



Examining corporate social irresponsibility in manufacturing: An eye-tracking study of social media news

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ABSTRACT

This research aims to experimentally examine how consumers respond to environmental corporate social irresponsibility (CSI) news about manufacturing production on social media, focusing on the cognitive mechanisms underlying consumers' behaviour decisions. Drawing on existing literature in CSI, consumer behaviour, and social media crisis communication, this study employs an eye-tracking methodology in conjunction with a 2 x 2 x 2 experimental vignette design with a nationally representative sample of 325 UK adults. Results reveal that the presence of evidence and a higher degree of harm in CSI events do not evoke stronger negative responses. Instead, the study highlights conformity behaviour on social media, showing that critical comments significantly drive negative responses. A significant three-way interaction between evidence, harmfulness, commentary on negative word-of-mouth (WoM) demonstrates that when a CSI event is evidence-based with low harm, critical comments accompanying CSI news provoke substantially greater negative WoM than supportive comments. The eye-tracking results indicate that collective opinions significantly moderated the relationship between visual attention and negative response levels. Specifically, higher visual attention leads to reduced negative responses when customers encounter critical rather than supportive comments. This study makes notable contributions by unwrapping the mechanisms shaping public perceptions of CSI news. It provides valuable insights for companies to mitigate the escalation of CSI news, minimise potential reputational harm, and enhance preparedness in managing CSI-related risks. Additionally, the integration of eye-tracking technology within a scenario-based experimental framework represents a novel methodological advancement, enriching the understanding of consumer behaviour in the context of social media crises.

1. Introduction

How do customers respond to coverage of corporations' environmental misconduct on social media? What do customers care about the most when consuming environmental corporate social irresponsibility (CSI) news? With the increasing awareness of environmental issues, corporate social responsibility (CSR) has emerged as an inescapable priority in business and academia (Diaye et al., 2023). Driven by the goal of carbon neutrality, companies have faced significant stress in reducing the environmental impact of their manufacturing production, such as tremendous effort in sustainable manufacturing or generating clean energy from renewable power plants. Previous works have well investigated the positive side of CSR – doing good; the discussion about CSI –

doing bad and avoiding bad, is gradually catching more academic attention. CSI is defined as corporate actions that result in disadvantages and harm to other actors and the legitimate claims of identifiable social stakeholders (Strike et al., 2006). Thus far, many works have examined the impact of CSI in manufacturing production (Ding et al., 2023; Ma et al., 2024), demonstrating how consumers respond and even punish corporate wrongdoings in various approaches (Grappi et al., 2013), such as spreading negative word-of-mouth (WoM), protests against the company, or joining the boycotts (Antonetti and Maklan, 2018; Scheidler and Edinger-Schons, 2020). Moreover, social media makes the delivery of customers' negative responses faster on a larger scale. The negative news can firestorm rapidly on social media. The social media environment will amplify the influence, escalating the negative impacts,

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therefore, making the event even harder to control and resulting in higher business risks, such as damaging green trust, company reputation, or stock market (Köbel et al., 2017; Xie et al., 2015; Visentin et al., 2019).

There are several key motivations for this study. Firstly, the environmental contamination resulting from manufacturing production has made it impossible for society to disregard ecological concerns and the impact of human activities, which significantly affect customer purchase decision-making. Köbel et al. (2017) suggest that media outlets are incentivised to favour CSI over CSR information, simply because it sells. Therefore, it is increasingly important to be aware of CSI's risks and negative consequences in the evolving business environment. Next, what is largely overlooked in the current CSI literature is decomposing the CSI event, for example, what is the difference between different kinds of CSI events, and how these events could damage the company to various extents (Lin-Hi and Müller, 2013). Moreover, social media serves as a powerful platform for social interaction, fostering enhanced customer engagement with companies and their interest groups. Meanwhile, social media is a double-edged sword, while positive news like CSR communication can bolster a company's image, negative news like CSI reports can increase the potential for stakeholder sanctions, resulting in increased financial risk or reputation damage. In short, digital communication accelerates scandalisation, which could magnify the reach and impact of scandal discourses (Coombs and Holladay, 2021).

The prevailing research on CSI primarily examines customer responses to crises but tends to overlook the fundamental reasons behind these reactions and the cognitive processes involved. Scholars have noted a significant gap in understanding the motivations and cognitive mechanics driving consumer perceptions and responses, advocating for more innovative methods to measure customer behaviour and interaction (Garrett, 2013). This study aims to enrich the CSI literature by focusing on the decision-making processes of consumers, using eye-tracking techniques alongside self-reported data to observe how customers process and respond to news, moving beyond just the outcomes (Franco-Watkins and Johnson, 2011). Meanwhile, incorporating the eye-tracking method can help us to overcome the potential challenges and concerns of weaknesses in the traditional approach to data collection, such as insufficient introspective capacity, data noise, or common method bias (Kock, 2015). Vraga et al. (2016) suggest that eye-tracking is a validated, consistent, reliable, and accurate way to measure computer use that goes beyond what is possible with a self-reported measurement approach. This makes it possible to develop a distinct portrayal of how people engage with social media content, therefore, answering the question of how customers make their behavioural decisions.

Aligned with the motivations discussed above, we seek to address the following research questions, aiming to augment the scholarly understanding in the realm of CSI online communication: RQ1: How do customers respond to different environmental CSI events on social media? RQ2: What is the mechanism that links environmental CSI news attributes to customers' negative responses?

This research aims to investigate consumer responses to the coverage of environmental misconduct in production on social media platforms and to determine under what conditions online CSI news could influence consumer responses to the CSI event. Therefore, we propose a conceptual model that includes the relationship between cognitive processes, CSI news attributes, and consumer behaviour in the context of environmental CSI events. To achieve this, we conduct an experimental vignette study (Aguinis and Bradley, 2014) to explore how customers behave and respond to CSI news with various attributes on social media, using a full 2 x 2 x 2 factorial combination of eight stimuli conditions (i. e., evidence, harmfulness, and collective opinion) included in the experiment to examine the causal effects of different CSI conditions on customer behavioural intentions. Additionally, eye-tracking techniques allow us to investigate the cognitive processes of consumers who read

CSI social media news. Overall, unravelling this can help businesses identify which elements will cause more negative customer responses to CSI news, prevent the escalation of CSI news on social media, and better prepare themselves for managing the risks existing in the media coverage of environmental CSI during their manufacturing production.

2. Literature review

2.1. CSI and CSI in manufacturing

Thus far, the connection between CSR and CSI is still a subject of debate, some believe there is a continuum between CSR and CSI (Riera and Iborra, 2017). Tench et al. (2012) define CSI as business practices that can be legal or illegal, but are severely unsustainable and/or unethical, and thus totally socially unacceptable. However, the threshold of the different extents of CSI is not clearly defined and specified as CSR is an open field without an end (Tench et al., 2012). Some scholars argue that the law is not enough, pointing out that there are limitations in defining CSR and CSI from the perspective of legality, the CSR concept has long been criticised for its vagueness and ambiguity (Kang et al., 2016). Recent works further reorient the CSI discussion by conceptualising CSI practices from three dimensions: harmfulness level, intentionality and corporate rectification (Clark et al., 2022).

Moreover, the proliferation of strategic outsourcing in industrial activities, alongside the increasing demand for affordable goods, appears to facilitate the emergence of CSI within global value chains (Nunes et al., 2021), companies often resort to implementing irresponsible practices in production and manufacturing processes as a means of cost reduction and profit enhancement. For example, the Volkswagen emissions scandal in the auto industry caused significant impacts on their supply chain partners as well as business customers (Jacobs and Singhal, 2020); mismanaging production resources during production led to fraud in food production, damaging customers' trust and decreasing the company's reputation. Furthermore, owing to inadequate safety protocols, the collapse of the Rana Plaza building in 2013 led to 1129 garment workers being killed (Paharia, 2020). Moreover, some scholars highlight the environmental perspective in CSI, pointing out that CSI practice in production and manufacturing can lead to negative environmental impacts, for example, the excessive use of fertilizers and pesticides in food supply chain (Zhu et al., 2018), the air pollution from manufacturing processes (Jiménez-Parra et al., 2018). Additionally, many works also demonstrate the negative impact of environmental CSI practices on corporations, such as damaging corporate reputation (Lin et al., 2016), or eliciting negative responses from the capital markets (Jin et al., 2020).

2.2. Customer responses towards CSI

A company's irresponsible practices can provoke a negative response from the market, emotion can be regarded as an extension of the realm of morality, representing the emotional responses when people assess other's behaviour (Haidt, 2007). Customers' emotional responses to company CSI practices are critical as customers' negative emotions are likely to negatively impact their behaviour toward the corporation (Schmalz and Orth, 2012), individuals tend to experience negative emotional responses to ethical and social transgressions, therefore, studying how customers' emotions change when they are examining a company's unethical practices can provide valuable insight into how they perceive the negative news and the potential behaviour. Thus far, existing literature has investigated various emotions in customers' responses to company misconduct, such as moral outrage, sympathy, anger, and contempt (Antonetti and Maklan, 2018). Moreover, after the prominent theoretical model of CAD (contempt, anger, and disgust) was proposed, many scholars framed anger, contempt, disgust as moral (Grappi et al., 2013), then CAD triad tradition is widely used to observe individuals' emotional responses. Recent investigations also employ

CAD as a reflection of how the public responds to CSI practices, e.g., testing how people against corporate irresponsibility (Grappi et al., 2013), examining how customers respond to corporate non-green actions (Xie et al., 2015).

Next, customers' behavioural responses toward CSI practices can manifest in diverse forms, ranging from mild responses to drastic reactions. Previous works have examined how customers respond to CSI from different perspectives, for example, Bhattacharjee et al. (2013) propose the moral decoupling model to explain how customers respond to immoral acts, Haberstroh et al. (2017) extend the discussion of the moral decoupling by examining individual's purchase intention. How customers' purchase intention changes have also been used to investigate customer's responses to corporate wrongdoing (Paharia, 2020). Additionally, there are some works have identified multiple ways in which customers punish company, such as spreading negative WoM, protests, or boycotts, some severe events might even trigger brand sabotage or brand hate (Antonetti and Maklan, 2018; Scheidler and Edinger-Schons, 2020). Overall, negative WoM is one of the most influential representations of consumer behaviour toward the company, Grappi et al. (2013) define it as the promulgation of distaste, disapproval, or disparagement about a company's irresponsible practices. Moreover, existing CSI literature also highlights another approach to punish irresponsible practices - boycott (Sweetin et al., 2013). Boycotts are gaining momentum due to the growing public awareness of CSR, which has become a powerful tool for consumers to hold companies accountable for engaging in unethical practices, there are 2% of firms in the Fortune 50 and 54% of brands within the Interbrand top 50 have experienced public boycotts (Scheidler and Edinger-Schons, 2020) like Starbucks and McDonald's; CSI practices in manufacturing can also spark significant consumers boycotts, for example, Volkswagen faced customers boycott after its 'Diesel Gate' emissions scandal.

2.3. Business scandal outbreak in social media

Current living environments are full of digital techniques, social media has become so entwined with people's everyday lives that it hugely shapes how customers gather information and make decisions, this also motivates companies to engage in social media activities increasingly. However, social media is a magnifying glass for companies' crises (Coombs and Holladay, 2021), some scholars have examined the impact of media coverage of CSI from various perspectives, such as reputation damage, increased financial risk, firm valuation penalties, and its effect on moves such as cross-border acquisitions (Hawn, 2021). Moreover, the importance of media attention on company CSR development is well documented, suggesting that media coverage on a greater scale will lead to a higher level of reputational damage (El Ghoul et al., 2019). Furthermore, some studies found that customer's reactions toward corporate negative events on social media can elevate the prominence of reports, for example, by leveraging the Twitter data and event study approach, Schmidt et al. (2023) found that more negative tweets after a supply chain glitch led to more adverse stock returns.

Meanwhile, the quick delivery of social media also drives concerns (Di Domenico et al., 2021), the design of social media platforms presents information in thin slices, and users are only able to obtain limited information, therefore, it's challenging to judge the veracity of information. Carr (2020) suggests that the development of technologies promoting rapid, shallow thought and superficial thinking in the social media environment has resulted in a decline in ordinary reflective thinking, therefore people with a high frequency of usage are less likely to engage in reflective thought and lose the ability of profound thinking. This phenomenon has been termed as herding effect or social influence (Huang and Chen, 2006), suggesting individuals will face great challenges in verifying the accuracy and then are highly likely to be misled by online messages.

Currently, social media has become a breeding ground for rumours

(Coombs and Holladay, 2021). Dizikes (2018) suggests that unverified information travels faster than accurate information on social media, for example, the dissemination of health rumours overwhelmed accurate messages during the pandemic, which even led to the "infodemic" phenomenon. There arose a similar concern in business, the dissemination of CSI news online could be effectively spread and reach an enormous number of social media users, therefore, bringing considerable unwarranted damage to the company if what has been disseminated is an unsubstantiated rumour, for example, Pepsi and New Balance suffered boycotts and huge financial losses due to online misinformation (Obadā, 2019). Much evidence on the potential impact of online business misinformation can be found, such as impacting stock market valuation, tarnishing reputations, and damaging brand trust (Visentin et al., 2019), moreover, Procter & Gamble, Coca-Cola, and McDonald's have long been the targets of rumours.

3. Theoretical background and hypothesis development

This section presents the theoretical foundation and hypothesis development. We develop a conceptual model (Fig. 1) that incorporates a vignette experiment design to investigate the relationship between cognitive processes (visual attention), CSI news attributes (evidence, harmfulness, and collective opinion), and consumers' emotional and behavioural responses (negative moral emotion, negative word-of-mouth, boycott, and share intention) in the context of environmental CSI events.

3.1. Visual attention and customer response

Building on the well-proven assumption that people have limited cognitive load when processing new information (Sweller et al., 2019), when an individual is required to give answers on how to respond to the company after viewing the CSI news online, they will use the post feed as the 'data pool' for collecting valuable information to help their decision-making, therefore, their distribution of visual attention (total dwell time) becomes a good indicator of their cognitive resources allocation. Moreover, the eye-mind hypotheses suggest that an individual's cognitive processing can be discerned by observing and analysing the patterns of people's eye movements (Just and Carpenter, 1980). This argument is also supported by Jacob and Karn (2003), suggesting that eye movement can be used to predict and interpret human behaviour by unveiling insights into their perceptual, emotional, and cognitive processes during the information-processing process. Wedel and Pieters (2017) also suggest that visual attention serves as a preliminary gateway, allowing information to enter a higher-order cognitive process. Nevertheless, the connection between visual attention and human behaviour continues to be a subject of debate, some scholars argue that eye movement and visual attention can be separated or decoupled from each other (Just and Carpenter, 1980), arguing that an individual's visual attention does not always imply that specific stimuli are undergoing cognitive processing (Engbert et al., 2005).

Orquin and Loose (2013) further propose the utility effect drawn from eye-tracking and decision-making literature, suggesting that individuals tend to direct their attention towards information that holds higher utility or significance to their decision. Many studies provide support for such a phenomenon, for example, individuals tend to fixate their gaze more frequently on the alternative they ultimately choose (Schotter et al., 2012). In addition, Schotter et al. (2012) suggest that when people make decisions, there is a longer dwell time on the chosen item. Meanwhile, some scholars argue that attributes that hold more significant importance to the decision-maker also tend to receive more fixations (Kim et al., 2012).

Therefore, we adapt the arguments to this research and propose that when customers view online CSI posts, they pay attention to the attributes of information that are most important to them; this is represented by the total dwell time a customer allocates to each attribute. We suggest

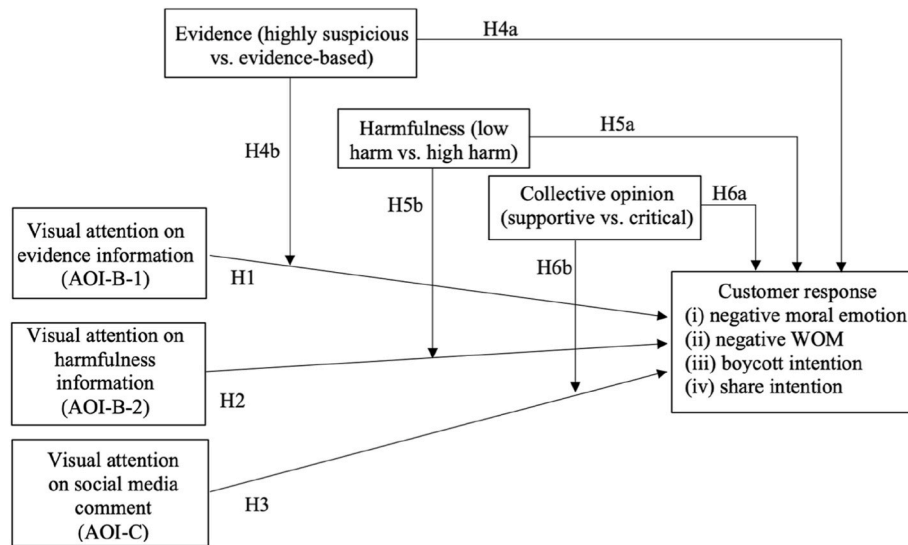


Fig. 1. Conceptual model.

that greater visual attention on a specific information field indicates a higher concern aroused by that attribute (Orquin and Loose, 2013; Sweller et al., 2019). When exposed to corporate misconduct, individuals tend to experience moral outrage and intend to punish the company (Grappi et al., 2013). In other words, CSI content can trigger individuals' moral judgments of the company. Thus, we suggest that prolonged dwell time on CSI content allows individuals to reflect deeply on the news (on each attribute: evidence, harmfulness, and collective opinions), further intensifying their moral outrage (Grappi et al., 2013; Xie et al., 2015) and emotions (Scheidler and Edinger-Schons, 2020), thereby driving a higher level of negative reaction towards the company. Therefore, we posit the following hypotheses.

- H1.** Higher total dwell time on evidence-related information is associated with a higher likelihood of negative responses.
- H2.** Higher total dwell time on harmfulness-related information is associated with a higher likelihood of negative responses.
- H3.** Higher total dwell time on social media comments is associated with a higher likelihood of negative responses.

3.2. Impact of evidence and harmfulness

In this study, evidence refers to whether there is information signifying there is supporting evidence of corporate environmental misconduct. When encountering CSI information online, consumers will seek the cause underlying the failure, which could be attributed to either external situational factors (caused predominantly by others) or organisational behaviour (caused by the company itself) and blame allocated accordingly (Weiner, 2010). In the online context, various scholars have demonstrated that failure attribution plays a crucial role in shaping customer responses to business failures, such as negative WOM and purchase behaviour (Weitzl et al., 2018).

When a scandal unfolds, individuals are likely to seek out the root cause, assign blame, and decide how to react by analysing the available information and contextual factors. Firstly, evidence-based CSI news provides concrete proof of corporate misconduct, enhancing the credibility of the accusations. Customers are more inclined to trust and react strongly to evidence-backed claims as opposed to unverified suspicions that breed uncertainty (Weiner, 2010). Moreover, solid evidence of corporate misconduct directly erodes customer trust by confirming the company's culpability, which evokes a sense of moral outrage among customers (Scheidler and Edinger-Schons, 2020). This leads to more negative responses compared to claims without evidence. Therefore, we

argue that the presence of evidence in CSI news can significantly influence individuals' views on the extent of responsibility the involved company should assume. Concrete evidence increases the likelihood of customers attributing greater accountability to the company, potentially shaping and intensifying their reactions to the news.

In this research, "harmfulness" refers to the severity of the CSI event as reported in social media news. When encountering high-harmfulness CSI news, individuals are inclined to blame the company for several reasons. Firstly, high-harmfulness CSI events are typically perceived as having profound ramifications, including devastating environmental destruction, loss of human life, or substantial harm to communities. Such incidents intensify customer apprehension and evoke more vehement negative reactions toward the company. Moreover, the magnitude of harm often aligns with perceived violations of moral and ethical principles, making significant harm from CSI events likely to elicit stronger customer responses as they provoke profound emotional and ethical indignation (Scheidler and Edinger-Schons, 2020). Companies involved in high-harmfulness CSI practices face a heightened risk of reputational damage (El Ghoul et al., 2019), as these events are perceived as more grievous and less forgivable by the public, thereby exacerbating negative reactions. Additionally, high-harmfulness events amplify customer demands for accountability and prompt corrective action, resulting in intensified negative reactions when the company is perceived as failing to meet public expectations. Nevertheless, we believe that the severity of the CSI event can significantly influence the public's tendency to attribute responsibility to the company. We then propose the following hypotheses.

H4a. Customers are more likely to have stronger negative responses when a company is implicated in evidence-based CSI news compared to news based solely on suspicion.

H5a. Customers are more likely to have stronger negative responses when a company is implicated with high-harmfulness CSI news compared to low-harmfulness CSI news.

Individuals possess limited cognitive resources for processing information (Sweller et al., 2019) and tend to focus their attention on content that they perceive as more valuable for decision-making. Accordingly, customers' prolonged dwell time reflects a heightened interest in engaging with the information (Schotter et al., 2012; Orquin and Loose, 2013). When customers spend more time reading evidence-backed or high-harmfulness content, this can intensify their negative emotions, leading to amplified adverse reactions. Referring to Sweller et al. (2019); the content in the post, including descriptions of the harmfulness and the

evidence of the issue, serves as a 'data pool,' providing critical information that influences decision-making. In cases of CSI, evidence or high-harmfulness attributes in the news are likely to evoke strong emotions such as anger or disappointment (Weiner, 2010; Scheidler and Edinger-Schons, 2020). As a result, the longer individuals dwell on CSI news featuring evidence or high-harmfulness, the more likely they are to exhibit stronger negative responses compared to scenarios with suspicious information or low-harmfulness. Based on this, we propose the following hypotheses.

H4b. The evidence attributes of a CSI event positively moderate the relationship between a customer's visual attention to social media posts' evidence-related information and their negative responses.

H5b. The harmfulness level of a CSI event positively moderates the relationship between a customer's visual attention to social media posts' harmfulness-related information and their negative responses.

3.3. Impact of collective opinion

In current society, people are increasingly relying on the digitised, aggregated opinions of others to make decisions, there is also a collective opinion displayed online where individual behaviour is strikingly susceptible to the opinions of others, such phenomena are often explained with the theory of conformity (Cialdini and Goldstein, 2004). This refers to the tendency of individuals to adjust their attitudes, beliefs, and behaviours to match the responses of others. Social conformity behaviour happens when individuals adjust their personal views to align with the collective opinion, which is the position held by the majority in group settings (Cialdini and Goldstein, 2004). However, excessive conformity behaviour can result in the phenomena of prioritising conformity over independent critical thinking, which can sometimes oversimplify judgement and decision-making, consequently nullifying the benefits of collective intelligence (Hullman et al., 2011).

Existing research on conformity behaviour, a phenomenon where people are influenced by the ideas and actions of others in social settings, indicates that individuals in social media environments tend to pay attention to the collective opinion and use it as a basis for their judgments and decisions. Colliander (2019) investigates social media responses to fake news, finding that critical comments reduce positive attitudes and sharing intentions compared to supportive comments. Winter et al. (2015) show that negative comments on Facebook news decrease persuasiveness, while positive comments do not affect it. These studies demonstrate the influence of collective opinions on social media behaviour, highlighting how community feedback shapes individual reactions online. Therefore, in this research, we argue that the collective opinion from comments can impact customers' judgment and manipulate how customers respond to the company. Specifically, when exposed to posts with critical comments, individuals tend to follow similar opinions and exhibit higher negative moral emotion, spreading negative WoM, boycotting the company, or sharing information to increase public awareness. We then propose the following hypothesis.

H6a. The likelihood that a customer has higher negative responses is higher when the company received critical, rather than supportive social media comments attached to CSI news.

Furthermore, building on the previously developed relationship between visual attention and customers' negative responses (Schotter et al., 2012; Orquin and Loose, 2013), we extend the assumption by including the impact of collective opinion. A higher dwell time indicates customers have a greater interest in comments. Following the argument from online conformity behaviour studies (Winter et al., 2015), individuals tend to rely on others' comments as a guide for how to respond, for example, when reading critical comments, people are more likely to follow the collective opinions from the comments and have a negative attitude (Colliander, 2019). Hence, compared to supportive comments, critical comments are more likely to evoke negative

responses. We argue that if individuals take more time to read the critical comments, this action is likely to intensify their negative emotions, and amplify their negative reactions. Individuals tend to take heed of the collective consensus and employ it as a foundation for their decisions (Winter et al., 2015; Colliander, 2019), exposed people to critical comments condition longer could result in a greater level of negative responses. Therefore, we posit.

H6b. The collective opinion positively moderates the relationship between a customer's visual attention to social media posts' comments and their negative responses.

4. Methodology

4.1. Experiment

4.1.1. Respondents and procedure

This study adopts a vignette experimental approach (Aguinis and Bradley, 2014; Li et al., 2023) in conjunction with eye-tracking to test the hypothesis. Moreover, this study is a full factorial experiment that adopts a between-subjects design, combining two levels of evidence availability (highly suspicious vs. evidence-based), two levels of harmfulness (low harm vs. high harm), two types of collective opinion (supportive vs. critical), yielding a 2 x 2 x 2 experimental design with eight experiment conditions. We recruited UK adult participants from an external research agency (www.realeye.io), participants are randomly assigned to one of eight experimental groups, this can eliminate the concern of carryover effects. After demographic questions, participants read through an introduction of a consumer goods corporation to establish a baseline image of this company, their initial brand image and purchase intention were documented as a manipulation check. Next, participants were exposed to a post that discussed the company's irresponsible operation and manufacturing practices regarding the environment, and their gaze activities will be documented while they read the post. Afterwards, participants were instructed to answer questions about measuring their responses to the online CSI news. Fig. 2 presents the flow chart of the experiment.

4.1.2. Variables measurement

This research examines three independent variables, each with two levels: evidence (0 = "highly suspicious" vs. 1 = "evidence-based"), harm (0 = "low harm" vs. 1 = "high harm"), and collective opinion (0 = "supportive comment" vs. 1 = "critical comment"), a total of eight experimental conditions could be tested. Moreover, there are four outcome variables: negative moral emotions, negative WoM, boycott intention, and shared intention. First, we borrow a previously validated scale of negative moral emotions (Haidt, 2003) to capture customers' emotional responses. Moreover, concerning the behaviour intention, we use valid measurement items from Xie et al. (2015) for measuring customers' negative WoM and boycott intention. The questionnaire is anchored in a seven-point Likert scale. Furthermore, we borrow the measurement from prior social media behaviour research (Chua and Banerjee, 2018) to measure participants' intention to share the post. Personal involvement has long been identified as a critical element in shaping user behaviour when dealing with information, referring to the degree of personal relevance of the information (Illies and Reiter-Palmon, 2004; Chua and Banerjee, 2018). Consequently, we included personal involvement as one of the control variables. In addition, we incorporated demographic information as control variables, including age, gender, education level, and income.

4.1.3. Experiment vignettes

To control for extraneous factors that could affect customer responses, several steps were taken in the experiment to eliminate company familiarity and initial preference. First, we used a fictitious corporate brand from prior literature, the ZENET Corporation (Sweetin

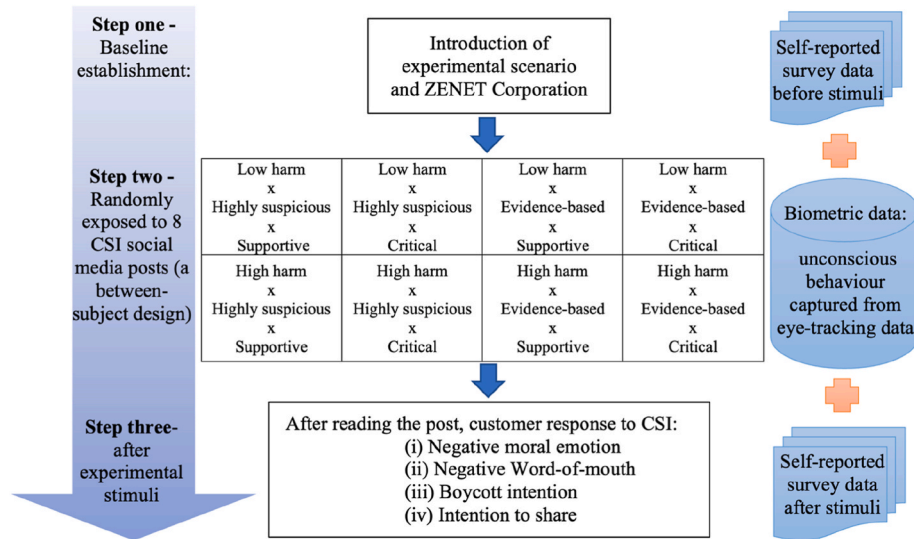


Fig. 2. Flow chart of the experiment.

et al., 2013). Moreover, given the focus is environmental CSI, we adapted and revised the description of ZENET to a consumer goods corporation with an above-average overall performance in its industry; ZENET received a B rating in technological innovation, manufacturing ability, corporate giving, and community involvement (see in Appendix A). Next, we create experiment vignettes based on Facebook, with an avatar, username, text, and comments. A tool was used to randomly generate avatars and usernames, with photos blurred to create a fictitious, nonidentifiable avatar.

This is followed by the design of textual content. First, we explicitly focus on the environmental CSI practices in manufacturing, hence, we develop the post built on information that captured from professional healthcare websites and news. Next, evidence information was broken down into two categories (0 = “highly suspicious” vs. 1 = “evident based”), where the highly suspicious condition refers to a message that claims the pollution is caused by ZENET without evidence, while another condition indicates that it is clear. Further, there are two harmfulness levels (0 = “low-harm” vs. 1 = “high-harm”), the former referring to a message that describes low-risk negative impacts, e.g., mild symptoms, a letter referring to a message warning of high-risk impacts, e.g., life-threatening diseases. Additionally, each message was kept consistent at around 40 words to eliminate the potential impact on the required cognitive resources. Lastly, there are two types of comments (0 = “supportive” vs. 1 = “critical”). We adapted the design from Colliander (2019) to our context, supportive comments contained expressions supporting the company, e.g., “This company is reliable”, and critical comments included lines such as “What a shame”. Moreover, a minimum of two comments can create a group idea, and a maximum of four comments is sufficient to elicit conformity in social media (Wijenayake et al., 2020), therefore, we assigned four comments to appear with each post. Next, we followed a full factorial combination of three independent variables with two levels in each variable, leading to eight experimental conditions.

Additionally, in developing the descriptive vignette (Fig. 3), we culled insights from the news press describing environmental contamination using the news sources of LexisNexis UK by searching the keywords “pollution” or “contamination”. A group of four academic professionals was gathered to assess the experimental stimuli, and carefully revised and improved the wording and layout of the company introduction and social media posts to show precise experimental cues. We circulated the drafts amongst the scholars and determined the final version of the post content based on the combined judgement (see in Appendix B).

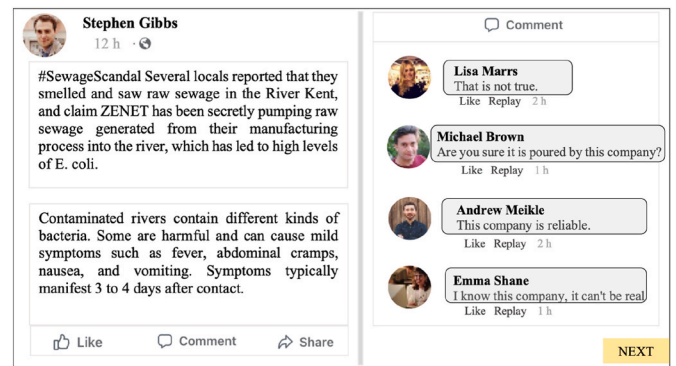


Fig. 3. A sample of social media post.

4.2. Eye-tracking methodology

Eye-tracking is an unobtrusive, direct and fine-grained process tracing technique (Rahal and Fiedler, 2019), providing valuable data with a non-invasive approach by documenting the x-coordinates and y-coordinates of individual’s gazes on the given information stimuli, meanwhile, capturing the temporal dimension of participant’s gazes as well as the dilation of the pupil while they are viewing the visual stimuli. The eye-tracking study is performed simultaneously with the experiment, participants were first instructed to perform individual eye-tracking calibration, this allows the eye tracker to track and record the participant’s eye movement with better accuracy, precision, and correction for data collection (Duchowski and Duchowski, 2017). This is followed by the design of the experiment flow discussed above.

One of the key steps is the design of Areas of Interest (AOI), defining the regions of information that investigators are interested in gathering data about, areas of the display that are defined by different shapes. AOI design is important as the relationship between the research hypothesis and what message is included in an AOI is strongly related (Holmqvist et al., 2011). AOI is designed to help explore how participant allocates their attention when reading news and the properties of participants’ eye movements in each AOI. In general, the design of AOI can help researchers segment stimulus space in the experiment, record eye movement data and transform the data into representations of the key information in that area. Moreover, the position and size of the AOI impact how researchers collect and calculate quantitative data for this certain region, according to Holmqvist et al. (2011), if the AOI changes,

the hypothesis is altered. Therefore, AOI are critical and should be defined as entities in the experimental stimulus.

We follow the instructions from Meißner and Oll (2019) to define AOI. First, we take three independent variables (evidence, harmfulness, collective opinion) into consideration and benchmark the layout of Facebook, with the key AOIs identified and present in Fig. 4. Specifically, AOI-A presents the information about the social media poster, with a username, avatar and posted time; AOI-B-1 shows the information about whether there is evidence of this CSI event; AOI-B-2 indicates the levels of harmfulness, either low harm or high harm; AOI-C presents social media comments that are either supportive or critical. Since the sender’s profile is not relevant to our objective, the same design of the AOI-A is used for all posts to control the variable and reduce noise. Moreover, we create a clear gap between each area to make clear identification of each AOI easier (Holmqvist et al., 2011). Additionally, the key data collected from eye-tracking is dwell time (in seconds) (Holmqvist et al., 2011), referring to the duration fixated on each AOI, and the total dwell time is defined as the aggregate of individual dwell times in particular AOIs during a trial or another specified period (Holmqvist et al., 2011), which is commonly used in eye-tracking investigation to assess individuals’ information processing and attention. Therefore, after capturing the visual attention of each AOI, we further analyse the total dwell time in AOI-B-1, AOI-B-2, and AOI-C, representing the customer’s visual attention and cognitive process when consuming the CSI news on social media. Lastly, Fig. 5 demonstrates the eye-tracking experiment process.

5. Results

5.1. Respondent details

This study provides a rigorous data cleansing process to ensure data quality (Fig. 6). After obtaining the raw data, we excluded samples that did not fully complete the experiment or failed attention checks. Moreover, we removed participants who had low engagement (e.g., low time spent and/or a patterned survey response) and low gaze sampling quality in the experiment. Overall, 325 datasets were included in the final analysis, with around 40 observations in each condition, respondents’ demographic details are detailed in Table 1.

5.2. Reliability and manipulation check

In this study, we measure customers’ negative moral emotions and behavioural intentions (negative WoM, boycott intention, share intention) with previously validated measurement items (Xie et al., 2015). Next, we conduct a reliability check of these measurements in this research context, test results demonstrate that the results of Cronbach’s alpha values of all outcome constructs are above the threshold of satisfactory reliability level (0.70) (Table 2). Moreover, we asked

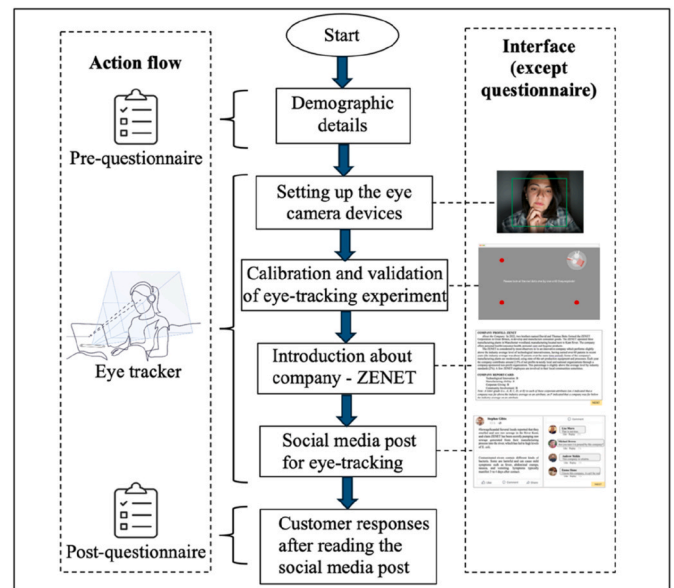


Fig. 5. Flow chart of eye-tracking process.

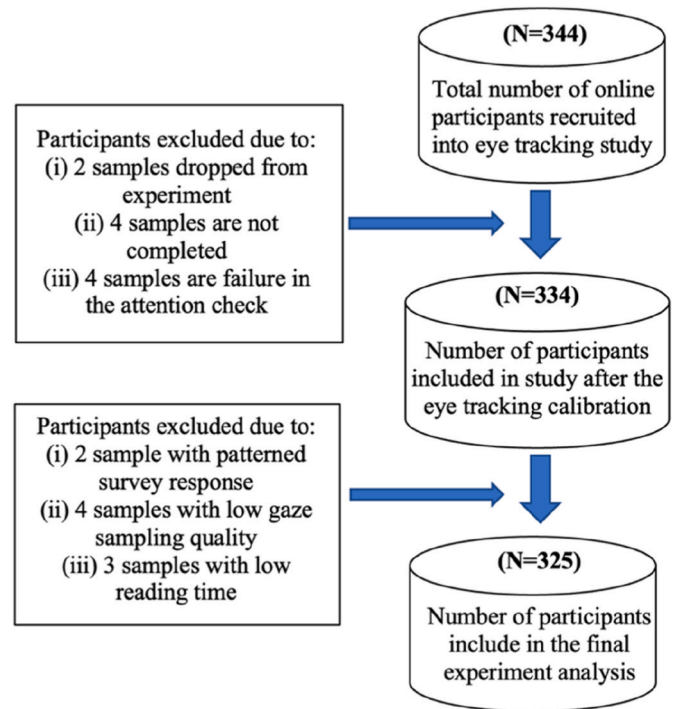


Fig. 6. Flow chart of sample participant filter process.

participants to respond to two manipulation questions on a seven-point bipolar adjective scale: (i) “Please express your attitudes toward this ZENET company” and (ii) “How likely you would consider buying that brand the next time you purchase consumer goods?” The manipulation test shows that there is a significant brand attitude drop (Brand attitude_{before} = 5.27, Brand attitude_{after} = 2.88, $t = -26.50, p < 0.05$) and purchase intention drop (Purchase intention_{before} = 5.06, Purchase intention_{after} = 2.76, $t = -26.58, p < 0.05$) (Table 3), indicating that the experiment vignette triggers a negative brand attitude and lower rate of purchase intention, which also signals a successful experimental manipulation with precise experimental cues.

In addition, we followed the method demonstrated by Sarafan et al.

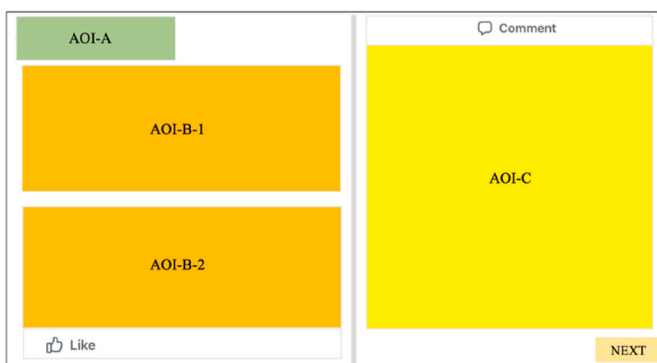


Fig. 4. AOI design.

Table 1
Demographic profiles of respondents.

Combinations of factors	Scenario 1: Supportive				Scenario 2: Critical				Total
	Highly Suspicious x Low harm	Highly Suspicious x High harm	Evidence-based x Low harm	Evidence-based x High harm	Highly Suspicious x Low harm	Highly Suspicious x High harm	Evidence-based x Low harm	Evidence-based x High harm	
No. of participants	43	43	40	39	40	40	40	40	325
Gender (%)									
Male	46.5	53.5	50	51.3	47.5	50	40	47.5	48.3
Female	53.5	46.5	50	48.7	52.5	50	60	52.5	51.7
Age (%)									
18–24	14	9.3	7.5	5.1	7.5	5	5	12.5	8.3
25–34	37.2	25.6	10	28.2	37.5	32.5	27.5	32.5	28.9
35–44	7	23.3	30	30.8	20	30	35	27.5	25.2
45–54	20.9	25.6	27.5	17.9	12.5	22.5	25	17.5	21.2
55 and older	20.9	16.3	25	17.9	22.5	10	7.5	10	16.3
Education level (%)									
Less than high school	0	0	2.5	5.1	0	2.5	0	2.5	1.6
High school or equivalent	25.6	20.9	27.5	33.3	30	30	27.5	17.5	26.5
Bachelor	44.2	44.2	45	43.6	52.5	47.5	40	42.5	44.9
Master	16.3	30.2	17.5	15.4	15	20	25	32.5	21.5
Doctorate	14	4.7	7.5	2.6	2.5	0	7.5	5	5.5
Income (%)									
Under £9999	20.9	20.9	17.5	10.3	10	20	2.5	15	14.8
£10,000 to £24,999	23.3	27.9	35	28.2	42.5	37.5	17.5	22.5	29.2
£25,000 to £49,999	41.9	32.6	35	43.5	37.5	32.5	62.5	42.5	40.9
£50,000 to £74,999	11.6	14	7.5	17.9	10	0	17.5	15	11.7
£75,000 to £99,999	0	2.3	5	0	0	7.5	0	2.5	2.2
£100,000 or more	2.3	2.3	0	0	0	2.5	0	2.5	1.2

Table 2
Reliability check.

Variable	Mean	SD	Cronbach's alpha
Negative moral emotions	4.62	1.47	0.92
Negative WoM	3.85	1.64	0.92
Boycott intention	2.83	1.35	0.90
Intention to share the post	2.30	1.34	0.95

Table 3
Results of paired t-test.

	t	df	p-value	Mean difference	SD
Brand attitude	-26.50	324	0.00	-2.40	1.63
Purchase intention	-26.58	324	0.00	-2.31	1.56

(2020) to check the degree to which the experiment vignette depicts a realistic scenario. Participants are required to rate realism checks questions which are anchored in a seven-point Likert scale: (i) The scenarios of reading social media news in this test are realistic to me (RL1); (ii) I am familiar with the news about corporate social irresponsible behaviour on social media (RL1); (iii) I had encountered similar news about corporate social irresponsible behaviour on social media (RL3); (iv) I took the assigned role as a social media user seriously when responding to questions asked. Results show that participants perceived the experiment to be relatively realistic (RL1 = 4.7, SD = 1.6; RL2 = 4.7, SD = 1.49; RL3 = 4.5, SD = 1.76; RL4 = 5.7, SD = 1.57).

5.3. Experiment results

A three-way ANOVA was employed to analyse the experimental data. First, we discuss the main effect of three independent variables on dependent variables. Subsequently, we further explore the interaction effects of three variables on customer responses.

The results have led to the rejection of H4a, there is no statistical difference between highly suspicious and evidence-based CSI news to

negative moral emotions ($M_{\text{highly suspicious}} = 4.52$, $M_{\text{evidence-based}} = 4.72$, $p = 0.125$), negative WoM ($M_{\text{highly suspicious}} = 3.77$, $M_{\text{evidence-based}} = 3.93$, $p = 0.184$), boycott intention ($M_{\text{highly suspicious}} = 2.75$, $M_{\text{evidence-based}} = 2.92$, $p = 0.149$), share intention ($M_{\text{highly suspicious}} = 2.3$, $M_{\text{evidence-based}} = 2.31$, $p = 0.911$). Therefore, irrespective of whether there is evidence in the CSI news, there is no difference in customer's emotional response and behavioural response to the CSI news. Next, the results reject H5a, indicating that no difference was detected between low-harmfulness and high-harmfulness CSI event to negative moral emotions ($M_{\text{low harm}} = 4.58$, $M_{\text{high harm}} = 4.66$, $p = 0.571$), negative WoM ($M_{\text{low harm}} = 3.93$, $M_{\text{high harm}} = 3.79$, $p = 0.303$), boycott intention ($M_{\text{low harm}} = 2.83$, $M_{\text{high harm}} = 2.84$, $p = 0.925$), share intention ($M_{\text{low harm}} = 2.33$, $M_{\text{high harm}} = 2.29$, $p = 0.303$). Hence, the harmfulness level presented in the CSI news does not lead to a greater level of negative responses toward the company.

Lastly, results support H6a, showing that there is a significant main effect of collective opinions on customer's negative moral emotions ($M_{\text{supportive comment}} = 4.42$, $M_{\text{critical comment}} = 4.82$, $p = 0.003$), negative WoM ($M_{\text{supportive comment}} = 3.53$, $M_{\text{critical comment}} = 4.2$, $p = 0.000$), boycott intention ($M_{\text{supportive comment}} = 2.61$, $M_{\text{critical comment}} = 3.06$, $p = 0.000$), and share intention ($M_{\text{supportive comment}} = 2.12$, $M_{\text{critical comment}} = 2.49$, $p = 0.003$). Therefore, customers exposed to social media CSI news by focusing on critical comments had higher levels of negative moral emotions, negative WoM, intention to boycott, and intention to share the post, in comparison to consumers exposed to a CSI news post with supportive comments.

Next, we decompose the three-way ANOVA results of the interactive effect and simple effect of three CSI news attributes on customer responses, exploring how customers' response is affected by the three key attributes of online CSI news. Results show that there is no statistically significant three-way interaction between evidence, harmfulness, and comment on customer's negative moral emotions ($F(1, 316) = 0.51$, $p = 0.476$), boycott intention ($F(1, 316) = 0.423$, $p = 0.516$), share intention ($F(1, 316) = 0.018$, $p = 0.892$). Moreover, there is a statistically significant three-way interaction between evidence, harmfulness, and collective opinions on customers' negative WoM, $F(1, 316) = 4.959$, p

= 0.027. Further, we explore the results and run the two-way ANOVA analysis by isolating the highly suspicious group and evidence-based groups, splitting the dataset into two groups based on the evidence conditions.

First, there is no two-way interaction in the highly suspicious group, $F(1, 161) = 0.666, p = 0.415$; while there is a statistically significant two-way interaction when CSI news is evidence-based, $F(1, 154) = 5.146, p = 0.025$. Next, one-way ANOVA is used to further examine the simple main effect of collective opinion at different levels of harmfulness within the group of evidence-based. Results show that the simple main effect of collective opinion for “high harm” “evidence-based” is not statistically significant, $F(1,317) = 0.25, p = 0.617$, that is, the type of online comment on CSI news did not affect negative WoM when the CSI news is high harm and evidence-based, alternatively, regardless of online comments, there is no statistically significantly different of negative WoM in the CSI news scenario of “high harm” “evidence-based”.

However, results show that the simple main effect of collective opinion for “low harm” “evidence-based” is statistically significant, $F(1,317) = 15.871, p = 0.000$, namely, in comparison to evidence-based CSI news with the high harm condition, the type of collective opinion has a statistically significant effect on negative WoM when the CSI news is evidence-based and at low harm condition. Alternatively, critical comments and supportive comments caused significantly different levels of customers’ negative WoM when the CSI news is evidence-based and at low harm.

Furthermore, we ran all simple pairwise comparisons for the “evidence-based” group at different types of harmfulness and collective opinion with a Bonferroni adjustment applied. Results show that there is no significant difference in negative WoM between the “critical” group (Mean = 4.001) compared to the “supportive” group (Mean = 3.798) under the high harm condition, which has a mean difference of 0.203 (95% CI, -0.343 to 0.750), $p = 0.464$. On the contrary, results indicate that when the harmfulness is low, the negative WoM in the “critical” group (Mean = 4.536) is higher than the “supportive” group (Mean = 3.476), a statistically significant difference of 1.060 (95% CI, 0.523 to 1.597), $p < 0.001$. Therefore, the breakdown of the results provides further support that when the CSI event is evidence-based and with low harm, online CSI news which is followed with critical comments will result in higher levels of negative WoM in comparison to social media CSI news with supportive comments.

5.4. Eye-tracking results

This section presents the result of the eye-tracking study. For the eye-tracking data analysis, we employ hierarchical multiple regressions to test the hypothesis on the relationship between visual attention and the customers’ response to online CSI news. First, we summarise the descriptive statistics of eye movement data in Tables 4-6. In general, compared with the critical comment condition, there is significantly higher visual attention allocated to AOI-A ($t(323) = 2.72, p = 0.01 < 0.05$), AOI-B1 ($t(323) = 2.72, p = 0.01 < 0.05$), and AOI-C ($t(323) = 4.29, p = 0.00 < 0.05$) with the condition of having supportive comments. Moreover, we do not observe any significant difference across the other two conditions, showing that dwell time on a single AOI stays relatively consistent across the conditions of “evidence” and

Table 4
Dwell time on pre-defined AOIs.

Variable	Mean (in second)	SD
AOI-A (username, avatar and posted time)	0.54	1.11
AOI-B1 (evidence: evidence-based vs highly suspicious)	6.27	4.24
AOI-B2 (harmfulness: low harm vs high harm)	5.84	4.37
AOI-C (collective opinion: supportive comment vs critical comment)	4.66	2.86
Full post feed	17.31	7.95

“harmfulness”.

Next, we introduce the statistical analysis with hierarchical multiple regressions. Building on the hypothesis development on the relationship between visual attention and customers’ negative response, we discuss the hierarchical multiple regression analysis and present a breakdown of the models. We capture participants’ emotional responses and behavioural intention. Further, we examine customers’ visual attention to the three pre-defined AOIs (AOI-B1, AOI-B2, AOI-C), yielding twelve sets of the full combinations. Therefore, we perform twelve hierarchical multiple regressions. For the negative moral emotion, there are three models. In Model 1, negative moral emotion is the dependent variable, we include demographic information – age, gender, education, income, and personal involvement as control variables. Next, we include the variable of visual attention on AOI-B1 (information about evidence) and evidence in model 2. This is followed by adding the following multiplication variables to model 3 to test the moderation effect: dwell time on AOI-B1 x Evidence.

The results reject H1. A higher dwell time on AOI-evidence does not drive a significantly greater level of negative moral emotions ($\beta = -0.04, n.s$), negative WoM ($\beta = -0.01, n.s$), boycott intention ($\beta = -0.02, n.s$), and share intention ($\beta = 0.00, n.s$). Hence, no significant effect of visual attention (on evidence-related information) and negative response toward the CSI event was found. Next, results reject H2. A higher dwell time on AOI-harmfulness does not drive a greater level of negative responses. On the contrary, a higher dwell time on AOI-harmfulness leads to a lower level of negative moral emotions ($\beta = -0.04, p < 0.01$). Moreover, there is no causal relationship between dwell time on AOI-harmfulness and negative WoM ($\beta = -0.03, n.s$), boycott intention ($\beta = -0.11, n.s$), and share intention ($\beta = 0.00, n.s$). Therefore, no significant effect of visual attention and negative response was found, apart from one result showing a surprising finding that a higher dwell time on AOI-harmfulness drives a lower level of negative moral emotions. Furthermore, results reject H3, a higher dwell time on AOI-comment does not drive a greater level of negative moral emotions ($\beta = 0.03, n.s$), negative WoM ($\beta = 0.00, n.s$), boycott intention ($\beta = -0.02, n.s$), and share intention ($\beta = -0.01, n.s$). Therefore, no significant effect of visual attention (on comment-related information) and negative response toward the CSI event was found. Overall, the results indicate that when customers allocate more visual attention to harmfulness-related information, they are more likely to have a lower negative moral emotion towards the company and the CSI event.

Following the moderation effect analysis, the results reject H4b. Regardless of evidence presence regarding the CSI event, a higher dwell time on AOI-evidence does not significantly impact customers’ negative moral emotion ($\beta = -0.01, n.s$), negative WoM ($\beta = -0.04, n.s$), boycott intention ($\beta = -0.02, n.s$), and share intention ($\beta = -0.04, n.s$) to CSI news online. Subsequently, the results reject H5b, as regardless of the harmfulness levels of the CSI event, a higher dwell time on AOI-harmfulness does not significantly impact customers’ negative moral emotion ($\beta = 0.06, n.s$), negative WoM ($\beta = 0.06, n.s$), boycott intention ($\beta = 0.02, n.s$), and share intention ($\beta = -0.04, n.s$) to CSI news online. Next, H6b is also rejected, but we found surprising findings that there is a significant and negative moderation effect of collective opinions on the relationship between dwell time on AOI of comment and the degree of negative moral emotion ($\beta = -0.20, p < 0.01$), negative WoM ($\beta = -0.10, p < 0.05$), boycott intention ($\beta = -0.10, p < 0.05$), and share intention ($\beta = -0.09, p < 0.05$). That is, a higher dwell time on the AOI of comment leads to a lower level of negative moral emotion and negative WoM, boycott intention, and share intention when customers encounter a critical comment rather than supportive comments, the tabulated results are available in Tables 7-10.

Table 5
Dwell time for target post feed by experiment condition.

Experiment factors	Evidence		Harmfulness		Collective opinion	
	Highly suspicious	Evidence based	Low harm	High harm	Supportive comment	Critical comment
Condition	n = 166	n = 159	n = 163	n = 162	n = 165	n = 160
Observation (total = 325)	16.91	17.73	17.53	17.09	19.22	15.34
Dwell time (in second)	(8.48)	(7.35)	(8.44)	(7.44)	(0.66)	(0.54)
Two sample t-test	t (323) = -0.93, p = 0.35		t (323) = 0.51, p = 0.61		t (323) = 4.53, p = 0.00	

Table 6
Dwell time on pre-defined AOIs across experiment condition.

Experiment factors	Evidence				Harmfulness				Collective opinion			
	Highly suspicious		Evidence based		Low harm		High harm		Supportive comment		Critical comment	
Condition	n = 166		n = 159		n = 163		n = 162		n = 165		n = 160	
Dwell time	Second	(SD)	Second	(SD)	Second	(SD)	Second	(SD)	Second	(SD)	Second	(SD)
AOI-A	0.64	(1.36)	0.44	(0.76)	0.48	(0.95)	0.60	(1.24)	0.54	(1.03)	0.55	(1.18)
	t (323) = 1.69, p = 0.09				t (323) = -0.97, p = 0.33				t (323) = -0.10, p = 0.35			
AOI-B1	5.99	(4.31)	6.56	(4.16)	6.05	(4.22)	6.49	(4.26)	6.89	(4.70)	5.63	(3.60)
	t (323) = -1.22, p = 0.22				t (323) = -0.94, p = 0.35				t (323) = 2.72, p = 0.01			
AOI-B2	5.53	(4.06)	6.16	(4.67)	6.20	(4.97)	5.47	(3.65)	6.48	(4.97)	5.17	(3.56)
	t (323) = -1.29, p = 0.20				t (323) = 1.51, p = 0.13				t (323) = 2.72, p = 0.01			
AOI-C	4.74	(2.98)	4.57	(2.73)	4.80	(3.05)	4.52	(2.66)	5.31	(3.10)	3.99	(2.42)
	t (323) = 0.54, p = 0.59				t (323) = 0.88, p = 0.38				t (323) = 4.29, p = 0.00			

Note: AOI-A: social media post sender; AOI-B-1: evidence; AOI-B-2: harmfulness; AOI-C: collective opinion.

Table 7
Results of hierarchical multiple regression (negative moral emotions).

	Negative moral emotions		
	Model 1	Model 2	Model 3
Gender	-0.20	-0.21	-0.23
Age	-0.14**	-0.12**	-0.10*
Education	-0.23***	-0.21***	-0.23**
Income	0.02	0.01	0.02
Personal Involvement	0.72***	0.69***	0.68***
Dwell time on AOI- Comment (VA-c)		-0.05*	0.03
Comment		0.31**	1.22***
VA-c x Comment			-0.20***
Total R ²	37.5%	39.7%	42.9%
Adjusted R ²	36.5%	38.3%	41.5%
F	38.25	27.78	29.71
	(df = 5, 319)	(df = 7, 317)	(df = 8, 316)

Note: *p < 0.1; **p < 0.05; ***p < 0.01.

Table 8
Results of hierarchical multiple regression (negative WoM).

	Negative WoM		
	Model 1	Model 2	Model 3
Gender	-0.03	-0.06	-0.07
Age	-0.23***	-0.19***	-0.18***
Education	-0.16*	-0.13	-0.14*
Income	0.06	0.03	0.03
Personal Involvement	0.87***	0.82***	0.82***
Dwell time on AOI- Comment (VA-c)		-0.04	0.00
Comment		0.58***	1.03***
VA-c x Comment			-0.10**
Total R ²	43.5%	47.4%	48.0%
Adjusted R ²	42.6%	46.2%	46.7%
F	49.16	40.74	36.50
	(df = 5, 319)	(df = 2, 317)	(df = 8, 316)

Note: *p < 0.1; **p < 0.05; ***p < 0.01.

Table 9
Results of hierarchical multiple regression (boycott intention).

	Boycott intention		
	Model 1	Model 2	Model 3
Gender	0.09	0.08	0.07
Age	-0.17***	-0.14***	-0.14***
Education	-0.03	0.00	-0.01
Income	-0.05	-0.08	-0.08
Personal Involvement	0.65***	0.61***	0.61***
Dwell time on AOI- Comment (VA-c)		-0.05**	-0.02
Comment		0.36***	0.78***
VA-c x Comment			-0.10**
Total R ²	38.8%	42.4%	43.3%
Adjusted R ²	37.8%	41.1%	41.9%
F	40.43	33.36	30.19
	(df = 5, 319)	(df = 2, 317)	(df = 8, 316)

Note: *p < 0.1; **p < 0.05; ***p < 0.01.

Table 10
Results of hierarchical multiple regression (share intention).

	Share intention		
	Model 1	Model 2	Model 3
Gender	0.07	0.06	0.05
Age	-0.20***	-0.18***	-0.17***
Education	0.00	0.02	0.01
Income	0.02	0.02	0.01
Personal Involvement	0.64***	0.61***	0.61***
Dwell time on AOI- Comment (VA-c)		-0.03	-0.01
Comment		0.29**	0.70***
VA-c x Comment			-0.09**
Total R ²	36.0%	37.7%	38.5%
Adjusted R ²	35.0%	36.3%	36.9%
F	35.83	27.36	28.28
	(df = 5, 319)	(df = 2, 317)	(df = 8, 316)

Note: *p < 0.1; **p < 0.05; ***p < 0.01.

6. Discussion and conclusion

6.1. Experiment findings - vignette

Experiment results provide some insight into the effect of CSI attributes on customers' negative response behaviour toward CSI news online. First, compared to CSI news reporting company's highly suspicious misconduct, the presence of evidence in CSI news does not necessarily lead to a higher degree of negative responses, as a result, we observed that there is no significant difference in customer response towards the company when evidence was present. Second, harmfulness does not appear to elicit higher degrees of negative moral emotion among customers, and regardless of the level of harmfulness reported in the CSI news, there is no significant difference in customer negative WoM, boycott intention, or share intention.

One possible explanation is the normalisation of negative messages and information in the media coverage within the current media landscape, and people are frequently exposed to negative and unfavourable news about companies, for example, found that negative company news is more than positive (Jonkman et al., 2020). Over time, people might be desensitised to negative company news. The frequent exposure of such news might be commonplace or unsurprising to people, therefore, regardless of the severity or evidence availability reported in the news, people show a similar negative reaction. Furthermore, the evolution of social media networks raises increasing concerns about the spread of online rumours (Shu et al., 2017). As a result, individuals may perceive negative social media news as untrustworthy, leading to weaker negative responses.

Subsequently, results provide strong support for the conformity behaviour when responding to the online CSI news. Compared to supportive comments, critical comments lead to a statistically significant higher degree of negative moral emotion, negative WoM, intention to boycott, and intention to share the social media posts (supporting H6a). This finding suggests that individuals' responses behaviour to CSI news are strikingly susceptible to others' opinions in the social media environment, and people tend to use collective opinion as a basic judgment and guide their behaviour and decisions.

Last but not least, the results of the varied effects of evidence availability, harmfulness levels, and collective opinion provide some interesting findings. Results show that there is a significant simple main effect of collective opinions in "evidence-based" and "low harm" CSI news. Specifically, customers are more sensitive to other people's comments in the low harm CSI event without the evidence showing the company involved in the CSI acts. Customers are more likely to be impacted by collective opinions, thereby react more negatively and aggressive toward the company when the comments are full of criticism messages. This finding also indicates that customers may react differently depending on the specific attributes of the online CSI news, highlighting the challenge and complexity of managing CSI or CSR issues in the digital environment.

6.2. Experiment findings - eye-tracking

In general, customers tend to show similar levels of visual attention towards CSI news, regardless of the presence of evidence or the degree of harmfulness associated with the event. However, CSI news accompanied by supportive comments garnered more visual attention compared to those accompanied by critical comments, and a significantly longer total dwell time is recorded across all the areas of interest, namely the information areas about evidence, harmfulness, and comments received greater attention when the collective opinion is in the condition of supportive comment. There are two possible reasons for higher visual attention to comment-related information. First, when collective opinions support the company, a conflict arises between the negative CSI event and the positive comments. This contrast can arouse interest and demand more cognitive resources. Additionally, customers may try to

make sense of the counterintuitive situation, encouraging them to pay more attention to the CSI post and gather information. As a result, the longer dwell time indicates greater visual focus on CSI news when comments show positivity toward the company.

Results reveal that a higher dwell time in the AOI for evidence, harmfulness, and collective opinion generally do not impact negative moral emotion, negative WOM, boycott intention, or the intention to share the post significantly. Thus far, one stream of literature provides theoretical support for the idea that "higher visual attention on corporate negative event results in greater negative response" (Jacob and Karn, 2003; Kim et al., 2012; Grappi et al., 2013; Sweller et al., 2019; Wedel and Pieters, 2017), however, there is another stream of scholars who provide the opposite idea that spending more time reading the information prompts deeper cognitive processing, fostering reflection and rational evaluation of CSI news (Kitchen et al., 2014; Wedel and Pieters, 2017). And our findings provide evidence that the CSI research context should follow the later stream of research.

We found that evidence does not moderate the relationship between visual attention to evidence information and customers' negative response. The severity of the CSI event does not moderate the relationship between customer's visual attention to the harmfulness information and customer's negative response.

Next, the results contradict our proposed hypothesis (H6b) and offer intriguing insights. Critical collective opinion negatively moderates customers' visual attention and their subsequent negative responses. The justification for the result of H6b corresponds with our earlier explanations of the findings derived from H1, H2, and H3 - when individuals spend more time reading comments, they are less likely to react negatively. However, when people read critical comments, they tend to stay even calmer, showing neither greater negative reactions nor responding negatively. The increased time spent analysing critical comments encourages individuals to apply a higher level of cognitive resources and engage in more in-depth information processing (Wedel and Pieters, 2017). Such a high level of engagement can lead to more profound reflection and analysis of the CSI news (Kitchen et al., 2014). This will trigger participants' rational evaluation of the negative comments. In this case, extended dwell time can create an opportunity for a more balanced assessment, potentially moderating what might otherwise be a strongly negative reaction. Moreover, lower visual attention may lead participants to rely on simpler cues to form negative responses, while higher visual attention induces participants to engage in higher-order cognitive processes (Kitchen et al., 2014), resulting in more cautious negative responses. Another possible explanation for this is the diffusion of responsibility (Paharia, 2020). Customers found that the company's misconduct has been reported and publicly exposed on social media, meanwhile, they found that the public is intensively criticising this company's CSI practice, therefore, they are suffering reputation damage. When individuals notice that a CSI post is filled with criticism about the company, it may alter their sense of responsibility and guilt regarding their ethical duties. This awareness can reduce their urgency and responsibility toward the CSI events, possibly decreasing their inclination to react negatively towards the company.

6.3. Methodological contribution

Thus far, eye-tracking techniques have been widely used in Psychology and Information Systems (Duchowski and Duchowski, 2017) but rarely applied in Operations Management (OM), with few structured and robust research designs in this field (Orquin and Loose, 2013). One of the major contributions of this research is the innovative application of eye-tracking techniques within an experimental vignette research design, spanning the interdisciplinary fields of OM, providing a valuable and robust methodological reference for future researchers. For example, we introduce eye-tracking as a real-time, objective, and non-intrusive method to capture visual attention and cognitive processing during decision-making in OM contexts. By integrating the

biometric data (from eye-tracking approach) with survey-based data (from experiment vignette), the obtained mix-data can help researchers to address potential challenges and limitations of traditional data collection approaches, such as limited introspective capacity, data noise, and common method bias (Baumeister et al., 2007; Kock, 2015). We also bridge psychological (cognitive process), experimental (experiment vignette) and social media behaviour literature with the context of CSI, leading to interdisciplinary methodological frameworks.

Our investigation into individuals' cognitive processes, through the analysis of visual attention data, significantly advances our understanding of visual attention and information processing, particularly in the context of AOI such as online news about CSI events. In addition, this study provides practical insights into the linkage between visual attention and respondents' behavioural intentions. Furthermore, our findings offer valuable guidance and serve as a reference for future eye-tracking studies aimed at elucidating the role of visual attention in the cognitive processes underlying individual decision-making behaviours. This advancement guides future researchers in tailoring their eye-tracking experiments to specific research contexts.

These enhancements in the experimental vignette and eye-tracking design mark a methodological advancement, providing valuable support for future research in OM, meanwhile, bringing methodological advancements and techniques from other disciplines to organizational research. Future studies in IS and OM can expand on this research design by employing the eye-tracking experimental technique to investigate research questions related to information processing and cognitive responses in various contexts, such as analysing how individuals read and react to business crisis messages or corporate announcements.

6.4. Theoretical and managerial implications

This study offers four key theoretical insights. First, it extends existing literature on social media user behaviour (Chua and Banerjee, 2018; Colliander, 2019) and public reactions to corporate irresponsibility (Antonetti and Maklan, 2018; Scheidler and Edinger-Schons, 2020) by emphasising the role of collective opinions in shaping responses to CSI news about manufacturing production. Our findings enhance the advancement of the conformity theory (Cialdini and Goldstein, 2004) in customer behaviour response to manufacturing misconduct, extending the knowledge of conformity behaviour in the context of online CSR crisis communication. We also add value to the literature of crisis communication (Kölbel et al., 2017; Visentin et al., 2019) by introducing new evidence that highlights the significant impact of social media comment. Moreover, we enrich the literature about how customers respond to production misconduct by providing observations on customers' visual attention when processing online news, showing how customers' cognitive resources are allocated when reading social media CSI news.

This study also enriches the OM literature by integrating cognitive and behavioural theories into OM. We provide a customer behavioural lens to evaluate the impact of manufacturing misconduct on consumer attitudes. Findings underscore how customer's information processing process and the attributes of CSI events about production practices (harmfulness, evidence) are associated with their negative response. By linking cognitive and behavioural literature with CSI news about production misconduct, we highlight the importance of how individual process the CSI information as well as the significant of ethical production practices. Further, by focusing on the social media environment, we experimental test the impact of online CSI news attributes (collective opinions) and provide novel insights into the CSI literature (Clark et al., 2022). Our work explains the effect of the presence of these attributes, meanwhile, responding to the call to better define the CSI can help corporations learn how to 'avoid bad' in their operation and production, contributing to CSR practices.

This study presents several practical contributions. Although there is a growing interest in analysing customer reactions to negative events

(Xie et al., 2015), research into how corporate misconduct influences customer information acquisition regarding CSI attributes on social media remains limited. By employing the experimental vignettes approach, we gain insights from customers' responses to CSI events. These findings enhance companies' understanding of the mechanisms that drive public perceptions of CSI incidents. Notwithstanding people view CSI production practices as unfavourable occurrences, they have equivalent negative behavioural tendencies towards penalising the company, regardless of the availability of evidence and degree of harm presented. We also present evidence of the significant main effect of collective opinions in "evidence-based" and "low harm" CSI news, showing that customers are more likely to be influenced by critical comments in that specific combined condition of CSI post, and react more negatively and aggressively toward the company. Unravelling these mechanisms helps corporations identify which aspects of CSI news are likely to provoke the most negative customer responses. This understanding aids in mitigating the escalation of adverse consequences from CSI incidents and improves companies' preparedness in managing CSI risks.

Moreover, our discoveries offer direction for corporations to evaluate the effect of CSI news about production on social media. We manipulated the experimental scenario of two collective opinion conditions, results reveal that critical comments have a significant impact on encouraging customers to react more negatively and aggressively towards the company, leading to conformity behaviour accorded after customers viewed the online CSI news and others' comments. We shed light on the role of social media in CSI reporting and highlight the significant impact of online conformity behaviours in CSI communication, these findings offer valuable implications for companies to avoid online conformity behaviour.

Additionally, our study offers valuable eye-tracking insights for risk management. Although simple dwell time on the CSI news does not result in higher negative responses, when taking the attributes of collective opinions, critical comments can negatively moderate the relationship between customers' visual attention and negative responses. Spending more time reading critical comments promotes deeper cognitive processing and thoughtful reflection on CSI news, enabling a more balanced assessment and reducing negative reactions. This also provides practical insight that the critical comments will only be less risky when people dedicate a higher level of engagement and have more in-depth information processing, otherwise, the profound reflection and analysis of the CSI news will be replaced by the conformity behaviour – follow what is broadcast in the comment and against the company.

6.5. Limitation and future direction

Notwithstanding its valuable contributions, this research has certain limitations, we also suggest several directions for future studies. First, the limitations of this study include its narrow focus on a corporate environmental irresponsibility issue in manufacturing production, which may limit the generalisability of the findings to other CSI incidents. Future research can manipulate the research design to various CSI context like product harm, service failure, or organisational fraud incidents. Second, this research is built on the context of the social media, the attributes of high-reach media coverage of CSI have yet been examined. Moreover, future researchers can consider further extending the discussion by examining the impact of the remaining attributes of intentionality and corporate rectification. How companies should respond to the public after the occurrence of different negative news online is still unknown, future research could build on this research and develop response strategies for different conditions. For example, examining the effect of different crisis response strategies under different conditions of CSI news. Lastly, future researchers can delve deeper into the question of how the position of information or present sequence, influences individuals' responses and behaviour, leading to a more comprehensive understanding of the subject matter.

CRedit authorship contribution statement

Xinwei Li: Writing – review & editing, Writing – original draft, Validation, Software, Methodology, Formal analysis, Data curation, Conceptualization. **Ying Kei Tse:** Writing – review & editing, Writing – original draft, Validation, Supervision, Methodology, Data curation, Conceptualization. **Xiangzhi Bu:** Supervision, Resources, Methodology, Data curation, Conceptualization.

Declaration of competing interest

none.

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Appendix A. The description of ZENET Corporation

COMPANY PROFILE: ZENET
About the Company: In 2022, two brothers named David and Thomas Butts formed the ZENET Corporation in Great Britain, to develop and manufacture consumer goods. The ZENET operated three manufacturing plants in Manchester woodland, manufacturing located next to Kent River. The company offers personal health/consumer health, personal care and hygiene products.
 The ZENET is considered by most observers to be an innovative company which performs slightly above the industry average level of technological innovativeness, having earned over 60 patents in recent years (the industry average was about 50 patents over the same time period). Some of the company's manufacturing plants are modernised, using state-of-the-art production equipment and processes. Each year the company contributes around 2.5% of net profits to needy local and national organizations through a company-sponsored non-profit organization. This percentage is slightly above the average level by industry standards (2%). A few ZENET employees are involved in their local communities sometimes.

COMPANY REPORT CARD:
 Technological Innovation: B
 Manufacturing Ability: B
 Corporate Giving: B
 Community Involvement: B

Note: A letter grade (i.e., A, B, C, D, or E) to each of these corporate attributes (an A indicated that a company was far above the industry average on an attribute; an F indicated that a company was far below the industry average on an attribute).

NEXT

Appendix B. Social media posts for experiment

The screenshot shows a social media post by Stephen Gibbs, posted 12 hours ago. The post contains two paragraphs of text. The first paragraph is a hashtagged post about sewage in the River Kent and ZENET's alleged involvement. The second paragraph is a general warning about contaminated rivers. Below the post are four comments from other users: Lisa Marrs (disagreeing), Michael Brown (questioning), Andrew Meikle (supporting), and Emma Shane (expressing skepticism).

NEXT

Appendix B-1. A sample of post - A1: Highly Suspicious + Low harm (Supportive comment)

The screenshot shows a social media post by Stephen Gibbs, posted 12 hours ago. The post contains two paragraphs of text. The first paragraph discusses a sewage scandal where locals reported raw sewage in the River Kent, claiming ZENET is secretly pumping raw sewage into the river, leading to high levels of E. coli. The second paragraph states that contaminated rivers contain different kinds of bacteria, some harmful and causing severe diseases like meningitis, septicemia, and urinary tract infections, and that drinking such water can be fatal for small children and the elderly. Below the text are icons for Like, Comment, and Share. To the right, a comment section titled 'Comment' shows four replies: Lisa Marrs (2h) says 'That is not true.'; Michael Brown (1h) asks 'Are you sure it is poured by this firm?'; Andrew Meikle (2h) says 'This company is reliable.'; and Emma Shane (1h) says 'I know this company, it can't be real'. A yellow 'NEXT' button is at the bottom right.

Appendix B-2. A sample of post A2: Highly Suspicious + High harm (Supportive comment)

The screenshot shows a social media post by Stephen Gibbs, posted 12 hours ago. The first paragraph discusses a sewage scandal where ZENET pumps raw sewage into the River Kent. After testing, the UK Environment Agency reported E. coli concentrations well above what are considered safe, and ZENET faces criminal charges. The second paragraph states that contaminated rivers contain different kinds of bacteria, some harmful and causing mild symptoms like fever, abdominal cramps, nausea, and vomiting, which typically manifest 3 to 4 days after contact. Below the text are icons for Like, Comment, and Share. To the right, a comment section titled 'Comment' shows four replies: Lisa Marrs (2h) says 'That is not true.'; Michael Brown (1h) asks 'Are you sure it is poured by this firm?'; Andrew Meikle (2h) says 'This company is reliable.'; and Emma Shane (1h) says 'I know this company, it can't be real'. A yellow 'NEXT' button is at the bottom right.

Appendix B-3. A sample of post A3: Evidence-based + Low harm (Supportive comment)

The screenshot shows a social media post by Stephen Gibbs, posted 12 hours ago. The first paragraph discusses a sewage scandal where ZENET pumps raw sewage into the River Kent. After testing, the UK Environment Agency reported E. coli concentrations well above what are considered safe, and ZENET faces criminal charges. The second paragraph states that contaminated rivers contain different kinds of bacteria, some harmful and causing severe diseases like meningitis, septicemia, and urinary tract infections, and that drinking such water can be fatal for small children and the elderly. Below the text are icons for Like, Comment, and Share. To the right, a comment section titled 'Comment' shows four replies: Lisa Marrs (2h) says 'That is not true.'; Michael Brown (1h) asks 'Are you sure it is poured by this firm?'; Andrew Meikle (2h) says 'This company is reliable.'; and Emma Shane (1h) says 'I know this company, it can't be real'. A yellow 'NEXT' button is at the bottom right.

Appendix B-4. A sample of post A4: Evidence-based + High harm (Supportive comment)

The screenshot shows a social media post by Stephen Gibbs, posted 12 hours ago. The post contains two paragraphs of text. The first paragraph, starting with '#SewageScandal', reports that several locals reported smelling and seeing raw sewage in the River Kent, and claims that ZENET has been secretly pumping raw sewage generated from their manufacturing process into the river, leading to high levels of E. coli. The second paragraph states that contaminated rivers contain different kinds of bacteria, some of which are harmful and can cause mild symptoms such as fever, abdominal cramps, nausea, and vomiting. It notes that symptoms typically manifest 3 to 4 days after contact. Below the text are icons for 'Like', 'Comment', and 'Share'. To the right of the post is a 'Comment' section with four comments from Lisa Marrs, Michael Brown, Andrew Meikle, and Emma Shane, all expressing disapproval of the company. A yellow 'NEXT' button is located at the bottom right of the comment section.

Stephen Gibbs 12 h · 🌐

#SewageScandal Several locals reported that they smelled and saw raw sewage in the River Kent, and claim ZENET has been secretly pumping raw sewage generated from their manufacturing process into the river, which has led to high levels of E. coli.

Contaminated rivers contain different kinds of bacteria. Some are harmful and can cause mild symptoms such as fever, abdominal cramps, nausea, and vomiting. Symptoms typically manifest 3 to 4 days after contact.

Like Comment Share

Comment

Lisa Marrs What a shame. Like Reply 2 h

Michael Brown Such an irresponsible company Like Reply 1 h

Andrew Meikle This company is not reliable. Like Reply 2 h

Emma Shane I knew it! Such a bad company. Like Reply 1 h

NEXT

Appendix B-5. A sample of post B1: Highly Suspicious + Low harm (Critical comment)

The screenshot shows a social media post by Stephen Gibbs, posted 12 hours ago. The post contains two paragraphs of text. The first paragraph, starting with '#SewageScandal', reports that several locals saw and smelled raw sewage in the River Kent, and claimed that ZENET has been secretly pumping raw sewage generated during their manufacturing process into the river, leading to high levels of E. coli. The second paragraph states that contaminated rivers contain different kinds of bacteria, some of which are harmful and can cause severe and life-threatening diseases such as meningitis, septicaemia, and urinary tract infections. It notes that drinking such contaminated water may be fatal in small children and in elderly individuals. Below the text are icons for 'Like', 'Comment', and 'Share'. To the right of the post is a 'Comment' section with four comments from Lisa Marrs, Michael Brown, Andrew Meikle, and Emma Shane, all expressing disapproval of the company. A yellow 'NEXT' button is located at the bottom right of the comment section.

Stephen Gibbs 12 h · 🌐

#SewageScandal Several locals reported that they saw and smelled raw sewage in the River Kent, and claimed ZENET has been secretly pumping raw sewage generated during their manufacturing process into the river, which has led to high levels of E. coli.

Contaminated rivers contain different kinds of bacteria. Some are harmful and can cause severe and life-threatening diseases such as meningitis, septicaemia, and urinary tract infections. Drinking such contaminated water may be fatal in small children and in elderly individuals.

Like Comment Share

Comment

Lisa Marrs What a shame. Like Reply 2 h

Michael Brown Such an irresponsible company Like Reply 1 h

Andrew Meikle This company is not reliable. Like Reply 2 h

Emma Shane I knew it! Such a bad company. Like Reply 1 h

NEXT

Appendix B-6. A sample of post B2: Highly Suspicious + High harm (Critical comment)

The screenshot shows a social media post by Stephen Gibbs, posted 12 hours ago. The post contains two paragraphs of text. The first paragraph, starting with '#SewageScandal', reports that ZENET pumps raw sewage generated during their manufacturing process into the River Kent. After testing, the UK Environment Agency reported E. coli concentrations well above what are considered safe. ZENET faces criminal charges in the wake of its misconduct. The second paragraph states that contaminated rivers contain different kinds of bacteria, some of which are harmful and can cause mild symptoms such as fever, abdominal cramps, nausea, and vomiting. It notes that symptoms typically manifest 3 to 4 days after contact. Below the text are icons for 'Like', 'Comment', and 'Share'. To the right of the post is a 'Comment' section with four comments from Lisa Marrs, Michael Brown, Andrew Meikle, and Emma Shane, all expressing disapproval of the company. A yellow 'NEXT' button is located at the bottom right of the comment section.

Stephen Gibbs 12 h · 🌐

#SewageScandal ZENET pumps raw sewage generated during their manufacturing process into River Kent. After testing, the UK Environment Agency reported E. coli concentrations well above what are considered safe. ZENET faces criminal charges in the wake of its misconduct.

Contaminated rivers contain different kinds of bacteria. Some are harmful and can cause mild symptoms such as fever, abdominal cramps, nausea, and vomiting. Symptoms typically manifest 3 to 4 days after contact.

Like Comment Share

Comment

Lisa Marrs What a shame. Like Reply 2 h

Michael Brown Such an irresponsible company Like Reply 1 h

Andrew Meikle This company is not reliable. Like Reply 2 h

Emma Shane I knew it! Such a bad company. Like Reply 1 h

NEXT

Appendix B-7. A sample of post B3: Evidence-based + Low harm (Critical comment)



Appendix B-8. A sample of post B4: Evidence-based + High harm (Critical comment)

Data availability

The data that has been used is confidential.

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