



# Extending Reality

Exploring the implementation of augmented reality (AR) in corporate social responsibility (CSR) communication and its influence on customer perception

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## Abstract

Augmented reality (AR) developed into a promising technology for enhancing communication processes. Especially in the context of communicating about corporate social responsibility (CSR), the technology holds great promise to, for instance, overcome stakeholder skepticism. Oftentimes, customers do not have trust in companies due to prevalent instances of greenwashing. However, AR's interactive nature offers a novel way to effectively engage customers and improve their understanding of CSR initiatives. This research examines if augmented reality can positively influence customer perceptions of a company, specifically in the context of CSR.

The study expected that AR would significantly enhance credibility, loyalty, identification, satisfaction, and overall CSR perception. Additionally, it was hypothesized that the communication of a mission statement including clear motives would strengthen this influence. A 2 (AR versus no AR) x 2 (motives versus no motives) between-subject design was used, with participants viewing one of two brochures: one included augmented reality features, whereas the second one did not. Participants were also exposed to either a clear mission statement or only a general company description. Afterwards, they completed a questionnaire assessing credibility, loyalty, identification, satisfaction, and CSR perception. Lastly, the survey measured the extent to which participants felt engaged too, since it was expected that this dimension mediates the analyzed relationship.

The findings showed that AR significantly improved all outcome measures. However, the implementation of a mission statement did not enhance these effects. The hypothesized mediating role of customer engagement appeared to be significant across three of the five outcome measures. These results underscore AR's substantial potential to elicit more positive customer reactions towards companies.

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## 1. Introduction

In the complex web of corporate dynamics, where showing social responsibility intertwines with the quest for enhancing public perception, there lies a crucial challenge: effective communication of corporate social responsibility initiatives (CSR). As academia underscores, the concept of CSR is well established and companies increasingly recognize its importance concerning public image (Lindgreen & Swaen, 2010; Moir, 2001). It represents a way of bringing value to society, through the actions an organization is taking. Specifically, it is defined as “corporate social actions whose purpose is to satisfy social needs” (Angelidis & Ibrahim, 1993, as cited in Brønn & Vrioni, 2001, p. 207). However, for an organization to achieve benefits through a commitment to CSR, a solid communication is required. CSR communication, nonetheless, is closely linked to challenges. This makes it difficult for organizations to effectively communicate about their CSR efforts and to get most out of it. Especially challenging is that stakeholders tend to doubt the reliability of CSR initiatives and show skepticism towards them (Kim and Ferguson, 2018). One well-known example is a frequent perception that a company’s sustainability effort only represents greenwashing (Torelli et al., 2019). Oftentimes it is doubted by stakeholders that an organization is not only interested in financial benefits but to support a good cause.

However, emerging technologies provide novel methods for engaging customers and delivering information in a more credible manner. One such technological innovation is augmented reality (AR). Berryman (2012) defines AR as a technology that overlays digital content onto physical objects or environments to enrich the overall user experience. Huang et al. (2019) further suggest that due to AR's immersive and interactive characteristics, it serves as a potent medium for information dissemination. The anticipated benefit of utilizing AR in CSR communication lies in its ability to offering a fresh approach to conveying information that aids in not only engaging more with information but also comprehending it better (Carmigniani & Furht, 2011). AR enables customers to feel more connected to a brand, activating a sense of information reception and active participation. Consequently, this may allow organizations to build stronger connections between their stakeholders and corporate social responsibility initiatives. As an example, the American snack label 'Cracker Jack' connected its in-package rewards with augmented reality elements (Figure 1). Through this, consumers can discover a paper card

within the package that is scannable with the smartphone camera to initiate augmented reality baseball-themed activities. The advantages of this approach include the company's successful establishment of a more environmentally sustainable image, alongside a boost in consumer interaction facilitated by the introduction of an innovative concept.

Nonetheless, it is anticipated that augmented reality not only enhances CSR communication but also that the communication of motives plays a crucial role in shaping this connection. For instance, it is most likely beneficial to make CSR communication based on a combination of both public-serving and firm-serving motives, particularly to enhance credibility. The formulation of a distinct mission statement grounded in a connection of these two categories of motives is expected to foster a more favorable perception of corporate social responsibility (Ellen et al., 2006). This aspect is especially critical to consider within the realm of augmented reality. Frequently, the integration of AR within organizational practices is viewed as a gimmick. Nevertheless, it is plausible that a transparent explanation of CSR motivations helps in refining the perception of the technology. Taking the benefits of the AR technology into consideration, it is striking that research did not make a connection between AR and CSR communication yet.

The present study is centered on exploring the impact of augmented reality in corporate social responsibility communication. Specifically, it will be measured how this technology can potentially improve the beliefs that consumers have about a brand. Credibility, identification, satisfaction, loyalty, and the overall CSR perception are key outcomes of successful communicating about corporate social responsibility and serve as the outcome measures of this study (Khan et al., 2023; Marín et al., 2009). Additionally, and as it became apparent so far, augmented reality fosters increased interaction and engagement with information provided by an organization. In this sense, this research study proposes that customer engagement is an additional important factor to consider. Hence, the research questions of this research are as follows: *How does the implementation of augmented reality (AR) in corporate social responsibility (CSR) communication impact customer perception?* and *How is the proposed relationship influenced by communicating clear motives and mediated by customer engagement?*

**Figure 1**

*Cracker Jack AR packaging*



## **2. Theoretical framework**

To this point, a substantial body of literature has been focused on examining the concept of corporate social responsibility. It developed into a business practice that serves as a crucial factor of organizational success. Demonstrating a strong dedication to CSR holds importance for companies as it fulfills ethical responsibilities, upholds a favorable image, ensures longevity, and generates value that is shared among all stakeholders (Homayoun et al., 2015). Furthermore, it functions as a significant factor for achieving competitive benefits (Porter et al., 2006). Nevertheless, numerous firms encounter challenges when integrating CSR initiatives into their operations. This obstacle may come from the difficulty to align established practices with new ones in accordance with CSR principles. Additionally, many companies fail in effectively communicating about their corporate social responsibility efforts (Öberseder et al., 2013). This study investigates augmented reality as an innovative technology that aids in addressing this challenge. Therefore, the following theoretical framework will examine current literature on both CSR and AR, laying the theoretical foundation for this research.

### **2.1 AR-enabled CSR communication**

An integral part of a positive customer perception is represented by the extent to which an organization is seen as *credible*. The role of corporate social responsibility in this context is crucial, since a company's actions towards resolving a societal problem increases the probability of people viewing it as credible (Su & Swanson, 2019). In line with this, Wu and Chen (2015) explain that the ethical component of CSR commitments is what especially influences credibility of an organization.

The implementation of augmented reality in this context most likely has a positive effect. Kim and Choo (2021) conducted a study to examine the efficacy of augmented reality as a medium for delivering product information. The investigation specifically aimed to explore the impact of AR utilization on consumers' product evaluations and brand perceptions. Employing a randomized assignment methodology, participants were categorized into different groups receiving product information. Subsequently, they engaged with an AR application facilitating virtual trials of Adidas



sneakers. The findings revealed that AR has a strong positive influence on mental imagery. This phenomenon is particularly evident due to AR's capacity to construct multi-sensory representations, thereby enriching consumers' understanding and perception of a product. Additionally, the authors emphasize that this enhanced experience positively influences perceived value. As examined by Sullivan et al. (2018), customers tend to see a company as more credible when their perception of product value is rather high. From a corporate social responsibility standpoint, augmented reality offers significant benefits by providing clearer representations of information. For example, organizations aiming to promote sustainable products or services can use AR to effectively convey CSR messages to improve credibility. As Kowalczyk (2020) puts it, AR outperforms, for instance, web-based product presentations by generating greater engagement and enjoyment, which in turn boosts product liking and ensures confidence about the viewed products or services.

Subsequently, a clear correlation can be established with respect to *loyalty*. Abd-El-Salam (2020) undertook an investigation within the Egyptian hypermarkets industry to get insights into the role of loyalty in corporate social responsibility. Specifically, participants were tasked with completing a survey to articulate their perception of CSR. Findings showed that increased credibility, consequent to effective CSR initiatives, functions as a mediator. This means that successful socially responsible activities help in building credibility that then results in loyalty towards a company. In line with this, Martínez and del Bosque (2013) conducted a similar study in the hospitality industry, yielding findings that confirm the mediating function of credibility within the context of CSR and brand loyalty.

Shifting the focus to augmented reality, conducted research suggest a notable effect of the technology on loyalty. For instance, Butt et al. (2024) examined the integration of AR features in a banking app. In detail, it was assessed what the effect of this on customer loyalty is. The authors found that AR positively impacts brand loyalty by offering engaging and interactive experiences, thereby improving consumer-brand relationships. Looking further into this, Lele and Shaw (2021) confirm the influence of the technology on loyalty customers have towards a brand. The authors state that the usefulness of augmented reality regarding novelty and interactivity is what makes customers more committed to a brand. Additionally, perceived usefulness appears to be a key-factor in this particular

context. Given the case that customers perceive the practical application of a technology as a value-adding element to their interaction, a heightened level of loyalty is expected to occur (Daud et al., 2018).

Furthermore, Pérez and Bosque (2014) found that customers' perceptions of CSR have a significant impact on *identification* which simultaneously increases loyalty towards the company, underlining the interconnectedness of the outcome measures.

A fitting study in the domain of AR was conducted by Wenzel and Copeland (2020). They focused on the influence of augmented reality within the apparel sector. Their study involved a comprehensive investigation into the utilization and perception of AR, alongside the effect on variables such as Fair Trade awareness, social responsibility consciousness, and purchasing intention. The findings notably revealed a significant correlation between the implementation of AR and heightened consumer sensitivity towards the production processes as part of the fashion industry. The authors emphasized that the technology facilitates an enhanced understanding of the circumstances of garment workers, thereby fostering a deeper identification with corporate social responsibility initiatives. Central to this phenomenon is the feeling of empathy and the establishment of an emotional identification with CSR principles. Consequently, organizations deploying AR technologies in such a manner not only demonstrate their commitment to fostering a sustainable industry but also play an important role in motivating their customers to adopt more sustainable consumption practices. Furthermore, Plotkina et al. (2021) delved into the examination of augmented reality's function in influencing customers' perception of brand personality. Notably, the researchers found that AR applications have the capacity to influence brand personality by shaping perceptions of attributes such as excitement, sincerity, competence, and sophistication. Especially, this holds significance in terms of its impact on identification, as a more favorable perception of brand personality leads to a heightened sense of identification among customers with a company (Lee et al., 2018).

When it comes to *satisfaction*, augmented reality potentially is a strategy that is of great advantage in this context. Poushneh and Vasquez-Parraga (2017) investigated the impact of the technology in retail on customer satisfaction. The authors employed an experiment in which participants were assigned to either one of three conditions: high and middle levels of AR interactivity, and a control group for traditional online shopping. The findings of the study suggest that augmented reality

significantly influences customers' satisfaction by shaping user experience through various product quality characteristics, such as aesthetics or pragmatic qualities. While the outcomes of this study do not directly relate to the realm of corporate social responsibility, they nevertheless bear substantial implications. Specifically, the findings suggest that the integration of augmented reality aids individuals in their decision-making processes. In the context of a company seeking to effectively communicate its CSR efforts, implementing augmented reality holds promise in helping customers to assess such initiatives, thereby potentially improving their satisfaction levels.

In conclusion, the body of research underscores the role of effective corporate social responsibility initiatives in fostering credibility, loyalty, identification, satisfaction, and overall CSR perception, all crucial dimensions in building a positive image. Moreover, the emerging consensus highlights augmented reality as a technology to increase these effects significantly. Multiple studies demonstrate AR's potential to impact each of the five factors positively, suggesting its instrumental role in shaping consumer perceptions and strengthening the bond between customers and brands. Thus, in the dynamic landscape of CSR communication, the integration of AR emerges not only as an innovative approach but also as a valuable strategy to elevate customer perception. Therefore, the hypotheses are as follows:

*H1a: The implementation of augmented reality (AR) in corporate social responsibility (CSR) communication leads to a significant increase in consumers' perception of credibility shown by a brand, compared to CSR communication methods that do not incorporate AR technology.*

*H1b: The implementation of augmented reality (AR) in corporate social responsibility (CSR) communication leads to a significant increase in consumer loyalty towards a brand, compared to CSR communication methods that do not incorporate AR technology.*

*H1c: The implementation of augmented reality (AR) in corporate social responsibility (CSR) communication leads to a significant increase in consumer identification with a brand, compared to CSR communication methods that do not incorporate AR technology.*

*H1d: The implementation of augmented reality (AR) in corporate social responsibility (CSR) communication leads to a significant increase in consumer satisfaction with a brand, compared to CSR communication methods that do not incorporate AR technology.*

*H1e: The implementation of augmented reality (AR) in corporate social responsibility (CSR) communication leads to a significant increase in consumers' overall CSR perception, compared to CSR communication methods that do not incorporate AR technology.*

### 2.1.1 The role of customer engagement

To begin, research makes clear that engaged customers tend to perceive a company more favorably. It holds significant advantage for positively influencing peoples perception of a brand. The concept is defined as “the level of a customer's cognitive, emotional, and behavioral investment in specific brand interactions” (Hollebeek, 2011; p.555). The following paragraphs will explore customer engagement as a potential mediator in the relationship between AR in CSR communication and customer perception.

Customer engagement plays a crucial role in achieving favorable results for customer perception. This is in line with a study conducted by Agyei et al. (2022) that explored the mediating function of engagement in the relationship between CSR initiatives and customer loyalty. The researchers found that involving customers in CSR initiatives establishes sentimental links, strengthens connections, and ultimately boosts loyalty. Related to this, Sitompul and Wallmyr (2018) delved into the exploration of how the utilization of augmented reality can serve as an encouragement in motivating individuals to exhibit behaviors that are aligned with environmentally sustainable practices. It was found that engaging customers by displaying information that is not naturally perceivable, AR can raise awareness about environmental issues and encourage sustainable actions.

When it comes to credibility of a company, identification, and satisfaction, Agyei et al. (2021) conducted a study on the impact of customer engagement through CSR on these dimensions. The

researchers argue that CSR endeavors establish a setting for enhancing customer interactions and brand engagement. When organizations partake in CSR activities, customers are more inclined to develop emotional connections with the company, ultimately resulting in heightened credibility. Moreover, corporate social responsibility plays a substantial role in shaping customer-brand identification and satisfaction. CSR initiatives foster a positive atmosphere surrounding the organization, which prompts positive evaluations of the service encounter and consequently boosts customer satisfaction. As became apparent so far, augmented reality can further amplify these effects by providing immersive experiences that showcase CSR initiatives in real-time, building deeper emotional connections between customers and the brand.

*H2: Customer engagement will mediate the relationship between AR-enabled CSR communication and customer perceptions.*

## **2.2 Motives**

Thus far, the advantages of employing augmented reality in corporate social responsibility communication for enhancing customer perception have become evident. Nevertheless, it is imperative to delve beyond the surface of the communication medium and examine the underlying motives driving its deployment. This is particularly crucial given the challenge of stakeholder skepticism in CSR communication. This necessitates a clear selection of transparent motives to convey. Consequently, the following section will explore the roles of public-serving and firm-serving motives within the framework of using AR in CSR communication initiatives.

To begin, a considerable amount of research has been centered around the question if either public-serving motives or firm-serving motives generate more positive customer reactions. In this regard, Du et al. (2010) raise the question on what kind of motivation organizations should focus on, especially when taking the challenge of reducing stakeholder skepticism into account. The question is if companies should deny business motivations and only communicate the addressing of social issues or if they should be honest about the financial benefits attributed to corporate social responsibility. Ellen et al. (2006)

offer an answer to this question by pointing out the advantage of making CSR communication based on a combination of intrinsic and extrinsic motivation. The intrinsic variable refers to performing an activity without expecting a reward except the activity itself, namely public-serving motives respectively (Deci, 1972). In the context of corporate social responsibility, this means to commit to these initiatives simply because they are seen as the right thing to do. The contrary part, extrinsic motivation or firm-serving motives, involves performing for external rewards. For CSR, this would include engaging in these activities for positive outcomes such as profitability or reputation. Forehand and Grier (2003) clarify the positive impact on customer perception resulting from a combination of both motives. They found consumers tended to perceive companies more favorably when they were transparent about their motives for implementing a societal initiative. Specifically, when firms acknowledged a combination of both firm-serving and public-serving motives, this resulted in more positive evaluations of companies.

#### 2.2.1 The role of motives for augmented reality

Frequently, consumers perceive the usage of augmented reality into communication channels as a gimmick. As articulated by Kemm (2017), such endeavors often prioritize the creation of a one-time 'WOW-effect', thereby neglecting a deeper examination of the underlying motives driving their implementation. This lack of clarity can pose a considerable challenge, as it leaves consumers questioning the fundamental 'why' behind such initiatives. In addition to that, there is a similar risk for corporate social responsibility to be seen as something like a gimmick by a company's customers. Chaker (2022) explains that this, for instance, can happen if companies CSR practices are used to cover up negative externalities and gain legitimacy. In other words, this is an example of an instance in which a company only implements CSR initiatives to result in personal benefits, while not necessarily thinking about society.

Next, Kemm (2017) undertook an exploration into the potential benefits of making clear to customers why augmented reality is being used by an organization. Notably, she explains that firms can expect increased demand and enhanced market performance through better customer satisfaction. For instance, Senthikumar et al. (2011) conducted a study in the banking sector to identify how CSR

influences this dimension. In this regard, corporate social responsibility acts as one of the most influential factors for the extent to which customers feel satisfied. However, and as also explained by the authors, the degree of this effect depends on the specific context and strategy employed by organizations. That is, if the communication follows a clear mission, it can be expected that the influences will be more positive. Furthermore, if corporate social responsibility is based on good rationales and motives, it influences customer identification as well. Specifically, research indicates that CSR has a strong long-term impact on customer-company identification, as it fulfills higher-order needs related to self-expression and ethical/moral image (Huang et al., 2017). In addition to that, Romano et al. (2020) conducted a study to understand how perceptions towards augmented reality influence customer experience. In this case it should be kept in mind that a combination of public-serving and firm-serving motives most likely improves peoples perception of the technology. In detail, the authors found that augmented reality enhances the customer experience at various stages. This, for instance, involves using try-on technology and making customers understand why this is beneficial for them. Additionally, this is in line with Oyman et al. (2022) who state that positive perceptions of augmented reality have a positive impact on various aspects of user experience. However, the problem that becomes apparent is that most research related to augmented reality and underlying motives either focuses on the brand or customer perspective. Taking into consideration what studies in the field of CSR imply for customer perception when communicating both public-serving and firm-serving motives, it would make sense to follow the same direction with augmented reality.

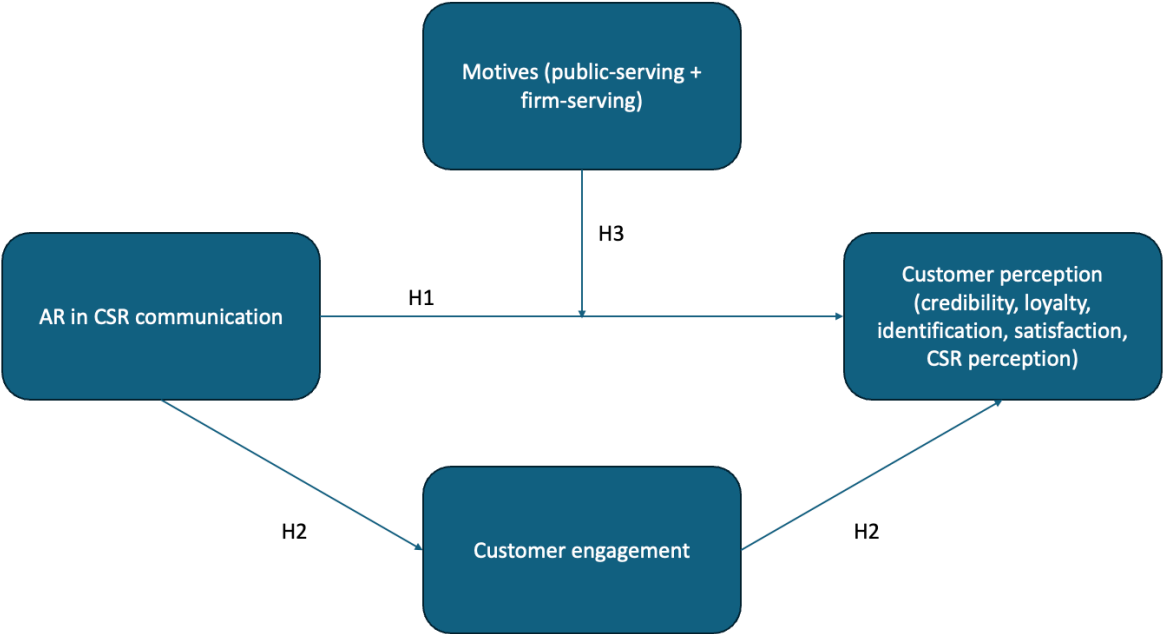
*H3: The positive effects of AR-enabled CSR communication on customer perception are strengthened by the presence of CSR motives.*

### **2.3 Research Model**

Based on the literature findings, the model below was developed (Figure 2). The implementation of augmented reality in corporate social responsibility communication represents the independent variable. The dependent variable on the other hand is customer perception. Specifically, the customer

perception variable is subcategorized by customers' perception of credibility, loyalty, identification, satisfaction, and corporate social responsibility. In addition to that, it is expected that motivating corporate social responsibility based on a combination of public-serving and firm-serving motives enhances the effect. Therefore, this dimension represents the moderator of the research model. Lastly, research shows that AR significantly enhances customer engagement which potentially improves customer perception as a result. Therefore, the present study proposes that customer engagement has a mediating role. The hypotheses will be tested by employing a 2 (AR versus no AR) X 2 (motives versus no motives) between-subject design.

**Figure 2**  
*Research model*





### **3. Method**

To examine the proposed hypotheses of the present study, a 2 (AR versus no AR) X 2 (motives versus no motives) between-subject design was employed. An investigation was carried out in collaboration with an actual organization known as 'WKS', a firm specializing in the circular fashion economy. More specifically, this means that the firm initiates its activities at the point where garments are typically thrown away. WKS retrieves these garments from customers and refurbishes them to a degree where they are hardly distinguishable from new clothes. Ultimately, this represents a mutually beneficial scenario as it aligns with both economic and environmental advantages. Primarily, the organization assumes accountability by facilitating the affordability of clothing, concurrently reducing waste and contributing to the preservation of the environment. For the purposes of this study, two brochures were created (Appendix 3) that explain the process behind the circular fashion economy. These materials illustrate the operational cycle, the measures undertaken by the firm, and the associated advantages. Notably, one of the brochures incorporates augmented reality features to evaluate whether this enhances WKS's CSR communication and positively impacts its brand perception. The second brochure does not include this feature, however, conveys the same amount of information.

#### **3.1 Material development**

##### **3.1.1 CSR brochures**

Central to the investigation are two brochures that present concise depictions of the organization and an explanation of the concept of circular economy within WKS. The organization divides its efforts into four elements: reverse logistics, 2nd hand, repair, and upcycling. This categorization mirrors the format of the brochures, which remains consistent across both. Nonetheless, one distinction exists.

One of the two brochures offers augmented reality features. This allows users to scan a QR-code and be exposed to a 3D-visualization of the circular fashion economy process (Figure 3). This includes a

range of interactable objects, that redirect people to additional information when clicking on them (Table 1). However, the second brochure does not include AR functionalities, in order to facilitate comparisons in the end. Nevertheless, in order for such comparisons to hold validity, it is imperative that an equivalent amount of information is communicated. In this regard, the brochure is equipped with a QR-code that directs users to a 'link-tree' (Appendix 2) which leads them to the identical information featured in Table 1. For instance, instead of a 3D representation of the truck, the link-tree displays a truck emoji that subsequently guides individuals to the webpage explaining reverse logistics. Hence, despite the absence of augmented reality in this brochure, it is identical.

For the creation of the brochures, they were designed in close correspondence with the company itself. The researcher organized several meetings with the sales manager of the firm to pitch the idea, clarify benefits for both parties, finding an agreement, and finally, collecting material for the brochures. This included textual information, images, and videos. After the stage of collecting material, it was time to enter the design phase. The brochures were designed using Adobe InDesign - a professional layout designing software application.

### Figure 3

*Augmented reality brochure*



**Table 1***Augmented reality objects*

Object	Explanation	Content
Truck	This object is used to explain the reverse logistics efforts of the company.	<a href="https://wks-textil.de/en/services/kreislaufwirtschaft/reverse-logistics-engl/">https://wks-textil.de/en/services/kreislaufwirtschaft/reverse-logistics-engl/</a>
Shirt and set of tools	The objects are used to explain the repairing of clothes as employed by the company.	<a href="https://youtube.com/shorts/MUuA4TCLx6E?feature=shared">https://youtube.com/shorts/MUuA4TCLx6E?feature=shared</a>
Recycling symbol	This object is used to explain the recycling and upcycling of garments and clothes.	<a href="https://wks-textil.de/en/services/kreislaufwirtschaft/upcycling/">https://wks-textil.de/en/services/kreislaufwirtschaft/upcycling/</a>
Trees	The objects are used to explain the sustainability efforts of the company.	<a href="https://wks-textil.de/en/services/kreislaufwirtschaft/sustainability/">https://wks-textil.de/en/services/kreislaufwirtschaft/sustainability/</a>

### 3.1.2 Augmented reality experience

When considering the augmented reality experience, it was developed utilizing Adobe Aero, a software dedicated to the creation of AR environments. This particular program facilitates the establishment of what is known as an anchor, serving as a reference point where AR elements can be positioned. A representation of circular economy practices was employed as the anchor, bringing dynamic elements to the brochure. The 3D assets were not created by the researcher himself but rather selected from the Adobe Stock database. Next, each object within the Adobe Aero platform was linked to specific interactive features. For example, when selecting a particular object, an additional webpage is launched, offering information on a topic.

### 3.2 Participants and procedure

88 people participated in the experiment of this master thesis, however, two were removed from the final data set since their responses included missing values. The researcher recruited participants by making use of two different strategies. On the one hand, strangers were approached, for instance, on the campus of the University of Twente and asked for their participation. Additionally, people from the personal social environment of the researcher were recruited as well. The sample consisted of 40.70% female, 58.14% male, and 1.16% identified as 'other', with 63.95% aged between 18 and 24 years old, followed by 25 to 34 with 23.26%. Participants were not required to meet many criteria for taking part in the experiment. However, it was important that people were able to read and understand the English language. In addition to that, for the participation it was best, when participants owned an iPhone, since the AR experience did not work well on Android devices. However, when participants did not own an android device, the researcher offered his own phone. In addition to that, the researcher made sure that participants did not have prior knowledge about the purposes of this master thesis.

Following, the experiment was initiated. Prior to each session, participants were provided with a concise overview of the research, focusing on the impact of brochures in CSR communication. This approach helped in preventing any potential biases. Nevertheless, post-experiment, all participants underwent debriefing sessions where they were acquainted with the comprehensive scope of the study. Moreover, they were given the opportunity at the end of the questionnaire to request the results of the thesis upon the project's conclusion by providing their E-Mail.

Next, before being exposed to one of the two brochures, a mission statement was read out loud to the participants by the researcher. In the 'AR + motives' and 'No AR + motives' conditions, participants heard a mission statement that is based on a combination of public-serving and firm-serving motives and is as follows.

*The company combines state-of-the-art with traditional craftsmanship, to prevent or repair even complex damage to raw materials and finished clothing products – whether they are new or already worn. WKS is*

*creative and collaborative to find the optimal solution for every single challenge to help reduce or even avoid the disposal or destruction of textiles. The company's mission is to significantly partake in the preservation of our environment, directly contributing to society. Additionally, this brings along economic benefits for both the company itself and the entire branch but also plays an important role of maintaining a positive image. The combination of those goals enables WKS to effectively continue with its operations.*

Participants in the conditions 'AR + no motives' and 'No AR + no motives' heard a statement generally describing the efforts of the company, without stating a clear motivation for its CSR actions.

*WKS is a company that combines state-of-the-art with traditional craftsmanship, to prevent or repair even complex damage to raw materials and finished clothing products – whether they are new or already worn. WKS is creative and collaborative to find the optimal solution for every single challenge.*

Throughout the brochure viewing process, participants received gentle guidance from the researcher to ensure comprehensive engagement with all content and features. Assistance was extended to individuals facing difficulties with the AR experience, but limited to small hints to maintain participant autonomy. Following, participants completed a survey as the final task of the experiment. The survey assessed participants' perception of the company, specifically in terms of credibility perception, loyalty, identification, satisfaction, and perceived CSR. In addition to that, the survey included measures of customer engagement, since this concept represented the mediating variable of this study.

### **3.3 Measures**

The following section describes the measures utilized to assess the key constructs of the study. All items were evaluated using a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). These measures were selected to capture participants' perceptions of credibility, loyalty, identification, satisfaction, CSR perception and customer engagement. The items were developed by

adapting existing scientific scales and by implementing self-constructed ones. The questionnaire consisting of all items can be found in Appendix 1.

### 3.3.1 Perceived credibility

For the credibility dimension, a selection of items developed by Koschate-Fischer and Gärtner (2015) was used. To match the purposes of this study, the formulation of the items was adapted. Two examples of items are “I am confident in the brands ability to perform well” and “I expect the brand to deliver on its promise” (Cronbach’s  $\alpha = .79$ ).

### 3.3.2 Customer loyalty

When it comes to customer loyalty, Bobalca et al. (2012) offer a fitting scale. The authors tested the items and labeled them as either good or not good. For this study, only items that proved to be good were used. “I am more interested in this brand than in other brands” and “I am likely to forgive this company if it makes a mistake” are two examples of items that measure customer loyalty (Cronbach’s  $\alpha = .61$ ).

### 3.3.3 Customer identification

Third, items like “The brand embodies what I believe in” and “I feel a sense of belonging to the brand” are items that were used to measure customer identification. These items were derived from Stokburger-Sauer et al. (2012) (Cronbach’s  $\alpha = .78$ ).

### 3.3.4 Customer satisfaction

When it comes to customer satisfaction, this was measured by adapting items from Millán and Esteban (2004). “The company makes a good impression” and “The services by the company meet my expectations” represent two examples (Cronbach’s  $\alpha = .77$ ).

### 3.3.5 CSR perception

The perception of corporate social responsibility activities was assessed using a scale adapted from Turker (2008). Originally consisting of 42 items, this scale evaluates various aspects of CSR, including employee well-being, community involvement, and environmental sustainability. Given the focus on sustainability in this study, only items related to environmental initiatives and future-oriented CSR efforts were implemented in the survey. Sample items included statements such as "The company implements special programs to minimize its negative impact on the natural environment" and "The company makes investments to create a better life for future generations by supporting sustainable practices" (Cronbach’s  $\alpha = .80$ ).

### 3.3.6 Customer engagement

Finally, customer engagement, serving as the mediator in this study, was assessed using a selection of items from the "Consumer Brand Engagement Scale" introduced by Hollebeek et al. (2014) and a scale developed by Vinerean and Opreana (2015). Adapted items were tailored to the specific objectives of the research. Items included “Interacting with this brand stimulated my interest to learn more about it” and “Interacting with the brand made me feel positive” (Cronbach’s  $\alpha = .80$ ).

#### 4. Results

The collected data was analyzed using various statistical tests within IBM SPSS, specifically Two-Way ANOVA and mediation analysis. ANOVA was used to determine if the independent variables, augmented reality (AR versus no AR) and motives (motives versus no motives), significantly influence the dependent variable, customer perception, in terms of credibility, customer loyalty, customer identification, customer satisfaction, and CSR perception. Additionally, this statistical test identified whether an interaction effect exists between the two independent variables, also allowing to explore if the hypothesized moderating effect of the motives factor exists. Furthermore, it was hypothesized that customer engagement has a mediating role in the proposed relationship. This hypothesis was tested with a mediation analysis, specifically using Hayes' (2017) 'PROCESS' macro for SPSS. Table 3 shows the descriptive statistics of the dependent variables.

**Table 2**

*Descriptive statistics of the dependent variables for each condition*

Dependent variables	AR + Motive	AR + No Motive	No AR + Motive	No AR + No Motive
	M (SD)	M (SD)	M (SD)	M (SD)
Credibility perception	20.71 (2.08)	21.1 (1.68)	18.86 (3.31)	18.3 (2.93)
Customer loyalty	18.19 (2.34)	18.05 (2.42)	15.32 (2.77)	14.7 (2.64)
Customer identification	18.76 (3.35)	17.55 (3.43)	16.82 (3.26)	15.91 (2.68)
Customer satisfaction	21.24 (2.12)	20.75 (2.65)	19.36 (2.68)	18.22 (1.88)
CSR perception	21.05 (2.38)	21.2 (1.85)	18.95 (4.26)	19.7 (2.51)
Customer engagement	20.05 (2.58)	20.6 (2.16)	17.36 (4.04)	16.48 (3.6)

*Note.* M = mean. SD = standard deviation. Minimum score = 1. Maximum score = 25.



#### 4.1 Credibility perception

When considering customers perception of credibility, augmented reality displayed a significant effect on this dependent variable ( $F(1, 82) = 16.96, p < .001$ ), showing that participants perceived the company as more credible when being exposed to AR as part of the CSR communication ( $M = 21.1, SD = 1.68$ ).

However, the motives factor did not exhibit the same influence ( $F(1, 82) = .02, p = .88$ ); participants did not perceive the company as more credible when they saw a clear mission statement ( $M = 18.86, SD = 3.31$ ).

Furthermore, given that the interaction effect was statistically insignificant ( $F(1, 82) = .7, p = .41$ ), the analysis showed that the combined impact of motives and augmented reality did not affect credibility. This led to the conclusion, that the motives did not function as a moderator in this relationship, meaning that this variable did not positively strengthen the connection between AR and customers' perception of credibility.

#### 4.2 Customer loyalty

Regarding customer loyalty, the main effect of the independent variable AR was found to be significant ( $F(1, 82) = 31.92, p < .001$ ), thus allowing to accept hypothesis 1b, which suggests that the implementation of the technology increases the willingness to show loyalty towards the company ( $M = 18.05, SD = 2.42$ ).

Nevertheless, the observation of a significant influence was not made for the motives factor ( $F(1, 82) = .48, p = .49$ ); when communicating a mission statement to participants, they did not show more loyalty towards the company ( $M = 15.32, SD = 2.77$ ).

The examination of the combined effect of the two independent variables yielded insignificant results as well ( $F(1, 82) = .19, p = .66$ ). This means that the combination of the independent variables did not result in increased loyalty. Further, this shows that the motives factor did not moderate this relationship.

### 4.3 Customer identification

For the dependent variable of customer identification, a similar observation concerning the primary effects, as mentioned above, was noted. The influence of augmented reality was found to be statistically significant ( $F(1, 82) = 6.81, p = .01$ ), enabling to accept hypothesis 1c; participants tended to identify more with the company when they interacted with augmented reality ( $M = 17.55, SD = 3.43$ ).

Contrary to the expectations, the effect of the motives variable remained insignificant ( $F(1, 82) = 2.38, p = .13$ ), suggesting that people did not show increased identification when they were exposed to motives regarding the company's CSR efforts ( $M = 16.82, SD = 3.26$ ).

The interaction effect of the two independent variables was not significant as well, indicating that the combination of both factors did not influence participants' identification with the company ( $F(1, 82) = .008, p = .93$ ). Additionally, this means that the presence of a mission statement did not moderate the proposed relationship.

### 4.4 Customer satisfaction

The main effect of augmented reality on customer satisfaction was significant ( $F(1, 82) = 18.86, p < .001$ ), therefore suggesting that participants within an AR condition showed higher satisfaction with the company ( $M = 20.75, SD = 2.65$ ).

Similar to the dependent variables discussed above, the influence of motives was insignificant in this relationship ( $F(1, 82) = 2.59, p = .11$ ). This means that this factor did not make participants feel more satisfied with the company ( $M = 19.36, SD = 2.68$ ).

The same observation regarding the insignificance was made for the interaction effect between the two independent variables ( $F(1, 82) = .42, p = .52$ ). This required to reject the moderation hypothesis concerning the motives; the positive effects of AR-enabled CSR communication on satisfaction were not strengthened by the presence of the motives factor.

#### 4.5 CSR Perception

The main effect of augmented reality on participants' CSR perception was significant ( $F(1, 82) = 8.15, p = .005$ ), indicating that the company's corporate social responsibility initiatives were viewed more positive when the technology was part of the communication ( $M = 21.2, SD = 1.85$ ).

Against the expectations, including a clear motive in the communication strategy did not significantly influence CSR perception ( $F(1, 82) = .50, p = .48$ ). This shows that the participants who were exposed to motives did not perceive the CSR initiatives of the company as more positive ( $M = 18.95, SD = 4.26$ ).

The interaction between the two independent variables was also not statistically significant ( $F(1, 82) = .22, p = .64$ ), indicating that the combination of both variables in communicating about corporate social responsibility did not enhance peoples' perception of the CSR initiatives. Additionally, this finding led to the rejection of the concerning moderation hypothesis, which proposed that motives, as a moderator, strengthen the relationship between AR and CSR perception.

#### 4.6 Customer engagement

Lastly, an ANOVA analysis was conducted as well for the hypothesized mediator. Concerning the main effect of augmented reality on customer engagement, it appeared to be significant ( $F(1, 82) = 23.94, p < .001$ ), allowing to conclude that participants felt more engaged when being part of an augmented reality condition ( $M = 20.6, SD = 2.16$ ).

Considering the effect of the motives factor on customer engagement, it showed to be insignificant ( $F(1, 82) = .06, p = .81$ ); participants did not feel increased engagement when being exposed to a clear mission statement ( $M = 17.36, SD = 4.04$ ).

Lastly, the combined effect of augmented reality and motives on customer engagement was not significant as well ( $F(1, 82) = 1.07, p = .30$ ). This means that the motives factor as a moderator did not strengthen this relationship.

#### 4.7 Mediation analysis

A mediation analysis was conducted to explore hypothesis 2. It was expected that customer engagement functions as a mediator between the relationship of AR and the dependent variables. In other words, the hypothesis indicated that the effect of AR on the dependent variables is explained by customer engagement.

When it comes to the variable of credibility, the mediation analysis revealed that the influence was mediated by customer engagement. Notably, a significant effect of augmented reality on customer engagement was observed ( $b = 3.41, t(84) = 4.92, p < .001$ ), along with a significant influence of engagement on credibility perception ( $b = .45, t(84) = 6.11, p < .001$ ). When controlling for customer engagement in this relationship, the direct effect of AR on credibility lost its significance ( $b = .79, t(83) = 1.49, p = .14$ ), thus suggesting that the identified influence of AR in CSR communication on credibility was mediated by customer engagement ( $b = 1.53, SE = .42, 95\% CI [.79, 2.42]$ ).

Looking at the relationship between augmented reality and customer loyalty, the analysis demonstrated that AR had a significant effect on the mediator ( $b = 3.41, t(84) = 4.92, p < .001$ ) and the same observation was made for the effect of the latter on customer loyalty ( $b = .36, t(83) = 4.71, p < .001$ ). Nonetheless, the natural direct effect of augmented reality on loyalty remained significant ( $b = 1.89, t(83) = 3.40, p = .001$ ). This indicates that customer engagement did not mediate the relationship between AR and customer loyalty.

Considering the dependent variable of customer identification, the mediation analysis showed a significant direct influence of augmented reality on the mediator ( $b = 3.41, t(84) = 4.92, p < .001$ ), however, the effect of customer engagement on customer identification appeared to be insignificant ( $b = .27, t(83) = 2.56, p = .18$ ). Nonetheless, the analysis still showed a significant effect of AR on customer identification through the mediator customer engagement ( $b = .92, SE = .43, 95\% CI [.17, 1.86]$ ). Still, this required to conclude that there was no mediation present.

During the examination of mediation within the correlation between AR and customer satisfaction, the impact of augmented reality on the mediator was significant ( $b = 3.41, t(84) = 4.92, p < .001$ ), as well as the influence of customer engagement on customer satisfaction ( $b = .31, t(83) = 4.21, p$

< .001). When controlling for customer engagement, the direct effect of AR on satisfaction was not significant anymore ( $b = .22, t(83) = .36, p = .72$ ) This allowed to accept the expected mediation effect on customer satisfaction ( $b = 1.05, SE = .34, 95\% CI [.49, 1.82]$ ).

Lastly, customer engagement was hypothesized to take on a mediating role in the suggested relationship between AR and CSR perception. Conducting the mediation analysis showed that a significant effect of augmented reality on customer engagement exists ( $b = 3.41, t(84) = 4.92, p < .001$ ). In addition to that, the mediator significantly predicted CSR perception ( $b = .46, t(83) = 5.39, p < .001$ ). Inspecting the direct effect of augmented reality on CSR perception when controlling for customer engagement, it was not significant anymore ( $b = .56, t(83) = .72, p = .48$ ), suggesting that the correct condition for customer engagement to mediate the relationship between augmented reality and CSR perception was met ( $b = 1.57, SE = .51, 95\% CI [.69, 2.66]$ ).

**Table 3**

*Mediation analysis.*

Dependent variables	Effect of IV on mediator	Effect of mediator on DV	Indirect effect	95% CI
Credibility perception	3.41 (.001)	.45 (.001)	.79 (.14)	[.79, 2.42]
Customer loyalty	3.41 (.001)	.36 (.001)	1.89 (.001)	[.62, 1.97]
Customer identification	3.41 (.001)	.27 (.18)	1.75 (.01)	[.17, 1.86]
Customer satisfaction	3.41 (.001)	.31 (.001)	.22 (.72)	[.49, 1.82]
CSR perception	3.41 (.001)	.46 (.001)	.56 (.48)	[.69, 2.66]

*Note.* The first figure represents b and the second figure represent p.

## 5. Discussion

The overall objective of this study was to examine the influence of using AR in communicating about corporate social responsibility on customer perception, in terms of credibility, loyalty, identification, satisfaction, and CSR perception. In addition to that, it was hypothesized that the implementation of a motive strengthens this relationship as a moderator, while customer engagement takes on a mediating role.

The study demonstrated that the implementation of AR in communicating about corporate social responsibility generally has a positive impact on customer perception. Overall, it became evident that the interactive nature of the technology, along with its novelty, contributes to more favorable evaluations from customers. As stated by Kim and Choo (2021) and Sullivan et al. (2018), the technology enhances individuals' understanding of information that is provided by a company. This improved understanding supports the finding that AR positively affects credibility perception. Considering this positive effect on credibility, it only makes sense that this study also found that augmented reality boosts customer loyalty. In line with Abd-El-Salam (2020) and Bosque (2013), results of this research showed that loyalty builds up as a result of a high degree of credibility. This suggests that the participants showed increased loyalty within the AR conditions since they perceived the presented information as more credible. An explanation for this is, that people potentially assign a lot of usefulness to AR experiences. Accordingly, Lele and Shaw (2021) state that this is an important factor that makes customers more committed to a brand.

However, there were some differences in the strength of the effects. For instance, the mean scores identified within the customer loyalty dimension were lower compared to other dependent variables. The same observation was made for customer identification. One plausible explanation for this could be that customer loyalty and identification evolve gradually over time and are not immediately established following to the first interaction with a company (Dick & Basu, 1994). For instance, Butt et al. (2024) state that AR fosters loyalty as a result of interactive and engaging experiences. While this finding may be true, it is essential to take into account that a singular use of augmented reality might not be

enough for such an influence to occur; in fact, a more regular engagement with AR may be necessary to elicit stronger influences on both loyalty and identification.

However, when it comes to the dimension of customer satisfaction, the study revealed that it is easier for augmented reality to have a positive influence on it. In line with Poushneh and Vasquez-Parraga (2017), it became evident that employing this technology enhances the overall user experience, resulting in increased satisfaction. An important factor in this regard may be that the enhanced interactivity of the technology lets people perceive information as less tedious. As explained by Huang et al. (2019), this interactivity is what makes augmented reality a potent medium for disseminating information. Taking this into consideration, it makes sense that AR enhanced peoples' CSR perception as well. Since the technology appears to be an effective way of disseminating information, customers can better understand it. That is, besides mere reading, AR allows to incorporate animations and visual representations. For instance, each AR-object used for this study related to a certain topic, assisting people in better understanding and perceiving the information. It is likely that these visualizations helped in developing clear correlations. Hence, and consistent with Kowalczyk (2020), this study revealed that AR as a communication medium surpasses traditional approaches such as plain websites or brochures. Further, the positive influences might be explained by the fact that the technology is rather new to certain individuals or they may have limited knowledge of its diverse capabilities. Interacting with something new that also leaves a positive impression, has great potential to increase peoples' satisfaction. However, it is crucial in this context that the wow-effect is not the only influence on customers' perception. In fact, it is necessary to achieve that the positive influences of the technology lead to long-term effects and are rooted in the belief that it adds value. Accordingly, Oyman et al. (2022) emphasize the influences of a positive AR perception on user experience.

Additionally, this study revealed that some of the identified influences on customer perception can be explained by customer engagement. Research made clear that good CSR communication can positively influence customers' perception on its own (Agyei et al., 2021). However, this study allows to conclude that the implementation of AR enhanced this influence. One explanation for this may be that engagement through AR often involves emotional responses. This might be due to the fact that the technology is rather new to some people, but also that it allows to share information in novel ways. This

emotional connection due to increased engagement potentially improves peoples' perception by associating the brand with positive experiences. In line with the findings of Sitompul and Wallmyr (2018), the heightened level of engagement experienced by participants led to a more positive perception of CSR information. The authors attribute this to the fact that the technology enhances the visualization of information, thereby fostering a deeper understanding and more favorable perception of corporate social responsibility.

Nonetheless, it still needs to be considered that customer engagement did not mediate all dependent variables. One explanation could be that AR experiences might be engaging in the short term but not necessarily lead to long-term influences. That is, engagement through AR may result in temporary positive effects that do not result in deeper connections to a company. Earlier it was explained that influences on loyalty and identification possibly need more time; the influence of customer engagement may not be enough for this.

Lastly, it is crucial to look at the hypothesized moderator of this study. Specifically, it was hypothesized that the implementation of a clear mission statement would strengthen the relationship between augmented reality in CSR communication and customer perception. Nevertheless, this study failed to identify any support for this hypothesis. When solely examining the CSR communication perspective, this finding does not align with what Ellen et al. (2006) state. Their research revealed that clear mission statements regarding CSR initiatives, particularly when combined with intrinsic and extrinsic motives, lead to more favorable customer reactions. In terms of the AR conditions, a possible explanation for this finding could be linked to the engaging nature of the technology, which might overshadow the impact of an explicit mission statement, making the motives less significant. Additionally, this study showed that the technology made participants perceive the company as more credible, suggesting that the communicated motives were seen as redundant, also explaining why the scores in the motives conditions were sometimes lower. This might also be the case since the company is already quite focussed on sustainability, meaning that additionally communicating motives regarding this may not be needed. In fact, it could be that clear CSR motives are more relevant for companies that do not center their operations around sustainability. For the non-AR conditions, a possible reason for the not existing influence lies within the presentation mode employed in the study. Since the motives were



read out loud to participants, they might have been seen as too explicit or forceful. Due to this, the mission statement possibly was perceived as self-serving rather than a consistent part of the CSR communication. For instance, this would also be supported by the persuasion knowledge model, that describes how consumers deal with and process persuasion attempts (Friestad & Wright, 1994). Considering this, the motives were possibly seen as a research strategy rather than something that would be part of CSR communication.

## **5.1 Limitations**

One notable limitation to discuss is the finding that the motives factor had insignificant influences on all dependent variables, contradicting research that has been discussed previously. Most likely, this is due to the fact that the mission statement was read out loud to participants by the researcher, potentially creating a disconnect from the CSR communication strategy itself. Taking this into account, it would have been better to explore the effects of motivational factors when directly implemented into the brochures. By making use of this approach, participants could be more likely to interpret this as a part of the CSR communication, rather than merely a research strategy. This would allow to assume that under those circumstances, the exploration of the influence of the mission statement would lead to different results.

Another limitation is the broad range of locations where the experiment was conducted, such as the library, a cafeteria, or participants' homes. Consequently, the varying locations may have influenced the results. For instance, concentrating in a cafeteria might be more challenging compared to a quiet place like a library. Hence, future research should be conducted in a consistent, neutral environment such as a laboratory, to ensure equal participation conditions. Similarly, future investigations need to ensure consistent user experiences. Depending on individuals' phones or internet connections, the AR experience was affected, leading to delays in loading objects or instances of stuttering. Additionally, sometimes the augmented reality objects did not load at all, requiring participants to restart the experiment. To address this, it would make sense to only conduct the experiment on one phone provided by the researcher.

Lastly, this study did not account for participants' familiarity with the technology. In fact, some people never heard of augmented reality before, whereas others were quite familiar with it. A notable challenge is that newcomers tended to be overly impressed by the technology. Specifically, not accounting for this familiarity may have led to bias in the results due to the occurrence of a one-time wow effect. Therefore, it would be interesting for future research to distinguish between people who are new to the technology and those who are not, to identify potential differences regarding the influences on customer perception.

## **5.2 Implications**

From a theoretical perspective, this research contributes to the academic field by providing new insights into the application of augmented reality in corporate communications. Specifically, the findings provide insight into the impact of this technology in CSR communication. This master thesis adds empirical support for theories suggesting the positive influences of the immersive and engaging nature of AR. Further, this study enhances the understanding of the mediating processes involved in augmented reality, especially with a focus on the role of customer engagement. The findings indicate that customer engagement plays a crucial role in mediating the effects of AR on customer perception. In the context of AR-research, this underlines the importance of not necessarily identifying augmented reality as the overall influence but recognizing the role of its underlying variables. Considering the hypothesized moderating effect of motives, as proposed by established theories emphasizing the importance of clear CSR motives in enhancing customer reactions, are brought into question. This potentially clarifies the strong impact of augmented reality in CSR communication, suggesting that the missing moderating effect might be explained by the dominating role of AR. Essentially, when integrating augmented reality into CSR communication strategies, the explicit mentioning of motives might be less critical, potentially because the engaging features of the technology sufficiently capture customer attention and elicit more positive reactions. Nonetheless, this research additionally showed that this might depend on the type of company and the degree to which it already focuses on sustainability.

Considering practical implications, this research allows to conclude that companies should incorporate augmented reality in their communication strategies concerning corporate social responsibility initiatives. The significant effects indicate the beneficial utilization of this technology in improving overall customer perceptions, a task that is oftentimes a challenging endeavor. Nevertheless, the findings additionally show that marketers need to consider the significance of customer engagement. Specifically, the integration of AR elements in CSR communication should not solely be developed to inform customers but to facilitate interactions with the technology. This research made it apparent that the possibility to interact with AR objects lets people feel more engaged, resulting in enhanced evaluations of the company. For instance, the CSR brochure created for the purposes of this study was used by the company during an exhibition in Frankfurt. Although no scientific measurements were made at the event, the representers of the company told the researcher that visitors showed quite some interest in the brochures and liked the novelty of the approach. This observation aligns with the study's discoveries, highlighting that the innovative and engaging features are an efficient way to further capture peoples attention. Consequently, the implementation of the technology should be considered as a long-term investment aimed at developing stronger relationships with customers, particularly since outcomes such as loyalty and identification may require more time to develop.

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## Appendix

### Appendix 1: Questionnaire

#### Master Thesis - AR + motivation

##### Start of Block: Default Question Block

Dear Participant,

Thank you for taking part in the experiment for my master's thesis. This study explores the impact of different communication methods on customer perceptions. You will first be presented with a brochure detailing an organization's efforts in repairing worn clothes to make them reusable again. Following this, I kindly ask you to complete a brief questionnaire about your perceptions of the company. The whole experiment will take approximately 10 minutes, and all of your responses will remain anonymous. Your participation is entirely voluntary, and you may withdraw at any time. To proceed, please click the arrow below.

Thank you for your participation!

##### End of Block: Default Question Block

##### Start of Block: Informed consent

This is an informed consent form. Please read the statements below and indicate whether you are fine with the conditions of this experiment.

I have read and understood the study information, or it has been read to me. I have been able to ask questions about the study and my questions have been answered to my satisfaction.

- Yes
- No

I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and I can withdraw from the study at any time, without having to give a reason.

- Yes
- No

I understand that taking part in the study involves a short experiment and a questionnaire.

- Yes
- No

I understand that information I provide will be used for a master thesis.

- Yes
- No

I understand that personal information collected about me that can identify me will not be shared beyond the study team.

- Yes
- No

I give permission for the information that I provide to be archived on the researcher's laptop so it can be used for future research and learning.

- Yes
- No

**End of Block: Informed consent**

**Start of Block: Demographics**

How old are you?

- Under 18
- 18-24 years old
- 25-34 years old
- 35-44 years old
- 45-54 years old
- 55-64 years old
- 65+ years old

How do you describe yourself?

- Male
- Female
- Non-binary / third gender
- Prefer to self-describe \_\_\_\_\_
- Prefer not to say

What is the highest level of education you have completed?

- High school
- Bachelor's degree
- Master's degree
- PhD or other advanced degree

What is your nationality?

- Dutch
- German
- Other \_\_\_\_\_

**End of Block: Demographics**

**Start of Block: Block 10**

For now, please set aside your phone, but do not close this survey, as you will need to answer some questions after reviewing the brochure. The researcher will hand the brochure to you now. If you have any questions, feel free to ask.

**End of Block: Block 10**

**Start of Block: Block 11**

Now that you have interacted with the brochure, I would like to learn more about your perception of this brand and your experience with it. Please respond to the statements on the following pages. This will take approximately 5 minutes.

**End of Block: Block 11**

**Start of Block: Customer engagement**

On the following statements, please indicate the extent to which you agree. This ranges from "strongly disagree" to "strongly agree".

While interacting with the brand, I paid a lot of attention to the provided information.

▼ Strongly disagree ... Strongly agree

Interacting with this brand stimulated my interest to learn more about it.

▼ Strongly disagree ... Strongly agree

Interacting with the brand made me feel like I learnt a lot.

▼ Strongly disagree ... Strongly agree

Interacting with the brand made me feel like time flies.

▼ Strongly disagree ... Strongly agree

Interacting with the brand captured my attention.

▼ Strongly disagree ... Strongly agree

**End of Block: Customer engagement**

**Start of Block: CSR**

On the following statements, please indicate the extent to which you agree. This ranges from "strongly disagree" to "strongly agree".

The company implements special programs to minimize its negative impact on the natural environment.

▼ Strongly disagree ... Strongly agree

The company participates in activities which aim to protect and improve the quality of the natural environment.

▼ Strongly disagree ... Strongly agree

The company's environmental claims are consistent with their actual practices.

▼ Strongly disagree ... Strongly agree

The company provides clear and honest information about its environmental practices.

▼ Strongly disagree ... Strongly agree

I believe the company is truly committed to protecting the environment.

▼ Strongly disagree ... Strongly agree

**End of Block: CSR**

**Start of Block: Trust**

On the following statements, please indicate the extent to which you agree. This ranges from "strongly disagree" to "strongly agree".

I am confident in the brand's ability to perform well.

▼ Strongly disagree ... Strongly agree

I expect the brand to deliver on its promise.

▼ Strongly disagree ... Strongly agree

I trust this brand.

▼ Strongly disagree ... Strongly agree

I have confidence in the services of this brand.

▼ Strongly disagree ... Strongly agree

I am confident that the provided information is true.

▼ Strongly disagree ... Strongly agree

**End of Block: Trust**

**Start of Block: Loyalty**

On the following statements, please indicate the extent to which you agree. This ranges from "strongly disagree" to "strongly agree".

I am more interested in this brand than in other brands.

▼ Strongly disagree ... Strongly agree

I would recommend this brand to those who ask my advice.

▼ Strongly disagree ... Strongly agree

I would say positive things about this brand to others.

▼ Strongly disagree ... Strongly agree

I am likely to forgive this company if it makes a mistake.

▼ Strongly disagree ... Strongly agree

I would prefer purchasing products from other companies than from this one.

▼ Strongly disagree ... Strongly agree

**End of Block: Loyalty**

**Start of Block: Identification**

On the following statements, please indicate the extent to which you agree. This ranges from "strongly disagree" to "strongly agree".

The brand embodies what I believe in.

▼ Strongly disagree ... Strongly agree

I feel a sense of belonging to the brand.

▼ Strongly disagree ... Strongly agree

I identify with the brand.

▼ Strongly disagree ... Strongly agree

I align with the values and beliefs of the company.

▼ Strongly disagree ... Strongly agree

I see this company as reflective of my identity.

▼ Strongly disagree ... Strongly agree

**End of Block: Identification**

**Start of Block: Satisfaction**

On the following statements, please indicate the extent to which you agree. This ranges from "strongly disagree" to "strongly agree".

The company makes a good impression.

▼ Strongly disagree ... Strongly agree

I am satisfied with how the brand communicates.

▼ Strongly disagree ... Strongly agree

So far, I had a positive experience with the brand.

▼ Strongly disagree ... Strongly agree

I would rate my overall satisfaction with this company as high.

▼ Strongly disagree ... Strongly agree



The services by the company meet my expectations.

▼ Strongly disagree ... Strongly agree

**End of Block: Satisfaction**

**Start of Block: Block 12**

The final statement aims to understand the extent to which you personally care about the environment.

I believe that protecting the environment is extremely important.

▼ Strongly disagree ... Strongly agree

**End of Block: Block 12**

**Start of Block: Debriefing**


Thank you for your time and participation in this survey. This study aims to determine whether using augmented reality to communicate about sustainability positively influences customer perceptions.

If you have questions regarding the survey, please feel free to contact [t.hartwig@student.utwente.nl](mailto:t.hartwig@student.utwente.nl). You can use this comment box for further remarks.

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**End of Block: Debriefing**

Appendix 2: Link-tree




WKS


- Reverse Logistics
- Clothing Repair
- Recycling and Upcycling
- Sustainability

## Appendix 3: CSR-Brochure


### CLOSING THE LOOP, REVOLUTIONIZING FASHION CIRCULAR TEXTILE ECONOMY BY WKS




Reverse Logistics




Upcycling




Repair



Second Hand






Sustainable  
Textile  
Solutions

### JOIN THE REVOLUTION & EMBRACE THE CIRCULAR TEXTILE ECONOMY


The idea of the circular economy is simple yet profound: it revolves around the idea of eliminating waste and continuously reusing resources in a closed-loop system. At WKS, we recognized the crucial break from the linear "take-make-dispose" model that has fueled unsustainable consumption patterns for too long.

Our expertise in reverse logistics, second hand, upcycling, and repair makes us your partner in combating clothing waste. We offer solutions that not only bring along economic benefits but significant advantages for the environment. Join us on our circular economy journey, where every thread tells its unique story of renewal, resilience, and longevity.



**RETURN**

Our service of reverse logistics is your first step into the circular economy. This approach drives sustainability by minimizing waste through reprocessing products and bringing them back into the circle.




**UPCYCLING**

Our creative solutions, carried out by our specialists, help to create new garments from existing resources. Upcycling supports extending the lifecycle of a product by finding a new purpose.



**REPAIR**

As an experienced expert in the textile industry, WKS offers tailored solutions. Our repairing efforts make second hand clothing indistinguishable from new products.




**2nd Hand**

At WKS, we are committed to giving worn clothing a "second life" and bringing it back to the market. By doing so, we are ensuring to increase the lifespan of clothing by 80% and cut their CO2 emissions in half by 2030.



### ABOUT WKS - SUSTAINABLE HERITAGE

With a corporate history of more than 60 years, WKS has gained valuable experiences in the textile sector, continually expanding its daily operations. Sustainability is what we do best and it ranges across all our solutions.



**40+**

Processing over 40 million metres of fabric per year.

**7**

Operating in 7 countries with 7 locations.

**15M**

Processing of over 15 million finished garments per year.

**+300**

More than 300 dedicated employees globally.

### JOIN US ON OUR MISSION TO COMBAT CLOTHING WASTE



Sustainable  
Textile  
Solutions



[www.wks-textil.de](http://www.wks-textil.de)



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