

Contemplating Circular Economy:

The Effects of an Integrated Circular Consumption Strategy on Consumer Electronic Brands

Abstract

Circular economy and circular consumption models have attracted much research attention in the last decades, particularly within consumer electronics, as a legitimate solution to our contemporary consumption mindset (i.e. take-make-use-dispose). Initial research has shown positive consumer responses to reused electrical products. Yet, managers are reluctant to introduce circular consumption, in the form of product reuse, because of fear of negative brand effects and marketing complications. Therefore, this thesis investigates how offering reused products will affect consumers' product and brand perceptions, attitude and purchase intention. A quantitative experimental study was conducted where consumers were exposed to either a new or reused product offering, from a familiar or unfamiliar brand. The findings indicate that consumers don't perceive reused products to have lower quality than new conventional products, contradicting one of the main assumptions among brand managers. Consumers' perception of product and brand sustainability are positively affected when a familiar or unfamiliar brand implements a circular consumption offering. However, the reused products offerings effects on perceived brand innovativeness, brand attitude and purchase intention are different for the familiar and unfamiliar brand; there is only a significantly higher effect for the unfamiliar brand. These findings, first, lead to managerial implications that there are no negative effects on brand perceptions when offering reused products. Second, electrical consumer brands can gain competitive advantage and position themselves as green by implementing and promoting circular consumption.

Key words: *Circular economy, Sustainable consumption, Green positioning, Consumer brand knowledge*

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1. Introduction

1.1 Background

The environmental changes provoked by human activities is a critical issue for today's and future societies. Scientists are convinced that there is a threshold where "abrupt global environmental change can no longer be excluded" (Rockström et al., 2009 p.1). Research shows that the increase in greenhouse gas emissions is not caused by population growth, rather, it's caused by the growth in consumption levels (Satterthwaite, 2009). A call to act is requested by the member states of the United Nations Development Programme, who agree that sustainable global development is threatened if current production and consumption systems are not modified (UNDP, 2019).

Conventional marketing practices have been criticised for encouraging and contributing to the consumption mindset in today's society (Peattie and Peattie, 2009). The majority of production systems in industrial practice today are linear, often called take-make-use-dispose (Singh and Giacosa, 2019). A linear production system acts with the presumption that our planet can provide us with infinite resources. The primary and only goal, it seems, for a linear production system is to maximize sales and monetary profits (Cole et al., 2018). Over the past few decades, marketing practices (along with other contextual factors) have had a great impact on consumption (Ribeiro et al., 2019), leading up to the contemporary throwaway-mentality among consumers (Lieder and Rashid, 2015).

Circular economy has become an important topic in recent years among practitioners and academia because this business approach represents a promising solution that can preserve consumption and economic growth without jeopardizing the well-being of our environmental system (Geissdoerfer et al., 2016; Lieder and Rashid, 2015; Selvfors et al., 2019). The most adopted definition of circular economy is put forth by the Ellen MacArthur Foundation (Geissdoerfer et al., 2016), describing it as "an industrial economy that is restorative or regenerative by intention and design" (EMAF, 2019). This can be achieved by intentionally designing services and products to enable use in as many use cycles and for as long as possible. When a product eventually becomes obsolete, it needs to be recycled and parts of product should become spare parts or input materials (Hopkinson et al., 2018). Numerous researchers and practitioners advocate that implementing a circular business model skillfully can create multiple competitive advantages, such as attracting new customer segments, building a loyal

customer base, and improving the corporate brand image and product innovation (Abbey et al., 2015; Jayaraman and Luo, 2008).

Research on circular economy started off in an engineering-dominated perspective, trying to understand if and how the supply chain could be feasible from a technical and operational viewpoint (Guide and Van Wassenhove, 2009). Today circular economy is a multidisciplinary research field and many terminologies are linked to this thinking (Lieder and Rashid, 2015). Consumer electronics is one of the most researched product categories, as it has great potential for circular economy (Camacho-Otero et al., 2018). Discarded electrical and electronic equipment is one of the fastest growing waste streams globally (Balde et al., 2015), and its consumption is continuously growing worldwide (Pérez-Belis et al., 2014). This is due to the rapid development of technology, product functions, and decrease in product lifetimes (Laurenti et al., 2015). Electrical products are not utilized by consumers their whole product-life, for instance, laptops are only used 4 out of 7 years (Bakker et al., 2014). To extend electrical products' lives, managers can employ remanufacturing, refurbishing and recycling as circular strategies (Bakker et al., 2014). This means that the used products taken back from customers will go through a remanufacturing or refurbishing process that converts returned products into a "like new" condition through disassembling, replacing, repairing, and repackaging (Guide and Van Wassenhove, 2009). For the remainder of this paper, the term 'reused' will be used as a shorter synonym for these circular strategies, since we take a consumer rather than a producer perspective when investigating consumers' responses to an integrated circular consumption strategy.

It is noteworthy that consumers adopt sustainable behaviours to particular product categories, hence the adoption is not transferable (McDonald et al., 2009). The category of small electrical products is lagging behind other categories in terms of establishing patterns for consumers' sustainable consumption; even the greenest consumers don't know how to choose a sustainable electrical product due to nonexistent information and sustainability criteria (ibid.). Studies repeatedly discover that consumers' awareness about reused products are extremely low in general (Weelden et al., 2016; Abbey et al., 2014; Abbey et al., 2015), and consumers don't associate reused products with being environmentally friendly (Abbey et al., 2015). However, providing information about their environmental benefits actually result in more positive consumer attitudes (Michaud and Llerena, 2011). Clearly, consumers lack awareness and knowledge about reused electrical products and their benefits for the environment. Consumers

have grasped recycling as a sustainable behavior, but the concept of circular consumption and reuse is much harder for consumers to understand and adopt (Cole et al., 2018).

Even though circular consumption models bring various opportunities, a number of potential issues have also been discussed in the literature. Companies have to handle the fact that consumers are unwilling to return their products (Weelden et al., 2016), which creates an uncertain supply of used products in terms of quality and quantity (Cole et al., 2018). Other market barriers include perceived product quality (Abbey et al., 2017; Lieder et al. 2017), timing of product returns (Lieder et al. 2017; Souza, 2013), product life-cycles and optimal introduction of reused products (Atasu et al., 2008), optimal pricing of reused products to avoid cannibalization of new products (Souza, 2013; Abbey et al., 2015), consumer segments for reused products (Abbey et al., 2015), and competition (Agrawal et al., 2015). Even though these complications seem discouraging from implementing a circular consumption offering, researchers in the field argue that a committed and holistic marketing strategy (i.e. providing various incentives to reduce the perceived risk of purchasing a reused product, strategic pricing to attract the price-sensitive consumer segment and so forth) should result in improved business performance (Abbey et al., 2015; Hopkinson et al., 2018; Jayaraman and Luo, 2008; Weelden et al., 2016).

However, these managerial complexities have had direct effects on their inclination to adopt a circular consumption strategy. Managers avoid selling reused products altogether as a natural part of the brand's product portfolio and instead hand over the reuse market to competitors, or they decide to sell reused products under a sub-brand as a way to protect brand reputation and image (Abbey et al., 2015; Cole et al., 2018; Guide and Van Wassenhove, 2009). Yet, it is more desirable to have market leaders offer reused products so the mass market can access and embrace sustainable consumption (White et al, 2019). According to Rettie et al. (2014), if consumers are exposed to sustainable products and activities as something 'normal', they are more likely to adopt green consumption behaviors. They refer to this as a 'social normalisation' process, and companies that position their sustainable products and services as normal are likely to influence the mainstream consumers (Jansson-Boyd and Zawisza, 2016). Therefore, firms should think of sustainable products and services as a way to expand their market, beyond the green consumer segment, by letting all customers recognize and embrace sustainable values and actions (Abbey et al., 2015; Agrawal et al., 2015; Peattie, 1999; White et al., 2019).

The majority of customers today have a desire to buy more responsibly (Gleim et al., 2013; Pickett-Baker and Ozaki, 2008). Given the increasing consumer pressure on corporations (Atasu et al., 2008), businesses should also recognize the potential negative effects if they neglect consumers' growing need for more sustainable consumption solutions. Such ignorance could damage "customer relations and may seriously jeopardize their brand image and reputation" (Jayaraman and Luo, 2008. p.56).

Peattie (1999) notes that in order to gain consumers' trust, brands should put effort into creating 'substance' in their sustainable marketing. Consistent with his notion, brands should focus their environmental efforts on the product, out of the four marketing mix elements (product, place, price, and promotion), since consumers reward brands more for offering green products (Davari and Strutton, 2014; Ginsberg and Bloom, 2004). The circular production and consumption strategy is different from 'green products' since it is a multi-faceted process that controls the environmental impact in all stages of the product's life cycle(s) (Dangelico and Pujari, 2010). These are unique benefits from circularity that companies can take advantage of to win the hearts and minds of consumers (Jayaraman and Luo, 2008; Pelozo and Shang, 2011).

1.2 Problem area

Researchers have stressed customers' acceptance of new consumption models as critical for successful implementation of circular economy (Camacho-Otero et al., 2018; Govindan et al., 2019; Lieder et al. 2017; Lieder and Rashid, 2015; Souza et al., 2013; Weelden et al., 2016). The current research within the circular economy field has investigated consumers' product perceptions and what factors influence consumers' purchase intention of reused products. These studies' authors have conducted their research by isolating the product from the manufacturing brand, for instance some have investigated consumers' responses by generating data from auctions (i.e. Guide and Li, 2010; McKie et al., 2018; Subramanian and Subramanyam, 2012), while others have applied experiments only presenting a product (i.e. Agrawal et al., 2015; Borin and Lindsey Mullinik, 2013). Thus, there is no research elaborating on the potential effects if these sustainable products are offered by a conventional consumer brand to mainstream consumers.

Given that brands have different brand value, defined by Keller (1993) as "the differential effect of brand knowledge on consumer response to the marketing of the brand" (p. 8), offering reused products will produce different consumer responses depending on which brand that implements the new circular practice. Given that consumers don't have any knowledge yet

about how to consume responsibly within the electrical product category, some brand associations and strength of associations might be more or less beneficial to facilitate a new sustainability practices among consumers.

To the best of our knowledge, there is no research to this date that investigates the effects when an established (familiar or unfamiliar) brand sells reused products as a complement to its current product portfolio. This lack of research is rather shocking, considering that both researchers and practitioners have stressed the potential negative effects on the brand image as one of the key barriers for adding reused products to the brand's or company's product portfolio (Cole et al., 2018). This is particularly relevant for brands to understand if they want to stay competitive and offer more sustainable consumption solutions to the mass market.

1.3 Purpose of the study

Today manufacturers of consumer goods are under a lot of pressure to change their business practices to become more sustainable. However, in the case of implementing a circular production and consumption strategy, the majority of managers are hesitant to start a new trajectory because they assume numerous negative effects. The research on circular economy from a consumer perspective is still in its infancy, therefore many of the issues and concerns that managers express should only be considered assumptions, not facts (Guide and Van Wassenhove, 2009). The widespread assumption among practitioners that offering reused products will dilute their brand value needs academic attention. Therefore, this study aims to better understand how including reused products in a brand's product portfolio affects consumers' perception of the brand.

The primary research question of the thesis is:

- *How will offering reused products affect consumers' product and corporate brand perceptions, brand attitude, and purchase intention?*

Two secondary research questions are also investigated:

- *How will brand familiarity moderate the effects of offering reused products on corporate brand perceptions, brand attitude, and purchase intention?*
- *Are the effects on brand attitude and purchase intention different depending on the level of consumers' environmental consciousness?*

1.4 Expected knowledge contribution

This research project intends to contribute to the circular economy and reused products research field by addressing the brand's role in consumer acceptance of circular consumption, particularly how implementing a circular strategy will affect consumers' perception of the brand. It will also contribute to the research in the green marketing field by integrating reused products for the first time, as a new green product strategy in the marketing mix. This research will also contribute to the field of sustainable consumption by investigating if consumer brands can be an actor to provide new sustainable consumption practices and appeal consumers to engage in the practices of purchasing reused electrical products as well as recycling.

There are also some important managerial contributions intended from this research. First of all, from a managerial perspective there is a lack of knowledge regarding the potential, and currently assumed, negative effect of offering reused products under the brand's name. It is important to know if there are any negative effects of introducing reused products. Addressing this managerial concern can validate whether or not reused products can be a potential practice for brands to position themselves as sustainable. Therefore, this research intends to investigate the short-term effects of offering reused products, and through these immediate effects elaborate on the long-term brand effects.

1.5 Delimitations

The current research project is limited to the electrical products category. It will only address the circular strategy of circular consumption, including purchase of reused products and return of products. Therefore, it will not address any of the purely service based circular strategies such as pay-per-use, leasing or renting, because these circular business models are evaluated differently by customers (Camacho-Otero et al., 2018). It will only investigate circular consumption, not circular production. Even though the technical and operational aspects are extremely important, more knowledge is needed to understand the branding effects of introducing reused products on the mainstream consumer market. Lastly, since this study will investigate the effects on consumers' brand perceptions, it will not directly address the macro perspective of positioning or differentiating from competitors.

2. Theory and hypotheses generation

This section will first introduce the reader to literature from the more mature research field of marketing and branding. Then the less mature field of sustainable consumption and sustainable marketing will be applied as the basis to generate our hypotheses concerning the effects of implementing reused products.

2.1 Theoretical background

2.1.1 Brand knowledge and brand value in consumer markets

As this thesis focuses on consumer perceptions and intentions, it will adopt Keller's framework of customer brand knowledge (1993), which is the most commonly used framework in marketing research (Czellar and Denis, 2002), because it is "strongly rooted in consumer behavior theory" (Keller, 2016 p. 2). Consumer brand knowledge can be defined in terms of the personal meaning of a brand that is stored in consumers' memory, that is, all descriptive and evaluative brand-related information (Keller, 2003).

Brand associations are the core constructs in brand knowledge and have been explicitly studied and conceptualized by various researchers. A simple definition of a brand association was offered by Aaker (1991): "A brand association is anything "linked" in memory to a brand" (Aaker, 1991 p. 109). According to Aaker (1991), "the brand associations are organized into groups that have meaning" (Aaker, 1991 p. 110). Keller (1993) also discusses brand associations and believes, similar to Aaker's reasoning, that they "are the informational nodes linked to the brand node in memory" and "contain the meaning of the brand for consumers" (Keller, 1993 p. 3).

Brand associations and brand positioning are two interrelated concepts in brand management. Brand positioning involves how consumers perceive a brand, similar to the notion of brand association, "except that it implies a frame of reference, the reference point usually being competition" (Aaker, 1991 p. 110). Similarly, Keller (1999) defines brand positioning as the action of brands to create "the optimal location in the mind of existing and potential customers" (Keller, 1999 p. 44), so the customers will perceive the brand the "right way". Using positioning or a positioning strategy, the brand can gear customers with more or less favorable associations based on how they want to be perceived in relation to competition. Brand managers can do so by establishing and reinforcing a brand image and its subsequent

associations in the minds of consumers, through sequences of marketing activities, to establish brand associations that convey the desired positioning (Keller, 1993). This requires thoughtful analysis of competitors and consumers' previous knowledge to determine the desired image for the brand, or put in other words, the meaning for individual consumers.

According to Aaker (1991), once brand associations for a brand are properly defined, there are a variety of ways they can create value for the firm and consumers. First of all, brand associations help process or retrieve information since they create a compact information chunk and influence the interpretation of facts, helping customers process and assess a brand's product or service offering. Second, associations can provide an important basis for differentiation, thus separate one brand name from another, and be a key competitive advantage for the brand. Next, brand associations can provide consumers with a reason to buy, either through the perceived attributes or benefits that consumers would get from purchasing a product from the brand, or through an impression of credibility and confidence in the brand. Finally, positive attitudes and feelings toward the brand could be created and transferred to consumers' minds through the associations. Keller (2001) consider brand meaning as one of the four building blocks for strong brands. Creating the appropriate brand meaning through brand associations "produces positive brand responses, the underpinning of intense and active brand loyalty" that strengthen brand equity (Keller, 2011 p.12).

Brand familiarity and new brand associations

Brand familiarity is determined by the extent which a consumer has direct or indirect experience with a brand (Kent and Allen, 1994). Therefore, a familiar and unfamiliar brand differ depending on how much knowledge and associations consumers have stored in memory (Campbell and Keller, 2003). Consumers lack associations for unfamiliar brands because they have no previous direct or indirect experience with them. Brand familiarity has an effect on consumers processing of new marketing activities or stimuli since prior brand knowledge determines how consumers will respond to future marketing activities (Keller, 1993). Unfamiliar brands should elicit more attention and extensive processing by consumers, since they have a goal to learn and form an impression of the unfamiliar brand (Campbell and Keller, 2003). However, when consumers process marketing communication from a familiar brand, they are less concerned with extensive processing, instead they are confirmation focused (Keller, 1991).

The congruence of brand associations determines the cohesiveness of the brand image, which also affects the extent that associations share meaning (Keller, 1993), and “information that is consistent in meaning with existing brand associations should be more easily learned and remembered than unrelated information” (Keller, 1993 p. 7). Brand knowledge and associative networks in consumers' minds are stable constructs, and they are often resistant to information that is inconsistent with consumers' prior knowledge (Jansson-Boyd and Zawisza, 2016).

Associations can be more or less transferable to a new product depending on their level of abstraction. According to Keller and Lehmann (2009), market leaders within a product category often have very strong associations to concrete product attributes and “if a brand is seen as representing or exemplifying a category too much, it may be difficult for consumers to think of the brand in any other way” (p. 12). Contrary, brand images with abstract associations are “more likely to (1) retain their strength, favorability and uniqueness and (2) be relevant across a broad range of product and consumer situations” (p. 16). There is a danger in being a market leader and familiar brand, since the brand associations might be too narrow and/or stable over time as the external competitive landscape changes.

2.1.2 Sustainability and a new marketing landscape

The concept of sustainability in business use dates back to the 1960s in academic literature, when organizational managers “began to realize that their decisions often involved social and environmental issues and if not properly resolved or dealt with could have a major impact on the organization's long-term success” (Schultz and Block, 2015 p. 342). In the 1970s, there were calls for integration of environmental aspects not only in business decisions but also in the development of marketing strategy (Fisk, 1973; Henion and Kinnear, 1976). This integration has been discussed by various researchers since then. Porter and Van der Linde (1995) explain the benefits of environmental practices to firms, such as enhancing resource productivity and fostering innovation. In a 2001 paper, Peattie emphasizes that “marketing as a philosophy, a management discipline and a management function has found itself at the forefront of the debate about the greening of business” (Peattie, 2001 p. 1).

Green marketing and sustainable marketing have been introduced and evolved as two concepts during the last two decades, where the former construct focuses only on the environmental dimension of the broader term sustainability (Kumar, 2016). Kotler and Armstrong (2009) discuss green marketing in their conventional marketing book and define it as “marketing that meets the present needs of consumers and businesses while also preserving or enhancing the

ability of future generations to meet their needs” (Kotler and Armstrong, 2009 p. 430). The importance of sustainability within marketing has developed over the years, initially green products were included and promoted to target a niche green consumer segment. According to Iannuzzi (2012), the view has shifted because “green marketing is quickly becoming more of a mainstream necessity rather than an initiative to be taken by proactive companies or those with a niche green product line” (Iannuzzi, 2012 p. 147). The theoretical development and research on green marketing practices is similar to conventional marketing as it builds on the four marketing mix elements (Dangelico and Vocalelli, 2017). Nonetheless, environmental challenges are addressed in each component of the marketing mix.

Green brand positioning, an extended concept of brand positioning, is suggested as an essential factor in the success of green marketing strategies (Hartmann et al., 2005). They mention “positioning a brand as a green brand entails an active communication and differentiation of the brand from its competitors through its environmentally sound attributes.” (Hartmann et al., 2005 p.10). Wang and Horng (2016) discuss, from the perspective of associative networks, that green brand positioning was presented as memory nodes that contain attributes regarding company green practices in the consumers’ minds. To create and reinforce these memory nodes, it is important that brand’s green initiatives are actively communicated to target consumers. This will influence consumers’ perceptions of a brand’s green positioning attributes and differentiate the brand from its competitors (Wang, 2017).

The emergence of green brand positioning as part of brand identity and value proposition and the growing popularity of green marketing practices are due to the shift of consumers’ behaviors toward becoming more sustainable and environmentally conscious, as pointed out by various researchers. In his article on how to reinvent marketing to manage the environment Kotler (2011) highlights that in the future an “increasing number of people will prefer to buy from companies that care” (Kotler, 2011 p.133). Additionally, sustainable consumption research by Reisch and Thøgersen (2015) finds that consumers are certainly having greater demand for sustainable options. As the interest in sustainable consumption is increasing, “firms have been pressured by market forces to take responsibility for the supply chain” (Iannuzzi, 2012 p.142). Consequently, “companies will need to add an environmental dimension to their profile” because “they do not want to appear indifferent to larger economic, social, and political concerns” (Kotler, 2011 p. 133).

2.2 Theoretical framework and hypothesis generation

According to Keller and Aaker (1998), there is a distinction between product and corporate brand associations. This distinction is important, because consumers use different associations as choice or evaluation criteria for products and services depending on situation and context (Hoyer et al., 2013). Product associations refer to the product-related and non-product related attributes and benefits in Keller's (1993) framework, whereas corporate associations very broadly "reflect values, programs and activities of the firm" (Keller and Aaker, 1998 p. 356). Therefore, brands need to decide which associations are important in their particular product category and competitive environment. Building a strong and favorable corporate brand is particularly important for brands with highly-related products in their portfolio (Keller and Aaker, 1998), and in such case the corporate brand might have more salient associations with the company's product. For example, Sony, Kodak, and IBM are three technological brands that convey both corporate and product associations (ibid.). Product and corporate associations influence each other to some extent (Brown and Dacin, 1997), and it's important to also recognize corporate images and reputation as relevant in brand positioning (Keller and Lehmann, 2006). Therefore, product perceptions will be addressed first and thereafter corporate perceptions.

2.2.1 Product perceptions

An integrated circular consumption strategy with the presence of a reused product offering should first of all affect consumers' product perception. Perceived product quality serves as an important dimension of product related associations and needs to be addressed, together with perceived product sustainability.

Perceived product quality

Perceived product quality is one of the key constructs in marketing, since it is the functional, performance-related association that consumers have with the brand. The importance of perceived quality for reused products have been emphasized by various researchers, such as Sharma et al. (2010), stressing that quality is one of the most important factors from the customer's perspective when considering to purchase a reused product. Tebourbi and Khemakhem (2017) also highlight that "the major barrier facing the marketing of remanufactured products is the customer's perception towards their quality" (p. 45). Even though the construct of perceived quality of reused products has not been adequately

conceptualized, defined, and standardized in literature (Hazen et al., 2017), there have been academic discussions and studies surrounding this concept.

Firstly, in conventional marketing, perceived quality is defined as “the customer’s perception of the overall quality or superiority of a product or service with respect to its intended purpose, relative to alternatives” (Aaker, 1991 p. 85). As a related concept to the brand associations, perceived quality also serves to help customers proceed information and assess the brand’s products, provide them with a reason to buy, and differentiate the brand from competing brands. According to Zeithaml (1988 p. 3), “perceived quality is not the actual quality of the product but the consumer’s subjective evaluation of the product”. Aaker (1991) elaborates further, “perceived quality cannot necessarily be objectively determined, in part because it is a perception and also because judgements about what is important to consumers are involved” (p. 85). This implies that the perception of product quality could be determined by the level of information provided by the brand about the product based on what they think is important for consumers’ judgements. Perceived quality of reused products, therefore, is not the actual quality of the product itself but the consumers’ subjective evaluation of how the product would fulfill the function sought by the consumers.

Hazen et al. (2017 p.716) argue that “the quality of remanufactured products should be nearly equal to that of new products”, given that remanufactured products, by definition, are the products that have been through the disassembling, repairing, replacing, and reassembling process to be restored to a like-new condition. Mobley et al. (1995), in their study of consumer evaluation of recycled products, find that consumers were favorably influenced by the presence of recycled materials regardless of product type. In a study by Guagnano (2001) on consumers’ behaviors toward recycled products, the findings show that consumer perceptions would be positive due to the green nature of recycled products. Borin and Lindsey-Mullikin (2013) find that consumer response to different green strategies (recycled/ refurbished products and new products) result in no significant difference in the perceived quality (regardless if they are green or non-green consumers). From these arguments and findings, together with the theoretical view that perceived quality is consumers’ subjective perception, we hypothesize that if a brand includes reused products in their product portfolio, consumers will not perceive the quality of reused products differently from new products. The hypothesis is as following:

Hypothesis 1: There will be no significant difference in perceived product quality between reused products and new products

Perceived product sustainability

The concept of product sustainability is elaborated by Dyllick and Rost (2017) in their recent paper about evolving perspectives of product sustainability. They explain that “product sustainability looks at how products can provide economic benefits to companies while at the same time providing environmental and social benefits to society in general” (Dyllick and Rost, 2017 p. 347). Prior to this research, various authors have studied the environmental aspects of product sustainability and tried to provide a definition for green or environmental products. Shrum et al. (1995) use the term “green” simply to indicate that the products are produced with concern for the physical environment (air, water, land). According to Ottman et al. (2006), the term “green product” and “environmental product” are used commonly to describe those that “strive to protect or enhance the natural environment by conserving energy and/or resources and reducing or eliminating use of toxic agents, pollution, and waste” (p.24). In a discussion about the green marketing mix, Davari and Strutton (2014) consider green offerings yield more environmentally munificent outcomes as the products are created through environmental processes. Common production strategies for green products, according to Dangelico and Vocalelli (2017), are recycling, reusing the product or part of it, reducing packaging, and making the products more durable and repairable.

Literature in the field of circular economy and remanufactured products explain explicitly the environmental benefits generated from the closed-loop supply chain that these products are based on. Dangelico and Pujari (2010)’s research, for example, displays three key types of environmental focus in a remanufacturing process, which are material, energy, and pollution. Lieder and Rashid (2015), in their literature review about circular economy implementation, highlight “resource scarcity” and “environmental impact” as key words in circular economy and the impact of remanufactured products on reducing, reusing, and recycling of resources.

Even though the green aspects of reused products are obvious, research on consumer behaviors emphasize the importance of communicating these aspects to the consumers. Some of the initial studies have found that consumers do not necessarily associate reused products with environmental benefits (i.e. Abbey et al., 2015), however, it’s possible to change their perception by providing information (Michaud and Llerena, 2011). Exposing consumers to an

integrated consumption offering as an alternative in the conventional product portfolio should provide consumers with informational cues about the reused products environmental aspects. Therefore, we hypothesize the following:

Hypothesis 2: Reused products will be perceived as more sustainable than new products

2.2.2 Corporate brand perceptions

As discussed in the previous section, a brand that offers reused products will influence and change the product-related associations that consumers have in their memory. Offering sustainable products through a circular consumption strategy should also affect the corporate brand associations. Brown and Dacin (1997) separate corporate associations into corporate ability (i.e. product and service production) and corporate social responsibility (CSR) (i.e. the company character in treating social issues and its environmental impact). Offering reused products - seen as an outcome of a sustainability-driven innovation process - should impact both the level of perceived innovativeness or corporate ability, and sustainability or CSR practices of a brand.

Perceived brand innovativeness

Brand innovativeness is defined by Barone and Jewell (2013) as the degree to which consumers perceive a brand to be innovative. According to Brexendorf et al. (2015), many brands include “innovativeness” in their brand personality and in their brand positioning and claims. Brand innovativeness as a marketing construct has been conceptualized by several researchers such as Quellet (2006) and Eisingerich and Rubera (2010), both mentioning factors such as the past and current capabilities of the brand to support new ideas and innovative processes. In the most recent paper, Shams et al. (2015) crystalise the concept from previous research and define consumers’ perceived brand innovativeness as “consumers’ perception of a brand’s track record of product innovations, degree of creativity, and potential for continued innovative activity in the future in a given market” (Shams et al., 2015 p. 7). Brand innovativeness, therefore, is a subjective assessment of the consumer and needs to be concerned with its target market. The consumers’ assessment of innovativeness could result from technological innovations, new offerings, extensions, new product features, and new marketing communications of the brand (Shams et al., 2015).

In order to build the perception of innovativeness, the brand maintains stable characteristics and behaviors that fit to its image (Brown and Dacin, 1997), shows the innovative efforts and offerings on a continuous basis (Eisingerich and Rubera, 2010), and takes the time to build demonstrated competence (Shams et al., 2015). The brand needs to inject the brand's innovation credits into the mind of consumers (Brexendorf et al., 2015). The innovation credit is “an intangible asset that involves the equity a brand accumulates with consumers in appreciation of its efforts to develop new products, services, or other innovative practices for the market” (Barone and Jewell, 2013 p.120). Brands could earn these innovation credits through a wide range of innovative activities, including innovations for sustainability. Such innovations are referred to by the commonly used terms "eco-innovation", "environmental" or "green" innovation (Rennings, 2000; Nidumolu et al., 2009; Carrillo-Hermosilla et al., 2010; Schiederig et al., 2012). They all imply the generation of new product concepts and processes that contribute to sustainable development. Iannuzzi (2012) refer to eco-innovation as a value driver for the brand and emphasize that more brands see sustainability as a way to drive the development of innovative solutions. Sustainability is quickly becoming the next great innovation in business, Porter and Kramer (2006) argue that it “can be a source of opportunity, innovation, and competitive advantage” (Porter and Kramer, 2006 p.2). Therefore, companies’ mission is to find the sustainability "sweet spots", which are innovation sweet spots where the right idea can help a company both do good and do well (Gobble, 2012).

To shift from linear to systems thinking, according to Szekely and Strebel (2013), is a radical innovation in processes and value chains. This shift can instigate the move from eco-efficiency to eco-effectiveness: “Whereas increases in eco-efficiency are mainly reactionary, incremental and linear, the implementation of eco-effectiveness involves the proactive replacement of toxic substances, the creation of cradle-to-cradle loops and the renewal of the relationship between the product and the customer” (Szekely and Strebel, 2013 p. 471). Rattalino (2017) discuss circularity and consider sustainability-driven innovations that improve the circularity of resources as “the key to generating a sustainable competitive advantage that marries economic and social objectives” (Rattalino, 2017 p. 747).

By deploying the circularity strategy as a sustainability-driven innovation, the brand therefore has the opportunity to gain the innovation credits and strengthen the consumers’ perceived brand innovativeness. They could even create a unique association called green brand innovativeness, defined by Lin et al. (2019) as ‘the extent to which consumers perceive brands

as being able to provide new and useful solutions to their green needs' (Lin et al., 2019 p. 83). Based on the existing research, the following is hypothesized:

Hypothesis 3a: Offering reused products will lead to a higher level of brand innovativeness perception compared to only offering new products

According to the discussion in section 2.1.1 regarding brand familiarity, consumers process new marketing activities or stimuli differently depending on their existing knowledge of the brand. The familiar brand has stronger and more stable associations in consumers' minds in terms of what innovation means, which to a large extent have been formed by the brand's previous innovation practices. Adding the eco-innovation offerings such as reused products would increase the level of perceived brand innovativeness through innovation credit. However, the absolute effect for the familiar brand would not be as high as the effect for an unfamiliar brand, to which consumers do not have any association regarding its innovation activities, hence they would have a stronger impression that the brand is innovative when the eco-innovation offerings are included. This leads to the following hypothesis:

Hypothesis 3b: Unfamiliar brand (versus familiar brand) will strengthen the effect of reused product offerings on brand innovativeness perception

Perceived brand sustainability

Brand sustainability, as discussed in section 2.1.2, is highlighted as one of the important associations among consumers, therefore brand and business managers have to reposition their brand as sustainable for long-term competitive advantage or survival. Even though sustainability has been discussed for more than half a century within the marketing field (Fisk, 1973; Henion and Kinnear, 1976), there is no prominent construct of sustainability as a brand association. However, as previously discussed, the mature research field of corporate branding can be applied in this research, and particularly CSR initiatives. Corporate associations or corporate positioning result from corporate marketing activities that are "publicly visible programs and actions that companies initiate and that are not identified with a single product or brand sold by the company" (Keller and Aaker, 1998 p. 357). Thus, initiating circular consumption and implementing a circular business model can be classified as an environmental program that is distinctive from the brand and a single product.

CSR is a multidimensional construct with several typologies (Bhattacharya and Sen, 2004), hence there are many definitions and no definition is more accepted than the other (Louis et al, 2019). CSR incorporates marketing activities that aim to “achieving commercial success in ways that honors ethical values and respect people, communities and the natural environment”, where specific environmental activities include “environment friendly products, hazardous waste management, use of ozone-depleting chemicals, animal testing, pollution control, and recycling“ (Bhattacharya and Sen, 2004, p. 13). According to Van de Ven (2008), there are three different approaches for companies to communicate their CSR (environmental) initiatives, the two more proactive strategies include building a virtuous corporate brand and ethical product differentiation. Ethical product differentiation means “differentiating a certain product or service on the basis of an environmental or social quality resulting in brand preference, and often in a premium price” (Van de Ven, 2008, p. 347). Proactive initiatives have a greater impact on corporate positioning, compared to consumers’ responses when companies are reactive in their CSR efforts (Becker-Olsen et al., 2006).

The main focus within the CSR research has been on establishing and empirically testing how various activities affect consumers’ attitudes and purchase intentions. The process of building corporate brand associations is less researched. CSR activities generally have a positive impact on consumers’ brand perception and can create a competitive advantage (Bhattacharya and Sen, 2004; Porter and Kramer, 2006; Webb et al, 2008). However, the CSR research highlights the fit between the good cause and the brand’s core value as one of the most important factors in order for consumers to appreciate and acknowledge a company’s social or environmental consciousness (Bhattacharya and Sen, 2004; Van de Ven, 2008). The perceived fit is important because “good fit between prior expectations, knowledge, associations, actions, and competencies of a firm and a given social initiative (...) can be more easily integrated into the consumer’s existing cognitive structure, strengthening the connection between the firm and the social initiative” (Becker-Olsen et al. 2005 p. 47). Thus, an environmental CSR initiative of recycling electronic products and offering environmentally friendly products should have a high perceived fit with a consumer electronics brand’s current value proposition and subsequently create a salient association with the brand as being more sustainable. This discussion on CSR and its positive effect on (corporate) brands give us reason to propose that offering reused products will not only affect the perceived sustainability of their products, but also affect the corporate brand perception. Therefore, we hypothesize the following:

Hypothesis 4a: Offering reused products will lead to a higher level of brand sustainability perception compared to only offering new products

The effects of introducing new brand associations will be different depending on the existing associations with the brand, as discussed in section 2.1.1. Consumers have a better and more sophisticated understanding of associations for the familiar brand (Delgado-Ballester et al., 2012), therefore it is harder to reposition the brand toward a new brand image. The unfamiliar brand, however, has the opportunity to position itself toward the desirable image as the external competitive landscape changes. Since consumers do not have existing memory nodes linked to the brand, what the brand exposes to them will form the first perception of the brand. If the brand exposes to consumers, through marketing and communication channels, a wide range of sustainable products, it will be likely that consumers perceive the brand as sustainable. These arguments lead to the following hypothesis:

Hypothesis 4b: Unfamiliar brand (versus familiar brand) will strengthen the effect of reused product offerings on brand sustainability perception

2.2.3 Brand attitude and its effect on intentions

The attitude concept has interested researchers in the marketing field for decades (Mitchell and Olson, 1981) and several theoretical frameworks of the attitude construct have been introduced from social psychology researchers. Attitudes influence our feelings and guide our thoughts in the decision making process (Hoyer et al., 2013), additionally it has been shown that attitudes are useful in predicting various consumer behaviors (Mitchell and Olson, 1981), such as brand choice (Keller, 1993). Attitudes are learned and considered to be relatively stable over time (Hoyer et al., 2013). However, attitudes are not permanent since they can be changed and influenced with various marketing activities, particularly new product introductions (Keller and Lehmann, 2006).

Attitude toward a brand is defined as an “individual’s internal evaluation of the brand” (Mitchell and Olson, 1981 p. 318). Because of the difficulty to capture all the relevant attribute values in a product class to understand consumers’ brand preferences (Srinivasan, 1979), researchers have constructed “a general component of attitude toward the brand” (Keller, 1993 p. 5). Expectancy-value models are widely accepted within marketing to explain how attitudes are formed and changed in high involvement decision making (Hoyer et al., 2013), which are

based on cognitive and analytical evaluation processes. According to Bettman (1986), Fishbein and Ajzen (1975) proposed one of the most influential models in the marketing field. Their “expectancy-value model” views attitudes as a multiplicative function of (1) the salient beliefs a consumer has about the product or service (i.e., the extent to which consumers think the brand has certain attributes or benefits) and (2) the evaluative judgment of those beliefs (i.e., how good or bad it is that the brand has those attributes or benefits)” (Keller, 1993 p. 4-5). Combined salient beliefs are the expected values that consumers think of when buying a particular brand (Jobber, 2010). It should be noted that there is a conceptual difference between the overall evaluation of the brand, i.e. brand attitude, and the attributes or benefits that consumers think the brand has. As problematized by Srinivasan (1979), the sum of the brands attribute values often fails to explain consumer preferences; however, by adding a brand-specific component i.e. brand attitude, the validity in the model increases in explaining consumers’ brand preferences.

Research shows that companies that are concerned with social and environmental efforts elicit more positive attitudes by consumers (Brown and Dacin, 1997; Olsen et al., 2014). Also there are studies on consumer attitudes, both academic and professional, showing that the majority of customers have a desire to buy more responsibly (Gleim et al., 2013; Pickett-Baker and Ozaki, 2008). Clearly, sustainability has become a brand aspect that is expected from an increasing number of consumers (Keller, 2011). In addition to sustainability, consumers expect from the brand the ability to produce and deliver its output, referred to as corporate ability (Brown and Dacin, 1997). Innovativeness is a dimension of corporate ability and is generally expected from consumer electronic brands (Shams et al., 2015).

The expectations regarding sustainability and ability of the products and companies, if met by brands, would bring value to the brand through a more positive brand attitude, according to the Fishbein and Ajzen (1975)’s expectancy-value model. Therefore, the hypothesized increase in the level of brand innovativeness and sustainability association when the reused products are included will lead to an increased level of brand attitude. We then form the following hypothesis:

Hypothesis 5a: Offering reused products will lead to a higher level of brand attitude compared to only offering new products

We have previously hypothesized that the effect of reused product offerings on brand innovativeness and sustainability perception will be moderated by brand familiarity. Based on the discussed relationship between these attributes and brand attitude, we hypothesize the following:

Hypothesis 5b: Unfamiliar brand (versus familiar brand) will strengthen the effect of reused product offerings on brand attitude

Purchase intentions are defined as “an individual’s conscious plan to make an effort to purchase a brand” (Spears and Singh, 2004 p. 56), and purchase intentions build on the concept of behavioral intentions. In Fishbein and Ajzen (1975)’s formulation of the relationship between beliefs, attitude, intentions and behavior, they affirm that consumer attitudes influence behaviour through behavioral intentions. There is a significant difference in the level of attitude that is needed to affect consumers’ actual behavior compared with behavioral intentions. The influence on consumers' attitude need to be much lower for a behavioral intention (purchase intention) compared with the level of attitudinal influence needed for the actual behavior (Spears and Singh, 2004). Based on the previous discussion on how the reused product offering is expected to have a positive effect on brand attitudes, and based on the established relationship between brand attitudes and behavioral intentions, it should be expected from a theoretical standpoint that a more positive attitude toward the brand will also result in higher purchase intention. Thus, we hypothesize the following:

Hypothesis 6a: Offering reused products will lead to a higher level of purchase intention compared to only offering new products

Similarly, since we have discussed the possible moderation effect of brand familiarity on brand attitude, the same effect would apply for purchase intention:

Hypothesis 6b: Unfamiliar brand (versus familiar brand) will strengthen the effect of reused product offerings on purchase intention

2.2.4 Moderator environmental consciousness

Consumers that are concerned about the environment, meaning that they are in favour of the environment, can have a positive impact on environmental behaviors (Roberts, 1996). Relatedly, a consumer's values have also been identified as a factor which guide consumers' product evaluation and purchase of environmentally friendly products (Pickett-Baker and Ozaki, 2008; Marde and Verite-Masserot, 2017). However, it's important for marketers to distinguish between consumers that express a concern for the environment and those who act on their concerns (Roberts, 1995). Therefore, environmentally conscious consumer behavior is defined as those "who purchase products and services which he or she perceives to have a positive (or less negative) impact on the environment" (Roberts, 1995 p. 98). Gleim et al. (2013) describe non-green consumers as "individuals that make purchases not in the best interest of the physical environment when environmentally friendly alternatives are available" (p. 45).

According to MacKenzie (1986), the attitude component in expectancy-value models is conceptually and empirically influenced by attribute importance, meaning that consumers who evaluate an attribute or benefit as positive should also consider it to be important (Keller, 1993). Therefore, consistent with the notion of attribute importance, environmentally conscious consumers who think green attributes or benefits are important will result in a more positive brand attitude when the reused products offering is available. However, as noted before, consumer knowledge is today inadequate about green product attributes and environmental consumption patterns within the small electrical product category (McDonald et al., 2009). Assuming that consumers' environmental consciousness transcends particular product categories, we hypothesize the following:

Hypothesis 7a: Consumers' environmental consciousness will moderate the effect of the reused product offering on the brand attitude, such that the effect will be stronger among respondents with a higher level of environmental consciousness.

Given that an environmentally conscious consumer will have a more positive attitude toward the brand, then based on the previously established relationships between brand attitude and purchase intention (Fishbein and Ajzen, 1975), we also hypothesize that:

Hypothesis 7b: Consumers' environmental consciousness will moderate the effect of the reused product offering on the purchase intention, such that the effect will be stronger among respondents with a higher level of environmental consciousness.

2.3 Summary of hypotheses

Table 1. Summary of hypotheses

| Research question | Hypotheses |
|---|--|
| How will offering reused products affect consumers' product and corporate brand perceptions, attitudes and purchase intention? | H1. There will be no significant difference in perceived product quality between reused products and new products |
| | H2. Reused products will be perceived as more sustainable than new products |
| | H3a. Offering reused products will lead to a higher level of brand innovativeness perception compared to only offering new products |
| | H4a. Offering reused products will lead to a higher level of brand sustainability perception compared to only offering new products |
| | H5a. Offering reused products will lead to a higher level of brand attitude compared to only offering new products |
| | H6a. Offering reused products will lead to a higher level of purchase intention compared to only offering new products |
| How will brand familiarity moderate the effects of offering reused products on brand perceptions, brand attitude, and purchase intention? | H3b. Unfamiliar brand (versus familiar brand) will strengthen the effect of reused product offerings on brand innovativeness perception |
| | H4b. Unfamiliar brand (versus familiar brand) will strengthen the effect of reused product offerings on brand sustainability perception |
| | H5b. Unfamiliar brand (versus familiar brand) will strengthen the effect of reused product offerings on brand attitude |
| | H6b. Unfamiliar brand (versus familiar brand) will strengthen the effect of reused product offerings on purchase intention |
| Are the effects on brand attitude and purchase intention different depending on the level of consumers' environmental consciousness? | H7a. Consumers' environmental consciousness will moderate the effect of the reused product offering on the brand attitude, such that the effect will be stronger among respondents with a higher level of environmental consciousness. |
| | H7b. Consumers' environmental consciousness will moderate the effect of the reused product offering on the purchase intention, such that the effect will be stronger among respondents with a higher level of environmental consciousness. |

3. Methodology

3.1 Scientific approach and research design

This research project adopts a deductive approach because the state of marketing and branding theory can be classified as mature (Edmondson and McManus, 2007). Even though the research on circular market offerings is novel, we investigate a new phenomena using established theories. Our purpose is to investigate how a new sustainable market offering causally affects the brand from a consumer knowledge perspective. Hypotheses are developed based on previous empirical findings and validated frameworks. Therefore, a deductive approach seems to fit well with our research question and intended theoretical contributions (Edmondson and McManus, 2007). A quantitative research strategy is employed to empirically test our assumptions (Bryman and Bell, 2015). The quantitative research method dominates within marketing and consumer research (Hoyer et al., 2013), as it enables testing of theories on a small group to draw general conclusions about a population (Eliasson, 2010).

To test our hypotheses, this research employed an experimental research design. Since our research question is concerned with the effects when offering reused products, a between-subjects design was chosen. Four experimental scenarios were used which controlled for the brand familiarity level and reused products offering (a familiar/unfamiliar brand, that offer/don't offer reused products). To measure the effects of implementing a circular strategy we used a survey method, specifically a self-completion questionnaire (Bryman and Bell, 2015). A survey is an appropriate method for our research because we aspire to collect unobservable data, i.e. consumers' attitudes and opinions towards something.

3.2 Preparatory work

3.2.1 Initial work

The initial work included an extensive literature review. Our literary readings initially focused on the areas of circular economy, reused products and sustainability from a consumer perspective to get an understanding of these more novel research fields. Later, the focus shifted towards the mature field of branding, which is the foundation for the hypothesis formulation. Given the lacking research on reused products within the branding literature, unstructured interviews and a pilot study was conducted before the main study.

Randomized interviews were conducted with a total of 9 respondents to get a general understanding of attitudes toward reused products and specifically the role of the brand in circular consumption adoption. Respondents were among Stockholm School of Economics students who were within the thesis course. Questions concerning general attitudes and perceptions toward reused products and brand familiarity were addressed. These initial interviews didn't follow a scientific procedure. The collected primary data was in line with current research on reused products. First, attitudes and perceptions of reused products were generally good (Wang et al., 2013), and incentives were considered a hygiene factor to consider reused products, consistent with Mugge et al. (2017)'s finding. Second, brand strength and familiarity were considered very important as a signal of reused product quality and brands that are associated with positive reputation were considered more credible as producers of reused products. These initial insights indicate that our research focus on the brand is particularly relevant in the consumer electronics product category.

3.2.2 Pilot study

Prior experimental studies of sustainable products' effect on brand perceptions and intentions predominantly expose the respondent to a single product. However, this research project is distinctive from the current research because it encompasses more than a single sustainable product. Based on the definition of a circular consumption strategy, we intend to investigate an integrated circular consumption offering. Therefore, the pilot test served three different goals. First, to test whether respondents understand the reused offering in the scenarios. Second, to test the understanding of the questionnaire design and scales (Saunders et al., 2009). Third, to pre-test our main hypotheses and measurements of the dependent variables. The last purpose can be criticised, but is motivated given the lacking research on circular products offerings' effect on a brand.

The pilot study was distributed to respondents on the 6th of March through the digital survey tool Qualtrics. The authors delivered the survey link to students sitting at the KTH Royal Institute of Technology's Library (open-space area) and Stockholm School of Economics' Atrium. The final sample size included 43 finalized and error checked responses. The data was analysed in SPSS using non-parametric independent mean comparison. In addition to collecting the quantitative data, we asked some of the respondents to describe and interpret the meaning of the scenarios and survey questions to confirm consistency among respondents and consistency with the researchers intended meaning.

The pilot study used four experimental scenarios, which will be described in more detail below in section 3.3. The pilot study exposed the subjects to the product page of either a new or reused (refurbished) product by either a familiar brand or an unfamiliar brand. The scenarios with a reused product also had a description of the product. The questionnaire measured the main constructs outlined in our theoretical framework (see table 1 in section 2.3), i.e. perceived brand innovativeness and sustainability, brand attitude and purchase intention.

The collected qualitative and quantitative data from the pilot study indicated that the scenarios and scales needed to be adjusted for the main study. First, the description and information about the unfamiliar brand were too brief as respondents felt confused and said they needed more information to form some kind of judgements and evaluations of the unfamiliar brand. Second, respondents expressed that they understood that the reused product is sustainable, even though this was not explicit in the description. However, the results showed a very small effect on the perceived sustainability of the product and brand. The researchers concluded that the two scenarios with a reused product offering should also include a description of the circular efforts by the brand, as well as an additional page from the online store presenting the whole product category offering. Third, scale loadings were changed for some survey questions because several respondents revealed that they had responded incorrectly assuming an opposite loading. Our intention was to stimulate the respondents' attention when responding, but the different loadings were removed to ensure that our collected data represent respondents' actual opinions. Lastly, we concluded that the questions in the beginning of the questionnaire about brand attitude and brand perceptions should be moved to the end of the survey. The rationale behind this decision will be elaborated in section 3.3, under the main study's survey design.

3.3 Main study

Here we will first describe our four different experimental scenarios in detail and all their elements (which are presented in detail in Appendix A). Then we will elaborate on the survey design, scales and measures that we adopted to answer our research questions and hypotheses.

3.3.1 Stimuli design

As mentioned before, this research project uses two different stimuli as manipulations in the study design, they are brand familiarity and product offering. In total, four different response groups were exposed to one scenario each. The four scenarios present the stimuli of either a familiar or unfamiliar brand and a product offering consisting of either new or reused products.

This study uses tablets as the specific consumer electronics product. The two most common products within reused product studies are smartphones and laptops (Camacho-Otero et al., 2018). However, they are often paid in installments or bought by someone else than the user. Therefore, tablets seem most appropriate and they have been used in comparable studies before (McKie et al., 2018; Wang and Kuah, 2018).

As our research distinguished between a familiar and unfamiliar brand, it was unquestionable that two real brands would be used in the study. Apple is used as the familiar brand because it is one of the strongest brands in the world and the researchers are confident that Apple has a high level of awareness among respondents. When choosing the unfamiliar brand, we used the criterion that it should be similar to Apple linguistically and the products should be of similar perceived quality. Out of a handful of options, we decided to go with the French brand Archos. The groups and different compositions of brand and product offering stimulus are presented below in table 2.

Table 2. Experimental scenarios in the main study

| | New products offering | Reused products offering |
|------------------|-----------------------|--------------------------|
| Familiar brand | Apple New | Apple Refurbished |
| Unfamiliar brand | Archos New | Archos Refurbished |

Before the respondents were presented with one of the four scenarios they were instructed to imagine themselves in the following situation: *“Imagine that you are thinking about buying a tablet. Therefore, you are now browsing the market. In the following scenario you will be presented to tablets offered by one brand in the market”*. The purpose with the introduction is that all respondents should go into the scenarios with the same mental state, since research shows that different goals influence consumers’ processing of information in a shopping context (Lee and Ariely, 2006).

Then each respondent was first exposed to a short description of the brand, mainly applied as a precaution from the pilot study to increase respondents’ basic understanding of the unfamiliar brand. Additionally, consumers have a need to research more information when forming judgments about high involvement products (Hoyer et al., 2013). Both brands had the same general description to minimize other potential influences than the two stimulus on brand perceptions and evaluation. If the respondent was assigned to the group with a reused product

offering, then (s)he would also read a description of the new circular efforts behind the reused offering. All the scenario elements can be found in detail in Appendix A.

After reading the assigned descriptions, the respondents were exposed to two different web pages from the brand's online store. The first web page picture exposed the subjects to either the new or reused offering, showing three products from the tablet assortment. The second picture exposed the subjects to either a new or refurbished product page with identical technical information in all groups. The respondents that were exposed to a reused product offering also got some additional sales information about the refurbished product. This promotional text was copied from Apple's current website and the visual material in all scenarios was copied from each brand's own website. The layout for the Archos scenarios was edited to be consistent with Apple's website, again to ensure that all four groups were exposed to similar information except for the chosen study stimulus.

3.3.2 Survey design

All four respondent groups answered the same set of questions in the questionnaire. The first part of the survey consisted of different question blocks concerning respondents' perception of the products offered by the brand. After the product questions, multiple blocks concerning the brand were asked, including perceptions of the brand in terms of its innovativeness and sustainability, brand attitude, purchase intentions and lastly intentions of circular consumption behaviors with the brand. Respondents answered the questions about product attributes first. Some suggest that the dependent variable should be measured first, since the subjects have the experienced scenario fresh in memory. However, in the current research project we advocate that respondents should reflect on the product attributes and their perception of the brand's offering before specifying their overall evaluation of the brand. This survey flow is consistent with comparable research on corporate brand extensions (i.e. Keller, 1998). The survey finished with a question block about general sustainable consumption. Lastly, there were four demographic questions as well as brand familiarity and usage questions.

3.4. Questionnaire

We used structured and closed questions in our survey. The majority of the questions applied scale responses (Bryman and Bell, 2015), specifically they were seven-point Likert scales. This approach is common when studying consumers underlying attitudes and opinions (Saunders et al., 2009). The question about attitude used a 7-item bipolar scale. All Likert and bipolar scales

used end labeling and the other value labels indicated values from 2 to 5. All demographic questions, except for age, used nominal scales for categorization of respondents. Nominal scales were also used for the questions on brand familiarity and usage.

When using scale responses one should consider whether or not to have a neutral midpoint. Our research includes a neutral value of four on all scales in the survey, since we are exposing respondents to new information. Having a neutral choice should be considered advantageous in our research area because we don't want to force respondents to express an opinion about the brand's offering or their general evaluation of the brand.

3.4.1 Scales and measures

Product perceptions

Two product attributes including perceived quality and sustainability were tested using previous measures and scales. Response scales ranging from strongly disagree to strongly agree.

The multi-item scale by Grewal et al. (1998) was adopted for perceived product quality. The number of items was adjusted, the perceived product quality was tested by first stating "The previously presented products appear... ", then the respondents would indicate to what extent they disagree or agree with the following items: "*to be of good quality*", "*to be durable*" and "*reliable*". The Cronbach's alpha is 0,895.

The perceived sustainability of the products was tested with the question "The previously presented products... ", then the respondents would indicate to what extent they disagree or agree with the following items: "*are environmentally responsible products*", "*are more beneficial to the environment than other products*" and "*contribute to a better environment*". All scale items were taken from the previously established measurement by Brown and Dacin (1997), where the last item was adjusted from the original "contribute something to the environment". The Cronbach's alpha is 0,856.

Corporate brand perceptions

The perceived innovativeness of the brand was tested using ad hoc items based on Shams et al. (2015)'s framework of brand innovativeness. First, respondents got the question "The considered brand..." and then the measurement consists of the following items: "*is different from current brands (sets itself apart from the rest)*", "*constantly generates new ideas*", "*is*

changing the market with its offerings”, *“is innovative”*, *“advanced, forward-looking”*, *“progressive”* and *“able to provide new and useful solutions to consumer’s needs”*. Response scale ranged from strongly disagree to strongly agree. Cronbach’s alpha for this index is 0,882 and therefore at a satisfactory level over 0,7.

To measure the perceived sustainability of the brand we adopted the measurements from Louis et al. (2019), who refer to previous research. To be specific, these items aim to measure to what extent consumers perceive a company to show respect for the environment. First we asked the question “The company that makes these products...” and then the scales included the following items: *“reduces its consumption of natural resources”*, *“probably has a policy to reduce or offset its emissions”*, *“makes its business activities more environmentally friendly”*, *“makes its products/services environmentally friendly”*, *“is responsible”* and *“is sustainable”*. Response scale ranged from strongly disagree to strongly agree. The resulting index had a Cronbach’s alpha of 0,856.

Brand attitude

The overall attitude toward the brand was tested using a subset of the multi-item bipolar scale from Spears and Singh (2004). The question “What is your overall attitude towards this brand?” was addressed to the respondents, then bipolar scales were used for indication and the labels read *“dislike - like”*, *“unfavourable - favourable”* and *“bad - good”*. Cronbach’s alpha was 0,908 and therefore an index was created.

Purchase intentions

The most common way to test consumers’ future behaviour in consumer research is to measure their purchase intention. The purchase intention measurement was adopted from Spears and Singh (2004)’s research. They used bipolar scales, but we adopted a Likert response scale ranging from strongly disagree to strongly agree and adjusted the item to fit our particular research setting. The purchase intention was tested by asking the question “how likely is it that you would do the following” including the following item *“buy any of the presented products from this brand”*.

Consumers’ environmental consciousness

To measure consumers’ environmental consciousness, we adopted measurements developed by Benoit-Moreau and Parguel (2011). First the respondents were asked the question “to what extent do you agree with the following statements”, then they indicated their answers on the

following items “*generally I try not to buy from companies that strongly pollute*”, “*when possible, I systematically choose the product that has low negative impact on the environment*” and “*when I have the choice between two equivalent products, I always wonder which one pollutes less before buying*”. Response scale ranged from strongly disagree to strongly agree. The Cronbach’s alpha was 0,826, therefore an index was created.

Circular consumption intention

An additional question was added to the survey. Based on the extensive literature review, we decided to also investigate if an integrated consumption offering would affect consumers’ willingness to return their used products to the brand. Product returns is a key issue for successful implementation of a circular consumption offering (Cole et al., 2018). Thus, we adopted ad hoc measures. First we asked “how likely is it that you would do any of the following with this particular brand”, then the respondents answered on following items “*return my used products for recycling*”, “*return my used products for them to refurbish and resell to someone else*”, “*participate in a trade-in program (return my used product and receive a discount when buying a new product)*”. Response scale ranged from extremely unlikely to extremely likely. Cronbach’s alpha was 0,816.

3.5 Procedure and sampling

The surveys were distributed and collected during the time period between 23rd and 30th of March 2020. Respondents were randomly assigned to one of the four groups with different scenarios. The estimated time for completing the survey was 6 minutes for the new product offering, the reused product offering should have taken an additional minute or so. The researchers used an incentive, where 5 SEK was donated to the WHO’s Covid-19 Response Fund for each completed questionnaire.

All the respondents completed the survey online, either on a smartphone or laptop, via an anonymous link to the questionnaire software Qualtrics. We used different methods to distribute the survey. It was shared through our social media platform Facebook to personal contacts. In addition, it was distributed at Stockholm School of Economics to students in the atrium and other study areas and sent out by email to 1.400 students. The response rate was higher than 50% when the surveys were distributed with physical interaction or if the respondent had a relationship with the researchers. The response rate from emails was less than 5%. Even though the distribution method varied, we expect a small variation because the

respondents are very homogenous (see tables 3 below). The use of a convenience sample is considered a good approach when resources are limited, as long as the population which the sample is chosen from do not vary substantially (Saunders et al., 2009). This sample is considered relevant for our research which intends to understand general consumers and not a particular subset or segment of consumers.

Table 3. Descriptive statistics of respondents

| | | Apple New (N = 61) | Apple Reused (N = 61) | Archos New (N = 58) | Archos Reused (N = 56) | Total sample (N = 236) |
|------------|----------|--------------------------|-----------------------------|---------------------------|------------------------------|------------------------------|
| Gender | Male | 29 | 24 | 31 | 30 | 114 |
| | Female | 32 | 36 | 27 | 26 | 121 |
| | Other | 0 | 1 | 0 | 0 | 1 |
| Occupation | Student | 45 | 37 | 44 | 37 | 163 |
| | Employed | 15 | 21 | 14 | 16 | 66 |
| | Other | 1 | 3 | 0 | 3 | 7 |
| Age | 18-24 | 26 | 28 | 32 | 27 | 113 |
| | 25-30 | 30 | 32 | 22 | 25 | 109 |
| | 31-40 | 4 | 0 | 1 | 3 | 8 |
| | 41-65 | 1 | 1 | 3 | 1 | 6 |

In total, 273 respondents completed the survey. After various data quality checks, 236 final responses were included in the analysis. Respondents are primarily young adults, between the age of 18-30 and typically a student. Our sample represents 48% males and 51% females.

The survey was distributed and completed online without supervision, therefore it was hard to ensure that all respondents paid attention and put considerable effort into answering the questions (Jones et al., 2015). We checked respondent fatigue in a number of ways to ensure that the data quality is good before the analysis (Bryman and Bell, 2015). First, the respondents that completed the survey in less than 4 minutes were removed, and for the reused offering scenario which took longer to complete we applied a 5 minute criteria. We also checked our dataset for straight-lining response patterns (Jones et al., 2015), but no respondents had indicated the same value on a consecutive number of questions. All respondents exposed to the unfamiliar brand Archos indicated that they had never heard of the brand before, therefore no subjects were removed based on this control variable.

3.6 Analytical tools

The analytical tool used in this research was IBM's SPSS Statistics software. Invalid responses were excluded from the dataset according to the previously described conditions. The remaining 236 responses were transferred from the survey software Qualtrics without any errors to our data. The majority of our variables are multi-item scales, therefore internal consistency was tested using Cronbach's alpha on variables including three or more items. A Cronbach's alpha greater than 0.7 is the general rule for creating an index (Bryman and Bell, 2015), which was applied as a criteria in this study. Given that our research uses an experimental study design, we applied mean comparison to test all of our hypotheses. Given that our study is based on a 2 x 2 experimental design, we applied two-way ANOVA to test our main hypotheses. The moderation analysis was conducted using Hayes' PROCESS tool for SPSS.

3.7 Critical review of data quality

According to Jacobsen (2002), a scientific study must obtain a high degree of reliability and validity to ensure that the study is accurately constructed. Below is a discussion on the contemplated reliability and validity of this research project.

3.7.1 Reliability

Reliability refers to the credibility in the performed study, meaning that it is correctly conducted and that the study produces accurate results (Bryman and Bell, 2015). When evaluating the reliability in quantitative research two dimensions are important to consider, stability and internal reliability.

The *stability* of a study is considered to be good if the measures used are stable over time and contextual circumstances (Bryman and Bell, 2015). The questionnaire was pre-tested two times, first in the pilot study and second after adjustments and before distributing the main study, to ensure the questions are consistent. Furthermore, this research project applied a pilot study and when comparing those results with the main study they indicate the same relationships. This suggests that our measures should be considered stable. Reliability is also contingent on the *internal reliability* of the study, meaning that the different measures in the study capture what is intended and with a high internal consistency. Given the quantitative approach, we have used prior academic literature for our theoretical development and subsequently the majority of measures in our questionnaire are from established research.

However, given the novelty of sustainable consumption within electrical products in consumer research, we often had to adjust the questions or apply measurements not yet validated. Therefore, to ensure that the internal reliability is tolerable, all variables in the hypothesis testing have a Cronbach's Alpha higher than 0.7 (Bryman and Bell, 2015).

3.7.2 Validity

The most important criterion in research is the validity of the study. The different validity dimensions reviews whether the measures are relevant, i.e. if we are measuring the intended phenomena and if the result and conclusions can be considered as accurate. Four dimensions of validity will be reviewed below.

Internal validity refers to the causal relationship between the independent variables and dependent variables (Saunders et al., 2009). Experimental study designs are favourable for high internal validity because the independent variables are controlled in the study design (Bryman and Bell, 2015). This study used two control groups, which strengthens the conclusion that the manipulation stimuli of offering reused products in fact can explain the differential effects on the dependent variables. A manipulation check can further legitimize the results of a study. This research did not apply a manipulation check in a direct manner. However, we argue that there is an indirect way to assure our stimuli had its intended effects since the survey measures multiple perceptions of the stimuli (i.e. perceived sustainability of the products and corporate brand). Additionally, the pilot test was conducted to confirm that the questions measured what they intended to. Again, reliable and validated measures were used from vastly cited secondary sources and tested statistically with our data using Cronbach's alpha before creating the variable indexes. Based on this, our *measurement validity* is considered satisfactory.

The *external validity* is of great importance to any research project because it addresses the issue of whether the results can be generalized beyond the particular research setting (Bryman and Bell, 2015). The survey was distributed randomly so that respondents would be evenly distributed between the test groups. Because this study used a convenience sample, our data mainly represents students and young adults from the Stockholm region. This therefore limits the generalizability of our results. However, the fact that millennials are environmentally conscious (Lu et al., 2013) should make this consumer group relevant for our research scope.

Concerning the *ecological validity*, we affirm that the study design amounts to a great level of validity. A common critique or disadvantage with questionnaires and experiments is that

respondents react differently compared to their natural setting, solely based on the fact that they are subjects to research (Bryman and Bell, 2015). However, our use of control groups should accordingly mitigate some of these experimental arrangement effects. This research applied a more natural manipulation compared to previous research, where only one product is exposed to the subject. In the current study, we have used graphics from actual online stores and thereby making the stimulus more harmonious with consumers' everyday lifestyles. The use of real brand names (Apple and Archos) also increases ecological validity. It should however be acknowledged that tablets are high involvement products, meaning that consumers require more information than what was given in the experimental scenarios to form judgements about a product or brand. It should also be pointed out that the marketing communication of a new product launch includes more marketing activities than the scope of our study. Due to the constraints of conducting a study, our results will not correspond to the actual effects of introducing an integrated circular consumption strategy and offering reused electrical products. We find both strengths and weaknesses with the study. However, the overall ecological validity is considered high, particularly compared with previous studies that study one product's effects on one brand.

3.7.3 Replicability

The quality of a study also relies on the replicability of it (Bryman and Bell, 2015). Given that our research project follows a deductive approach, the theories, methodology and the majority of measurements are replicated from previous research. Survey questions are mainly used from past successful replicated studies. Our study design with scenarios and the questionnaire is presented in detail. Therefore, this study's circumstances are beneficial for replicability.

4. Results and analysis

In this section we will test each of the hypotheses outlined in section 2.3, analyze the effects of the moderators, and conduct additional analyses based on the collected data.

4.1 Manipulation check

Before testing the hypotheses, we first checked if the two brands used in the study are perceived differently in terms of brand familiarity. According to the results, all respondents who were exposed to Apple scenarios reported that they are familiar with the brand and all respondents who were exposed to Archos scenarios reported that they are not familiar with the brand.

Next, we conducted a one-way ANOVA to test the differences in the level of environmental consciousness between 4 groups. The results show no significant differences in mean levels ($F(3,232) = 0.286, p = 0.836$).

Additionally, we analyzed the perceived fit between the brand and the reused products offering using an independent sample T-test. The result showed that there was no significant difference in perceived fit of the reused offering and the brand, comparing Apple and Archos ($M_{\text{Apple}} = 5.40, M_{\text{Archos}} = 5.50, p > .05$). Also, it's needed to control for possible differences in terms of attitudes towards reused products. No significant differences were found for attitude towards reused products between the two groups that were exposed to the reused products offering ($M_{\text{Apple}} = 5.48, M_{\text{Archos}} = 5.58, p > .05$).

4.2 Hypothesis Testing

To test our hypotheses, we conducted a 2 (Product offering: New, Reused) x 2 (Brand: Familiar, Unfamiliar) factor analysis of variance (ANOVA) on dependent variables: perceived product quality, perceived product sustainability, perceived brand innovativeness, perceived brand sustainability, brand attitude, and purchase intention. We compared the means of the 4 cells for each of the dependent variables and tested the statistical significance for the difference between cell means, using Scheffe's post hoc test. These results are the basis for concluding the hypotheses proposed in section 2.

4.2.1 Effects on product perceptions

The first hypothesis suggests that the reused products, if offered by the brand in its product portfolio, will not have a significant difference in perceived quality compared to the new products offered by the same brand.

According to the 2-way ANOVA result in table 4, there were significant main effects for product offering ($F(1,232) = 9.45, p < .05$) and brand familiarity ($F(1,232) = 6.54, p < .05$) as well as a significant 2-way interaction effect of product offering and brand familiarity on perceived product quality ($F(1,232) = 7.15, p < .05$). By looking at the cell mean comparison in table 5, we can see that the perceived product quality was not significantly different comparing the Apple Reused condition ($M = 5.23$) and the Apple New condition ($M = 5.17$), $p > .05$. Interestingly, reused products offered by Archos were perceived with even significantly higher quality ($M = 5.24$) than new Archos products ($M = 4.47$), $p < .05$. Therefore, hypothesis 1 is partially supported.

Table 4
2-way ANOVA for perceived product quality

| Source | df | Mean Square | F | Sig. (p-value) |
|------------------|----|-------------|------|----------------|
| Offering | 1 | 9.91 | 9.45 | 0.002 |
| Brand | 1 | 6.86 | 6.54 | 0.011 |
| Offering x Brand | 1 | 7.50 | 7.15 | 0.008 |

Table 5
Compared cell means for perceived product quality (post hoc test)

| | New | Reused | Mean difference | Sig. (p-value) |
|--------|------|--------|-----------------|----------------|
| Apple | 5.17 | 5.23 | 0.06 | 0.994 |
| Archos | 4.47 | 5.24 | 0.77* | 0.001 |

Note. *. the mean difference is significant at 0.05 level

Hypothesis 1: There will be no significant difference in perceived product quality between reused products and new products

PARTIALLY SUPPORTED

The next hypothesis investigates the effect of the reused offering on perceived product sustainability and expects that reused products would be perceived as more sustainable. 2-way

ANOVA result on product sustainability is presented in table 6 and cell mean comparison using Scheffe's post hoc test is presented in table 7.

Table 6
2-way ANOVA for perceived product sustainability

| Source | Df | Mean Square | F | Sig. (p-value) |
|------------------|----|-------------|--------|----------------|
| Offering | 1 | 399.84 | 296.37 | 0.000 |
| Brand | 1 | 7.21 | 5.34 | 0.022 |
| Offering x Brand | 1 | 0.07 | 0.05 | 0.821 |

Table 7
Compared cell means for perceived product sustainability (post hoc test)

| | New | Reused | Mean difference | Sig. (p-value) |
|--------|------|--------|-----------------|----------------|
| Apple | 2.76 | 5.40 | 2.64* | 0.000 |
| Archos | 3.14 | 5.71 | 2.57* | 0.000 |

Note. *. the mean difference is significant at 0.05 level

There were significant main effects of product offering ($F(1,232) = 296.37, p < .05$) and brand familiarity ($F(1,232) = 5.34, p < .05$) on perceived product sustainability. This means the level of perceived product sustainability was significantly higher in the Reused offering condition than in the New offering condition. There was no significant interaction effect of product offering and brand familiarity on perceived product sustainability ($F(1,232) = 0.05, p = .821$). We investigate further by comparing the cell means using Scheffe's post hoc test. There was a significant increase in the level of perceived product sustainability for Apple Reused ($M = 5.40$) compared to Apple New ($M = 2.76$), $p < .05$. Similarly, the level of perceived product sustainability was significantly higher for Archos Reused ($M = 5.71$) compared to Archos New ($M = 3.14$), $p < .05$. Therefore, hypothesis 2 is supported.

Hypothesis 2: Reused products will be perceived as more sustainable than new products

SUPPORTED

4.2.2 Effects on corporate brand perceptions

Hypothesis 3a and 3b discuss the effect of the reused products offering on the perception of brand innovativeness. They suggest a positive effect on perceived brand innovativeness when the brand include reused products in their offering and a greater effect for the unfamiliar brand. A two-way ANOVA was conducted on perceived brand innovativeness with product offering and brand familiarity as between subject predictors. Table 8 shows the 2-way ANOVA result

and Table 9 presents the compared mean values between scenarios as well as the significant level resulting from the Scheffe's post hoc test.

Table 8
2-way ANOVA for perceived brand innovativeness

| Source | Df | Mean Square | F | Sig. (p-value) |
|------------------|----|-------------|--------|----------------|
| Offering | 1 | 48.02 | 48.06 | 0.000 |
| Brand | 1 | 175.67 | 175.85 | 0.000 |
| Offering x Brand | 1 | 34.74 | 34.74 | 0.000 |

Table 9
Compared cell means for perceived brand innovativeness (post hoc test)

| | New | Reused | Mean difference | Sig. (p-value) |
|--------|------|--------|-----------------|----------------|
| Apple | 5.57 | 5.71 | 0.14 | 0.906 |
| Archos | 3.08 | 4.75 | 1.67* | 0.000 |

Note. *. the mean difference is significant at 0.05 level

A significant main effect of product offering was found ($F(1,232) = 48.06$, $p < .05$), along with a significant main effect of brand familiarity ($F(1,232) = 175.85$, $p < .05$). Importantly, the two-way interaction was significant ($F(1,232) = 34.75$, $p < .05$). This result implied that brand familiarity moderated the effect of offering reused products on innovativeness perception of the brand. According to Table 9, respondents in the Apple Reused condition reported higher ($M = 5.71$) perceived brand innovativeness compared to respondents in the Apple New condition ($M = 5.57$), however, the effect was not significant ($p > .05$). The effect on perceived brand innovativeness was however significant for Archos Reused ($M = 4.75$) compared to Archos New ($M = 3.08$), $p < .05$.

From these results, hypothesis 3a is partially supported. It is supported for the unfamiliar brand and not supported for the familiar brand. Hypothesis 3b is supported: the effect of reused offerings on perceived brand innovativeness was greater for the unfamiliar brand than for the familiar brand.

Hypothesis 3a: Offering reused products will lead to a higher level of brand innovativeness perception compared to only offering new products

PARTIALLY SUPPORTED

Hypothesis 3b: Unfamiliar brand (versus familiar brand) will strengthen the effect of reused product offerings on brand innovativeness perception

SUPPORTED

The next hypotheses focus on the effect of the reused products offerings on another component of brand perceptions, which is the perceived brand sustainability. Hypothesis 4a anticipate that including reused products in a brand's portfolio would result in an increased level of perceived brand sustainability and Hypothesis 4b expects a greater effect for the unfamiliar brand. The overall 2-way ANOVA result is presented in Table 10 and cell means are shown in Table 11.

Table 10
2-way ANOVA for perceived brand sustainability

| Source | Df | Mean Square | F | Sig. (p-value) |
|------------------|----|-------------|--------|----------------|
| Offering | 1 | 245.56 | 189.07 | 0.000 |
| Brand | 1 | 12.32 | 9.49 | 0.002 |
| Offering x Brand | 1 | 8.89 | 6.85 | 0.009 |

Table 11
Compared cell means for perceived brand sustainability (post hoc test)

| | New | Reused | Mean difference | Sig. (p-value) |
|--------|------|--------|-----------------|----------------|
| Apple | 3.05 | 4.70 | 1.65* | 0.000 |
| Archos | 3.12 | 5.55 | 2.43* | 0.000 |

Note. *. the mean difference is significant at 0.05 level

There was a significant main effect of product offering on perceived brand sustainability ($F(1,232) = 189.07, p < .05$), along with a significant main effect of brand familiarity ($F(1,232) = 9.49, p < .05$). Importantly, the interaction effect of product offering and brand familiarity on perceived brand sustainability was significant, ($F(1,232) = 6.85, p < .05$). This implied that the impact of the product offering on perceived brand sustainability is moderated by the brand familiarity. Respondents who were exposed to the Apple Reused scenario had significantly higher perceived brand sustainability ($M = 4.70$) than those were exposed to the Apple New scenario ($M = 3.05$), $p < .05$. Similarly, the Archos Reused response group ($M = 5.55$) reported a significantly higher level of perceived brand sustainability than the Archos New response group ($M = 3.12$), $p < .05$. The effect of reused offerings on perceived brand sustainability was greater for Archos than for Apple, given a higher mean difference between the reused offering and the new offering condition.

We can conclude that hypothesis 4a is supported: the level of perceived brand sustainability is higher for the reused offering than for the new offering. The effect of reused offerings on perceived brand sustainability was greater for the unfamiliar brand, therefore hypothesis 4b is supported.

Hypothesis 4a: Offering reused products will lead to a higher level of brand sustainability perception compared to only offering new products

SUPPORTED

Hypothesis 4b: Unfamiliar brand (versus familiar brand) will strengthen the effect of reused product offerings on brand sustainability perception

SUPPORTED

4.2.3 Effects on brand attitude

Hypothesis 5a and 5b expect that offering reused products would give a positive effect on the brand attitude and the effect would be greater for the unfamiliar brand. To test these hypotheses, we ran a 2-way ANOVA on brand attitude with product offering and brand familiarity as predictors and post hoc test to compare cell means. The results are presented in Table 12 and Table 13.

Table 12
2-way ANOVA for brand attitude

| Source | Df | Mean Square | F | Sig. (p-value) |
|------------------|----|-------------|-------|----------------|
| Offering | 1 | 25.30 | 17.01 | 0.000 |
| Brand | 1 | 52.67 | 35.42 | 0.000 |
| Offering x Brand | 1 | 22.43 | 15.08 | 0.000 |

Table 13
Compared cell means for brand attitude (post hoc test)

| | New | Reused | Mean difference | Sig. (p-value) |
|--------|------|--------|-----------------|----------------|
| Apple | 5.68 | 5.72 | 0.04 | 0.999 |
| Archos | 4.12 | 5.39 | 1.27* | 0.000 |

Note. *. the mean difference is significant at 0.05 level

The product offering of Reused and New had a significant effect on brand attitude given the 2-way ANOVA result ($F(1,232) = 17.01, p < .05$). Similarly, there was a significant main effect

of brand familiarity on brand attitude ($F(1,232) = 35.42, p < .05$). Importantly, the significant two-way interaction effect between product offering and brand familiarity emerged ($F(1,232) = 15.08, p < .05$), implying that the effect of product offering on brand attitude differed depending on the brand familiarity.

According to table 13, respondents in the Apple Reused condition ($M = 5.72$) did not report significantly higher brand attitude compared to respondents in the Apple New condition ($M = 5.68$), $p > .05$. However, the effect was significant for Archos comparing the response group in the Archos Reused condition ($M = 5.39$) and in the Archos New condition ($M = 4.12$), $p < .05$. Therefore, hypothesis 5a is partially supported and hypothesis 5b is supported.

Hypothesis 5a: Offering reused products will lead to a higher level of brand attitude compared to only offering new products

PARTIALLY SUPPORTED

Hypothesis 5b: Unfamiliar brand (versus familiar brand) will strengthen the effect of reused product offerings on brand attitude

SUPPORTED

4.2.4 Effects on purchase intention

The next pair of hypotheses propose that offering reused products had a positive effect on the level of purchase intention and the effect would be greater for the familiar brand than for the unfamiliar brand. A two-way ANOVA with product offering and brand familiarity as predictors was run on the purchase intention, followed by a post hoc test. The results are reported in Table 14 and Table 15.

Table 14
2-way ANOVA for purchase intention

| Source | Df | Mean Square | F | Sig. (p-value) |
|------------------|----|-------------|-------|----------------|
| Offering | 1 | 10.32 | 3.12 | 0.079 |
| Brand | 1 | 76.55 | 23.11 | 0.000 |
| Offering x Brand | 1 | 21.13 | 6.34 | 0.012 |

Table 15
Compared cell means for purchase intention (post hoc test)

| | New | Reused | Mean difference | Sig. (p-value) |
|--------|------|--------|-----------------|----------------|
| Apple | 4.72 | 4.54 | -0.18 | 0.960 |
| Archos | 2.98 | 4.00 | 1.02* | 0.033 |

Note. *. the mean difference is significant at 0.05 level

There was a significant main effect of brand familiarity ($F(1,232) = 23.11, p < .05$) and no significant main effect of product offering on purchase intention ($F(1,232) = 3.12, p > .05$). The interaction effect of product offering and brand familiarity on purchase intention was found significant ($F(1,232) = 6.34, p < 0.5$), implying that the effect of the familiar and unfamiliar brand on purchase intention differed according to the reused and new product offering. This can be seen from the results in Table 15. While there was no significant difference in purchase intention comparing Apple Reused ($M = 4.54$) and Apple New ($M = 4.72$), $p > .05$, there was a significantly higher level of purchase intention for Archos Reused ($M = 4.00$) than for Archos New ($M = 2.98$), $p < .05$. We can conclude that hypothesis 6a is partially supported and hypothesis 6b is supported.

Hypothesis 6a: Offering reused products will lead to a higher level of purchase intention compared to only offering new products

PARTIALLY SUPPORTED

Hypothesis 6b: Unfamiliar brand (versus familiar brand) will strengthen the effect of reused product offerings on purchase intention

SUPPORTED

4.2.5 Moderation effects

The last hypotheses focus on the moderation effect of the consumers' environmental consciousness on the relationship between product offering and brand attitude (hypothesis 7a) as well as purchase intention (hypothesis 7b). This was tested using Hayes' PROCESS tool for SPSS - Model 1 for the moderation effect, taking product offering as the independent variable and controlling for brand familiarity. The sample was bootstrapped for indirect effects with bootstrap samples $n = 5000$ in order to get better data representation as well as prevent non-normality (Preacher and Hayes, 2008). As expected, the test showed significant interaction effects at 95% confidence intervals for both brand attitude and purchase intention. This means that consumers' environmental consciousness moderates the effect of product offering on brand

attitude and on purchase intention. The interaction coefficients and significance levels are presented in Table 16.

To further explore the effect, we visualized the data generated from Hayes' PROCESS (Figure 1, Figure 2). Data points were the level of brand attitude reported by the respondents at the 25th, 50th, and 75th percentile of environmental consciousness and for each type of offerings. We can see that the more conscious consumers are, the higher brand attitudes are elicited in the reused offering condition and lower brand attitudes in the new offering condition. This pattern also applied for purchase intention. We therefore conclude that hypothesis 7a and hypothesis 7b are supported.

Table 16
Result of moderation effect testing using Hayes' PROCESS

| Dependent variable | Interaction coefficient | Sig. (p-value) |
|--------------------|-------------------------|----------------|
| Brand Attitude | 0.328 | 0.004 |
| Purchase Intention | 0.372 | 0.028 |

Figure 1

Moderation effect visualization: environmental consciousness moderated the effect of product offering on brand attitude

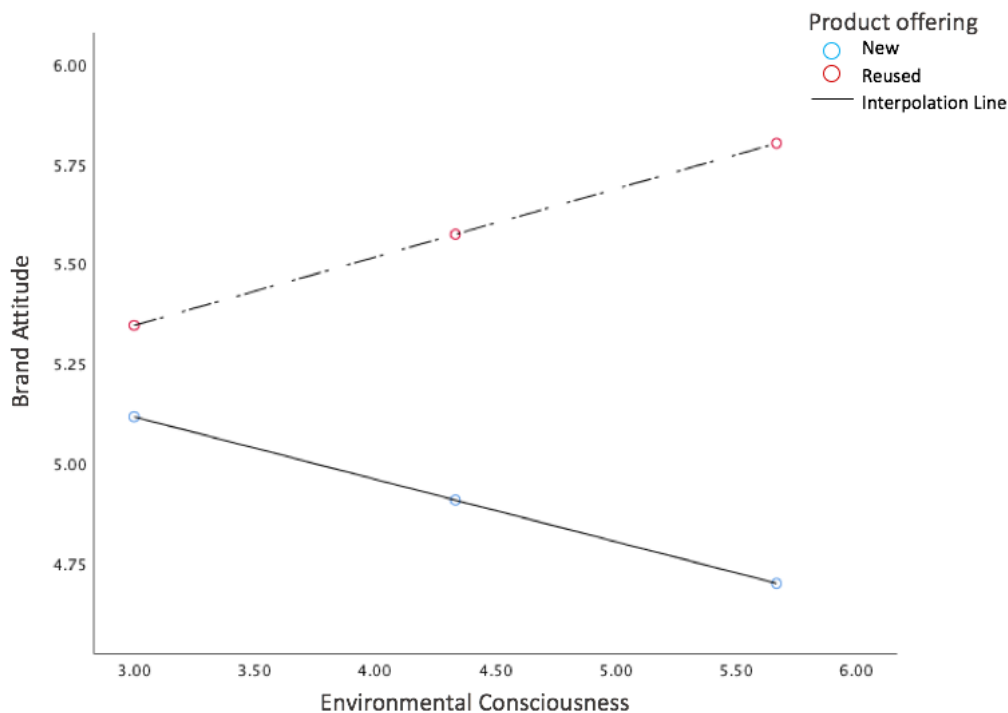
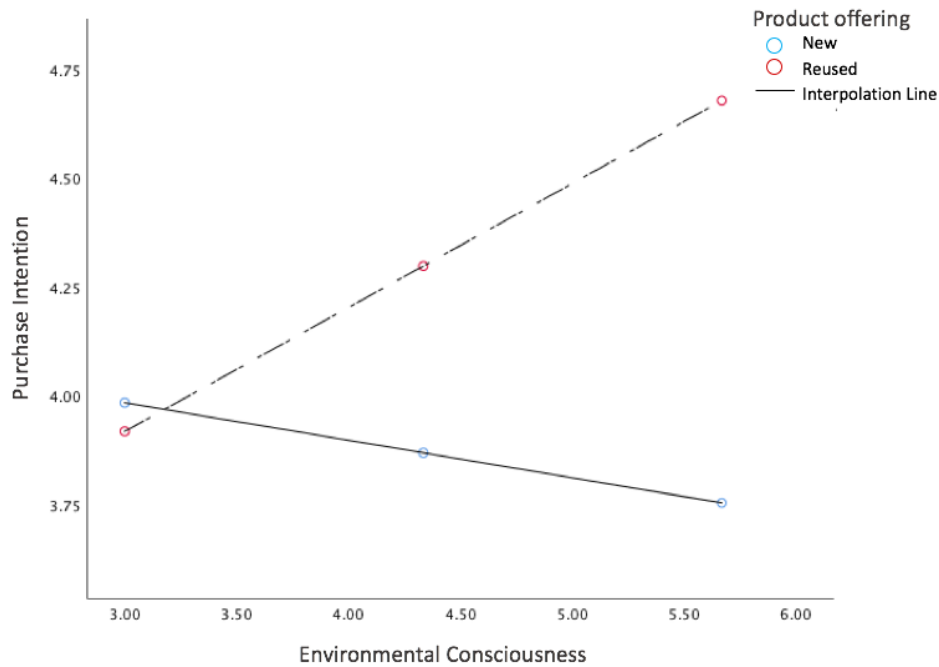


Figure 2

Moderation effect visualization: environmental consciousness moderated the effect of product offering on purchase intention



Hypothesis 7a: Consumers' environmental consciousness will moderate the effect of the reused product offering on the brand attitude, such that the effect will be stronger among respondents with a higher level of environmental consciousness.

SUPPORTED

Hypothesis 7b: Consumers' environmental consciousness will moderate the effect of the reused product offering on the purchase intention, such that the effect will be stronger among respondents with a higher level of environmental consciousness.

SUPPORTED

4.3. Additional analysis on circular consumption intention

In this section, we will present results from an additional analysis that explores consumers' intention to participate in the circular consumption behavior of returning their used products to the brand. This circular consumption intention is relevant to practice, however, it has not been addressed by researchers or conceptualized yet.

As mentioned in section 1, the two issues that business managers need to solve in order to adopt a circular strategy, is managing product supply and creating a consumer market for reused products (Guide and Van Wassenhove, 2009). While the market and branding aspect has been tested in the main hypotheses, the question regarding product supply remains unanswered.

Companies have to handle the fact that consumers are unwilling to return their products (Weelden et al., 2016), creating an uncertain supply of used products in terms of quality and quantity (Cole et al., 2018). Therefore, we conducted an additional analysis to explore if consumers are more willing to participate in the last phase of circular consumption, by returning used products to the same brand that offers the reused products.

According to the result of 2-way ANOVA analysis (Table 17), the main effect of product offering on the consumers' return intention was significant ($F(1,232) = 21.54$, $p < .05$); no other effects were significant. Respondents who were exposed to reused offerings reported significantly higher intention to participate in circular consumption than those who were exposed to new offerings (Table 18).

Table 17
2-way ANOVA for circular consumption intention

| Source | Df | Mean Square | F | Sig. (p-value) |
|------------------|----|-------------|-------|----------------|
| Offering | 1 | 60.10 | 21.54 | 0.000 |
| Brand | 1 | 6.66 | 2.39 | 0.124 |
| Offering x Brand | 1 | 0.000 | 0.000 | 0.996 |

Table 18
Compared cell means for circular consumption intention (post hoc test)

| | New | Reused | Mean difference | Sig. (p-value) |
|--------|------|--------|-----------------|----------------|
| Apple | 4.08 | 5.09 | 1.01* | 0.012 |
| Archos | 4.41 | 5.42 | 1.01* | 0.017 |

Note. *. the mean difference is significant at 0.05 level

4.4 Summary of hypotheses testing

Table 19. Summary of hypothesis testing

| Hypothesis | Result |
|---|---------------------|
| H1. There will be no significant difference in perceived product quality between reused products and new products | Partially supported |
| H2. Reused products will be perceived as more sustainable than new products | Supported |
| H3a. Offering reused products will lead to a higher level of brand innovativeness perception compared to only offering new products | Partially supported |
| H3b. Unfamiliar brand (versus familiar brand) will strengthen the effect of reused product offerings on brand innovativeness perception | Supported |

| | |
|--|---------------------|
| H4a. Offering reused products will lead to a higher level of brand sustainability perception compared to only offering new products | Supported |
| H4b. Unfamiliar brand (versus familiar brand) will strengthen the effect of reused product offerings on brand sustainability perception | Supported |
| H5a. Offering reused products will lead to a higher level of brand attitude compared to only offering new products | Partially supported |
| H5b. Unfamiliar brand (versus familiar brand) will strengthen the effect of reused product offerings on brand attitude | Supported |
| H6a. Offering reused products will lead to a higher level of purchase intention compared to only offering new products | Partially supported |
| H6b. Unfamiliar brand (versus familiar brand) will strengthen the effect of reused product offerings on purchase intention | Supported |
| H7a. Consumers' environmental consciousness will moderate the effect of the reused product offering on the brand attitude, such that the effect will be stronger among respondents with a higher level of environmental consciousness. | Supported |
| H7b. Consumers' environmental consciousness will moderate the effect of the reused product offering on the purchase intention, such that the effect will be stronger among respondents with a higher level of environmental consciousness. | Supported |

5. Discussion and Conclusion

In this last part we will start by discussing the results presented in the previous section, followed by the overall conclusions and answer to our research questions. Next, a discussion of both theoretical and managerial implications of the study will be presented. Finally, we will present a critical evaluation of the study and suggestions for future research in the field.

5.1 General discussion of the results

In our study we have looked at the effect of offering reused products on product perceptions, corporate brand perceptions, brand attitude and purchase intention. We have also investigated the possible difference in effects on corporate brand perceptions, attitudes and purchase intentions for the familiar and unfamiliar brand. Additionally, an analysis has been carried out to examine the moderation effect of consumers' environmental consciousness on the results. In this section we will present our findings as well as explain the results in relation to our theoretical background and framework.

5.1.1 Product perceptions

Perceived product quality - as good as new or even better

Hypothesis 1 considered the consumers' perceived product quality of offering reused products in a brand's product portfolio. Our findings show that there was no significant difference in perceived product quality for the reused products offered by the familiar brand. For the unfamiliar brand, the perceived quality of reused products was significantly higher than that of the new products. These findings support hypothesis 1 and are in line with previous arguments and findings that perceived product quality is the subjective judgement of the consumers' which are based on the information provided. The result shows that when consumers are informed about the recycled components and the remanufacturing process, they perceive the unfamiliar brand's products to have higher quality than the new products.

The significantly higher perceived product quality of the unfamiliar brand's reused products, though unexpected, could be explained using the theoretical base regarding product knowledge and brand knowledge. Consumers do not have any previous knowledge about the unfamiliar brand's products (either through their own experience, marketing activities, word-of-mouth, or other social influences), therefore they might be more skeptical toward this brand's products. However, when the unfamiliar brand employs a circular consumption strategy with a greening of their products, consumers' subjective perception of quality seems to be influenced since they evaluate the reused products to have higher quality.

Perceived product sustainability - more sustainable

Hypothesis 2 considered an emerging aspect of product associations, which is product sustainability. There was adequate evidence to support hypothesis 2. Reused products are perceived as more sustainable than new products, if they are offered by a familiar and unfamiliar brand. As discussed earlier, reused products are green products by definition, since they are part of the processes that protect the natural environment by reducing use of resources and waste. The key concern was, as pointed out, the lack of consumer's awareness and knowledge about sustainable practices in the studied electrical product category. However, if the reused products are offered as a part of a brand's integrated circular consumption strategy, then consumers get additional informational cues that these products are made with concern for the environment.

5.1.2 Corporate brand perceptions

Perceived brand innovativeness

Theoretically we were able to hypothesize that there would be a positive effect for perceived brand innovativeness when reused products as a circular consumption offering are introduced, since they give consumers an impression of the firm's sustainability-driven innovation. The results show a significant increase in the perception of brand innovativeness for the unfamiliar brand. This could be explained through the theoretical arguments presented in section 2. First, the introduction of circular consumption practices with offering reused products in the brand's product portfolio, as discussed before, is part of the eco-innovation effort that increases the effectiveness of the whole ecosystem. The brand gains innovation credits through the reused products offering and hence is perceived as more innovative. Second, the greater effect for the unfamiliar brand is due to the situation that the brand has not been associated to any specific meaning in consumers' minds. Therefore, this green innovation solution provides the consumer with new knowledge, that the brand is engaging in innovation activities and would have potential to continue such activities in the future.

The effect, however, was not significant for the familiar brand. There are several alternative explanations based on existing theories. First, the consumers tend to have a better and more sophisticated understanding of the familiar brand's associations. The brand already has certain meanings in the consumers' memory, therefore it needs various types of marketing activities to establish new associations or strengthen existing associations. Second, perceived brand innovativeness, by definition, implies the perception of the firm's track record and potential

for continued innovation activities. Consumers perceive the level of brand innovativeness of a familiar consumer electronic brand such as Apple based on the track record of product offerings, R&D activities, the firm's engagement in supporting creativity, etc. Deploying an integrated circular consumption strategy and offering reused products is another element added in the familiar brand's innovation track record. Therefore, the perceived brand innovativeness for the familiar brand does not significantly increase.

Perceived brand sustainability

Hypothetically we expect that the level of brand sustainability is higher when reused products are introduced. There was a significant main effect of the product offering on perceived brand sustainability, indicating that reused offering generated a higher level of sustainability brand perception. Importantly, we found that the interaction effect between product offering and brand familiarity on perceived brand sustainability was significant. This implies that even though both the familiar and unfamiliar brand were reported with higher perceived brand sustainability when reused products are included, the effect was greater for the unfamiliar brand.

First, according to the research field of corporate branding and particularly CSR initiatives, the circular business model can be classified as an environmental program that benefits the positioning of the brand as more sustainable and responsible. Offering reused products should primarily communicate an ethical product differentiation to consumers. In this case, the brand gains the perception that they are proactively responding to the sustainability issues, rather than being reactive, by differentiating their products on the basis of an environmental quality. The good fit between the electrical consumer brand's core offering with the integrated circular consumption strategy creates a salient association among consumers about the brand as being more sustainable. All in all, deploying a circular consumption strategy generates a higher level of consumer's perceived brand sustainability.

Second, the greater effect of offering reused products on perceived brand sustainability for the unfamiliar brand could be explained following the previous discussion about the difference between the familiar and unfamiliar brand on perceived innovativeness. Consumers process new marketing activities or stimuli based on their prior brand knowledge. Since there are no informational nodes linked to the unfamiliar brand in the consumers' memory, when they are exposed to the reused product offering, this first experience of the unfamiliar brand's products should create a stronger perception of the brand as a sustainable and environmentally focused

brand. The sustainability association hence serves as the most salient association and therefore what consumers think of as the meaning of the unfamiliar brand (compared to a net of many associations that consumers' have of the familiar brand), leading to a greater effect.

5.1.3 Brand attitude and purchase intention

Brand attitude

Based on the expectancy-value model and relevant theories, we hypothesized that offering reused products would have a positive effect on brand attitude. The significant main effect found in the results of the product offering on brand attitude supported this hypothesis. However, the effect was only significant for the unfamiliar brand. The previously discussed expectancy-value model supports this result. First, the consumers' salient beliefs and associations to the brand increased since they perceived the products to have higher quality and the brand as more innovative and sustainable. Second, a higher level of product quality and brand innovativeness is what consumers expect and these attributes should be valued as important in the context of evaluating consumer electronic brands, hence consumers' overall evaluation of the brand is more positive.

There are several potential explanations for the insignificant effect of offering reused products as a familiar brand. Firstly, attitudes are fairly stable (Hoyer et al., 2013) and based on previous experiences. Consumers already have a high brand attitude toward the familiar brand (as the mean value of brand attitude in the new offering condition in this study indicated), therefore the effect on brand attitude might not be observed through one or two marketing activities. Secondly, we proposed that an increase in perceived brand innovativeness and sustainability should also have an effect on consumers' brand attitudes. However, the overall evaluation of a brand depends on what attributes the consumer think is important. Therefore, even though the familiar brand was perceived as more sustainable, this new benefit or attribute did not impact the consumers' overall evaluation. This leads us to believe that consumers don't think sustainability is an important decision-making criterion in this particular product category, which is reasonable given the lacking sustainability practices. Additionally, the greater effect on the unfamiliar brand might be caused by the fact that consumers process the new information more extensively, thus evaluating the meaning of the offering more thoroughly (Campbell and Keller, 2003), leading to a higher influence on their attitude.

Purchase intention

There are similar findings regarding the effect of reused offering on the purchase intention. The difference in level of purchase intention between the reused offering and new offering was only significant for the unfamiliar brand. This aligns with the established theoretical framework that brand attitude affects consumers' purchase intention. Since there was a significant increase in brand attitude for the unfamiliar brand when they offer reused products, the purchase intention for such products also increased. Similarly, since a higher brand attitude was not observed for the familiar brand, the purchase intention of reused products compared with their new products did not increase.

5.1.4 Moderation effect of consumers' environmental consciousness

From theories we have the reason to believe that the level of consumers' environmental consciousness would moderate the effect of the reused and new product offering on brand attitude and purchase intention. What we found in the results supported this proposition. The more environmentally conscious a consumer is, the higher level of brand attitude and purchase intention they have for reused products. Interestingly, the results also show that the brand attitude and purchase intention for new product's decreased as the consumers' environmental consciousness increased. Theoretically, the attitude component in expectancy-value models is conceptually and empirically influenced by attribute importance. The environmentally conscious consumers consider the green attributes of the reused electrical products as more important, therefore have a higher attitude toward the brand when the reused products are introduced as a sustainable alternative to new products.

5.2 Conclusions

The main research question in this research was:

- *How will offering reused products affect consumers' product and corporate brand perceptions, attitudes and purchase intention?*

And, the two secondary research questions were:

- *How will brand familiarity moderate the effects of offering reused products on brand perceptions, brand attitude, and purchase intention?*
- *Are the effects on brand attitude and purchase intention different depending on the level of consumers' environmental consciousness?*

Firstly, the findings in the previous section provide an answer to the main research question. The results show that offering reused products will not lead to a lower perceived product quality compared with the brands' conventional products. Additionally, the reused products are

perceived to have a higher level of product sustainability. Including reused products in the brand's product portfolio certainly increases the level of brand sustainability perception while generating different levels of effects on brand innovativeness perception for the familiar and unfamiliar brand. There is an increase in the perceived brand innovativeness for the unfamiliar brand and no significant difference for the familiar brand. Similar effects are observed for brand attitudes and purchase intention.

Secondly, we have found a moderation effect consistent with what we hypothesized for the familiar and unfamiliar brand. Brand familiarity moderated the effects of offering reused products on corporate brand perceptions of innovativeness and sustainability, brand attitude, and purchase intention, such that the unfamiliar (familiar) brand enjoys a greater (lower) effect when offering reused products. This is the answer to the first secondary research question.

Thirdly, the effects of offering reused products on brand attitude and purchase intention were different depending on the level of consumers' environmental consciousness. Consumers with a higher level of environmental consciousness who were exposed to reused offerings have a higher attitude toward the brand and higher purchase intention, compared with those who have a lower level of environmental consciousness. This is the answer to the second secondary research question.

5.3 Theoretical implications

Although previous research has provided an abundance of evidence that implementing a circular strategy would bring various benefits to firms, consumers, and society, the literature has remained silent about the branding implications of the new circular economy practices. The research on reused products has investigated, extensively, how various aspects influence consumers' purchase intention, optimal pricing, and cannibalization effects, but no study so far has investigated specifically the effects on the brand, or the brand's impact on consumers' perception of reused products.

This research, therefore, fills an important gap by demonstrating the effects of an integrated circular consumption strategy on the brand. It bridges the circular economy literature with conventional marketing and branding theories as well as the emerging green marketing field by addressing the question of how offering reused products effects the brand. The results from this research can be classified as the first empirical findings regarding the implementation of circular practices and how offering reused products effect a brand, at both the product and

corporate brand level. This research contributes to the green marketing and sustainable consumption field by investigating a new sustainable product and service offering which has not been addressed before.

Since this research has found that consumers do not perceive reused products to have lower quality than new products, we have contributed to the theoretical field of circular economy by showing that brand knowledge can have an effect on consumers' perception of reused products. Furthermore, we have contributed by showing that the brand can play an important role in influencing consumers' acceptance of reused products, something that previous research has not addressed.

The authors have not only compared the branding effects of offering reused products versus only offering new products, but also investigated the specific effects for a familiar and unfamiliar brand. Since most of the studies so far have been conducted for the familiar or a fictitious brand, the findings of the present study shed light on this underdeveloped field by showing the differential effects for unfamiliar brands if they embrace sustainability practices. They also support existing theoretical arguments regarding the possible different impacts that marketing activities would generate for a brand depending on the consumers' previous brand knowledge and associations.

5.4 Managerial and practical implications

Opportunities for new customer segments

According to the findings, the reused products would not be perceived as having lower quality than the new products, therefore still satisfy the functional needs that consumers seek from an electrical product. Since perceived quality has been considered as a critical barrier for consumers' acceptance of reused products, this finding gives managers the confidence needed to include reused products in their product portfolio without damaging the brand image. This finding should be particularly satisfactory for familiar brands, given that reused products will not dilute their brand, consumers might consider purchasing a reused product from a premium brand instead of paying the same price for a new product from a middle-end brand. Furthermore, the reused products are perceived as more sustainable than the new products. According to our research findings, environmentally conscious consumers have a higher brand attitude and purchase intention toward reused products. Therefore, consumer electronics brands

who implement a circular consumption offering have opportunities to target a new and growing customer segment - the green consumers.

Stay ahead of the future

By offering reused products, the brand can position themselves as sustainable in the minds of consumers. This is very important for long term survival. Literature in the areas of sustainability and branding, as depicted in section 2.1.2, have emphasized the needs for companies in general and consumer electronics firms in particular to incorporate sustainability into their everyday marketing practices. Sooner or later, consumer brands need to provide their consumers with sustainable consumption options. First of all, in the future one should expect stricter requirements from regulations regarding the usage of critical resources and waste disposal. Second, as previously mentioned, consumer pressure on companies and brands will most likely increase as consumers become more aware and knowledgeable about environmental issues. Therefore, it is not anymore a question if firms should embark on a sustainable journey, rather the question of when and how. From previous research it is found that companies that work with proactive sustainability programs are rewarded more by consumers and other stakeholders (Porter and Kramer, 2006). This research shows that consumer electronics bands can implement circular production and consumption to position themselves as sustainable, i.e. creating a competitive advantage in the minds of consumers. According to our findings, the familiar brand might have to adopt the sustainability practices as a precaution, given that consumers' evaluated the unfamiliar brand with a reused offering almost as positively as the familiar brand on the dependent variables, which implies that consumers might switch brands if another one satisfies their future needs better.

Creating and reinforcing the associations (managing the brand growth)

Although circular business models and reused products offerings create potential for brands in general, the level of impact they bring is different depending on the brand. Therefore, managers of each brand familiarity type need to carefully consider the green marketing mix and other marketing activities to maximize the benefits from their company's circular consumption practice.

Managers of the unfamiliar brands could consider reused products as a game changer. Reused product offerings are not only perceived to have higher quality and be more sustainable but also lead to an increased level of brand innovativeness and sustainability, which lead to a more positive brand attitude and higher purchase intention for the unfamiliar brands. Based on this

insight, managers could initiate a sustainable positioning strategy to initialize memory nodes in consumers' minds that the brand is sustainable, responsible, and able to provide innovative solutions for consumers' needs. Once those associations are created, the brand needs to be consistent in its marketing and communications in order to strengthen these memory nodes and become a stronger brand in the minds of consumers.

Managers of the familiar brands also need to play their own game. Given the existing net of associations that consumers have for the brand, this requires more marketing activities to change their strong, unique, and favorable associations, and should therefore make strategic decisions regarding brand growth. Consumer electronic brands would always need to maintain and enhance their innovation capabilities and the innovativeness perception in consumers' minds. Though there was not a significant effect found for brand innovativeness when reused products were offered, managers of the familiar brands should still consider including this option in their product offering, to give the impression that the brand is able to provide innovative solutions to customers' needs (in this case, green customers' needs). This practice, together with other R&D activities and new offerings, would build the brand's innovation track record, hence enhancing the perceived brand innovativeness in the long-term.

Managing the closed-loop supply chain

One issue that managers need to handle, also a barrier to adopt circular business model, is acquiring the input for the remanufacturing processes. Studies have indicated that consumers are unwilling to return their products, hence the supply of used products for companies are unstable in terms of both quality and quantity. This study has found that, if the brand includes reused products in its portfolio, consumers are more willing to return their used products for recycling, refurbishing, or a trade-in program (offering a discount when buying new products). This is an interesting finding that give managers insights when planning their product acquisition strategy.

5.5 Criticism and limitations of the study

The study is the first research attempt to investigate the effects of implementing a circular consumption strategy on a brand, providing clear implications to practitioners and academics. However, it has some criticism and limitations that need to be considered when interpreting the results.

First, the hypotheses of this study are formulated based on the mature branding literature but also the fields of circular economy, green marketing, sustainable consumption and corporate branding and CSR. Theories from these fields do not take into consideration the unique nature of circular consumption strategy and reused product offerings. We overcame this by reading a wide variety of theories to get a picture as broad as possible, creating a conceptual mapping of all the constructs and applying it to our study.

Second, this study uses an experimental methodology. This research approach provides the benefit of isolating particular variables of interest and testing for predicted effects, however, it is not able to capture other phenomena. Respondents were exposed to a scenario instead of a real-life shopping situation, which would probably involve more information search and consideration given that tablets are high-involvement products. This limitation of the study could generate some criticism regarding the results validity.

Third, the respondent sample was Swedish consumers, who generally have a positive attitude towards sustainable practices. According to Keller (1993), the demographic factors such as race and psychological factors such as the environment could affect associations of a typical brand user. Therefore, this study's findings regarding consumers' perceptions of a brand that offers reused products might only be applicable to the specific Swedish or Nordic markets. The generalisability of the results to other product categories is also limited since it focuses on a single product category and only two brands.

5.6 Further research

This research aims to take the first steps of identifying the effect of offering reused products on a brand. There is more research that could be done in the field to better understand the effects of implementing circular consumption on the brand.

First of all, the effects of offering reused products on the brand could be studied for other product categories, both the low-involvement consumer electronic products and other types of products. It is possible that the findings from the present study hold true across all the product categories within consumer electronics, but more research is needed before this conclusion can be made. Furthermore, it would be beneficial to validate the findings in an actual shopping experience and capture other dynamic processes that lead to branding effects that were outside of the scope for this current study.

Second, similar research could be done with some added stimulus, such as price levels and product placements on the website. For instance, should reused products be placed next to the new products or should they be separated in the online store, to increase consumers' awareness about reused products and maximize new and reused product sales.

Third, the promotion and communications of a new circular consumption offering are very important to educate consumers about the reused product offering and its benefits. There could be further research studying specifically what types of messages should be used in product advertisement or in corporate marketing to bring the best effect to the brand.

Finally, we recommend further research for other markets, where consumers might generally have a lower attitude towards sustainable practices and reused products compared to the Swedish respondents of this study. It would be interesting to investigate if this difference moderates the effects of reused product offerings on the brand.

References

- Aaker, D. A. (1991). *Managing brand equity: Capitalizing on the value of a brand name*. New York: Free Press.
- Aaker, D. A. (1996). *Building strong brands*. New York: Free Press.
- Abbey, J. D., Kleber, R., Souza, G. C., & Voigt, G. (2017). The role of perceived quality risk in pricing remanufactured products. *Production and Operations Management*, 26(1), 100-115. doi:10.1111/poms.12628
- Abbey, J. D., Blackburn, J. D., & Guide Jr, V. Daniel R. (2015). Optimal pricing for new and remanufactured products. *Journal of Operations Management*, 36(1), 130-146. doi:10.1016/j.jom.2015.03.007
- Agrawal, V. V., Atasu, A., & Van Ittersum, K. (2015). Remanufacturing, third-party competition, and consumers' perceived value of new products. *Management Science*, 61(1), 60-72. doi:10.1287/mnsc.2014.2099
- Armstrong, Gary., Kotler, Philip.,. (2009). *Marketing: An introduction*. Upper Saddle River, N.J.: Pearson Prentice Hall.
- Atasu, A., Sarvary, M., & Wassenhove, L. N. V. (2008). Remanufacturing as a marketing strategy. *Management Science*, 54(10), 1731-1746. doi:10.1287/mnsc.1080.0893
- Bakker, C., Wang, F., Huisman, J., & Den Hollander, M. (2014). Products that go round: Exploring product life extension through design. *Journal of Cleaner Production*, 69, 10-16. doi:10.1016/j.jclepro.2014.01.028
- Balde, C. P., Wang, F., Kuehr, R., & Huisman, J. (2015). The global e-waste monitor 2014: Quantities, flows and resources.
- Barone, M., & Jewell, R. (2013). The innovator's license: A latitude to deviate from category norms. *Journal of Marketing*, 77(1), 120. doi:10.1509/jm.10.0145
- Bettman, J. (1986). Consumer Psychology. *Annual Review of Psychology*, 37(1), 257–289. <https://doi.org/10.1146/annurev.ps.37.020186.001353>
- Becker-Olsen, K., Cudmore, B. A., & Hill, R. P. (2006). The impact of perceived corporate social responsibility on consumer behavior. *Journal of Business Research*, 59(1), 46-53. doi:10.1016/j.jbusres.2005.01.001
- Benoit-Moreau, F., & Parguel, B. (2011). Building brand equity with environmental communication: An empirical investigation in france. *EuroMed Journal of Business*, 6(1), 100-116. doi:<http://dx.doi.org.ez.hhs.se/10.1108/14502191111130334>

- Bhattacharya, C. B., & Sen, S. (2004). Doing better at doing good: When, why, and how consumers respond to corporate social initiatives. *California Management Review*, 47(1), 9-24. doi:10.2307/41166284
- Borin, N., Lindsey-Mullikin, J., & Krishnan, R. (2013). An analysis of consumer reactions to green strategies. *Journal of Product & Brand Management*, 22(2), 118-128. doi:10.1108/10610421311320997
- Brexendorf, T., Bayus, B., & Keller, K. (2015). Understanding the interplay between brand and innovation management: Findings and future research directions. *Journal of the Academy of Marketing Science*, 43(5), 548-557. doi:10.1007/s11747-015-0445-6
- Brown, T. J., & Dacin, P. A. (1997). *The company and the product: Corporate associations and consumer product responses* American Marketing Association. doi:10.2307/1252190
- Bryman, A., & Bell, E. (2015). *Business research methods* (4th ed.). Oxford: Oxford University Press.
- Camacho-Otero, J., Boks, C., & Pettersen, I. N. (2018). Consumption in the circular economy: A literature review. *Sustainability (Switzerland)*, 10(8) doi:10.3390/su10082758
- Campbell, M., & Keller, K. (2003). Brand familiarity and advertising repetition effects. *Journal of Consumer Research*, 30(2), 292-304. doi:10.1086/376800
- Carrillo-Hermosilla, J., Del Río, P., & Könnölä, T. (2010). Diversity of eco-innovations: Reflections from selected case studies. *Journal of Cleaner Production*, 18(10-11), 1073–1083. <https://doi.org/10.1016/j.jclepro.2010.02.014>
- Cole, C., Gnanapragasam, A., Cooper, T., & Singh, J. (2019). *Assessing barriers to reuse of electrical and electronic equipment, a UK perspective* doi:<https://doi-org.ez.hhs.se/10.1016/j.rcrx.2019.100004>
- Dag Ingvar, J., & Gunnar, S. (2002). *Vad, hur och varför : om metodval i företagsekonomi och andra samhällsvetenskapliga ämnen* (1st ed.) Lund : Studentlitteratur.
- Dangelico, R. M., & Pujari, D. (2010). Mainstreaming green product innovation: Why and how companies integrate environmental sustainability. *Journal of Business Ethics*, 95(3), 471-486. doi:10.1007/s10551-010-0434-0
- Dangelico, R. M., & 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. doi:10.1016/j.jclepro.2017.07.184

- Davari, A., & Strutton, D. (2014). Marketing mix strategies for closing the gap between green consumers' pro-environmental beliefs and behaviors. *Journal of Strategic Marketing*, 22(7), 563-586. doi:10.1080/0965254X.2014.914059
- Delgado-Ballester, E., Navarro, A., & Sicilia, M. (2012). Revitalising brands through communication messages: The role of brand familiarity. *European Journal of Marketing*, 46(1), 31-51. doi:10.1108/03090561211189220
- Dyllick, T., & Rost, Z. (2017). *Towards true product sustainability* doi:<https://doi-org.ez.hhs.se/10.1016/j.jclepro.2017.05.189>
- Edmondson, A. C., & Mcmanus, S. E. (2007). Methodological fit in management field research. *The Academy of Management Review*, 32(4), 1155-1179. doi:10.5465/AMR.2007.26586086
- Ellen McArthur Foundation (EMAF) (2019). Retrieved from <https://www.ellenmacarthurfoundation.org/circular-economy/what-is-the-circular-economy>
- Eisingerich, A., & Rubera, G. (2010). Drivers of brand commitment: A cross-national investigation. *Journal of International Marketing*, 18(2), 64. doi:10.1509/jimk.18.2.64
- Eliasson, A. (2018). *Kvantitativ metod från början* (4th ed.) Lund : Studentlitteratur AB.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley Publishing Company.
- Fisk, G. (1973). Criteria for a theory of responsible consumption. *Journal of Marketing*, 37(2), 24-31. doi:10.2307/1250047
- Geissdoerfer, M., Savaget, P., Bocken, N. M. P., & Hultink, E. J. (2017). The circular economy – A new sustainability paradigm? *Journal of Cleaner Production*, 143, 757-768. doi:10.1016/j.jclepro.2016.12.048
- Ginsberg, J. M., & Bloom, P. N. (2004). Choosing the right green marketing strategy. *MIT Sloan Management Review*, 46(1), 79-84+88.
- Gleim, M. R., Smith, J. S., Andrews, D., & Cronin, J. J. (2013). Against the green: A multi-method examination of the barriers to green consumption. *Journal of Retailing*, 89(1), 44-61. doi:10.1016/j.jretai.2012.10.001
- Gobble, M. M. (2012). Innovation and sustainability. *Research-Technology Management*, 55(5), 64-67. doi:10.5437/08956308X5505005
- Grewal, D., Krishnan, R., Baker, J., & Borin, N. (1998). *The effect of store name, brand name and price discounts on consumers' evaluations and purchase intentions* doi:[https://doi-org.ez.hhs.se/10.1016/S0022-4359\(99\)80099-2](https://doi-org.ez.hhs.se/10.1016/S0022-4359(99)80099-2)

- Guagnano, G. (2001). Altruism and market-like behavior: An analysis of willingness to pay for recycled paper products. *Population and Environment*, 22(4), 425-438.
doi:10.1023/A:1006753823611
- Guide Jr., V. Daniel R., & Van Wassenhove, L. N. (2009). *The evolution of closed-loop supply chain research* INFORMS: Institute for Operations Research.
doi:10.1287/opre.1080.0628
- Guide, V. D. R., & Li, J. (2010). The potential for cannibalization of new products sales by remanufactured products. *Decision Sciences*, 41(3), 547-572. doi:10.1111/j.1540-5915.2010.00280.x
- Hartmann, P., Apaolaza Ibáñez, V., & Forcada Sainz, F. J. (2005). Green branding effects on attitude: Functional versus emotional positioning strategies. *Marketing Intelligence & Planning*, 23(1), 9-29. doi:10.1108/02634500510577447
- Hazen, B. T., Mollenkopf, D. A., & Wang, Y. (2017). Remanufacturing for the circular economy: An examination of consumer switching behavior. *Business Strategy and the Environment*, 26(4), 451-464. doi:10.1002/bse.1929
- Hopkinson, P., Zils, M., Hawkins, P., & Roper, S. (2018). Managing a complex global circular economy business model: Opportunities and challenges. *California Management Review*, 60(3), 71-94. doi:10.1177/0008125618764692
- Hoyer, W.,D., MacInnis, D.,J., & Pieters, R. (2013). *Consumer behavior, international edition* (6th ed.) South-Western College Publishing.
- Iannuzzi, A. (2012). *Greener products the making and marketing of sustainable brands*. Boca Raton: Taylor & Francis.
- Jansson-Boyd, C.,V., & Zawisza, M.,J. (Eds.). (2016). *Routledge international handbook of consumer psychology* (1st ed.). London: Routledge.
- Jayaraman, V., Yadong, L., & Findlay, E. M. (2007). Creating competitive advantages through new value creation: A reverse logistics perspective. *Academy of Management Perspectives*, 21(2), 56-73. doi:10.5465/AMP.2007.25356512
- Jobber, D. (2010). *Principles and practice of marketing* (6th ed.). Berkshire: McGraw-Hill Education.
- Jones, M., House, L., & Gao, Z. (2015). Respondent screening and revealed preference axioms: Testing quarantining methods for enhanced data quality in web panel surveys. *Public Opinion Quarterly*, 79(3), 687. doi:10.1093/poq/nfv015

- Keller, Kevin Lane,,Marketing Science Institute.,. (2001). *Building customer-based brand equity : A blueprint for creating strong brands*. Cambridge, Mass.: Marketing Science Institute.
- Keller, K., & Aaker, D. (1998). The impact of corporate marketing on a company's brand extensions. *Corporate Reputation Review*, 1(4), 356-378.
doi:10.1057/palgrave.crr.1540057
- Keller, K. L. (1991). Cue compatibility and framing in advertising. *Journal of Marketing Research*, 28(1), 42-57. doi:10.2307/3172725
- Keller, K. L. (1993). Conceptualizing, measuring, and managing customer-based brand equity. *Journal of Marketing*, 57(1), 1-22. doi:10.2307/1252054
- Keller, K., & Lehmann, D. (2009). Assessing long-term brand potential. *Journal of Brand Management*, 17(1), 6-17. doi:10.1057/bm.2009.11
- Kent, R. J., & Allen, C. T. (1994). Competitive interference effects in consumer memory for advertising: The role of brand familiarity. *Journal of Marketing*, 58(3), 97-105.
doi:10.2307/1252313
- Kotler, P. (2011). Reinventing marketing to manage the environmental imperative. *Journal of Marketing*, 75(4), 132-135. doi:10.1509/jmkg.75.4.132
- Kumar, P. (2016). State of green marketing research over 25 years (1990-2014): Literature survey and classification. *Marketing Intelligence and Planning*, 34(1), 137-158.
doi:10.1108/MIP-03-2015-0061
- Laurenti, R., Sinha, R., Singh, J., & Frostell, B. (2015). Some pervasive challenges to sustainability by design of electronic products – a conceptual discussion. *Journal of Cleaner Production*, 108(PA), 281–288. <https://doi.org/10.1016/j.jclepro.2015.08.041>
- Lee, L., & Ariely, D. (2006). Shopping goals, goal concreteness, and conditional promotions. *Journal of Consumer Research*, 33(1), 60-70. doi:10.1086/504136
- Lieder, M., & Rashid, A. (2016). Towards circular economy implementation: A comprehensive review in context of manufacturing industry. *Journal of Cleaner Production*, 115, 36-51. doi:10.1016/j.jclepro.2015.12.042
- Lin, J., Lobo, A., & Leckie, C. (2019). The influence of green brand innovativeness and value perception on brand loyalty: The moderating role of green knowledge. *Journal of Strategic Marketing*, 27(1), 81-95. doi:10.1080/0965254X.2017.1384044
- Louis, D., Lombart, C., & Durif, F. (2019). Impact of a retailer's CSR activities on consumers' loyalty. *International Journal of Retail & Distribution Management*, 47(8), 793-816. doi:10.1108/IJRDM-12-2018-0262

- Lu, L., Bock, D., & Mathew, J. (2013). Green marketing: What the millennials buy. *The Journal of Business Strategy*, 34(6), 3-10. doi:<http://dx.doi.org.ez.hhs.se/10.1108/JBS-05-2013-0036>
- Mackenzie, S. (1986). The role of attention in mediating the effect of advertising on attribute importance. *Journal of Consumer Research* (1986-1998), 13(2), 174.
doi:10.1086/209059
- Marde, S., & Verite-Masserot, C. (2018). Antecedents of green consumption: A scale of measure. *Journal of Consumer Marketing*, 35(4), 414-425. doi:10.1108/JCM-08-2016-1927
- Mark, S., Philip, L., & Adrian, T. (2009). *Research methods for business students* (5th ed.) Harlow : Financial Times Prentice Hall.
- McDonald, S., Oates, C., Thyne, M., Alevizou, P., & McMorland, L. -. (2009). Comparing sustainable consumption patterns across product sectors. *International Journal of Consumer Studies*, 33(2), 137-145. doi:10.1111/j.1470-6431.2009.00755.x
- McKie, E. C., Ferguson, M. E., Galbreth, M. R., & Venkataraman, S. (2018). How do consumers choose between multiple product generations and conditions? an empirical study of iPad sales on eBay. *Production and Operations Management*, 27(8), 1574-1594. doi:10.1111/poms.12884
- Michaud, C., & Llerena, D. (2011). Green consumer behaviour: An experimental analysis of willingness to pay for remanufactured products. *Business Strategy and the Environment*, 20(6), 408-420. doi:10.1002/bse.703
- Mitchell, A. A., & Olson, J. C. (1981). Are product attribute beliefs the only mediator of advertising effects on brand attitude? *Journal of Marketing Research*, 18(3), 318-332. doi:10.2307/3150973
- Mobley, A. S., Painter, T. S., Untch, E. M., & Rao Unnava, H. (1995). Consumer evaluation of recycled products. *Psychology and Marketing*, 12(3), 165-176.
doi:10.1002/mar.4220120302
- Mugge, R., Jockin, B., & Bocken, N. (2017). How to sell refurbished smartphones? an investigation of different customer groups and appropriate incentives. *Journal of Cleaner Production*, 147, 284-296. doi:10.1016/j.jclepro.2017.01.111
- National Workshop on Ecological Marketing, Henion, Karl E., Kinnear, Thomas C., American Marketing Association.. (1976). Ecological marketing. Paper presented at the

- Nidumolu, R., Prahalad, C., & Rangaswami, M. (2009). Why sustainability is now the key driver of innovation. *Harvard Business Review*, 87(9), 56-64.
- Olsen, M. C., Slotegraaf, R. J., & Chandukala, S. R. (2014). *Green claims and message frames: How green new products change brand attitude* American Marketing Association. doi:10.1509/jm.13.0387
- Ottman, J. A., Stafford, E. R., & Hartman, C. L. (2006). Avoiding green marketing myopia. *Environment*, 48(5), 22-36,2.
- Peattie, K. (1999). *Trappings versus substance in the greening of marketing planning* Routledge. doi:10.1080/096525499346486
- Peattie, K. (2001). Golden goose or wild goose? the hunt for the green consumer. *Business Strategy and the Environment*, 10(4), 187-199. doi:10.1002/bse.292
- Peattie, K., & Peattie, S. (2009). *Social marketing: A pathway to consumption reduction?* doi:https://doi.org/10.1016/j.jbusres.2008.01.033
- Peloza, J., & Shang, J. (2011). How can corporate social responsibility activities create value for stakeholders? A systematic review. *Journal of the Academy of Marketing Science*, 39(1), 117-135. doi:10.1007/s11747-010-0213-6
- Pérez-Belis, V., Braulio-Gonzalo, M., Juan, P., & Bovea, M. D. (2017). *Consumer attitude towards the repair and the second-hand purchase of small household electrical and electronic equipment. A spanish case study* doi:https://doi.org/10.1016/j.jclepro.2017.04.143
- Pickett-Baker, J., & Ozaki, R. (2008). Pro-environmental products: Marketing influence on consumer purchase decision. *Journal of Consumer Marketing*, 25(5), 281-293. doi:10.1108/07363760810890516
- Poças Ribeiro, A., Harmsen, R., Rosales Carreón, J., & Worrell, E. (2019). *What influences consumption? consumers and beyond: Purposes, contexts, agents and history* doi:https://doi.org/10.1016/j.jclepro.2018.10.103
- Porter, M. E., & Van Der Linde, C. (1995). Toward a new conception of the environment-competitiveness relationship. *The Journal of Economic Perspectives*, 9(4), 97-118. doi:10.1257/jep.9.4.97
- Porter, M., & Kramer, M. (2006). Strategy & society: The link between competitive advantage and corporate social responsibility. *Harvard Business Review*, 84(12), 78-85,88+.
- Quellet, J.F. (2006). The mixed effects of brand innovativeness and consumer innovativeness on attitude towards the brand. Retrieved from <http://luxor.acadiau.ca/>

library/ASAC/v27/content/authors/o/ouellet,%20jean- francois/

The%20Mixed%20Effects%20of.pdf

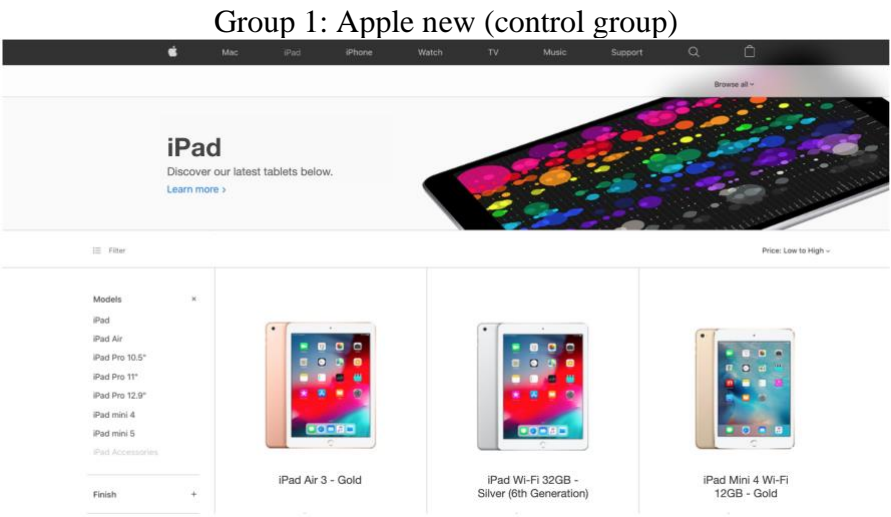
- Rattalino, F. (2018). Circular advantage anyone? Sustainability-driven innovation and circularity at patagonia, inc. *Thunderbird International Business Review*, 60(5), 747-755. doi:10.1002/tie.21917
- Reisch, L. A., & Thøgersen, J. (Eds.) (2015). *Handbook of Research on Sustainable Consumption*. Cheltenham: Edward Elgar.
- Rennings, K. (2000). *Redefining innovation — eco-innovation research and the contribution from ecological economics* doi:[https://doi.org/10.1016/S0921-8009\(99\)00112-3](https://doi.org/10.1016/S0921-8009(99)00112-3)
- Rettie, R., Burchell, K., & Barnham, C. (2014). Social normalisation: Using marketing to make green normal. *Journal of Consumer Behaviour*, 13(1), 9-17. doi:10.1002/cb.1439
- Roberts, J. A. (1995). Profiling levels of socially responsible consumer behavior: A cluster analytic approach and its implications for marketing. *Journal of Marketing Theory and Practice*, 3(4), 97-117. doi:10.1080/10696679.1995.11501709
- Roberts, J. A. (1996). Green consumers in the 1990s: Profile and implications for advertising. *Journal of Business Research*, 36(3), 217-231. doi:10.1016/0148-2963(95)00150-6
- Rockström, J., W. Steffen, K. Noone, Å. Persson (2009) Retrieved from <https://www.ecologyandsociety.org/vol14/iss2/art32/>
- Satterthwaite, D. (2009). The implications of population growth and urbanization for climate change. *Environment & Urbanization*, 21(2), 545-567. doi:10.1177/0956247809344361
- Schiederig, T., Tietze, F., & Herstatt, C. (2012). Green innovation in technology and innovation management – an exploratory literature review. *R&D Management*, 42(2), 180–192. <https://doi.org/10.1111/j.1467-9310.2011.00672.x>
- Schultz, D. E., & Block, M. P. (2015). Beyond brand loyalty: Brand sustainability. *Journal of Marketing Communications*, 21(5), 340-355. doi:10.1080/13527266.2013.821227
- Selvefors, A., Rexfelt, O., Renström, S., & Strömberg, H. (2019). Use to use – A user perspective on product circularity. *Journal of Cleaner Production*, 223, 1014-1028. doi:10.1016/j.jclepro.2019.03.117
- Shams, R., Alpert, F., & Brown, M. (2015). Consumer perceived brand innovativeness. *European Journal of Marketing*, 49(9), 1589-1615. doi:10.1108/EJM-05-2013-0240
- Sharma, A., Iyer, G. R., Mehrotra, A., & Krishnan, R. (2010). *Sustainability and business-to-business marketing: A framework and implications* doi:<https://doi.org/10.1016/j.indmarman.2008.11.005>





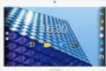


- Shrum, L. J., McCarty, J. A., & Lowrey, T. M. (1995). Buyer characteristics of the green consumer and their implications for advertising strategy. *Journal of Advertising*, 24(2), 71.
- Singh, P., & Giacosa, E. (2019). Cognitive biases of consumers as barriers in transition towards circular economy. *Management Decision*, 57(4), 921-936. doi:10.1108/MD-08-2018-0951
- Souza, G. C. (2013). Closed-loop supply chains: A critical review, and future research*. *Decision Sciences*, 44(1), 7-38. doi:10.1111/j.1540-5915.2012.00394.x
- Spears, N., & Singh, S. N. (2004). *Measuring attitude toward the brand and purchase intentions* CTC Press. doi:10.1080/10641734.2004.10505164
- Srinivasan, V. (1979). Network models for estimating brand-specific effects in multi-attribute marketing models. *Management Science*, 25(1), 11-21. doi:10.1287/mnsc.25.1.11
- Subramanian, R., & Subramanyam, R. (2012). *Key factors in the market for remanufactured products* INFORMS: Institute for Operations Research. doi:10.1287/msom.1110.0368
- Szekely, F., & Strebel, H. (2013). Incremental, radical and game-changing: Strategic innovation for sustainability. *Corporate Governance*, 13(5), 467-481. doi:10.1108/CG-06-2013-0084
- Tebourbi, S., Khemakhem, R., 2017. Service quality in retail market: effect on attitude, satisfaction and loyalty to the store brands. *Int. J. Bus. Perform. Supply Chain Model.* 9 (3), 181e201. <https://doi.org/10.1504/IJBPSM.2017.089034>
- United Nations Development Program (UNDP) (2019). Retrieved from <https://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-12-responsible-consumption-and-production.html>
- Van De Ven, B. (2008). An ethical framework for the marketing of corporate social responsibility. *Journal of Business Ethics*, 82(2), 339-352. doi:10.1007/s10551-008-9890-1
- Van Weelden, E., Mugge, R., & Bakker, C. (2016). Paving the way towards circular consumption: Exploring consumer acceptance of refurbished mobile phones in the dutch market. *Journal of Cleaner Production*, 113, 743-754. doi:10.1016/j.jclepro.2015.11.065
- Wang, H. (2017). A brand-based perspective on differentiation of green brand positioning. *Management Decision*, 55(7), 1460–1475. <https://doi.org/10.1108/MD-04-2016-0251><https://doi.org/10.1080/02642069.2017.1365140>



- Wang, H., & Horng, S. (2016). Exploring Green Brand Associations through a Network Analysis Approach. *Psychology & Marketing*, 33(1), 20–35.
<https://doi.org/10.1002/mar.20854>
- Wang, P., & Kuah, A. T. H. (2018). Green marketing cradle-to-cradle: Remanufactured products in asian markets. *Thunderbird International Business Review*, 60(5), 783-795.
doi:10.1002/tie.21925
- Wang, Y., Wiegerinck, V., Krikke, H., & Zhang, H. (2013). Understanding the purchase intention towards remanufactured product in closed-loop supply chains. *International Journal of Physical Distribution & Logistics Management*, 43(10), 866–888.
<https://doi.org/10.1108/IJPDLM-01-2013-0011>
- White, K., Habib, R., & Hardisty, D. J. (2019). How to SHIFT consumer behaviors to be more sustainable: A literature review and guiding framework. *Journal of Marketing*, 83(3), 22-49. doi:10.1177/0022242919825649
- Zeithaml, V. (1988). Consumer perceptions of price, quality, and value: A means-. *Journal of Marketing*, 52(3), 2. doi:10.2307/1251446

Appendix

Appendix A: Scenarios in the main study

| Experimental manipulations | |
|-------------------------------|--|
| Brand description | <p>Apple Inc. [Archos] is a multinational technology company that designs, develops, and sells consumer electronics, computer software and online services. The company's hardware products include smartphones, tablets, personal computers, portable media players, smartwatches, digital media players, wireless earbuds, and smart speakers. Apple's [Archos] products are distributed worldwide through online and physical stores.</p> |
| Circular offering description | <p>Apple [Archos] have invested and developed new capabilities to make their product offerings more sustainable. As a necessary step to reduce electronic product waste, Apple [Archos] are offering all product owners the opportunity to return their used product. When returning a product to Apple [Archos] you receive a trade-in value which can be deducted from the price when purchasing a new product. The returned products are recycled and become input materials for their new products or they go through a refurbishing process to be restored to a 'like-new' condition.</p> <p>Apple [Archos] are now introducing certified refurbished products as an alternative to new products in all their product categories. The refurbished products are available on their online stores globally.</p> |
| Tablet offering page | <p>Group 1: Apple new (control group)</p>  <p>The screenshot shows the Apple website's iPad product page. At the top, there's a navigation bar with links to Mac, iPad, iPhone, Watch, TV, Music, and Support. Below the navigation bar, the word 'iPad' is prominently displayed with the tagline 'Discover our latest tablets below.' and a 'Learn more' link. To the right of the text is a large image of an iPad with a colorful, abstract pattern on its screen. Below this, there's a section titled 'Filter' on the left and 'Price: Low to High' on the right. The main content area displays three iPad models: iPad Air 3 - Gold, iPad Wi-Fi 32GB - Silver (6th Generation), and iPad Mini 4 Wi-Fi 12GB - Gold. Each model is accompanied by a small image of the device and its name and specifications.</p> <p>Group 2: Apple refurbished</p> |

| | |
|--------------------------|--|
| | <div><div>ARCHOS</div><div><div>Laptops</div><div>Smartphones</div><div>Tablets</div><div>Smartwatch</div><div>Headphones</div><div>Support</div><div></div><div></div></div></div> <div><div>Certified Refurbished</div><div><div><div></div><div><div>Models</div><div>Core 3 Ultra</div><div>Oxygen 5G</div><div>Sense X 32 GB</div></div></div><div><div>Price: Low to High</div><div></div></div></div><div><div><div><div></div><div>Refurbished Core 3 Ultra</div></div><div><div></div><div>Refurbished Oxygen 5G</div></div><div><div></div><div>Refurbished Sense X 32GB - Black</div></div><div><div></div><div>Refurbished Oxygen 5G - Mini</div></div></div></div></div> |
| Product information page | <div><div>Group 1: Apple new (control group)</div><div><div><div>Apple</div><div>Mac</div><div>iPad</div><div>iPhone</div><div>Watch</div><div>TV</div><div>Music</div><div>Support</div><div></div><div></div></div><div><div>iPads</div><div>></div><div>iPad Air 3</div></div><div><div><div></div><div><div>iPad Air 3</div><div>Everything you need in just a pound. Extremely portable and perfect for getting anything done anywhere.</div><div><div>10.5" Retina display</div><div>A12 Bionic chip</div><div>Touch ID</div><div>Up to 256GB storage</div><div>Support for Apple Pencil</div><div>Support for Smart Keyboard</div></div></div></div></div></div></div> |
| | <div><div>Group 2: Apple refurbished</div><div><div><div>Apple</div><div>Mac</div><div>iPad</div><div>iPhone</div><div>Watch</div><div>TV</div><div>Music</div><div>Support</div><div></div><div></div></div><div><div>iPads</div><div>></div><div>Refurbished iPad Air 3</div></div><div><div><div></div><div><div>Refurbished iPad Air 3</div><div>A "like new" product backed by a one-year warranty and the Apple Certified Refurbished promise.</div><div><div>10.5" Retina display</div><div>A12 Bionic chip</div><div>Touch ID</div><div>Up to 256GB storage</div><div>Support for Apple Pencil</div><div>Support for Smart Keyboard</div></div></div></div></div></div></div> |
| | <div><div>Group 3: Archos new (control group)</div></div> |

| | |
|---------------------------------|---|
| | <div> <div> ARCHOS Laptops Smartphones Tablets Smartwatch Headphones Support </div> <div> Tablets > ARCHOS Core 3 Ultra </div> <div> <div>  </div> <div> <h3>Core 3 Ultra</h3> <p>Everything you need in just a pound. Extremely portable and perfect for getting anything done anywhere.</p> <ul style="list-style-type: none"> 10.5" Retina display A12 Bionic chip Touch ID Up to 256GB storage Support for Archos Pencil Support for Smart Keyboard </div> </div> </div> |
| | <div> <div> Group 4: Archos refurbished </div> <div> <div> ARCHOS Laptops Smartphones Tablets Smartwatch Headphones Support </div> <div> Certified Refurbished > Refurbished ARCHOS Core 3 Ultra </div> <div> <div>  </div> <div> <h3>Refurbished Core 3 Ultra</h3> <p>A "like new" product backed by a one-year warranty and the Archos Certified Refurbished promise.</p> <ul style="list-style-type: none"> 10.5" Retina display A12 Bionic chip Touch ID Up to 256GB storage Support for Archos Pencil Support for Smart Keyboard </div> </div> </div> </div> |
| Refurbished product description | <p>Every Apple [Archos] Certified Refurbished product completes a rigorous refurbishment process that includes full testing that meets the same functional standards as new Apple [Archos] products. They are Apple [Archos] devices that have been restored to full working conditions. All refurbished iPad models come with a new battery, new outer shell, are backed by a one-year warranty, have free delivery and returns. Your refurbished device is truly "like new," with special savings of up to 15%.</p> |

Appendix B: Measurements and sources

| | Number of items in scales | Adjustments, if applicable (/the original wording) | Cronbach's alpha | Sources |
|--|---------------------------|--|------------------|---|
| Product perceptions | | | | |
| Product quality | 3 | | 0.895 | Grewal et al. (1998) |
| Product sustainability | 3 | contribute to a better environment (/contribute something to the environment) | 0.856 | Brown & Dacin (1997) |
| Corporate brand perceptions | | | | |
| Brand innovativeness | 8 | | 0.882 | Adapted from Alpert et al. (2015)'s construct of brand innovativeness |
| Brand sustainability (company's respect for the environment) | 6 | | 0.856 | Louise et al. (2019) |
| Brand attitude | 3 | | 0.908 | Spears & Singh (2004) |
| Brand intentions | | | | |
| Purchase intention | 1 | buy any of the presented products from this brand (/bipolar: probably not - probably buy it) | - | Spears & Singh (2004) |
| Circular consumption intention | 3 | | 0.816 | Ad hoc measures |
| Consumer characteristics | | | | |
| Consumers' environmental consciousness | 3 | | 0.811 | Benoit-Moreau & Parguel (2011) |

Appendix C: Questionnaire of the main study

1. The previously presented products appear...

[illegible]

2. The previously presented products...

[illegible]

3. To what extent do you agree with the following:

[illegible]

4. To what extent do you agree with the following:

[illegible]

5. The considered brand...

[illegible]

6. The company that makes these products is...

[illegible]

7. The company that makes these products...

[illegible]

8.

This brand offers...

overall low quality products

○ ○ ○ ○ ○ ○ ○

overall high quality products

overall inferior products

○ ○ ○ ○ ○ ○ ○

overall superior products

not at all good manufacturing

○ ○ ○ ○ ○ ○ ○

very good manufacturing

9.

This brand is...

not at all trustworthy

○ ○ ○ ○ ○ ○ ○

very trustworthy

not at all dependable

○ ○ ○ ○ ○ ○ ○

very dependable

not at all concerned about
customers

○ ○ ○ ○ ○ ○ ○

very concerned about customers

not at all likable

○ ○ ○ ○ ○ ○ ○

very likable

not at all prestigious

○ ○ ○ ○ ○ ○ ○

very prestigious

10.

What is your overall attitude towards this brand?

Dislike

○ ○ ○ ○ ○ ○ ○

Like

Unfavorable

○ ○ ○ ○ ○ ○ ○

Favorable

Bad

○ ○ ○ ○ ○ ○ ○

Good

11. How likely is it that you would do the following:

[illegible]

12. How likely is it that you would do the following with this particular brand:

| | Extremely unlikely | 2 | 3 | 4 | 5 | 6 | Extremely likely |
|---|-----------------------|-----------------------|-----------------------|----------------------------------|-----------------------|-----------------------|-----------------------|
| Return my used products for recycling | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Return my used products for them to refurbish and resell to someone else | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Participate in a trade-in program (return my used product and receive a discount when buying a new product) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Take extra care of my electrical products so they can be used for as long as possible | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

13. Do you consider any of the following aspects to be *unique* for Apple:

[illegible]

14. In your opinion, is it positive or negative for Apple to be associated with the following aspects:

[illegible]

15. To what extent do you agree with the following statements:

[illegible]

16. What is your current knowledge about sustainable consumption of electrical products?

[illegible]

17.

What is your overall attitude towards refurbished products?

| | | | | | | | | |
|------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------|
| Dislike | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Like |
| Unpleasant | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Pleasant |

. What is your main occupation?

- ☐ Employed
- ☐ Student
- ☐ Unemployed
- ☐ Other

. What do you identify as?

- ☐ Female
- ☐ Male
- ☐ Non-binary
- ☐ Prefer not to answer

. How old are you? (Please, specify in number of years, e.g. 34)

. Do you own and use any products from Apple?

- ☐ Yes
- ☐ No
- ☐ No, but I have in the past