highlights the importance of tailoring corporate response strategies based on the specific emotions evoked by opportunistic product recalls. Given that regret exerts a stronger influence on customer behavior than anger, firms should prioritize strategies that minimize post-purchase regret. Transparent communication of product features and limitations can help manage expectations (Barta *et al.*, 2023; Pieters and Zeelenberg, 2007), while flexible return policies and proactive engagement strengthen customer trust (Bozic and Kuppelwieser, 2019; Tong *et al.*, 2022). Managers should also consider establishing monitoring systems that track customer sentiment (e.g., negative electronic word-of-mouth, complaints and emotional feedback) during and after recall campaigns, enabling early interventions when indicators of brand hate or protest behavior surface. Although grounded in the automotive sector, the findings hold relevance across industries, as supported by Raithel *et al.* (2024), Seo and Jang (2021) and Goswami *et al.* (2025), who emphasize communication, branding and stakeholder engagement in recall contexts.

Finally, the study reveals the importance of developing occupation-specific recall strategies. Full-time employees, more inclined to protest, may respond well to transparent service and targeted incentives. At the same time, self-employed or unemployed individuals may require consistent engagement and reassurance to mitigate potential negative responses. For example, after-hours service slots, mobile technicians or courtesy vehicles for working professionals can reduce time-related burdens that often intensify regret, while frequent personalized updates for self-employed or unemployed customers can reduce uncertainty and reinforce trust.

5. Limitations and future research

This study, while offering significant insights into the emotional and behavioral consequences of opportunistic product recalls, has limitations that warrant future research. First, its generalizability is constrained by its exclusive focus on the automotive sector. Future studies should investigate opportunistic recalls in other industries, such as consumer electronics, pharmaceuticals and food and beverage, where regulatory contexts and customer expectations vary. These differences may reveal divergent emotional and behavioral responses, enriching the understanding of consumer-brand dynamics.

An important consideration in interpreting our results lies in the relatively low mean values reported across emotional responses (anger and regret) as well as perceived opportunism. These values suggest that extreme perceptions of opportunism and intense negative emotions were not prevalent among most respondents. Nevertheless, consistent with affective events theory, even low-intensity affective reactions can meaningfully influence attitudes and behaviors when they function as explanatory mechanisms linking events to downstream outcomes (Christensen *et al.*, 2023; Weiss and Cropanzano,

1996). Indeed, our findings highlight that regret, despite being moderate in intensity, played a pivotal role in driving protest behavior, indicating that subtle yet widespread affective judgments may still erode brand trust and loyalty. We therefore interpret these results as evidence of “low-intensity but consequential” emotional and cognitive response to opportunistic product recalls. There are comparable patterns of modest variability that have been reported in peer-reviewed work while maintaining valid inference (e.g., Suka *et al.*, 2017; Luk *et al.*, 2018). However, future research could examine conditions under which levels of perceived opportunism may emerge, such as more severe product-harm crises or contexts with greater regulatory scrutiny.

Second, the low mean values of perceived opportunism and the modest levels of anger and regret (see Table 1) suggest that respondents generally did not perceive the recall as highly opportunistic or emotionally distressing. While this limits the generalizability of extreme-response scenarios, it does reflect the real-world possibility that brand crises often evoke subtler affective reactions. These more tempered responses are nonetheless theoretically significant, as shown by their explanatory role in our model (see Figure 1). Moreover, the observed dispersion in the data is within or close to empirically expected ranges for Likert-type measures, and as mentioned above, comparable low-variability cases have been published with robust psychometrics (Churchill and Iacobucci, 2006; Sauro and Lewis, 2023; Suka *et al.*, 2017; Luk *et al.*, 2018). Future studies could replicate the model in settings characterized by higher-intensity crises to test whether the observed mechanisms hold under stronger affective conditions. In addition, future research could examine how variables such as cultural values, economic conditions or political climates moderate or mediate the relationship between opportunistic recalls and consumer behavior. Conducting studies during periods of economic downturn or societal disruption may also uncover temporal influences on customer responses. Third, the study’s reliance on US-based MTurk participants raises the possibility of cultural bias. Cross-cultural research (Kim and Yim, 2022; Akrouit and Mrad, 2023) highlights the role of cultural context in emotional and behavioral responses. Replicating this study across diverse settings would enhance generalizability and reveal how sociocultural factors moderate these effects.

Fourth, there are a few minor variations in measurement referents and phrasing. For example, anger was measured toward company employees (Gelbrich, 2010), whereas other constructs referred to the company or brand. Similarly, regret items were framed in the second person (e.g., “you regret”), whereas other constructs used first-person phrasing. These variations reflect the conventions of validated source scales and did not impair psychometric performance. Nonetheless, future research may benefit from harmonizing referents and pronouns across constructs. In addition, the regret item (“change your decision”) may be ambiguous; it was meant to capture regret over continuing the brand relationship, such as staying loyal or not switching after purchase, particularly following the recall. Future studies may consider rephrasing such items to improve contextual clarity.

Finally, the study relies on individual responses, which might not fully capture the complexity of customer reactions that are influenced by group dynamics. Future research could

incorporate a more holistic approach, considering both individual and group dynamics in customer responses to opportunistic product recalls. In addition, exploring suppliers’ perspective alongside customers’ point of view could yield a more nuanced understanding of the impact of opportunistic product recalls on consumer-brand relationships.

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Author contributions

Shahid Hussain, Writing – original draft, Supervision, Software, Methodology, Formal analysis, Data curation, Conceptualization. Asim Qazi, Writing – review and editing. Abdul Salam, Writing – review and editing.

Ethics statement

All procedures in this study were approved by the institutional review board at Edith Cowan University and conducted in accordance with the ethical standards as enshrined in the National Statement on Ethical Conduct in Human Research 2023, Australia.

Data availability

Data included in this study may be available upon reasonable request.

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Appendix

Table A1 One-way ANOVA (Welch's)

Outcome variable	<i>F</i>	df1	df2	<i>p</i>
Protest behavior	13.2	5	14.7	<0.001

Source(s): Authors' own work

Table A2 Fornell–Larcker criterion for discriminant validity

Constructs	AVE	Anger	Brand hate	OPR	Protest behavior	Regret	Revenge
Anger	0.947	0.973					
Brand hate	0.816	0.564	0.904				
OPR	0.807	0.366	0.634	0.898			
Protest behavior	0.852	0.506	0.769	0.794	0.923		
Regret	0.921	0.571	0.777	0.643	0.702	0.96	
Revenge	0.862	0.387	0.68	0.717	0.765	0.593	0.928

Note(s): OPR = opportunistic product recall; AVE = average variance extracted

Source(s): Authors' own work

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