UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

Combating the credibility crisis

Investigating the role of brand co-creation within green marketing

Graduate School
Master of Science in
Marketing and Consumption
Master's thesis

Authors
Niklas Löfgren
Axel Wieslander

Supervisors
Tommy D. Andersson
Ingrid Stigzelius

Acknowledgements

We would like to express our gratitude to our supervisors Tommy D. Andersson and Ingrid Stigzelius. To Ingrid for her excellent guidance through the initial idea generation and theoretical conceptualisation, and to Tommy for his extensive and untiring support in our process of constructing the model and performing the data analysis. We are also grateful towards those who participated in the survey and contributed with their thoughts.

As this thesis marks the end of the master's programme and a total of five years at the School of Business, Economics and Law at the University of Gothenburg, we would like to thank our friends and family for their invaluable support throughout the years.

Gothenburg
June 1st, 2022

Abstract

Firms are facing increasing pressure to become more sustainable, coupled with growing insight and scrutiny. However, attempts to meet these demands and attract sustainability-concerned consumers through green marketing and branding has resulted in widespread greenwashing. As a result, claims around sustainability have become less credible and made consumers more sceptical. Consequently, firms and consumers have found themselves in what could be referred to as a credibility crisis. In parallel, firms are subject to increasing consumer participation captured in the new marketing paradigm of co-creation in which they need to balance control with maintaining a relevant brand. Taken together, they constitute two pressing challenges that firms need to manage. This study focuses on investigating the relationships of brand co-creation, brand credibility and greenwashing, and their role in building green brand equity. To investigate this, a quantitative study was conducted using survey data collected from young adults at a Swedish university. The results show that while the activities of dialogue and access in brand co-creation were less effective, the transparency it entails contributed to increased brand credibility and green brand equity. The results confirm the destructive nature of greenwashing, and the importance of minimising such conducts in order to overcome the credibility crisis apparent within green marketing. The theoretical implications demonstrate the benefits of a more detailed approach when investigating co-creation, and brand credibility's natural role in improving green brand equity. Managerial implications include dismantling all greenwashing practices, while increasing transparency in order to both improve brand credibility and green brand equity. While having other clear benefits, brand co-creation per se is deemed less effective if the sole purpose is to improve green brand equity.

Keywords: Green Marketing, Brand Co-creation, Green Brand Equity, Brand Credibility, Greenwashing, Transparency

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1. Introduction

As we have entered a new decade, firms find themselves increasingly pressured to act sustainable. However, attempts in doing so have often fallen short and in many cases resulted in greenwashing (European Commission, 2021), that is portraying a false appearance of sustainability by exaggerating one's environmental efforts (Martin & Schouten, 2013). Greenwashing includes overstated environmental utility of products, selective disclosure strategies, as well as ambiguous and unprovable claims (Martin & Schouten, 2013; Iglesias et al., 2018). In 2009, a report concluded that 98% of products in North America, Australia and the United Kingdom fulfilled at least one of the seven sins of greenwashing" (Terrachoice, 2009). Although being over a decade old, the report remains relevant, as greenwashing is still frequently appearing (European Commission, 2021) and firms, at large, make weak efforts to advance their sustainability practices. This is coupled with increased awareness, insight, and scrutiny of firms (Nguyen et al., 2019; Wang et al., 2020; Perks & Smith, 2010, Farooq & Wicaksono, 2021). As a result, this has created what will be referred to as a "credibility crisis", characterised by widespread consumer scepticism against companies' claims of sustainability (Chen & Chang, 2013; Akturan, 2018). It is a result of attempts to undermine efforts of true sustainable business and risks distorting the movement created by the sustainable consumers (Chen & Chang, 2013). There is a need for combating this development and for firms to regain their credibility, to advance sustainability efforts. Marketing has been a driving factor in creating this situation (Chen & Chang, 2013; Chen et al., 2013; Martin & Schouten, 2013). However, advancements within the marketing discipline and the scholar world related to sustainability also showcase its potential role of reversing it.

One such advancement is the concept of green brand equity which has gained increased attention within marketing literature (Chen, 2010; Chang & Chen, 2013; Ng et al., 2014; Bekk et al., 2015; Chen et al., 2017; Akturan, 2018; Górska-Warsewicz et al., 2021). Originating from the cognitive psychology marketing perspective led by Aaker (1991; 1996) and Keller (1993), green brand equity is a modification of conventional brand equity that aims at capturing consumers' perception of a brand's environmental initiatives and concerns (Chen, 2010). Green brand equity hence represents the perceived environmental value of a brand from the consumer perspective. Developing a high level of green brand equity has been proposed to increase firms' competitiveness (Bekk et al., 2016), while simultaneously having the potential to generate more sustainable consumption (Akturan, 2018). However, in the context of increasing scepticism as a result of greenwashing, generating green brand equity is challenging for firms.

In essence, the issue is that firms are often lacking credibility in their claims regarding environmental initiatives (e.g., Chen & Chang, 2013). If brands are not perceived as credible, little attention will be given to their environmental claims (Chen & Chang, 2013). Brand credibility, in general, constitutes a vital part of branding, within cognitive psychology marketing as an important building block of brand equity (Keller, 1993) and within signalling theory as the most critical element of brand signals (Erdem & Swait, 1998). In the context of

marketing, brand credibility relates to the perceived ability of a firm to deliver what they promise (Erdem & Swait, 2004).

In parallel with the above-mentioned development and increasing pressures to implement sustainable strategies (Wang et al., 2020; Perks & Smith, 2010), a new marketing perspective has emerged characterised by the ideas of service-dominant logic, promoting consumer participation as central for value creation (Vargo & Lusch, 2008). A central tenet of this new challenge is constituted by co-creation, which views customers as active contributors rather than passive recipients of value (Prahalad & Ramaswamy, 2004). Though co-creation has captivated the interest of many scholars in recent years, few have investigated its role in sustainable marketing. Voices have however been lifted in the potential to connect the two research streams, as they both incorporate transparency, inclusiveness, and receptiveness to one's surroundings (e.g., Iglesias et al., 2018; Palakshappa & Dodds, 2021).

Drawing on this, an interesting opening within sustainable marketing emerges, which could help counteract the credibility crisis. Co-creation, brand credibility and green brand equity arguably intersect in their mutual need for transparency and communicative elements between firms and consumers. Such elements may also influence the consumer perspective of perceived greenwashing that a brand conducts. Combining the new branding logic of co-creation (Hatch & Schultz, 2010) with the green marketing literature is seen as a fruitful area of inquiry that might reveal unexpected synergies. In specific, given that co-creation enables a higher degree of consumer participation and insight (Prahalad & Ramaswamy, 2004; Hatch & Schultz, 2010), a question arises whether this may contribute to firms in increasing credibility, reducing perceived greenwashing, and being perceived as more sustainable.

Earlier studies have investigated green brand equity in relation to several different concepts. Specifically, Górska-Warsewics et al. (2021) found that image, trust, value, satisfaction and loyalty are among the most frequently investigated ones. Additionally, the negative effect of greenwashing has also been established (Chen & Chang, 2013; Farooq & Wicaksono, 2021; Nguyen et al., 2019; Chen et al., 2017). However, the research on greenwashing's effect on green brand equity is scarce and requires further investigation, while inquiries of brand credibility's effect on green brand equity has generated conflicting results (e.g., Adnan et al., 2019; Akturan, 2018; Górska-Warsewicz et al, 2021; Ng et al., 2014). Moreover, literature connecting co-creation and green marketing is limited (e.g., Iglesias et al., 2018; Palakshappa & Dodds., 2021; Aquilanie et al., 2016). Lastly, to the best of the authors' knowledge, the joint relationships between co-creation, brand credibility, greenwashing and green brand equity has not yet been empirically investigated.

1.2 Research question and aim

As a result of the above discussion, this paper aims to investigate the relationships between brand co-creation, greenwashing and brand credibility, and followingly their effect on green brand equity, serving as an indicator of the level of green marketing success from the consumer perspective. Taken together, these concepts represent multiple, contemporary and pressing

challenges facing firms simultaneously within green marketing. To concretize the above discussion, our research question is stated as follows:

What are the relationships between co-creation, greenwashing and brand credibility and their relative importance in building green brand equity?

To answer the research question, a conceptual model based on, and inspired by, previous literature was built, and a survey was sent out to 5 519 students at a selection of programmes at the University of Gothenburg. The survey was aimed at investigating consumer brand perception in general, related to the discussed areas, meaning that respondents were free to choose a brand that they were knowledgeable about. Following this, a structural equation model analysis was carried out.

This thesis makes several contributions. Firstly, brand co-creation seems to have a role within green marketing based on the transparent communication it entails, rather than the shift in power of creating brand meaning it brings. Secondly, this paper demonstrates the integral role of transparency in building brand credibility and green brand equity. When investigating brand co-creation, more information is gained when adding transparency as a separate construct. Support is also given for the need of employing conventional branding concepts when advancing green marketing.

The following sections of this paper are outlined as follows. First, a literature review and concepts definitions are presented, and hypotheses developed. This is followed by a methodology section and a presentation of the study's result and data analysis. Finally, a discussion and conclusion coupled with implications and suggestions for future research are given.

1.3 Delimitations

The concepts will exclusively be examined from the consumer perspective. Hence, any views from the organisational part in judging brand credibility, greenwashing, green brand equity or co-creation will not be included. Moreover, the concept of co-creation is intrinsically broad and varied. In this paper, brand co-creation is referred to as the process of joint value and meaning creation between organisations and stakeholders related to the brand. Consequently, this study will aim at investigating the effect on a wider range of consumers, not only those actively participating in co-creation activities.

2. Literature review and theoretical framework

To investigate and further expand research within green marketing, its meaning and implications must be defined. Although several definitions of green marketing have been developed (Dangelico & Volacelli, 2017), this paper will go in line with the definition of Peattie (2001). Hence, green marketing is marketing activities aimed at actively decreasing the negative social and environmental impact of business activities, such as product development and production systems, while marketing more environmentally friendly products and services (Peattie, 2001).

2.1 Green brand equity

The concept of brand equity has gained considerable attention since the 1990's when it was introduced by Farquhar (1989) as "*the 'added value', with which a given brand endows a product"* (Farquhar, 1989, p. 24). The importance of brand equity is multifaceted in relation to different actors. For consumers it relates to brand attitude, for companies it represents incremental cash flows and competitive advantage and in general trade it represents brand leverage (Farquhar, 1989). This initial conceptualisation came to constitute the foundation that Aaker (1991; 1993) and Keller (1993) built upon. Together, these two authors became representatives for the cognitive psychology marketing research stream (Górska-Warsewicz, 2021).

Aaker (1991) essentially determines brand equity as the strength of a brand, which offers firms competitive advantage and uniqueness on the market. The concept is described as consisting of five elements: brand loyalty, perceived quality, brand awareness, brand associations and other proprietary brand assets (Aaker, 1991). Keller (1993) further formulated thoughts concerning customer-based brand equity and defined the concept as "[...] *the differential effect of brand knowledge on consumer response to the marketing of the brand*" (p. 2). Here, brand knowledge is seen as a key determinant of brand equity, which in turn is established by brand awareness and brand image (Keller, 1993). Further divisions of these two concepts are made, leading Keller (1993) to include brand recognition, brand recall and brand association as concepts establishing customer-based brand equity.

Building on the definitions of Aaker (1991) and Keller (1993), in an attempt to focus more on the green aspects consumers affiliate with a brand, Chen (2010, p. 310) developed and defined green brand equity (GBE) as: *"[...] a set of brand assets and liabilities about green commitments and environmental concerns linked to a brand, its name, and symbol that add to or subtract from value provided by a product or service".* In the same study, Chen (2010) both defined and found positive relationships between what is stated to be the three novel constructs of green brand image, green satisfaction, and green trust on green brand equity. Hence, Chen

(2010) concluded that if companies want to increase their green brand equity, financial resources should be put to developing green brand image, green satisfaction, and green trust[1].

The concept of green brand equity has later been used in several studies (e.g., Chang & Chen, 2013; Ng et al., 2014; Akturan, 2018; Bekk et al., 2015; Chen et al., 2017). In an extensive systematic literature review regarding green brand equity, Górska-Warsewicz et al. (2021) found that the definition formulated by Chen (2010) has spurred over 33 peer reviewed articles. This shows that it is an emergent research stream that has managed to gain traction in the scholar world, with the most frequently investigated constructs being image, trust, value, satisfaction and loyalty (Górska-Warsewicz et al., 2021). Additional relationships that have been investigated are greenwashing (Avcilar & Demirgüneş 2016, Akturan, 2018), conventional marketing constructs such as perceived brand quality and brand credibility (Esmaeili et al., 2017; Delafrooz & Gooli, 2015; Ng et al., 2014; Adnan et al., 2019), word-of-mouth, behavioural intentions and purchase intention (Bekk et al., 2015; Konuk, 2015; Ho et al., 2019), brand affect (Kang & Hur, 2012), as well as green brand awareness (Chang & Chen, 2013).

In particular, Ng et al. (2014) conclude that focusing solely on green product attributes and neglecting conventional constructs in green marketing impairs organisations' ability to attract environmentally conscious consumers. Akturan (2018) found that green brand equity has a positive impact on purchase intention, meaning that consumers tend to favour brands possessing a high level of green brand equity. Further, in determining antecedents to green brand equity, Kang & Hur (2012) highlighted the importance of relational aspects between brand and consumer in enhancing GBE. Further advancing conventional branding concepts effects on GBE is therefore warranted. As is clear from the discussion above, Chen (2010) has been a large contributor concerning the research stream of green brand equity and additional complementary green constructs. However, a clear limitation of much of the research made is that many of the studies are conducted over similar populations and contexts, using East-Asian countries and the electronics market as a basis for data collection (e.g., Chen, 2010; Chang & Chen, 2013, Ng et al., 2014). Although there are some studies replicating them in other contexts (e.g., Bekk et al., 2015) further investigation is warranted and needed.

Seeing that green brand equity not only incorporates the strength of a brand (Aaker, 1991) but also the level of perceived environmental strength (Chen, 2010) and that consumers are becoming more environmentally conscious, combined with stricter regulations (Polonsky et al., 2010; Chang & Chen, 2013, Wang et al., 2020), it is argued to be a highly relevant concept to be incorporated in business practices. Taking inspiration from the approach of Chen (2010), Ng et al. (2014), Esmaeili et al. (2017) and Adnan et al. (2019) who incorporates green marketing into the branding literature, it is further argued interesting to investigate the role of additional conventional branding constructs on green brand equity. In this paper, green brand

[1] Chen (2010) among several studies after it (e.g., Chan & Chen, 2013; Ng et al., 2014; Avcilar & Demirgüneş, 2021), adds the prefix "green" to conventional branding concepts and does so by highlighting the environmental concerns or environmental commitments from both the consumer and brand perspective, in relation to the branding concept in question. Some of these other green versions of conventional branding concepts will be referred to later on.

equity will be used in accordance with Chen (2010), Ng et al. (2014), Akturan (2014) and Bekk et al. (2015), as an indicator of consumers' perception of a brand's green commitments and environmental strength. Its connection to the various concepts mentioned will be discussed in detail below.

2.2 Co-creation

Co-creation has been defined and interpreted in several ways depending on the context (Nysveen & Pedersen, 2014; Liljedal, 2016) and the term is used for a wide variety of activities (Grönroos, 2012; Aquilani et al., 2016; Ranjan & Read, 2016). Fundamentally, co-creation concerns the idea of organisations cooperating with consumers and other stakeholders in a value creation process (Prahalad & Ramaswamy, 2004; Hatch & Schultz, 2010; Ind et al., 2013; Nysveen & Pedersen, 2014; Liljedal, 2016 Palakshappa & Dodds, 2021). Prahalad and Ramaswamy (2004) wrote one of the first prominent papers that discussed co-creation and described it as a shift in marketing literature from seeing customers as isolated, uninformed, and passive recipients of value, to interconnected, informed actors who actively partake in the value creation process. This resonates with the service-dominant logic described by Vargo and Lusch (2008), seeing consumers as involved in value creation and as operant resources, rather than the target and operand resources. Being a relatively new and wide concept, it is important to highlight that co-creation not only concerns product development processes but may take place in everyday consumption situations, therefore complicating any clear categorisation (Nysveen & Pedersen, 2014).

Although co-creation has been presented as a process that reaches its full potential when incorporated throughout a firm's operation (Prahalad and Ramaswamy, 2004), several studies have chosen to focus on specific business areas (Grönroos & Voima, 2013; Liljedal, 2016). Many scholars have concentrated on co-creation in the setting of product development and innovation (e.g., Füller et al., 2010; Markovic & Bagherzadeh, 2018; Iglesias et al., 2018, Liljedal, 2016). Fuchs and Schreier (2011) showcase the potential of consumer participation and empowerment through the internet in new product development (NPD). The studies of Grönroos (2011), Grönroos and Voima (2013), Merz et al. (2018) and Ramaswamy & Ozcan (2016) instead focus on value co-creation and the value-in-use perspective (Vargo & Lusch, 2008; Ranjan & Read, 2016), as in customers actively partaking in value creation when interacting with firm offerings and products. Additionally, Ranjan & Read (2016) states that co-creation relates to all exchanges between consumers and the firm and concerns not merely product development but also joint development of brand meaning.

A final research stream, the most prominent one in this paper, is that of brand co-creation (Hatch & Schultz, 2010; Iglesias et al., 2013; Tajvidi et al., 2020). Brand co-creation is concerned about challenging the view of brand managers as the sole constructors of brand meaning and value and instead include customers and other stakeholders in this process (Gregory, 2007; Hatch and Schultz, 2010; Iglesias et al., 2013). In doing so, brand co-creation lets the firm create and manage an active dialogue with consumers, enabling them to participate in brand conversations and consequently affect the future direction of the firm (Van Belleghem,

2010 as cited in van Dijk et al., 2014). As Iglesias et al. (2013) states, brand managers should recognize this loss of control of brand meaning and willingly share it if a relevant brand image is to be created. Co-creation does not imply that organisations cannot influence the brands which they own but advocates a shift in power toward consumers and additional stakeholders in defining brand meaning (Iglesias et al., 2013). This perspective of brands being co-created has been seen as a new branding logic by several scholars (Christodoulides, 2008; Hatch & Schultz, 2010; Merz et al., 2009; Schultz & Hatch, 2003).

When Prahalad and Ramaswamy (2004) first defined co-creation, they concluded that it is constituted by the interrelated building blocks of dialogue, access, risk assessment and transparency. Building on these four interrelated building blocks, Hatch and Schultz (2010) created an integrative theoretical framework of brand co-creation. The latter pair the building blocks into two concepts: Stakeholder Engagement (consisting of dialogue and access) and Organisational Self-Disclosure (consisting of transparency and risk assessment) (Hatch & Schultz, 2010). Hatch and Schultz (2010) argued that the dialogue between a firm and its stakeholders lays the foreground for developing brand engagement in co-creative processes of brand meaning and brand image. The access given as well as gained for each included actor further enriches the engagement. Hence, the two initial building blocks are represented by stakeholder engagement (Hatch and Schultz, 2010).

Establishing dialogue and access with stakeholders external to the firm calls for a more transparent relationship (Prahalad & Ramaswamy, 2004), being open about organisational culture, operations, and management practices (Hatch & Schultz, 2010). Although organisations have much to gain from increased co-creation (e.g., innovation, increased market insight), transparency of operations also carries risk, in terms of losing distinctiveness on the market and losing control of governance (Prahalad & Ramaswamy, 2004; Hatch & Schultz, 2010). Hatch and Schultz (2010) draw a parallel to the risk-reward of personal self-disclosure and thus merge the interrelated forces of organisational transparency and risk to coin the concept of organisational self-disclosure. In the context of co-creation, incorporating consumers in a more transparent and open brand building process by sharing knowledge will enable a more dynamic and participatory process, which is argued to ensure a more relevant brand (Iglesias et al., 2013).

Evidently, co-creation is an ambiguous and abstract concept with research demonstrating vast differences. As a result, research within this literature stream needs to be clear about its meaning. Though Hatch and Schultz (2010) argue that organisational self-disclosure is the combination of organisational transparency and the risk associated with letting oneself be known by the public, this study will aim at understanding the consumer perspective. Hence, the perceived risk from the company's view will be excluded. Consequently, this paper adopts a view of brand co-creation based on a combination of the value focus of Prahalad & Ramaswamy (2004) and Hatch & Schultz (2010) integrative framework, as follows:

Brand co-creation, constituted by dialogue, access and transparency is the process of joint value and meaning creation between organisations and stakeholders related to the brand.

In terms of the three building blocks, *dialogue* represents the interactive communication between firms and consumers constituting the creation process of brand value and brand meaning. *Access* relates to letting consumers receive the information and tools needed for participation in such action. Concerning transparency, Dapko (2012) defined it as: *"[...] the extent to which a stakeholder perceives a firm's conduct is open and forthright regarding matters relevant to the stakeholder."* (p.1). As this paper will focus on the consumer perspective, it is this groups perception of transparency which will be investigated.

Earlier research has demonstrated many benefits of co-creation. For example, consumer participation and empowerment were shown to lead to increased perceived customer orientation and improved corporate attitudes (Fuchs & Schreier, 2011). Van Dijk et al. (2014) concluded that co-creation enhances brand perceptions and strengthens the overall brand associations. In essence, van Dijk et al. (2014) argue for the natural role of co-creation within marketing and branding as a way of increasing brand perception through authentic collaboration, which is argued to be highly valued by consumers. Additionally, Kristal et al. (2016) measured the effect of co-creation on observer-based brand equity (OBBE) and concluded a weak but positive effect on OBBE.

As it is an emerging research field, the literature connecting co-creation and green marketing is rather scarce. Iglesias et al. (2018) argued for a connection between co-creation and corporate social responsibility (CSR), as both phenomena build on multi-level stakeholder co-operation. They found that CSR had a positive relationship on customer loyalty, both directly and indirectly with co-creation and customer trust as mediators (Iglesias et al., 2018). Palakshappa and Dodds (2021) further investigated how brand value co-creation can be used in shaping sustainable consumption. In specific, co-creation was seen as a powerful branding tool to promote sustainable consumption (Palakshappa & Dodds, 2021). Based on a literature review, Aquilanie et al. (2016) proposed an integrated framework from a strategic management perspective of critical success factors with value co-creation processes that firms should adopt to foster sustainability. Hence, Aqulaini et al. (2016) propose combining the sustainability and value co-creation literature.

Strikingly, much of the research carried out on the effects of co-creation relate to the perception of actual participants, which constitute a vanishingly small part of the market. Fuchs and Schreier (2011) noted this a decade ago, and has since then received support, including from Kristal et al. (2016), van Dijk et al. (2014) and Liljedal (2016) who all highlight the lack of research on the effect of co-creation activities on non-participants. Within this very limited research stream, co-creation has however been demonstrated to lead to several benefits, including reduced R&D costs, increased product relevance, improved brand equity and corporate attitudes, as well as increased performance (Fuchs & Schreier, 2011; van Dijk, 2014, Kristal et al., 2016). A key point here is hence that co-creation may have favourable effects on non-participating consumers as well (Fuchs and Schreier, 2011; Liljedal, 2016).

From the above discussion, evidence of a possible connection between co-creation, brand equity and sustainability efforts may be discerned. However, to the best of the authors knowledge, no prior research has been conducted to investigate the relationship between brand co-creation and green brand equity. Therefore, this is argued to be worth investigating further.

2.3 Brand credibility

Credibility represents the extent to which something is believable and is composed of two sub-factors: trustworthiness and expertise (Erdem & Swait, 2004). Consequently, brand credibility is defined as "*[...]the believability of the product information contained in a brand [...] to continuously deliver what has been promised"* (Erdem & Swait, 2004, p. 192), seen from the consumer perspective. Erdem and Swait (Erdem & Swait 1998; 2004; Erdem et al., 2002; Erdem et al., 2006; Sweeney & Swait, 2008) states that brand credibility is based on the idea of consumers perceiving the firm to possess the ability (expertise) and willingness (trustworthiness) to live up to its commitments. However, it has been demonstrated that trustworthiness, rather than expertise, has the largest effect on consumer choices (Erdem & Swait, 2004).

Brand credibility originates from information economics and signalling theory, which was originally introduced by Spence (1973) in the context of labour markets. It focuses on market information asymmetries, often between two parties: the signaller and the receiver (Connelly et al., 2011; Dunham, 2011). Signals are used to reduce asymmetries and for signallers to stand out (Erdem & Swait, 1998). The signaller may be a manager, a product or a firm having access to information not available to others, which would benefit the receiver if given access (Connelly et al., 2011). Signals refer most often to positive information concerning the characteristics of the sender or as a risk reducing element about the sender's future behaviour (Dunham, 2011; Connelly et al., 2011).

Effective signals are regarded as those who are observable and costly (e.g., a ISO9000 certification) (Connelly et al., 2011), with higher quality firms being better at absorbing such costs. However, if the benefits of signalling are seen as greater than the costs of being caught with dishonesty by a lower quality actor, false signalling may be attempted (Connelly et al., 2011). The effect, given that such signals become widespread, would be that receivers will eventually ignore them. Essentially, a key task for a signal is to overcome scepticism of receivers (Dunham, 2011). Overcoming scepticism depends on the signal design and its perceived honesty. Reliability of a signal emerges when signal production is too costly for a low-quality sender, when falsely produced signals do not lead to any gains or in a situation where it cannot be faked (Dunham, 2011).

Within a brand context, credible signals are information communicated effectively that, as a result, are perceived as dependent and truthful by consumers (Erdem & Swait, 1998). Ultimately, firms need to signal credibly to create consumer confidence in their products (Erdem & Swait, 1998). A brand signal, in this perspective, is therefore constituted by a firm's current and historical marketing mix activities as a total measure and as a cumulative effect

(Erdem & Swait, 1998; 2004). As such, Erdem and Swait (1998) argues that credible brand signals are the most important characteristic for product positioning and may lead to improved consumer perceptions of brand attributes as well as generating larger confidence in claims. Brand credibility is roughly determined by three factors (Erdem & Swait, 1998). Firstly, by brand investments as they function as a motivating factor for firms to be truthful in their claims and deliver on promises. Secondly, by consistency of marketing mix strategies as it is stated to demonstrate a firm's willingness and ability to deliver. Lastly, by clarity, as it is argued that firms fulfilling the above requirements would send clear signals. The value of credibility of brands is argued to derive from the idea that brand information in a market with information asymmetries will not be favourable without it (Erdem & Swait, 1998).

Prior research regarding brand credibility includes its effect on brand choice and consideration sets (Erdem & Swait, 2004), brand loyalty (Sweeney & Swait, 2008), purchase intention, brand commitment and price (Kemp & Bui, 2011), corporate brand equity and corporate reputation (Hur et al., 2014), green perceived value and green brand image (Ng et al., 2014) as well as brand credibility's relation to perceived quality, perceived risk and information costs saved (Baek et al, 2010). Spry et al. (2011), investigating the role of celebrity credibility on brand equity, concluded that brand credibility mediated the positive impact on brand equity. Moreover, brand credibility's role as a mediating factor within CSR and its effect on brand equity, brand reputation and purchase intention has also been investigated (Wang et al., 2021; Hur et al., 2014) as well as its relationship to greenwashing (Akturan, 2018).

In terms of research on the effect of brand credibility on green brand equity, the literature is limited and inconclusive. Ng et al. (2014) established that firms may leverage their green initiatives with traditional branding concepts and that brand credibility significantly influenced green perceived value and green brand image yet found no direct effect from brand credibility on green brand equity. Their model inspired several other studies (e.g., Esmaeili et al., 2017; Delafrooz & Gooli, 2015). Esmaeili et al. (2017) made several similar conclusions, including the not significant relation between brand credibility and green brand equity. Delafrooz and Gooli (2015) investigated the relationship between brand credibility and brand equity but could not conclude a significant relationship either. Adnan et al. (2019) examined the relationship between green brand credibility and green brand equity and concluded a positive and significant relationship, while being partially mediated by green attitude. In contrast, Akturan (2018) investigated the effect on green brand associations, brand credibility, green brand equity and purchase intention and concluded that brand credibility did directly and positively affect green brand equity. Given these different outcomes, further research is warranted to gain greater clarity in the relationship between brand credibility and green brand equity.

2.4 Greenwashing

As a consequence of increasing sustainability pressures (Kalafatis et al., 1999; Polonsky et al., 2011; Wang et al., 2020; Chen & Chang, 2013) firms have increasingly engaged in green marketing, claiming to be sustainable, green or eco-friendly (Chen & Chang, 2013). Such claims are however often both deceptive and ambiguous, and consumers looking for more

sustainable products can find themselves confused and unable to discern the differences and, as a result, lack confidence in them (Polonsky et al., 2010; Chen & Chang, 2013). In addition, this has generated comprehensive scepticism (Pomering & Johnson, 2009; Chen et al., 2018; Farooq & Wicaksono, 2021).

This surge in scepticism is largely generated by widespread greenwashing (Farooq & Wicaksono, 2021; TerraChoice, 2009), which is defined as "*Making false or exaggerated claims to project a more sustainable image than is warranted by actual practice.*" (Martin & Schouten, 2013, p.4). Indeed, companies may use greenwashing to manage their reputation, for example through concealing misconduct, blaming others, or creating doubt and confusion around issues (Laufer, 2003). Greenwashing may take on many forms (TerraChoice (2009). Specific examples include making unprovable environmental claims, making vague and easily misunderstandable statements, using fabricated labels, making irrelevant comparisons and claims, as well as sharing false information (TerraChoice, 2009; Martin & Schouten, 2013). One of the most prominent greenwashing activities is employing a selective disclosure strategy (Chen et al., 2017; Iglesias et al., 2018; Marquis et al., 2016), which concerns organisations deliberately emphasising small organisational achievements with a positive environmental impact, while simultaneously withholding information of other processes generating a negative impact and a misleading image. Such actions strive to accomplish a false sense of transparency (Iglesias et al., 2018; Marquis et al., 2016), which in branding terms would mean neglecting customers the openness needed to drive further brand engagement (Hatch & Schultz, 2010).

Although it is possible for firms to gain financially from engaging in greenwashing in the short term, it may affect both the organisation in question and the whole market negatively in the long term (Chen et al., 2013; Akturan et al., 2018; Polonsky et al., 2011). This phenomenon is described as the Halo-effect, which refers to the effect of letting overall impressions affect the evaluation of specific objects within the same area (Oh & Ramaprasad, 2003). In concrete terms, greenwashing may not only affect the greenwashing firm in question, but also other firms making sustainable claims. Hence, greenwashing impedes green marketing as its capability in increasing scepticism towards green initiatives undermines environmental efforts and weakens consumer power as a force for change (Chen & Chang, 2013; Chen et al., 2018). One could therefore argue that greenwashing is a big contributor to the credibility crisis as its ongoing practices have eroded and undermined consumer confidence in green claims.

As mentioned, several studies have found greenwashing to lead to increased consumer scepticism (e.g., Farooq & Wicaksono, 2021; Nguyen et al., 2019). For example, the impact of greenwashing has previously been shown to negatively influence green trust, mediated by green consumer confusion and green perceived risk (Chen & Chang, 2013). Chen et al. (2018) found greenwashing to have a negative effect on green purchasing behaviour, brand loyalty and brand image. Additionally, Chen et al. (2013) concluded that greenwashing negatively affected green word-of-mouth directly as well as being mediated by green perceived quality and green satisfaction. Akturan (2018) found that greenwashing had a negative effect on brand credibility and brand association and by that claimed a negative indirect effect on green brand equity.

The direct negative effect that greenwashing has on green brand equity, has also previously been studied. Chen et al. (2017) found that greenwashing had a negative impact on green brand equity, along with brand image and green satisfaction (the latter two also serving as partial mediators). Along with this, Avcilar and Demirgüneş (2016) found that greenwashing had a direct negative effect on green brand equity. Interestingly, a clear reverse relationship of brands ranking high on greenwashing ranked low on green brand equity (Avcilar & Demirgüneş, 2016).

As such, the negative impact of greenwashing on firms' branding is clear. However, more knowledge regarding how to counteract and prevent greenwashing is needed. To clarify, interest lies not in how brands and branding can be used to overcome the negative scrutiny of greenwashing (subsequently leading to further intensified greenwashing), but instead in how branding practices can be used to increase organisational transparency which will benefit both the firm and the consumer and, thus, decrease consumers perception of greenwashing.

2.5 Hypothesis development and model conceptualisation

With each concept described in the previous section, the hypothesised relationships that this paper will analyse will be presented below.

2.5.1 Co-creation and its connection to GBE, greenwashing and brand credibility

As Fuchs and Schreier (2011), van Dijk et al., (2014) and Kristal et al. (2016) discusses, the non-participating, observing and periphery consumers constitute the mass of the market and should be the ones of interest in regard to the effects of co-creation. Accordingly, the view is shifted from the perceptions of participants of co-creation, to mainly non-participants to further investigate the effect of brand co-creation on brand credibility, greenwashing and ultimately green brand equity. Customer perceptions hence become key for this study's conceptual model. Moreover, in line with Hatch and Schultz (2010), brand co-creation is represented by firm transparency and by dialogue and access.

Customer-based brand equity (i.e., Keller, 1993) implies that customers and firms jointly develop brand equity in a co-creative manner (Merz et al., 2009). Since consumers are becoming more environmentally conscious (Chen, 2008; Akturan et al., 2018) and green brand equity can be used to measure the environmental strength of a brand from a customer perspective (Chen, 2010), interest lies in whether brand co-creation can benefit green brand equity. Co-creation has been shown to be positively and directly related to satisfaction and loyalty (Nysveen & Pedersen, 2014). In addition, the importance of relational experiences pertaining to co-creation has been shown to affect both satisfaction and loyalty, demonstrating the relational aspects in gaining a competitive advantage (Nysveen & Pedersen, 2014). Further, as satisfaction and loyalty pertain to one of the most researched constructs in relation to green brand equity (Górska-Warsewicz et al., 2021), one may argue that brand co-creation should influence green brand equity. The fact that Kristal et al (2016) concluded a positive relationship between co-creation and observer-based brand equity, also supports this.

Given that green brand equity has been found to be developed through investments in relationships with consumers (Kang & Hur, 2012) and that this constitutes a central part of brand co-creation, we argue that brand co-creation should be positively related to the consumer perspective of green brand equity. To clarify, brand co-creation from a consumer perspective is represented in this paper by the combination of dialogue and access, and transparency. Thus, the following hypotheses are formulated:

H1a: Dialogue and Access has a direct positive effect on green brand equity
H1b: Transparency has a direct positive effect on green brand equity

In the study of Liu et al. (2015), firms' ability association was defined as consumer perceptions of firms' ability to deliver on promises, which essentially embodies the definition of brand credibility (Erdem & Swait, 2004). Liu et al. (2015) found that firms' ability association

negatively moderated the effect performance transparency had on purchase intention and willingness to pay a price premium and drew the conclusion that transparency becomes less important if consumers have a high degree of ability associations towards the firm. What is argued for in this paper is to look at approximately the reversed causal relationship, that is, how transparency affect perceived brand credibility. It is likely that brands which are more open and transparent about their operations will be viewed as more credible. Iglesias et al. (2013) states that even if there is consistency of what a brand promises and what it delivers, consumers have the possibility to influence the brand through co-created brand value. This may lead to that the brand identity changes to the degree that managers can be persuaded to adapt or change their view of the brand (Iglesias et al., 2013). The subject of consumers believing that firms deliver on their promises is a highly central part of brand credibility (Erdem & Swait, 1998; 2004). Likewise, as perceived credibility is derived from dynamic firm-consumer interaction (Erdem & Swait, 1998), and such consumer-firm interaction constitutes the foundation of co-creation (Liljedal, 2016; Grönroos, 2012), it arguably is warranted to look at brand co-creations relationship with perceived brand credibility. Seeing a link with firm-consumer interaction and dialogue and access, and based on the above discussion of transparency, the following hypotheses are formulated:

H2a: Dialogue and Access has a direct positive effect on brand credibility
H2b: Transparency has a direct positive effect on brand credibility

2.5.2 Brand credibility and its connection to green brand equity

The argument for the connection between brand credibility and GBE may be divided into three parts. Firstly, brand credibility has been stated to constitute a key element of brand equity in earlier literature (Erdem & Swait, 1998; 2004; Keller, 2001; Sweeney & Swait, 2008). Brand credibility at large concerns a firm's ability and willingness to deliver on its promises and if they fail in doing so, brand equity has been stated to erode as a consequence (Erdem & Swait, 2006). As such, brand credibility may be viewed as a central determinant with a high plausibility for having an effect on green brand equity as well.

Secondly, Connelly et al. (2011) argues that quality may be viewed as an underlying, unobservable ability to fulfil the needs and demands of receivers. In fact, quality uncertainty has been a focal point in both the information economics and marketing literature (Erdem et al., 2006) which establishes a point of intersection. Aaker (1991) deems strong brands as those with higher perceived quality, which is stated to assume variance, uncertainty, and risk (Erdem et al., 2006). Given that one of the main functions of brand credibility is as a risk reducer (Erdem et a., 2006) another connection may therefore be discerned in regard to the relationship between information economics and the cognitive psychology marketing view in that quality is the central determinant. Thus, brand credibility (based on signalling theory) and green brand equity (originating from the cognitive psychology view) are arguably theoretically linked. Moreover, the strength of brand equity is seen as the result of brand signalling (Erdem & Swait, 1998).

Thirdly, earlier studies have demonstrated traditional concepts' potential in advancing green marketing (e.g., Ng et al., 2014, Esmaeili et al., 2017). In a similar vein, although there are inconclusive results, several works supporting the connection have been published (e.g., Spry et al., 2011; Adnan et al., 2019; Akturan, 2018).

In essence, it is thought that brand credibility in this case too may have a positive effect on green brand equity. In the context of the ongoing credibility crisis, it is argued that credibility is crucial for companies today. It is debatably also possible to distinguish a link between effective signals, the task of overcoming scepticism and creating confidence among consumers (Erdem & Swait, 1998; Dunham, 2011) to that of communicating sustainability initiatives credibly.

Given the above discussion around information asymmetries and risk, and both brand credibility and brand equity's connection to them (e.g., Aaker, 1991; Erdem & Swait, 1998; Erdem et al., 2006), credibility's earlier demonstrated role in brand equity (Erdem & Swait, 1998; 2004; Erdem et al., 2006; Keller, 2001; Spry et al., 2011, Adnan et al., 2019) combined with inconclusive results from earlier studies, further research is warranted. As green brand equity is closely related to brand equity, it is believed to have a similar effect. It is therefore hypothesised that:

H3: Brand credibility has a direct positive effect on green brand equity

It is also of interest to investigate the interplay between the consumer perspective of brand co-creation, brand credibility and green brand equity. Hence, it will be investigated if brand co-creation on its own increases green brand equity or if the effect is channelled towards increasing brand credibility which then increases GBE indirectly. Transparency has been stated to be an important aspect for both brand co-creation (Prahalad & Ramaswamy, 2004; Hatch & Schultz, 2010) and brand credibility in the form of trustworthiness (Erdem & Swait, 1998; 2004). It is also reasonable to believe that increased dialogue and access between a firm and its customers will affect brand credibility positively, as credibility is stated to be derived from a dynamic firm-customer interaction (Erdem & Swait, 1998). Further, Keller (1993) and Erdem & Swait (1998) argue for the importance of brand credibility for brand equity. Taking this together, the potential of brand credibility mediating the effect of brand co-creation on green brand equity is argued for as a relevant relationship. Thus, the following hypotheses is formulated:

H4a: Brand credibility mediates the effect of Dialogue and Access on GBE
H4b: Brand credibility mediates the effect of Transparency on GBE

2.5.3 Greenwashing and its connection to green brand equity

Building on prior research, this paper aims at further developing knowledge about the relative effect of greenwashing on green brand equity, by conducting research in a different context. Chen et al. (2017) concluded a negative relationship between greenwashing and green brand equity. Additionally, indirect negative effects of greenwashing on green brand equity have been

demonstrated (Avcilar & Demirgüneş, 2016; Akturan, 2018). Being one of the prominent negative forces within green marketing, it is deemed highly relevant to include the concept of greenwashing to evaluate its effect on green brand equity. Thus, the following hypothesis is formulated:

H5: Greenwashing has a direct negative effect on green brand equity

A prominent subject within greenwashing practices concerns the degree of transparency. As discussed earlier, the greenwashing activity of selective disclosure strategy builds on the premise of deliberately withholding information that would affect a brand negatively to create a false sense of transparency (Iglesias et al., 2018; Marquis et al., 2016). As such, co-creation and the organisational self-disclosure it entails may, in part, be viewed as a counterpart to selective disclosure strategy (Iglesias et al., 2018; Hatch & Schultz, 2010). Since brand co-creation is built on an open and transparent dialogue and disclosure (Hatch & Schultz, 2010), an interest of this study is to investigate if brand co-creation can be used to counteract the perception of greenwashing. As brand co-creation is also based on the premises of brand engagement (Hatch & Schultz, 2010), a negative relationship between the two is expected. As previously stated, Iglesias et al. (2018) found that CSR practices of a firm positively affect customers' willingness to participate in co-creation activities concerning product development. Although not being perfect contrasts to each other, CSR practices and greenwashing activities can arguably be regarded as being on opposite sides of the green marketing spectrum. Drawing on the findings of Iglesias et al. (2018), this paper will focus on the reversed causality, as the interest lies in investigating if brand co-creation can counteract the perception of greenwashing. Further, based on the above discussion, combined with Chen et al. 's (2018) emphasis on a need for firms to establish reliable and transparent claims to reduce greenwashing, the following hypothesis is formulated:

H6a: Dialogue and Access has a direct negative effect on greenwashing
H6b: Transparency has a direct negative effect on greenwashing

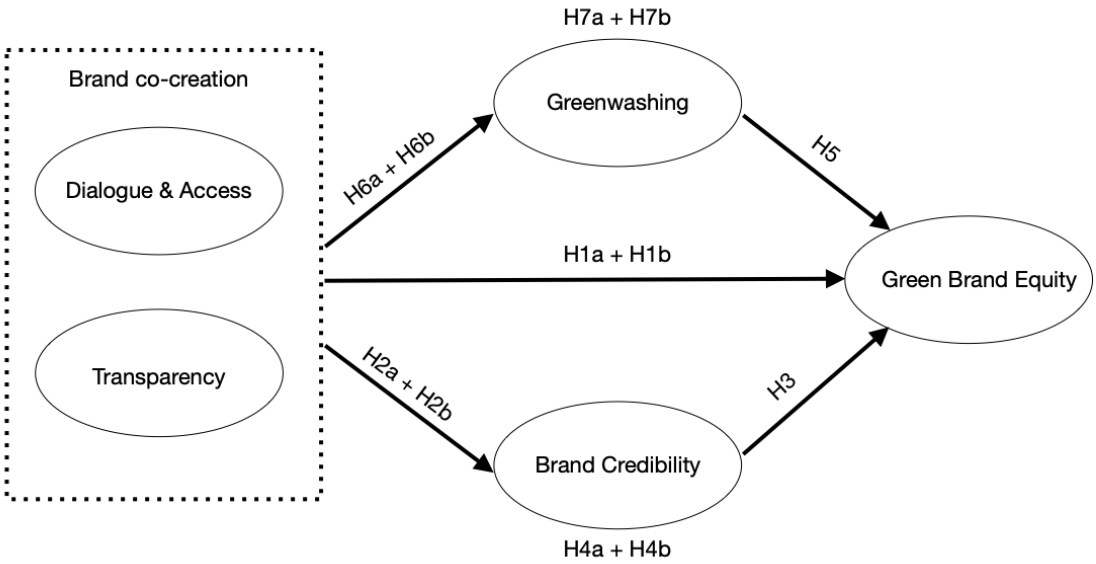
Further, it also becomes interesting to see if brand co-creation can be used to offset the hypothesised negative effect of greenwashing on green brand equity. If such a relationship can be determined, then a strong argument could be given for firms to invest in brand co-creation initiatives to minimise perceived greenwashing from the consumer perspective. Contrastingly, if greenwashing is found to be a full mediator of the effect of brand co-creation on green brand equity, subsequently absorbing the direct effect, it would demonstrate the destructive nature of greenwashing Given this papers characterisation of brand co-creation, the following hypotheses is formulated:

H7a: Greenwashing negatively mediates the effect of Dialogue and Access on GBE
H7b: Greenwashing negatively mediates the effect of Transparency on GBE

Based on the theoretical framework and the formulated hypotheses, the following theoretical model is shown in Figure 1. The hypothesised relationships visualised by the arrows will be tested using structural equation model (SEM) analysis. An evaluation of the explanatory power of the model will also be conducted.

Figure 1

Visualisation of the theoretical model



3. Methodology

In examining the relationships between brand co-creation, brand credibility, greenwashing and GBE, this paper employs a quantitative method with a deductive approach. Quantitative methods enable one to measure and analyse social systems empirically through statistical inference (Esteban-Bravo & Vidal-Sanz, 2021; Patel & Davidsson, 2019). Moreover, a quantitative method is the main method for measuring causation between phenomena (Patel & Davidsson, 2019). Further, the method offers a higher degree of objectivity, reduces personal bias and more clearly distinguishes between facts and judgements made by authors (Esteban-Bravo & Vidal-Sanz, 2021; Patel & Davidson, 2019). Moreover, the study's deductive approach requires substantial anchoring in existing literature, in which hypotheses are generated out of existing theory (Bryman & Bell, 2013).

One could argue that a qualitative method would be suitable for the current research topic, due to its capability of interpreting complex phenomena, emphasising the social realities of individuals and their perceptions as well as enabling deeper insights and understanding of context (Esteban-Bravo & Vidal-Sanz, 2021; Bryman & Bell, 2013; Patel & Davidsson, 2019). However, as the interest lies in better understanding relationships between the concepts, rather than the underlying structures, a quantitative method was favoured over a qualitative one.

Limitations of the method however exist. A deductive approach restricts researchers as existing research may limit and affect the current research so that new perspectives or insights are missed (Patel & Davidsson, 2019). Further, quantitative methods have been criticised for not capturing the full complexity of social reality and having a static view (Bryman & Bell, 2013). In spite of this, it is deemed the most appropriate for this paper's purpose.

3.1 Literature search

The literature review was conducted using Web of Science, University of Gothenburg's literature database as well as Google Scholar, consistently using peer-reviewed articles with a few exceptions due to high relevance. Keywords used for finding relevant literature include "brand credibility", "greenwashing", "green brand equity" and "co-creation" with several variations and combinations. Searches were initially conducted on a large scale and were sorted for relevance. Likewise, two literature reviews were used (i.e., Górska-Warsewicz et al., 2021; Ranjan & Read, 2016). After this, further searches were done in iterations and reference lists of identified articles were skimmed which effectively gave a clearer picture of the conducted research.

3.2 Population

A prerequisite for this study is to tap into a group with high brand engagement and general involvement, with less emphasis on purchase experience as it is not necessarily required. The population chosen to fulfil the above-mentioned criteria for this study are young adults, mainly between the ages 20-30, due to several reasons. Firstly, social media and the internet constitute a major channel for firm-to-consumer communication (Osei-Frimpong & McLean, 2018) and

consequently co-creation (Füller et al., 2009). In Sweden, people born in the 1990's are in general, more present, engaged, and participative online, both on the internet in general, and on social media in particular (Internetstiftelsen, 2020; Internetstiftelsen, 2021). Secondly, given that brands increasingly need to engage with consumers online (Osei-Frimpong & McLean, 2018) one might suggest that younger individuals are also more often engaged with brands and firms. It is therefore argued that selecting this group increases the chance of relevant and timely responses. Thirdly, young, educated individuals demonstrate a higher degree of environmental awareness and will constitute an attractive and relevant consumer group for several decades ahead (Vermeir & Verbeke, 2006). Lastly, the chosen sample is suitable considering the time, scope and financial restrictions of this paper. In essence, the selected population is argued to constitute a group of consumers that are more aware and engaged and are therefore viewed as appropriate for this study.

3.3 Sampling method, data collection and sample characteristics

To gather data, a simple randomised sampling method via a list-based sampling frame was selected, as access to an email-list for students at University of Gothenburg was gained and that it is an appropriate method for larger homogenous groups of which such frames can be generated (e.g., universities) (Fricker, 2017). However, one should be aware of the limitations that a survey of a list-based sampling frame poses, for instance in terms of generalisability as a result of internet access and computer literacy (Fricker, 2017). Based on the above, it is however clear that a large majority of the sample selected (i.e., young adults in Sweden) both have internet access and inhibit a high level of computer literacy.

To reach the relevant group, a survey was sent out to 5, 519 students at said university containing a description of the study and the link to the survey. This method is a cost-effective way of collecting a high amount of data in a short amount of time while simultaneously ensuring anonymity (Donley, 2012, Bryman & Bell, 2013). Likewise, a survey presents a lower risk for the "interviewer effect", provides consistency in how questions are posed and is more flexible in terms of answering the questions (Bryman & Bell, 2013). However, online surveys, compared to other kinds of surveys, see lower response rates, partly due to a survey fatigue created by an overload of surveys requested in general (Donley, 2012). Other disadvantages include the inability of clarifying questions, posing follow up questions and the risk of respondents losing interest due to the number of questions (Bryman & Bell, 2013). To counteract this, the survey was introduced by a thorough walkthrough of aim and purpose, explanation of the context and through sending out reminders. In the same vein, the survey has been created with the aim of being clear, concise, and appealing to create the best conditions possible for a high response rate (Bryman & Bell, 2013).

The survey was published between the dates of 17.03.2022 - 05.04.2022 and after two reminders a total of 153 answers had been collected, resulting in a response rate of 2.75%. A greater response rate was desirable, yet a high degree of survey fatigue was apparent. Time restrictions and the fact that it fulfilled the variable to answer ratio of 5:1 (Hair et al., 2014) led to the decision to close the survey. Once the data had been collected, inspections of outliers

and invalid answers were carried out. One respondent chose the same answer throughout the survey and was therefore removed from the data set. Further, three respondents failed to declare their chosen brand and thus had to be removed as well, resulting in a final sample size of 149 respondents.

Since this study aims to investigate consumer perceptions of trustworthy and sustainable branding at a general level, and to ensure the ability of respondents to answer, participants were asked to choose a brand freely that they had experience of, were knowledgeable about or were engaged in. This is in line with previous research on green brand equity (Chang & Chen, 2013; Chen & Chang, 2013; Chen, 2010). Although one could argue for choosing one industry, it was deemed unfitting. This was confirmed after a small pilot study, in which participants were asked to select a brand within the automobile industry, which resulted in respondent frustration and an inability to answer the questions. Participants were informed about the study's purpose and the introduction emphasised that the respondents should base their answers on their own perceptions of the chosen brand.

3.4 Descriptive statistics

As can be seen in the descriptive statistics in Table 1, the sample is relatively equally distributed between males and females. Further, the majority of the respondents are between 20-29 years old, consistent with the main occupation of students. Concerning respondents' monthly salaries, the majority earns below SEK 15 000 per month, which also mirrors the suspected sample characteristics for the given group. However, the survey did reach both older adults and full-time employees, although they represented a small percentag of the total sample. This can potentially be explained by that one of the larger email-pools used to gather the data consisted of individuals who are registered on any courses given at the School of Business, Economics at the University of Gothenburg. This may include individuals who are taking single or evening courses or simply those who have chosen to study in a later part of life. It is noted that the older individuals in the data set are a minor discrepancy for the intended population. However, given the low response rate it was deemed necessary to keep these individuals in our sample, in order to proceed with the statistical analysis.

Table 1

Descriptive statistics

	Frequency	Percent	Cumulative percent
Gender			
Male	63	42.3	42.3
Female	86	57.7	100
Age			
<20	5	3.40	3.40
20-29	122	81.9	85.2
30-39	16	10.7	96.0
40-49	3	2.00	98.0
50-59	1	0.7	98.7
>60	2	1.3	100
Occupation			
Student	120	80.5	80.5
Full-time employee	21	14.1	94.6
Part time employee	-	-	-
Self-employed	1	0.7	95.3
Other	7	4.7	100
Monthly income (SEK)			
<15 000	91	61.1	61.1
15 001 - 30 000	34	22.8	83.9
30 001 – 45 000	18	12.1	96.0
45 001 – 60 000	3	2.00	98.0
>60 000	-	-	-
Not disclosed	3	2.00	100

Respondents chose brands in a wide variety of industries. Clothes and fashion related brands constituted the majority as 62 respondents answered that they chose such a brand. This was followed by food related brands with 26 respondents, which in turn was followed by automotives and beauty with 14 respondents each. Eleven respondents chose sports brands and ten chose electronics. Five respondents chose the furniture brand IKEA. Lastly, twelve respondents chose brands categorised as "other" (e.g., SAS, Svanenmärkt, etc.), due to the low frequency and high spread.

3.6 Survey development

The survey was composed of eleven questions in total. Six questions were descriptive ones (e.g., gender, age, monthly income). To measure the relevant concepts, corresponding measurement scales from earlier research were used. All measurement scales were set to seven-point Likert-scales. These scales were chosen as they properly reflect the constructs the current study aims at measuring and have received high Cronbach's alpha value (above 0.7) in their previous usage, indicating high reliability. All measurement scales were translated from

English to Swedish to fit the sought-after population. When translating questions, it is in the researchers' interest to keep the original formulation as intact as possible to ensure the validity is kept. To minimise discrepancies, backward translation was performed by two fellow students in order to make sure that nothing was lost in translation. The results of the backward translations were consistent with the original English versions, only leading to two small wording adjustments.

Before the primary data collection started, two small pilot studies were performed to evaluate if the survey was understandable. The test group consisted of both marketing students and individuals unrelated to the field, to ensure that those unfamiliar with the concepts could grasp the questions. The first pilot study resulted in minor changes to the layout and a reformulation of the introductory description. Following this, a second pilot study was performed, which results indicated that previous issues were resolved. Additionally, a professor with experience of marketing research and survey composition was given the opportunity to share his thoughts about the questionnaire. Confirming that the survey was properly understood, combined with the test runs, face validity was achieved (Hair et al., 2014). The survey in its entirety can be seen in Appendix 1.

3.7 Scale development

To further explain the model, comments concerning each individual construct will follow. Each construct with corresponding items can be seen in their entirety in Table 2. It is the consumer perspective of the construct in relation to the chosen brand that this study aims to capture. It is therefore their perception of transparency, brand credibility, greenwashing and if the brand in question actively includes consumers in a dialogue or grants access to internal properties, which will lay the foreground of the analysis. This alteration is especially important concerning the concept of greenwashing, which will be later discussed in the following section.

3.7.1 Brand Co-creation

As declared in the theoretical background, the definition of brand co-creation in this paper follows the argument of Hatch and Schultz (2010), composed by stakeholder engagement and organisational self-disclosure. After a thorough literature search of previous empirical research within co-creation (in the wider definition of the term), a decision was made to let the construct be represented by two individual measurement scales: co-creation (Nysveen & Pedersen, 2014) and transparency (Dapko, 2012). The former scale was constructed and used by Nysveen and Pedersen (2014) and was also later adapted by Iglesias et al. (2018). The focus of these two studies was, however, to measure co-creation as customer direct participation within product development processes (Nysveen & Pedersen, 2014; Iglesias et al, 2018). As declared in the theoretical framework, this paper will focus on how consumers co-create brand meaning and joint brand value with the firm. It is argued that such brand co-creation processes do not demand direct customer participation, but is instead more cognitive in nature, making all consumers evaluation relevant. Thus, the measurement scale of Nysveen and Pedersen (2014)

were adjusted by reformulating the items to better fit the theoretical framework and the interest of this paper.

Moreover, four additional items were formulated by the authors, built on the discussion of dialogue and access, to further strengthen the measurement scale's connection to the theoretical framework (Prahalad & Ramaswamy, 2004; Hatch & Schultz, 2010). Specifically, these four items were: "I participate in creating the brand together with the company", "The company solely controls what the brand stands for", "I have the opportunity to affect the brand" and "My opinions affect the brand". With these adjustments the measurement scale is deemed to capture the most relevant aspect of stakeholder engagement (Hatch & Schultz, 2010), that being consumer involvement in brand value creation generated by dialogue and access (Prahalad & Ramaswamy, 2004). This led to renaming the measurement scale to dialogue and access, to avoid confusion in this study.

To capture the second dimension of brand co-creation, organisational self-disclosure (Hatch & Schultz, 2010), the transparency measurement scale from Dapko (2012) was adopted. Adding it ensures this study to better measure consumers' perception of how transparent the chosen brand acts. As previously stated, though organisational self-disclosure is the combination of organisational transparency and the associated risk (Hatch and Schultz, 2010), as this study will aim at understanding the consumer perspective, a scale concerning organisational risk was deemed irrelevant. The construct reliability is ensured for both the dialogue and access and transparency measurement scales, with previous Cronbach's Alpha coefficients of 0.89 and 0.97 (Nysveen & Pedersen, 2014; Dapko, 2012), respectively.

3.7.2 Brand Credibility

To measure respondents' perception of brand credibility, the scale used by Newell and Goldsmith (2001) and Ng et al. (2014) was adopted. The items of this measurement scale are considered to capture the definition of Erdem and Swait (1998), which this study relies on. The construct reliability is ensured by the previously achieved Cronbach's Alpha coefficient of 0.84 (Ng et al., 2014).

3.7.3 Greenwashing

In this study, full attention will be on how consumers themselves evaluate the amount of greenwashing occurring from a chosen brand. Hence, the actual amount of brands' greenwashing will not be measured. This would require a more thorough approach analysing the claims stated by specific brands in their market communication in relation to the actual activities within each firm. The consumer perception of greenwashing was measured by adopting the measurement scale used by Chen and Chang (2013) and Chen et al. (2017), consisting of five items. Several variations of this measurement scale have been produced and used in previous studies where they have been specified either to a product, firm or marketing message. Since this study will investigate consumers' perception of a specific brands' possible greenwashing, the measurement scale will be adapted accordingly by replacing "company" (Chen et al., 2017) with "brand". The wording is deemed adequate to capture what this study

aims to investigate in relation to greenwashing. When used by Chen et al. (2017), the scale received a Cronbach's alpha coefficient of 0.91, confirming construct reliability.

3.7.4 Green Brand Equity

Lastly, the construct of green brand equity was measured by using the measurement scale developed in Chen (2010) where the definition of the concept was made. In the study of Chen (2010), the measurement received a Cronbach's alpha coefficient of 0.84, leading the scale to be adopted in several studies afterwards (Górska-Warsewicz et al., 2021), ensuring construct reliability.

Table 2

Specification of construct items

Construct	Item	Question	Source
GBE			
	GBE 1*	It makes sense to buy this brand instead of other brands because of its environmental commitments, even if they are the same	Chen (2010)
	GBE 2	Even if another brand has the same environmental features as this brand, you would prefer to buy your chosen brand	
	GBE 3	If there is another brand's environmental performance as good as this brand's, you prefer to buy your chosen brand	
	GBE 4	If the environmental concern of another brand is not different from that of this brand in any way, it seems smarter to purchase your chosen brand.	
BC			
	BC 1	My chosen brand delivers what it promises	Erdem & Swait (1998), Newell & Goldsmith (2001)
	BC 2	Service claims from my chosen brand are believable	
	BC 3	Over time, my experiences with my chosen brand have led me to expect it to keep its promises, no more and no less	
	BC 4	My chosen brand is committed to delivering on its claim, no more and no less	
	BC 5	My chosen brand has a name I can trust	
	BC 6	My chosen brand has the ability to deliver what it promises	

GW			
	GW 1	This brand misleads with words in its environmental features	Horiuchi and Schuchard (2009), Laufer (2003), and Chen & Chang (2013)
	GW 2	This brand misleads with visuals or graphics in its environmental features	
	GW 3	This brand possesses a green claim that is vague or seemingly un-provable	
	GW 4	This brand overstates or exaggerates how its green functionality actually is	
	GW 5	This brand leaves out or masks important information, making the green claim sound better than it is.	
D&A			
	D&A 1*	I often express my personal needs to the brand	Nysveen & Pedersen (2014)
	D&A 2	I often suggest how the brand can improve its services	
	D&A 3	I participate in decisions about how the brand offers its services	
	D&A 4	I often find solutions to my problem together with the brand	
	D&A 5	I am actively involved when the brand develops new solutions for me	
	D&A 6	The brand encourages customers to create solutions together	
	D&A 7*	I am involved in creating the brand together with the company	Newly generated items
	D&A 8*	The company individually controls what the brand should stand for	
	D&A 9	I have the opportunity to influence the brand	
	D&A 10	My perceptions affect the brand	
TP			
	TP 1	This company provides me with a learning opportunity about itself	Dapko (2012)

TP 2	This company enables me to know that it is doing
TP 3	This company wants me to understand what it is doing
TP 4	This company is open with me

* Item removed in CFA

3.8 Data analysis

The initial data analysis was carried out through exploratory factor analysis (EFA), using IBM SPSS. This was done to find the underlying structure of the data (Hair et al., 2014). Further, a confirmatory factor analysis (CFA) was performed to assess the predefined theoretical pattern and constructs (Hair et al., 2014). After this, structural equation model (SEM) analysis was used to test the formulated hypotheses and to evaluate the theoretical model's explanatory power, as this allows for simultaneous testing of multiple relationships (Hair et al., 2014). Both the CFA and SEM were performed in StataSE.

4. Results and analysis

The abbreviations of each construct displayed in Table 2 will henceforth be used when presenting the results

Initially, an EFA was carried out to verify the structure of the data to evaluate if the proposed constructs hold. This was specifically important for the construct of dialogue and access (D&A) as it contained both previous and newly formulated items. Before the analysis was conducted, item 8 in the D&A construct was reversed and transformed into a new variable (xD&A8), as the question related to the item was, unlike the others, negatively formulated.

Based on the correlation matrix, three items were initially dropped (GBE1, D&A1 and xD&A8) as these had correlations below the threshold of 0.3 (Hair et al., 2014) with corresponding items. Besides this, each item had moderate to high correlations with the other items related to the same construct and less with those of other constructs. Eigenvalues were inspected and indicated six components. Further, a direct oblimin rotation was carried out, as proposed if the investigated constructs are likely to correlate (Hair et al., 2014) and to see how each item loaded into the corresponding components. From the initial rotation, six components were suggested by the software, with each factor loading corresponding to the expected combination, confirming the scales. The items of the D&A construct were divided into two components, with one component consisting of factor loadings from the original scale and one with the newly formulated items. However, as the theoretical model is composed of five constructs, a second direct oblimin rotation with a fixed number of factors set to five was carried out. This resulted in all items related to the dialogue and access construct loading into a single component, leaving the other components intact. The results of the pattern matrix can be found in Appendix 2. One cross loading still exists (BC1), loading on component GW and component BC. The difference between the loadings is 0.2, a large enough difference for the variable to be kept and argued for theoretically (Hair et al., 2014).

Once the components were extracted, corresponding to the theorised constructs, Cronbach's alpha tests were performed for each scale. The mean, standard deviation and Cronbach's alpha coefficient for each test is shown in Table 3. As can be seen, all alpha values exceeded the cut-off point of 0.7, indicating scale reliability (Hair et al., 2014). The only exception of this is the Cronbach's alpha coefficient of GBE, which received a value of 0.697. Though SPSS indicated that the alpha coefficient could be

Table 3

Reliability and descriptive statistics of measurement scales

Scale	Mean	S.D.	Cronbach´s Alpha
D&A	4.34	0.99	0.867
TP	4.86	0.92	0.878
BC	5.51	0.88	0.901
GW	3.76	1.24	0.924
GBE	4.80	0.79	0.697

improved if an additional item was dropped (GBE4), the item was still kept as it would otherwise result in the GBE construct only consisting of two items and becoming underidentified (Hair et al., 2014), which could become problematic in the following tests.

4.1 Measurement model

Following the EFA, a CFA was performed to assess construct validity and model fit. Factors removed in the EFA were reintroduced as all factors and variables were theoretically grounded. After several iterations, GBE1, D&A1, D&A7, xD&A8 were dropped due to their standardised factor loadings being well under the threshold of 0.5 (Hair et al., 2014). GBE4 had a standardised factor loading of 0.49, indicating the need for a removal as well. It is however advised that other diagnostic measures should be regarded simultaneously (Hair et al., 2014) and since the item is theoretically justified and grounded, the decision was made to keep it for further analysis. Keeping GBE4 also ensures that the construct of GBE does not become underidentified (Hair et al., 2014). As such, the items that were dropped in the EFA did not meet the requirements within the CFA either, resulting in dropping the same set of variables once more, as well as D&A7. In doing so, consistency is kept between the EFA and the CFA.

The model with the removed items was assessed in terms of construct validity. Convergent validity was examined through the measures stated by Hair et al (2014): factor loadings above 0.5, average variance extracted (AVE) above 0.5 and composite reliability above 0.7. Factor loadings of the remaining items were all above 0.5 and hence fulfilled the requirements. The AVE ranged from 0.473 to 0.711 (see Table 4) with BC, GW and TP performing well over the threshold. However, lower AVE scores were found for GBE and D&A, the former low score are likely a result of keeping GBE4. Although this points towards a weakness, it will be kept as they have been demonstrated as reliable measures in earlier studies. Moreover, if AVE is below the level of 0.5, they may still be used if CR is above 0.6 (Lam, 2012; Fornell & Larcker, 1981), which they both are (0.722 for GBE and 0.866 for D&A). In terms of composite reliability (CR) all constructs were above 0.7, ranging from 0.722-0.925 (see Table 4).

Table 4

Construct validity CFA

Construct	Item	Factor loading	AVE	CR
GBE			0.473	0.722
	GBE 2	0.82		
	GBE 3	0.71		
	GBE 4	0.50		
BC			0.598	0.899
	BC 1	0.77		
	BC 2	0.81		
	BC 3	0.78		
	BC 4	0.80		
	BC 5	0.71		
	BC 6	0.76		
GW			0.711	0.925
	GW 1	0.90		
	GW 2	0.83		
	GW 3	0.83		
	GW 4	0.81		
	GW 5	0.84		
D&A			0.490	0.866
	D&A 2	0.64		
	D&A 3	0.82		
	D&A 4	0.83		
	D&A 5	0.85		
	D&A 6	0.65		
	D&A 9	0.50		
	D&A 10	0.51		
TP			0.652	0.882
	TP 1	0.73		
	TP 2	0.85		
	TP 3	0.82		
	TP 4	0.81		

Following this, discriminant validity was evaluated which examines whether constructs are distinct from each other and capture different phenomena (Hair et al., 2014). Discriminant validity was achieved through validating that the AVE of two constructs exceeded the squared correlation estimate between them (Hair et al., 2014).

Examining face validity in terms of item contents and meaning (Hair et al. 2014), the model is arguably deemed to fulfil the requirements as substantial theory has been read and analysed and the final model has been reviewed for overlaps as a result of combining constructs. Face validity was also ensured by the two pilot studies and the backward translation. Lastly, nomological validity, based on the correlations between constructs making sense (Hair et al., 2014), at large fulfil the requirements. The exception is the correlation between D&A and GBE as it is not significant and has a correlation of -0.047. However, this correlation value is close to zero, which explains that the correlation is not significant.

Regarding goodness-of-fit, the model is assessed through absolute and incremental fit indices (see Table 5). In terms of absolute fit indices, the $\chi 2$ test is significant which is undesirable but common and expected despite good fit and with the given combination of variables and sample size (Hair et al., 2014). The normed $\chi 2$ test is 1.44 which is less than 2.0 and considered adequate (Hair et al., 2014). RMSEA is below the threshold of 0.08 at 0.054 and SRMR is 0.056 which is below 0.1 (Hair et al., 2014). Looking at the incremental fit indices, CFI is 0.948, placing itself above the threshold of 0.9, while TLI indicates a value of 0.941, approaching 1, deemed to characterise well-fitting models (Hair et al., 2014). Overall, the model indicates a good fit and validity, making it appropriate for further analysis through an SEM.

Table 5

CFA Goodness-of-fit statistics

Model fit (CFA)	Model value	Cut-off value *(Hair et al., 2014)*
$\chi 2$	377.466	–
df	263	–
Normed chi square ($\chi 2$/df)	1.44	< 2
RMSEA	0.054	< 0.08
SRMR	0.056	< 0.1
CFI	0.948	> 0.9
TLI	0.941	Approaching 1

4.2 Hypothesis testing

To test the formulated hypotheses, a structural equation model (SEM) analysis was conducted, building further on the results from the CFA. As each hypothesis is formulated to test a specific relationship between different constructs, these relationships were tested one at a time, only including the constructs in question for each test. To compare the change of adding a separate transparency dimension to brand co-creation, two more complete models with all path estimates were carried out and compared with each other. All tests were carried out with standardised estimates.

Assessing the first hypothesised effect, the two constructs representing brand co-creation (D&A and TP) were tested for a direct positive effect on GBE. The effect of D&A on GBE was not significant. This entails that it cannot be ruled out that the effect is equal to zero, resulting in H1a being rejected. As such, no support was found for dialogue and access having a significant positive effect on green brand equity. Looking at TP, it did have a significant and positive effect on GBE (p= 0.003; ß= 0.316). This indicates that transparency has a positive effect on green brand equity and thus, H1b is supported.

Proceeding with how brand co-creation affects BC, the two constructs of D&A and TP were run on BC. The test of D&A on BC was not significant, hence H2a was rejected. However, TP had a positive and significant effect (p= 0.000; ß= 0.641) on BC. This indicates that transparency does have a positive effect on brand credibility, and H2b is supported. Looking at how BC affects GBE, the test was significant and showed a positive effect (p = 0.000; ß= 0.433). As such, a confirmation of that brand credibility has a positive effect on green brand equity was found and H3 is supported.

When further analysing the hypotheses related to mediating effects, tests were run including the two constructs of brand co-creation (D&A and TP), the endogenous construct GBE and the mediator in question. As H4a and H4b concerns brand credibility as a mediator of the effect of brand co-creation on GBE, this is the first mediator to be investigated. First, the path estimates were drawn with D&A and TP only having indirect effects on GBE being mediated by BC. From this test, the relationships go in line with the previous results, as the effect of D&A on BC is not significant, while TP on BC has a positive significant effect (p= 0.000; ß= 0.643). The direct effect from BC on GBE is also positive and significant (p= 0.000; ß= 0.431). Further, the direct effects from D&A and TP on GBE were added. None of these two direct effects were significant. The direct effect of TP on BC still holds with a slight decrease in effect size (p= 0.000; ß= 0.641). The direct effect of BC on GBE also holds, but with a slight increase in effect size (p= 0.000; ß= 0.476). The tests with D&A remain not significant.

These tests show that once BC is added, the positive direct effect previously found from TP on GBE when testing H1b, disappears. TP only has an indirect effect on GBE by the mediator of BC. This indicates that brand credibility fully mediates the effect of transparency on green brand equity. Running a test to evaluate the indirect effect of TP on GBE through BC gave a significant result (p= 0.002; ß= 0.309). Thus, H4b is supported. However, as no significant relationship could be found between D&A and GBE either directly or indirectly, it is not possible to confirm that dialogue and access positively affects brand credibility or green brand equity. Therefore, H4a is rejected.

Proceeding with testing if GW has a negative effect on GBE (H5), the result shows a significant and negative effect (p= 0.000; ß= -0.329), indicating that greenwashing has a negative effect on green brand equity. Thus, H5 is supported. Further, the effect of brand co-creation on greenwashing was investigated by running a test with D&A and TP on GW. From this test, D&A on GW was not significant, and as such H6a is rejected. However, TP does have a significant and negative effect on GW (p= 0.000; ß= -0.582). This indicates that transparency has a negative effect on greenwashing, which was expected. Thus, H6b is supported.

Lastly, GW was tested as a mediator of the effects of D&A and TP on GBE. When the test was performed with only indirect effects of D&A and TP on GBE through GW, D&A did not have a significant effect while TP had a significant and negative effect on GW (p= 0.000; ß= -0.584), making the results consistent with previous results. GW also retains a significant and negative effect on GBE (p= 0.000; ß= -0.333). The two direct effects from D&A and TP on GBE were then added. None of these direct effects were significant. The effect of TP on GW still holds (p=0.000; ß= -0.579), with a slight decrease in effect size. Likewise, the direct effect of GW on GBE also remains significant (p= 0.02; ß= -0.259), also with a slight decrease in effect size. As such, TP only has an indirect effect on GBE through GW, as GW fully mediates the effect.

Performing a test to calculate the indirect effect of TP on GBE showed that the effect is significant and positive (p=0.035; ß= 0.158). The positive ß-value can be explained by that two negative effects multiplied with each other results in a positive effect. However, like the previous mediating test, D&A did not have either a direct or indirect significant effect on GBE. This indicates that only one of the two constructs representing brand co-creation had a significant effect. Thus, H7a is rejected while H7b is supported. A summary of each hypothesis results is shown in Table 6.

Table *6*

Summary of results

Hypothesis	Relationship	ß	p-value	Result
H1a	D&A → GBE	-	-	Rejected
H1ab	TP → GBE	0.316	0.003	Supported
H2a	D&A → BC	-	-	Rejected
H2b	TP → BC	0.641	0.000	Supported
H3	BC → GBE	0.433	0.000	Supported
H4a	D&A → BC → GBE	-	-	Rejected
H4b	TP → BC → GBE	0.309*	0.002	Supported
H5	GW → GBE	-0.329	0.000	Supported
H6a	D&A → GW	-	-	Rejected
H6b	TP → GW	-0.582	0.000	Supported
H7a	D&A → GW → GBE	-	-	Rejected
H7b	TP → GW → GBE	0.158*	0.035	Supported

*: indirect effect

4.3 Total structural models

In order to evaluate the explanatory power of the entire theorised models, an SEM was analysed with all relationships drawn simultaneously. However, based on the previous results, as the direct effect of D&A on GBE was not significant and the direct effect of TP on GBE diminished once a mediator was added, the two direct effects of the brand co-creation concepts on GBE were dropped.

As was argued for earlier in this paper, the transparency measurement scale of Dapko (2012) was added, as the measurement scale of co-creation (renamed D&A) from earlier research (Nysveen & Pedersen, 2014; Iglesias et al., 2018) was not deemed to fully represent brand co-creation, based on the definition by Hatch and Schultz (2010). To evaluate this action, two model analyses were performed. In the first model (Model 1), the TP construct was excluded, leading to D&A being the sole exogenous construct to represent brand co-creation, in accordance with prior research. In the second model (Model 2), transparency (TP) was added and together with D&A represented brand co-creation, as has been argued for in this paper. These two models were then compared by their corresponding diagnostic measurements to evaluate which model received the highest goodness of fit.

The corresponding diagnostic measurements from testing the models are shown in Table 7. The two tested models are also shown visually in Figure 2 and Figure 3. Comparing these values, one can see that Model 1 received a normed $\chi 2$-value of 1.81, while Model 2 received a normed $\chi 2$-value of 1.51. As explained by Hair et al. (2014), a normed $\chi 2$-value below 2 is deemed a good fit, with receding values indicating higher fit. As such, Model 2 with both the construct of D&A and TP has a higher fit than Model 1 when D&A is tested alone. This also

holds when comparing the additional corresponding diagnostic measurement for each model (see Table 7). Further, the covariance between D&A and TP is 0.41, indicating interrelations between the two constructs, yet still on a tolerable level to be regarded as measuring different concepts.

Table 7

SEM Goodness-of-fit statistics

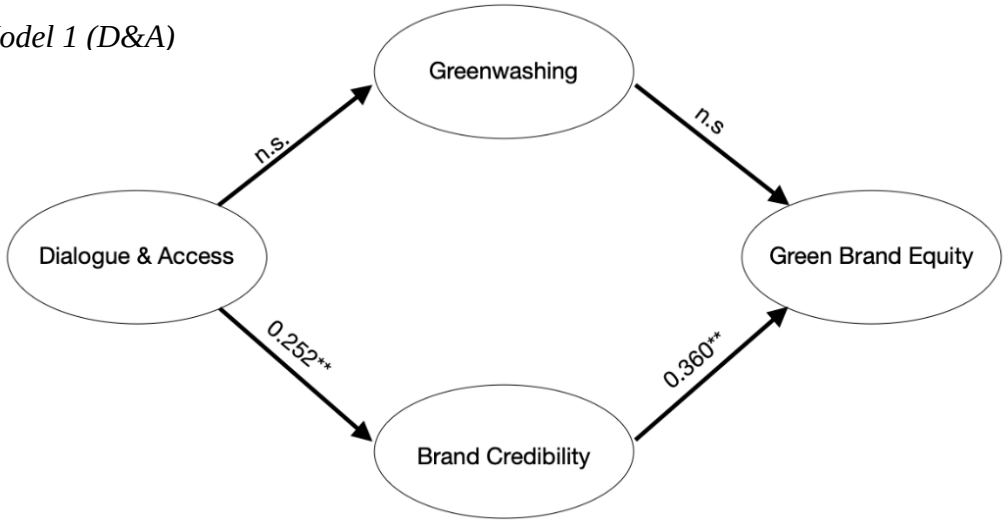
Model fit SEM	Model 1 (D&A)	Model 2 (D&A + TP)	Cut-off value
$\chi 2$	333.700	401.760	–
df	184	266	–
Normed chi square ($\chi 2$/df)	1.81	1.51	< 2
RMSEA	0.074	0.059	< 0.08
SRMR	0.161	0.082	< 0.1
CFI	0.916	0.939	> 0.9
TLI	0.904	0.931	Approaching 1

As for the goodness-of-fit of Model 2 (see Table 7), all diagnostic measurement fulfils the requirements as suggested by Hair et al. (2014). However, when investigating the hypothesised relationship, only four path relationships are significant (BC→GBE, D&A→GW, TP→GW and TP→BC). This is a different result compared with when the relationships are tested individually. There are also some discrepancies concerning what tests are significant, with one example being the effect of D&A on GW, which previously was not significant but now is (p = 0.048; ß= 0.173). However, it is significant on a 95% confidence level and with a reversed sign. The opposite is true for the effect of GW on GBE, which is now not significant. If the hypotheses were to be evaluated based on the complete structural model (Model 2), it would lead to rejecting H1a, H1b, H2a, H4a, H5 and H6a compared to rejecting H1a, H2a, H4a, H6a and H7a when each relationship is tested separately.

The reduction of significant path estimates when testing the model as a whole can be related to the increased statistical power needed when all paths are estimated simultaneously. The data consist of 149 respondents (n=149), which is a relatively small sample when conducting SEM analysis (Hair et al., 2014). This could possibly be an explanation for the weak estimates when the whole model is tested.

Figure 2

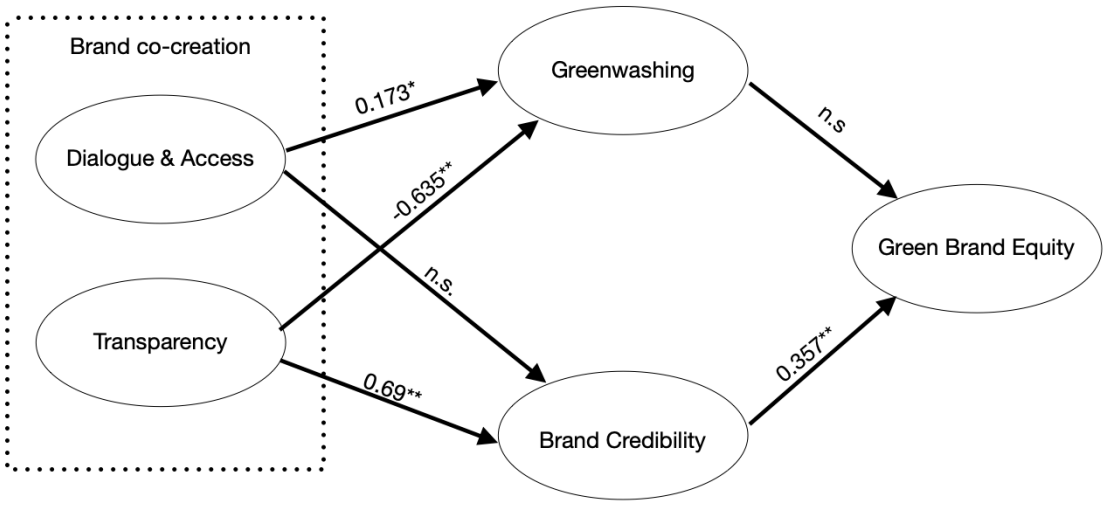
Model 1 (D&A)



**: p<0.01

Figure 3

Model 2 (D&A + TP)



*: p<0.05 **: p<0.01

5. Discussion

In the following section each concept and their interrelations will be discussed, followed by a model comparison and evaluation.

5.1 Brand co-creation

This study chose to let brand co-creation be represented by two constructs: dialogue and access and transparency, based on the framework of Hatch & Schutz (2010). Of these two constructs, perceived transparency was the only one which had a significant and positive direct effect on green brand equity. This indicates that when firms want to create a brand which is viewed from the consumer perspective as environmentally conscious, it is of greater importance to be transparent about one's operations than enabling consumers to partake in co-creative activities. The importance of a transparent relationship with consumers and other stakeholders in order for these groups to believe claims from a brand is something that has been demonstrated previously (van Dijk et al., 2014). This has also been discussed within sustainable marketing studies, for example in the discussions concerning selective disclosure strategy (Iglesias et al., 2018). The result from this study further strengthens these arguments, that is, if a brand is to be regarded as green, transparency cannot be overlooked.

An interesting finding is that dialogue and access did not have a significant effect on any of the tested relationships. This was somewhat surprising as research has indicated that green brand equity is established by investing in consumer relationships (Kang & Hur, 2012) and that if consumers perceive the brand in question as open for collaborations, this will positively affect one's perception of green brand equity. Further, given the central role of satisfaction and loyalty for both co-creation (Nysveen & Pedersen, 2014) and green brand equity (Górska-Warsewicz et al., 2021), a potential link between the two phenomena was argued for. However, no support of this could be found. Even when respondents were free to choose their favourite brands, the notion of dialogue and access does not seem to be common. In other words, though respondents chose a brand that they were relatively engaged with or knowledgeable about, no clear indication was found that they perceived the brand as inclusive. This is also demonstrated by the fact that the mean of the measurement scale was 4.34 (with SD=0.994, see Table 3), indicating that respondents tended to choose the middle alternative in the 7-point scale "neither or".

Hatch and Schultz (2010) argue that a brand can increase brand engagement by engaging consumers through having a dialogue and granting access in co-creative processes. The loss of control this entails is stated by Iglesias et al. (2013) helps firms create a more relevant brand. However, the results indicate that few consumers tend to see brands actively doing so. In contrast to earlier research which showed that co-creative processes had a positive effect on non-participant's perception of brand equity (Fuchs & Schreier, 2011; van Dijk, 2014; Kristal et al., 2016), no such conclusion can be drawn based on the results in this study. Kristal et al. (2016) found a small positive effect of co-creation on observer-based brand equity, but a rather

weak one. The result from this study does indicate a similar weak relationship, reflected in how no significant effect of dialogue and access was found and that the direct effect of transparency on green brand equity diminishes when additional mediators were added.

5.2 Brand credibility

Credible signals are defined as information communicated effectively which is perceived as truthful, dependent and costly by consumers (Erdem & Swait, 1998; Connelly et al., 2011). This has been argued to be determined by brand investments, consistency and clarity (Erdem & Swait, 1998). *Brand* credibility is made up of trustworthiness and expertise and represents the extent to which something is believable (Erdem & Swait, 2004). Effective signalling is key for firms to generate consumer confidence in products and is stated to be the most critical part in enhancing perceptions (Erdem & Swait, 1998). From the results however, it may be concluded that the dialogue and access component of co-creation did not generate a significant relationship on brand credibility while transparency showcased a direct, positive, and significant relationship on brand credibility.

One could argue that co-creation of brand meaning would imply a democratisation and, among the concerned consumers, a more favourable and legitimate view of the brand. Likewise, based on Fuchs and Schreier (2011), Van Dijk et al., (2014) and Kristal et al. (2016), greater consumer engagement was believed to generate an enhanced brand perception and by that brand credibility (Keller, 1993; Erdem & Swait, 1998). The connection previously argued for between brand co-creation and brand credibility also rests on the assumption that firm-consumer interaction constitutes the basis for perceived credibility (Erdem & Swait, 1998) just as it does for co-creation (Liljedal, 2016; Grönroos, 2012; Hatch & Schultz, 2010). However, the dialogue and access component of co-creation does not support any connection. As it is not possible to reject the null hypothesis, it is not possible to state that the effect is not equal to zero. Hence, it is possible that dialogue and access, as a part of co-creation endeavours, does not have a noteworthy effect on brand credibility. The area of inquiry might also be more complex than what has been captured by the conceptual model. However, to the best of the authors knowledge, this paper is the first to investigate such a relationship and future studies will have to continue to explore this avenue.

The transparency component of brand co-creation does, on the other hand, have a clear effect on brand credibility. This may be interpreted as that it is not the activities of dialogue and access in co-creation *per se* that generates the demonstrated positive effects, but the increase in transparency that accompanies it (Hatch & Schultz, 2010). This resonates with Prahalad and Ramaswamy (2004) and Hatch and Shultz (2010) as the building blocks are stated to be highly interlinked and in that establishing dialogue and access calls for transparency. In addition, putting this in relation to market information asymmetries and the underlying reasoning of brand credibility (Erdem & Swait, 1998; 2004; Connelly et al., 2011; Dunham, 2011) it is not surprising that transparency generates this effect, as transparency may arguably be considered the very antitheses to information asymmetry. A further explanation for this effect may also be that increased transparency, possibly seen as costly, lead to brands being perceived as more

truthful and dependent by consumers. Hence, it may lead to more effective signals and in the end, favour consumer perceptions of the firm (Erdem & Swait, 1998; Connelly et al., 2011). It also resonates with low quality firms being unable to send such signals (Erdem & Swait, 1998), as increased transparency would uncover their low quality, rendering such signals more credible.

The possible connection between the negotiation of brand meaning through co-creation (Hatch & Schultz, 2010; Iglesias et al., 2013; Iglesias et al. 2018), the underlying logic of co-creation at large (Liljedahl, 2016; Grönroos, 2012) and the idea of perceived credibility being negotiated in consumer-firm interaction (Erdem & Swait, 1998) may therefore also be argued to gain some support as a result of the transparency components effect on brand credibility. This is not surprising, given that trustworthiness, rather than expertise, constitute the bulk of brand credibility (Erdem & Swait, 2004). Consequently, brand co-creation may be used to increase perceived brand credibility. However, one needs to be aware that, according to the data collected, it is the increase in perceived transparency that creates this effect, not the actual activities of dialogue and access in brand co-creation.

5.3 Green brand equity

Chen (2010) defined green brand equity as the assets and liabilities regarding environmental commitments linked to a brand that either adds or subtracts value from the product. Among these, brand credibility has been examined in several studies (Ng et al., 2014; Esmaeili et al., 2017; Delafrooz & Gooli, 2015; Adnan et al., 2019; Akturan, 2018). This prior research has however produced contradicting results in relation to the effect of brand credibility on green brand equity. Ng et al. (2014) found no direct relationship between BC and GBE, while Esmaeli et al. (2017) and Delafrooz and Gooli (2015) found no relationship at all. In contrast, Akturan (2018) concluded a direct and positive relationship between BC and GBE, while Adnan et al., (2019) made a similar conclusion in relation to green brand credibility. In this study, it is concluded that BC has a direct positive relationship to GBE, meaning that brand credibility improves GBE. The clear positive relationship between BC and GBE showcases their connection and further substantiates their theoretical cutting point as quality symbols and risk reducers (Erdem et al., 2006; Connelly et al., 2011)

Moreover, as D&A did not have a significant direct effect on BC, the discussion of BC as a possible mediator of D&A falls short. However, the results showcase that brand credibility fully mediates the TP-component's effect on GBE, meaning that again, transparency has demonstrated its many advantages. Anew, the D&A component of brand co-creation has not shown any significant effect on BC or GBE, while the transparency component has. Given this, it is argued that undertaking brand co-creation activities is a feasible way of increasing GBE through its effect on brand credibility. Earlier research has argued that consumer empowerment and co-creation in general lead to improved corporate attitudes, brand perceptions among non-participants and may promote sustainable consumption (Fuchs & Schreier, 2011; Van Dijk et al., 2014; Kristal et al., 2016; Palakshappa & Dodds, 2021). From the data collected, it also seems to be applicable in terms of building green brand equity.

A possible counterargument could be that brand co-creation is insufficient for the sole purpose of improving green brand equity. However, the effects of undertaking co-creation are wide reaching and multifaceted (e.g., Fuchs & Schreier, 2011; van Dijk, 2014, Kristal et al., 2016). What has been demonstrated here is another benefit that may be harvested from undertaking such investments.

5.4 Greenwashing

To gain a better understanding of how brand co-creation can counteract greenwashing and the credibility issues it brings, perceived greenwashing was included as an investigated concept. In line with Chen et al. (2017) and Avcilar and Demigrünes (2016), the results indicate that perceived greenwashing has a direct negative effect on green brand equity. This was an expected and logical finding as it reflects that when a firm undertakes greenwashing activities it has clear negative consequences on green brand equity from a consumer perspective. Earlier studies that have investigated the indirect negative effect of greenwashing on GBE through various constructs have arrived at similar conclusions (e.g., Akturan, 2018; Avcilar & Demirgüneş, 2016). Concerning the concept of Halo-effect (Oh & Ramaprasad, 2003), the negative effect of perceived greenwashing may hurt other brands within the same industries, in spite of actual behaviour Thus, this finding is persistent with previous research; greenwashing is highly detrimental.

Further, the direct effects of brand co-creation on perceived greenwashing were analysed. As with previous tests, no significant effect was found from dialogue and access, while a significant and negative effect from transparency was. This further points to that in terms of green branding, transparency is a more profound force than dialogue and access. Iglesias et al. (2018) states a positive effect of CSR practices on co-creation and draws the conclusion that CSR practices does motivate consumers to take part in co-creation, while simultaneously counteracting selective disclosure strategies (Marquis et al., 2016). Though the aim was to find the reversed and inverted effect from brand co-creation on greenwashing, our results only support this for the effect of perceived transparency on perceived greenwashing. However, a similar argument can still be made as selective disclosure strategy, being a form of greenwashing, is when a company deliberately only communicates activities that are environmentally friendly while withholding other information which puts the company in a bad light from a sustainable perspective, creating a false sense of transparency (Marquis et al., 2016; Iglesias et al., 2018). A true increase in transparency will have an opposite effect on greenwashing, something that our data supports. As the effect of dialogue and access on perceived greenwashing was not significant, it cannot be ruled out that the effect is equal to zero. Based on this study's results, brand co-creation activities of dialogue and access cannot be stated as being a solution for minimising perception of greenwashing directly, while the transparency such activities entails can.

When perceived greenwashing was introduced as a mediator, the direct effect of brand co-creation on GBE diminished, just as it did when brand credibility was included. Greenwashing serves as a full mediator for transparency, indicating that consumers cannot see a brand both as transparent and sustainable while simultaneously perceiving the brand as conducting greenwashing activities. Hence, the results demonstrate that transparency and greenwashing are opposite forces.

5.5 Model evaluation

Comparing the two SEM analyses, Model 2 received a higher goodness-of-fit. This shows that when the transparency construct is added, the SEM receives greater explanatory power. This means that the suggested alteration of not only relying on the co-creation construct similar to earlier research (i.e., Nysveen & Pedersen, 2014; Iglesias et al., 2018), which was renamed D&A in this study, but also including the transparency construct in order to capture Hatch and Schultz's (2010) definition of brand co-creation, is warranted for.

In Model 1, D&A had a significant direct effect on BC and an indirect effect on GBE, yet these two effects diminish in Model 2 as a result of introducing transparency. An explanation for this could be that when the TP construct is added it absorbs the transparency inherent within dialogue and access. As Prahalad and Ramaswamy (2004) and Hatch and Schultz (2010) point out, the building blocks of co-creation are not distinctively different but co-exist with each other. In other words, for brands to engage consumers in dialogue and grant them access to internal processes, an underlying openness is needed and, naturally, such actions demand a certain degree of transparency (Prahalad & Ramaswamy, 2008). This is also supported by the covariance between the two exogenous constructs being 0.41, indicating similarities between the two. The TP construct represents transparency better than the D&A construct and therefore when the former is added, the latter's strength decreases. Again, this could be interpreted as the possibility that it is not co-creation activities *per se* that generates the positive effects on brand perceptions, but the transparency that intrinsically follows co-creation endeavours.

Given the variety of views on the benefits of co-creation and the lack of research on the large group of non-participants (e.g., Van Dijk et al., 2014; Fuchs & Schreier, 2011, Kristal et al., 2016, Palakshappa & Dodds, 2021; Iglesias et al., 2018) the authors of this paper, together with several other authors, encourage further research into the area. One cannot however escape the thought that many earlier studies concerning co-creation and its various effects on brand perceptions have generated positive results, in part due to the increase in transparency that follows co-creation, which this paper has successfully captured. For example, Kristal et al., (2016) concluded a marginal effect of co-creation of observer-based brand equity and concluded that engaging in co-creation to improve OBBE was insufficient in relation to non-participants. Concretely, there is a risk that the relationship would have lost that marginal effect, had transparency been included as a separate construct. However, one must remember that the transparency component of brand co-creation increased brand credibility which in turn improved GBE. Any direct relationship between TP and GBE was not established when Model 2 was tested.

5.6 The significance of perception

Finally, this study has investigated *perceptions* of co-creation, transparency, brand credibility and greenwashing. Perceptions are not necessarily proportionally connected to actual firm behaviour and conduct, and hence may be argued to lose some of its potential of driving a sustainable transition forward. However, one might ask where the line is drawn between actual behaviour and perceived behaviour. Regarding this, two aspects are arguably worth considering. Firstly, it is unreasonable to demand that firms become completely transparent. Secondly, firms are facing progressively increased insight and scrutiny. One could therefore argue that the gap between actual behaviour and perceived behaviour is being reduced and hence that perceptions matter to a larger extent.

6. Conclusions and contributions

The purpose and aim of this study were to investigate the relationships between brand co-creation, greenwashing and brand credibility and their relative importance in building green brand equity. Moreover, transparency and dialogue and access were investigated due to their high relevance within all concepts. In doing so, this study has mainly contributed to the literature within green branding and co-creation.

6.1 Theoretical implications

Firstly, concerning dialogue and access and transparency, representing the building blocks of brand co-creation, the latter has clearly demonstrated its leading role in improving consumer perception in terms of green brand equity and brand credibility, while lessening perceived greenwashing. Transparency has a greater effect than the activities of dialogue and access, highlighting its crucial role within green marketing. This result is intriguing, given that earlier research has not, to the best of the authors knowledge, included this level of detail in their co-creation research. The findings demonstrate the benefits of including transparency as an individual construct when investigating co-creation as it generates a more detailed understanding of the concept and its interrelations. Evidently, transparency has an influential role as part of brand co-creation, and it is therefore encouraged that future investigations include transparency as an essential component. Such alterations will also more correctly reflect the influential framework presented by Hatch and Schultz (2010).

Secondly, the importance of brand credibility in relation to green brand equity is confirmed. Concerning the discrepancies in previous research, this study sides with proponents of a positive connection. It also supports the theoretical argument of brand credibility and brand equity in which they are joint by their role as risk reducers and quality symbols. It is also concluded that a similar reasoning can be applied to green brand equity. Further, a greater connection between transparency and brand credibility was found, compared to transparency and green brand equity, with brand credibility being a perfect mediator. Brand co-creation in terms of transparency can be stated to make brands more credible, which in turn can improve green brand equity. Less can be stated about the importance of dialogue and access activities, though it is not possible to rule out that it is a contributor as well.

Lastly, perceived greenwashing unsurprisingly affects green brand equity negatively. Increased transparency leads to less perceived greenwashing from the consumer perspective, while not being as negatively affected by increased dialogue and access. It is again important to note that dialogue and access cannot be ruled out as a contributor to reducing perceived greenwashing. In sum, transparency's role in reducing perceived greenwashing and, in turn, greenwashing's role in reducing green brand equity, is supported.

6.2 Managerial implications

Based on the findings of this thesis, this paper proposes three main recommendations for practitioners. Firstly, as brand co-creation is mostly contributing to green brand equity through brand credibility by the transparency it entails, it is suggested that co-creation alone is not sufficiently effective to increase the perception of sustainability or to advance green marketing. Practitioners should be aware of the crucial role transparency and brand credibility has within green marketing. With that said, as it is a key part of co-creation, such endeavours also become investments in transparency which has been shown to increase brand credibility and consequently green brand equity. Engaging consumers in an open dialogue and granting access was not directly found to increase the perception of green brand equity or brand credibility, nor reduce perceived greenwashing. Establishing such connections with one's consumer-base has been shown to be beneficial in many other areas but based on the findings it is ineffective in increasing the perceived environmental value of a brand from the consumer perspective.

Secondly, it is concluded that improving brand credibility increases green brand equity. Based on that, it is proposed that to advance green marketing and improve consumer perceptions, firms need to improve their credibility as it is an influential factor. Here, brand co-creation in the form of transparency can play an essential part. As firms open to let themselves be known, their signals will be perceived as more credible. In the introductory sections of this paper, it was argued for an ongoing credibility crisis in terms of sustainability claims. Based on the result from this study, brand credibility is highly influential on green brand equity. Hence, it is stressed that practitioners should not overlook its importance, as increased credibility contributes to less scepticism from consumers and is a strong contributor to improved green brand equity.

Thirdly, touching on the note of scepticism, brand co-creation had a limiting effect of reducing perceived greenwashing. Contrastingly, greenwashing instead is detrimental to the degree that it limits the positive effect of brand co-creation on green brand equity. Given this clear undermining effect, firms should strive to minimise greenwashing by all means. Given the widespread use of greenwashing today, this paper calls for firms to be self-critical and continue a steady and uninterrupted dismantling of such practices. This would likely lessen the very credibility crisis it has contributed to.

A final and important conclusion is that the very central role of transparency discussed earlier in this paper is supported. As mentioned, many of the subjects and factors discussed (e.g.,

greenwashing, brand credibility, brand co-creation) puts transparency in a principal role. In parallel, a credibility crisis has risen within green marketing, and it stands clear that transparency and credibility are major determinants of green marketing success. To advance green marketing and, hopefully as a consequence, sustainable consumption, firms are called upon to increase their level of transparency and to work towards becoming more credible as it will most certainly be advantageous for firms in the longer run, especially as the effects of environmental degradation become more apparent.

7. Limitations

It is important to remember that the data is primarily constituted by young adults studying at the University of Gothenburg which is limiting in regard to making any broad generalisations. This is to be taken in consideration together with the small sample size with 149 usable answers. In addition, as can be seen in the descriptive section, six respondents were above 40 years old, which is a deviation from the intended population.

Since this was a general investigation into concepts within green marketing, respondents were allowed to choose a brand freely which they were knowledgeable about or highly regarded. This means that the conclusions which are drawn are dependent on both a certain degree of brand knowledge and a degree of favourable attitudes towards the brand. This was deemed necessary, due to the level of brand engagement required to investigate brand co-creation. However, such prerequisites could possibly have influenced the respondents to given more optimistic responses to the survey questions. In the same vein, less scepticism is expected from these individuals compared to consumers with no preconceived views about a brand. Moreover, the data consist of individuals who chose brands in a variety of markets. However, being regarded as a green brand in the food industry can differ from brands within the transport sector. Therefore, there is a risk of possible omitted variable bias, that is, other factors affecting the perception of each investigated construct.

During the analysis it became clear that the scale of dialogue and access had some statistical shortcomings. This led to most of the relationships drawn from the construct to other ones being not significant. Besides the limited response rate, this could potentially be explained by that the concept is hard to investigate quantitatively, due to the limited ability to explain the concept in the survey and the limited knowledge in the general public of the meaning of co-creation and what it entails.

8. Further research

Co-creation is in general an under-investigated area and further research is called for. For example, the effects of co-creation on non-participants which constitute the wide mass of the market or co-creations' role within sustainable marketing in general need further investigations. Likewise, as this study was not able to discern the role of dialogue and access and showed that transparency has an influential role, future studies integrating the transparency dimension of co-creation more clearly is encouraged. In doing so, it is hoped that greater clarity will be

gained around the effect of dividing co-creation into dialogue and access and transparency. Looking further into this will hopefully also result in a more generalizable dialogue and access scale than this study could achieve.

More research is also needed regarding the relationship between brand credibility and (green) brand equity. Although this paper found a clear connection, the inconsistent results from previous studies still exist. As this study was conducted in Sweden and primarily among young adults, investigations in other contexts and with larger samples is needed. Lastly, this was a general investigation on green branding. Future research may need to focus on specific industries but be aware of the need for brand engagement which we found lacking throughout our study.

References

Aaker, D. (1991). *Managing brand equity: Capitalizing on the value of a brand name.* Maxwell Macmillan International.

Aaker, D. (1996). Measuring Brand Equity Across Products and Markets. *California Management Review, 38*(3), 102-120.

Adnan, M., Naveed, R. T., Ahmad, N., & Hamid, T. A. (2019). Predicting Green Brand Equity Through Green Brand Credibility. *Journal of Managerial Sciences, 13*(2), 144-157

Akturan, U. (2018). How does greenwashing affect green branding equity and purchase intention? An empirical research. *Marketing Intelligence & Planning, 36*(7), 809-824.

Aquilani, B., Silvestri, C., & Ruggieri, A. (2016). Sustainability, TQM and Value Co-Creation Processes: The Role of Critical Success Factors. *Sustainability, 8*(10), 995. https://doi.org/10.3390/su8100995

Avcilar, M., & Demirgünes, B. (2016). Developing Perceived Greenwash Index and Its Effect on Green Brand Equity: A Research on Gas Station Companies in Turkey. *International*

Baek, T.H., Kim, J. and Yu, J.H. (2010), The differential roles of brand credibility and brand prestige in consumer brand choice. *Psychology & Marketing, 27*(7), 662-678. https://doi-org.ezproxy.ub.gu.se/10.1002/mar.20350

Bekk, M., Spörrle, M., Hedjasie, R., & Kerschreiter, R. (2015). Greening the competitive advantage: Antecedents and consequences of green brand equity. *Quality & Quantity, 50*(4), 1727-1746.

Bryman, A., Bell, E., & Nilsson, B. (2013). *Företagsekonomiska forskningsmetoder.* Stockholm: Liber

Chang, C., & Chen, Y. (2013). Managing green brand equity: The perspective of perceived risk theory. *Quality & Quantity, 48*(3), 1753-1768.

Chen, Y. (2008). The Driver of Green Innovation and Green Image: Green Core Competence. *Journal of Business Ethics, 81*(3), 531-543.

Chen, Y. (2010). The Drivers of Green Brand Equity: Green Brand Image, Green Satisfaction, and Green Trust. *Journal of Business Ethics, 93*(2), 307-319.

Chen, Y., & Chang, C. (2013). Greenwash and Green Trust: The Mediation Effects of Green Consumer Confusion and Green Perceived Risk. *Journal of Business Ethics, 114*(3), 489-500.

Chen, Y., Huang, A., Wang, T., & Chen, Y. (2020). Greenwash and green purchase behaviour: The mediation of green brand image and green brand loyalty. *Total Quality Management & Business Excellence, 31*(1-2), 194-209.

Chen, Y., Lin, C., & Chang, C. (2013). The influence of greenwash on green word-of-mouth (green WOM): The mediation effects of green perceived quality and green satisfaction. *Quality & Quantity, 48*(5), 2411-2425.

Chen, Y., Tien, W., Lee, Y., & Tsai, M. (2017). Greenwash and green brand equity. *Portland International Conference on Management of Engineering and Technology (PICMET): Technology Management for Social Innovation, Proceedings,* 1797-1803. doi: 10.1109/PICMET.2016.7806783.

Christodoulides, G. (2008). Breaking free from the industrial age paradigm of branding. *The Journal of Brand Management, 15*(4), 291-293.

Connelly, B., Certo, S., Ireland, R., & Reutzel, C. (2011). Signaling Theory: A Review and Assessment. *Journal of Management, 37*(1), 39-67.

Dangelico, R., & Vocalelli, D. (2017). “Green Marketing”: An analysis of definitions, strategy steps, and tools through a systematic review of the literature. *Journal of Cleaner Production, 165*, 1263-1279.

Dapko, J. L. (2012). *Perceived firm transparency: Scale and model development.* [Ph.D. Thesis, University of South Florida]. Digital Commons @ USF. https://digitalcommons.usf.edu/etd/4025

Delafrooz, N., & Goli, A. (2015). The factors affecting the green brand equity of electronic products: Green marketing. *Cogent Business & Management, 2*(1), 1079351.

Donley, A. M. (2012). *Research methods.* Infobase Learning. https://ebookcentral.proquest.com/lib/gu/reader.action?docID=914729

Dunham, B. (2011). The Role for Signaling Theory and Receiver Psychology in Marketing. In Saad, G. (Ed.*) Evolutionary Psychology in the Business Sciences. (pp.* 225–256) Springer. https://doi.org/10.1007/978-3-540-92784-6_9

Erdem, T., & Swait, J. (1998). Brand Equity as a Signaling Phenomenon. *Journal of Consumer Psychology, 7*(2), 131-157.

Erdem, T., & Swait, J. (2004). Brand Credibility, Brand Consideration, and Choice. *The Journal of Consumer Research, 31*(1), 191-198.

Erdem, T., Swait, J., & Louviere, J. (2002). The impact of brand credibility on consumer price sensitivity. *International Journal of Research in Marketing, 19*(1), 1-19.

Erdem, T., Swait, J., & Valenzuela, A. (2006). Brands as Signals: A Cross-Country Validation Study. *Journal of Marketing, 70*(1), 34-49.

Esmaeili, A., Sepahvand, A., Rostamzadeh, R., & Joksiene, I., & Antucheviciene, J. (2017). Effect of integration of green constructs and traditional constructs of brand on green purchase intention of customers. *E&M Economics and Management 20*(3). 219-237.

Esteban-Bravo, M., & Vidal-Sanz, J. (2021). *Marketing research methods: Quantitative and qualitative approaches.* Cambridge University Press.

European Commission. (2021, January 28). *Screening of Websites for ‘Greenwashing': Half of Green Claims Lack Evidence*. [Press release] https://ec.europa.eu/commission/presscorner/detail/en/ip_21_269.

Farooq, Y., & Wicaksono, H. (2021). Advancing on the analysis of causes and consequences of green skepticism. *Journal of Cleaner Production, 320*, 128927.

Farquhar, P. H. (1989). Managing brand equity. *Marketing research, 1*(3), 24-33.

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research, 18*(1), 39–50.

Fricker, R. (2017). Sampling methods for online surveys. In N. Fielding, R. Lee, & G. Blank (Eds.) *The SAGE Handbook of online research methods* (pp. 162-183). SAGE Publications Ltd.

Fuchs, C., & Schreier, M. (2011). Customer Empowerment in New Product Development. *The Journal of Product Innovation Management, 28*(1), 17-32.

Füller, J., Mühlbacher, H., Matzler, K., & Jawecki, G. (2009). Consumer Empowerment Through Internet-Based Co-creation. *Journal of Management Information Systems, 26*(3), 71-102.

Górska-Warsewicz, H., Debski, M., Fabus, M., & Kovac, M. (2021). Green brand equity - empirical experience from a systematic literature review. *Sustainability, 13*(20), 11130.

Gregory, A. (2007). Involving Stakeholders in Developing Corporate Brands: The Communication Dimension. *Journal of Marketing Management, 23*(1-2), 59-73.

Grönroos, C. (2011) Value co-creation in service logic: A critical analysis. *Marketing Theory 11*(3), 279–301.

Grönroos, C. (2012). Conceptualising value co-creation: A journey to the 1970s and back to the future. *Journal of Marketing Management, 28*(13-14), 1520-1534.

Grönroos, C., & Voima, P. (2012). Critical service logic: Making sense of value creation and co-creation. *Journal of the Academy of Marketing Science, 41*(2), 133-150.

Hair, J., Black, W., Babin, B. & Anderson, R. (2014*). Multivariate Data Analysis*. Pearson Education Limited.

Hatch, M. J., & Schultz, M. (2010). Toward a theory of brand co-creation with implications for brand governance. *Journal of Brand Management, 17*(8), 590-604.

Ho, T. N., Wu, W. Y., Nguyen, P. T., & Chen, H. C. (2019). The moderating effects for the relationships between green customer value, green brand equity and behavioral intention. *Academy of Strategic Management Journal*, *18*(4), 1-21.

Horiuchi, R., & Schuchard, R., Shea, L., Townsend, F. (2009). *Understanding and preventing greenwash: A business guide. [White paper]*. BSR, Futerra. https://www.bsr.org/reports/Understanding%20_Preventing_Greenwash.pdf

Hur, W., Kim, H., & Woo, J. (2014). How CSR Leads to Corporate Brand Equity: Mediating Mechanisms of Corporate Brand Credibility and Reputation. *Journal of Business Ethics, 125*(1), 75-86.

Iglesias, O., Ind, N. and Alfaro, M. (2013), "The organic view of the brand- a brand value co-creation model*". Journal of Brand Management, 20*(8), 670-688.

Iglesias, O., Markovic, S., Bagherzadeh, M., & Singh, J. (2018). Co-creation: A Key Link Between Corporate Social Responsibility, Customer Trust, and Customer Loyalty. *Journal of brand experience Business Ethics, 163*(1), 151-166.

Ind, N., Iglesias, O., & Schultz, M. (2013). Building brands together: Emergence and outcomes of co-creation. *California Management Review, 55*(3), 5-26.

Internetstiftelsen. (2020, June 25) *År 2020 Q1 använder 96 procent av svenskarna internet.* Svenskarna och internet. https://svenskarnaochinternet.se/rapporter/digitalt-utanforskap-2020/internetutveckling-och-uppkoppling/ar-2020-q1-anvander-96-procent-av-svenskarna-internet/

Internetstiftelsen. (2021, October 21). *90-Talisterna använder sociala medier mest av alla.* Svenskarna och internet. https://svenskarnaochinternet.se/rapporter/svenskarna-och-internet-2021/sociala-medier/90-talisterna-anvander-sociala-medier-mest-av-alla/

Kalafatis, S., Pollard, M., East, R., & Tsogas, M. (1999). Green marketing and Ajzen's theory of planned behaviour: A cross-market examination. *The Journal of Consumer Marketing, 16*(5), 441-460.

Kang, S., & Hur, W. M. (2012). Investigating the antecedents of green brand equity: A sustainable development perspective. *Corporate Social Responsibility and Environmental Management, 19*(5), 306–316.

Keller, K. L. (1993). Conceptualizing, measuring and managing customer-based brand equity. *Journal of Marketing, 57*, 1–22.

Keller, K. L. (2001). Building customer-based brand equity. Marketing Management, 10(2), 14-19.

Kemp, E., & Bui, M. (2011). Healthy brands: Establishing brand credibility, commitment and connection among consumers. *The Journal of Consumer Marketing, 28*(6), 429-437.

Konuk, F., Rahman, S., & Salo, J. (2015). Antecedents of green behavioral intentions: A cross-country study of Turkey, Finland and Pakistan. *International Journal of Consumer Studies, 39*(6), 586-596.

Kristal, S., Baumgarth, C., Behnke, C., & Henseler, J. (2016). Is co-creation really a booster for brand equity? The role of co-creation in observer-based brand equity (OBBE). *The Journal of Product & Brand Management, 25*(3), 247-261.

Lam, L. (2012). Impact of competitiveness on salespeople's commitment and performance. *Journal of Business Research, 65*(9), 1328-1334.

Laufer, W. S. (2003). Social accountability and corporate greenwashing. *Journal of Business Ethics, 43*(3), 253-261.

Liljedal, K. (2016). *Communicated Consumer Co-creation. Consumer Response to Consumer Co-creation in New Product and Service Development.* [Doctoral Dissertation, Stockholm School of Economics]. SSE Library. https://www.hhs.se/contentassets/95137c26e7cf44818b9abd03314cf885/kappa_avhandling_ktl_v.9.pdf

Liu, Y., Eisingerich, A., Auh, S., Merlo, O., & Chun, H. (2015). Service Firm Performance Transparency. *Journal of Service Research, 18*(4), 451-467.

Markovic, S., & Bagherzadeh, M. (2018). How does breadth of external stakeholder co-creation influence innovation performance? Analyzing the mediating roles of knowledge sharing and product innovation. *Journal of Business Research, 88*, 173-186.

Marquis, C., Toffel, M., & Zhou, Y. (2016). Scrutiny, norms, and selective disclosure - A global study of greenwashing. *Organization Science, 27*(2), 483–504.

Martin, D., & Schouten, J. (2013). *Sustainable marketing.* Pearson.

Merz, M., He, Y., & Vargo, S. (2009). The evolving brand logic: A service-dominant logic perspective. *Journal of the Academy of Marketing Science, 37*(3), 328-344.

Merz, M., Zarantonello, L., & Grappi, S. (2018). How valuable are your customers in the brand value co-creation process? The development of a Customer Co-Creation Value (CCCV) scale. *Journal of Business Research, 82*, 79-89

Newell, S. J., & Goldsmith, R. E. (2001). The development of a scale to measure perceived corporate credibility. *Journal of Business Research, 52*(3), 235-247.

Ng, P., Butt, M., Khong, K., & Ong, F. (2014). Antecedents of Green Brand Equity: An Integrated Approach. *Journal of Business Ethics, 121*(2), 203-215.

Nguyen, T., Yang, Z., Nguyen, N., Johnson, L., & Cao, T. (2019). Greenwash and green purchase intention: The mediating role of green scepticism. *Sustainability, 11*(9), 2653.

Nysveen, H., & Pedersen, P. (2014). Influences of co-creation on brand experience: The role of brand engagement. *International Journal of Market Research, 56*(6), 807-832.

Oh, M. Y., & Ramaprasad, J. (2003). Halo effect: Conceptual definition and empirical exploration with regard to South Korean subsidiaries of US and Japanese multinational corporations. *Journal of Communication Management, 7(*4), 317-332

Osei-Frimpong, K., & McLean, G. (2018). Examining online social brand engagement: A social presence theory perspective. *Technological Forecasting & Social Change, 128*, 10-21.

Palakshappa, N., & Dodds, S. (2021). Mobilising SDG 12: Co-creating sustainability through brands. *Marketing Intelligence & Planning, 39*(2), 265-283.

Patel, R., & Davidson, B. (2019). *Forskningsmetodikens grunder: Att planera, genomföra och rapportera en undersökning* (2nd ed.). Liber.

Peattie, K. (2001). Towards sustainability: the third age of green marketing. *The marketing review, 2*(2), 129-146

Perks, S., & Smith, E. (2010). A perceptual study of the impact of green practice implementation on the business functions. *Southern African Business Review, 14*(3), 1-29.

Polonsky, M., Grau, S., & Garma, R. (2010). The New Greenwash? Potential Marketing Problems with Carbon Offsets. *International Journal of Business Studies, 18*(1), 49-54.

Pomering, A., & Johnson, L. W. (2009). Advertising corporate social responsibility initiatives to communicate corporate image: Inhibiting scepticism to enhance persuasion. *Corporate Communications, 14*(4), 420-439.

Prahalad, C., & Ramaswamy, V. (2004). Co-creating unique value with customers. *Strategy & Leadership, 32*(3), 4-9.

Ramaswamy, V., & Ozcan, K. (2016). Brand value co-creation in a digitalized world: An integrative framework and research implications. *International Journal of Research in Marketing, 33*(1), 93–106.

Ranjan, K. R., & Read, S. (2016). Value co-creation: Concept and measurement. *Journal of the Academy of Marketing Science. 44,* 290–315.

Schultz, M., & Hatch, M. (2003). The Cycles of Corporate Branding: The Case of the LEGO Company. *California Management Review, 46*(1), 6-26.

Spence, M. (1973). Job Market Signaling. *The Quarterly Journal of Economics, 87*(3), 355–374.

Spry, A., Pappu, R., & Bettina Cornwell, T. (2011). Celebrity endorsement, brand credibility and brand equity. *European Journal of Marketing, 45*(6), 882-909.

Sweeney, J., & Swait, J. (2008). The effects of brand credibility on customer loyalty. *Journal of Retailing and Consumer Services, 15*, 179–193.

Tajvidi, M., Richard, M., Wang, Y., & Hajli, N. (2020). Brand co-creation through social commerce information sharing: The role of social media. *Journal of Business Research, 121*, 476-486.

TerraChoice. (2009). *The seven sins of greenwashing.* [White paper]. TerraChoice Environmental Marketing Inc. https://www.map-testing.com/assets/files/2009-04-xx-The_Seven_Sins_of_Greenwashing_low_res.pdf

Van Dijk, J., Antonides, G., & Schillewaert, N. (2014). Effects of co-creation claim on consumer brand perceptions and behavioural intentions. *International Journal of Consumer Studies, 38*(1), 110-118.

Vargo, S. L., & Lusch, R. F. (2008). Service-dominant logic: Continuing the evolution. *Journal of the Academy of Marketing Science, 36*(1), 1–10.

Vermeir, I., & Verbeke, W. (2006). Sustainable Food Consumption: Exploring the Consumer "Attitude – Behavioral Intention" Gap. *Journal of Agricultural & Environmental Ethics, 19*(2), 169-194.

Wang, L., Li, W., & Qi, L. (2020). Stakeholder pressures and corporate environmental strategies: A meta-analysis. *Sustainability, 12*(3), 1-16.

Wang, S., Liao, Y., Wu, W., & Le, K. (2021). The Role of Corporate Social Responsibility Perceptions in Brand Equity, Brand Credibility, Brand Reputation, and Purchase Intentions. *Sustainability, 13*(21), 11975

Appendices

Appendix 1
The complete survey (in Swedish)

Varumärkesuppfattning

 Obligatoriska frågor är markerade med en stjärna (*)

GÖTEBORGS UNIVERSITET
HANDELSHÖGSKOLAN

Hej!

Ett stort tack till dig som valt att delta i vår undersökning. Den är en del av vår masteruppsats, där vi ämnar att undersöka hållbar varumärkesuppbyggnad. Vi ber dig som svarar på enkäten att tänka på ett valfritt varumärke som du värdesätter högt och/eller har erfarenhet av. Vi vill understryka att samtliga svar ska utgå ifrån din personliga uppfattning, inte nödvändigtvis vad varumärket faktiskt gör. Med andra ord, det krävs inte att du har kunskap om hur varumärket agerar. Det är din uppfattning av varumärket som är av intresse.

Enkäten tar ca 5-8 mintuer att svara på. Alla svar kommer vara anonyma och kan inte kopplas till dig som individ samt kommer behandlas konfidentiellt.

Tack för att du deltar!

Niklas Löfgren & Axel Wieslander
MSc Marketing & Consumption
Handelshögskolan vid Göteborgs Universitet

1. Kön

◯ Kvinna

◯ Man

◯ Annat/vill ej delge

2. Ålder

◯ Under 20

◯ 20-29

◯ 30-39

◯ 40-49

◯ 50-59

◯ 60+

3. Huvudsaklig sysselsättning

◯ Studerande

◯ Deltidsanställd

◯ Heltidsanställd

◯ Egenföretagare

◯ Annat

4. Månadsinkomst innan skatt i SEK

◯ <15 000

◯ 15 001 - 30 000

◯ 30 001 - 45 000

◯ 45 000 - 60 000

◯ >60 000

◯ Vill ej delge

5. Sett till ditt valda varumärke, svara på följande påståenden: *

	Instämmer s l l a i e n t	Instämmer inte	Instämmer delvis inte	Varken eller	Instämmer delvis	Instämmer	Instämmer helt
Det är rimligt att köpa varumärket baserat på dess miljöåtaganden istället för andra varumärken, även om deras miljöåtaganden är desamma	◯	◯	◯	◯	◯	◯	◯
Även om ett annat varumärke har samma miljöegenskaper som ditt tilltänkta varumärke, föredrar du att köpa ditt tilltänkta varumärke	◯	◯	◯	◯	◯	◯	◯
Om det finns ett annat varumärke vars miljöprestanda är likställt med ditt tilltänkta varumärke, så föredrar du att köpa det tilltänkta varumärket	◯	◯	◯	◯	◯	◯	◯
Om ett annat varumärkes miljöhänsyn inte skiljer sig på något sätt från ditt tilltänkta varumärke, verkar det smartare att köpa ditt tilltänkta varumärke.	◯	◯	◯	◯	◯	◯	◯

6. Sett till ditt valda varumärke, svara på följande påståenden om trovärdighet: *

	Instämmer inte alls	Instämmer inte	Instämmer delvis inte	Varken eller	Instämmer delvis	Instämmer	Instämmer helt
Varumärket håller vad det lovar	◯	◯	◯	◯	◯	◯	◯
Påståenden om produkter och tjänster från varumärket är trovärdiga	◯	◯	◯	◯	◯	◯	◯
Över tid har mina erfarenheter av mitt valda varumärke fått mig att förvänta mig att de håller vad de lovar, varken mer eller mindre	◯	◯	◯	◯	◯	◯	◯
Varumärket är fast beslutet att leva upp till sina påståenden, varken mer eller mindre.	◯	◯	◯	◯	◯	◯	◯
Varumärket har ett namn jag kan lita på	◯	◯	◯	◯	◯	◯	◯
Varumärket har förmågan att leverera det de lovar	◯	◯	◯	◯	◯	◯	◯

7. Sett till ditt valda varumärke, svara på följande påståenden om hållbarhet: *

	Instämmer inte alls	Instämmer inte	Instämmer delvis inte	Varken eller	Instämmer delvis	Instämmer	Instämmer helt
Varumärket vilseleder med ord angående dess hållbara egenskaper	◯	◯	◯	◯	◯	◯	◯
Varumärket vilseleder med hjälp av bilder eller visualisering kring sina hållbara egenskaper	◯	◯	◯	◯	◯	◯	◯
Varumärket vilseleder med hjälp av otydliga eller svårbevisade påståenden om sin hållbarhet	◯	◯	◯	◯	◯	◯	◯
Varumärket överdriver hur hållbart det faktiskt är	◯	◯	◯	◯	◯	◯	◯
Varumärket utelämnar eller förskingrar viktig information, som leder till att dess påståenden om hållbarhet låter bättre än vad de är	◯	◯	◯	◯	◯	◯	◯

8. Sett till ditt valda varumärke, svara på följande påståenden om hur varumärket samarbetar med konsumenter (utifrån din uppfattning) *

	Instämmer inte alls	Instämmer inte	Instämmer delvis inte	Varken eller	Instämmer delvis	Instämmer	Instämmer helt
Varumärket är lyhört för konsumenters behov	◯	◯	◯	◯	◯	◯	◯
Varumärket har en dialog tillsammans med konsumenter om hur företagets produkter och tjänster kan förbättras	◯	◯	◯	◯	◯	◯	◯
Varumärket inkluderar konsumenter i att delta i beslut om hur dess produkter och tjänster erbjuds	◯	◯	◯	◯	◯	◯	◯
Varumärket och konsumenter hittar ofta tillsammans lösningar till konsumenters problem	◯	◯	◯	◯	◯	◯	◯
Konsumenter deltar aktivt när varumärket skapar nya lösningar	◯	◯	◯	◯	◯	◯	◯
Varumärket uppmuntrar kunder att tillsammans skapa lösningar	◯	◯	◯	◯	◯	◯	◯

	Instämmer inte alls	Instämmer inte	Instämmer delvis inte	Varken eller	Instämmer delvis	Instämmer	Instämmer helt
Jag är delaktig i att skapa varumärket tillsammans med företaget	◯	◯	◯	◯	◯	◯	◯
Företaget styr enskilt vad varumärket står för	◯	◯	◯	◯	◯	◯	◯
Jag har möjlighet att påverka varumärket	◯	◯	◯	◯	◯	◯	◯
Mina åsikter påverkar varumärket	◯	◯	◯	◯	◯	◯	◯

9. Sett till ditt valda varumärke, svara på följande påståenden om transparens (utifrån din uppfattning) *

	Instämmer inte alls	Instämmer inte	Instämmer delvis inte	Varken eller	Instämmer delvis	Instämmer	Instämmer helt
Företaget förser mig med möjligheten att lära mig mer om det	◯	◯	◯	◯	◯	◯	◯
Företaget möjliggör för mig att veta vad det gör	◯	◯	◯	◯	◯	◯	◯
Företaget vill att jag förstår vad det gör	◯	◯	◯	◯	◯	◯	◯
Företaget är öppet med mig	◯	◯	◯	◯	◯	◯	◯

10. Har du någonsin köp en produkt eller tjänst från varumärket?

◯ Ja

◯ Nej

11. Till sist, vilket varumärke tänkte du på? *

Jag tänkte på: _____

Appendix 2

Pattern Matrix from EFA

	Component				
Item	1	2	3	4	5
GW1	-0.880				
GW4	-0.872				
GW2:	-0.835				
GW5	-0.830				
GW3	-0.814				
D&A3		0.847			
D&A5		0.809			
D&A4		0.787			
D&A6		0.750			
D&A2		0.646			
D&A9		0.617			
D&A10		0.616			
D&A7		0.600			
GBE3			0.840		
GBE2			0.769		
GBE4			0.690		
Trans2				0.836	
Trans3				0.786	
Trans1				0.731	
Trans4				0.625	
BC3					0.843
BC4					0.818
BC5					0.773
BC2					0.721
BC6					0.659
BC1	0.365				0.564

Note. Extraction Method of Principal Component Analysis. Rotation Method of Oblimin with Kaiser Normalization. Items D&A1, D&A8 and GBE1 were dropped in an earlier stage of the EFA