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Design for circular behaviour: a literature-based conceptual model

Jan Jagnow✉, Bernd Stoehr, Christian Koldewey and Roman Dumitrescu

Heinz Nixdorf Institute, Paderborn University, Germany

✉ jan.jagnow@hni.uni-paderborn.de

ABSTRACT: The transition to a circular economy requires products that encourage circular consumer behaviour. Despite the central role of designers in this transition, the design for circular behaviour (DfCB) approach remains under-explored. This paper presents a literature-based conceptual model explaining which factors need to be in place, and how they interrelate, in order for designers to facilitate circular behaviours through product design. By pointing out gaps in the current state, future research directions are suggested to foster the establishment of DfCB.

KEYWORDS: circular economy, behavioural design, human behaviour, sustainable design, sustainability

1. Introduction

The concept of the circular economy (CE) has become increasingly relevant in both industry and research (Camacho-Otero et al., 2018). It is an alternative economic model that is designed to replace the prevailing linear economy (Kirchherr et al., 2017). In contrast to the take-make-use-waste growth model of the linear economy, the CE contributes to a company's social, environmental, and economic performance by looping back resources into the economic system (Balkenende et al., 2017; Kirchherr et al., 2017). To align with the principles of the CE, it is essential that business models, processes, and products are designed to slow down, narrow, and close resource cycles (Balkenende et al., 2017; Bocken et al., 2016). In the field of product design, this is referred to as the circular product design approach (Hollander, 2018). The aim is to design products that retain their economic value for as long as possible while minimising their environmental impact (Bakker et al., 2019; Balkenende et al., 2017; Hollander et al., 2017). As designers have a significant influence on the early stages of product development, their role in the transition to a CE is central (Bocken et al., 2016). Designers are able to influence the circularity of a product directly by optimising materials and processes, and indirectly by shaping the behaviour of consumers towards circularity (Chu et al., 2020; Irizar-Arrieta et al., 2020). An approach within circular product design that addresses both the pro-environmental design of products and the behavioural change of consumers is described by design for sustainable behaviour and, in the context of CE, by design for circular behaviour (DfCB) (Lilley & Wilson, 2017; Wastling et al., 2018). It aims to explore how design can specifically influence consumers' behaviour towards circularity (Bhamra et al., 2011; Wastling et al., 2018). This multidisciplinary research field examines consumers and their behaviour in order to shape and create a desired behaviour (Boks & Daae, 2017; de Medeiros et al., 2018). It follows the principles of behavioural design, according to which desired behaviours should be facilitated, undesired behaviours should be made more difficult, the inclination to perform desired behaviours should be encouraged, and the inclination to perform undesired behaviours should be discouraged (Niedderer et al., 2014).
Nevertheless, despite its growing recognition as a key enabler of successful circular solutions, DfCB has received insufficient attention from industry and research, and therefore remains under-explored (Clark et al., 2020; Wastling et al., 2018). The practical application of DfCB has proven challenging (Lilley & Wilson, 2013). Shaping behaviours is perceived as difficult to predict and highly complex, given the large number of interdependent consumer factors (Coskun & Erbug, 2017; Irizar-Arrieta et al., 2020). Furthermore, the existing support lacks guidance and consistent terminology for effective application

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(Balikci et al., 2021). In order to promote the insufficient establishment of DfCB, a few studies have focused on identifying relevant factors and barriers that need to be addressed. However, these studies lack a designer-centred perspective and are highly fragmented, examining the barriers and factors in isolation. Consequently, the phenomenon as a whole is insufficiently understood. Blessing and Chakrabarti (2009) argue that developing a network of influencing factors is essential to provide a comprehensive explanation of the prevailing situation. A sufficiently detailed conceptualisation of this situation forms the foundation for developing effective support aimed at improving the current state (Blessing & Chakrabarti, 2009). Following this reasoning, the present study aims to develop a well-founded understanding of the influencing factors and their relationships in the form of a conceptual model, thereby answering two research questions:

- Which factors determine the extent to which designers effectively facilitate circular behaviour through product design?
- What are the relationships between the identified factors that determine designers' effectiveness in facilitating circular behaviour through product design?

The remainder of this paper is structured as follows. Section 2 provides the necessary theoretical background for this paper, while Section 3 highlights the scientific gap that this study addresses. In Section 4, the research design of this paper is outlined. A detailed description of the results of this study is presented in Section 5. A discussion of these, as well as known limitations and further research needs, will be presented in Section 6. The paper concludes in Section 7 with a summary of this publication.

2. Theoretical background

Crilly et al. (2004, 2009) consider products to be the communicative media between designers, consumers, and their respective environments. Consequently, designers express their intentions through the design of products, whereby consumers within their environment attribute meanings to these intentions, which is reflected in behavioural responses (Crilly et al., 2004). The DfCB research field builds on this idea, suggesting that designers can actively shape consumer behaviour towards pro-environmental actions through product design (Sohn & Nam, 2015). Figure 1 illustrates this conceptual understanding of the key relationships between designers, product designs, and consumers, which forms the foundation of this paper.

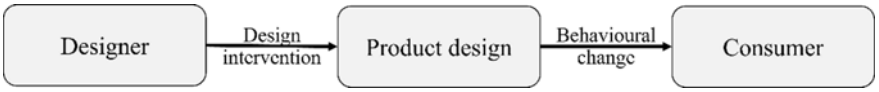


Figure 1. Key relationships between designers, product design, and consumers

The overall objective of DfCB is to design consumers' behavioural changes towards the CE. The term *consumer behaviour* refers to the entirety of decisions and actions taken by individuals in their role as consumers with the aim of satisfying individual desires and needs (Solomon, 2020). These can be simplified into the three phases pre-purchase, purchase, and post-purchase (Solomon, 2020). This publication refers to circular behaviour when consumers act in accordance with the principles of the CE. In contrast, non-circular behaviour is characterised as harmful, insufficient, or excessive product-user interaction (Balikci et al., 2021). An example of a non-circular behaviour is the storage of products that are no longer needed instead of looping them back into the resource cycle, which means that their utilisation is not maximised (Wastling et al., 2018). Figure 1 illustrates that such behavioural changes result from consumers' reactions to a product design. The figure also shows that designers influence products through design interventions. This study understands design interventions as the application of measures such as design strategies to product design in order to change a behaviour (Kuo et al., 2018). One example of such a design intervention is the use of anthropomorphic strategies, where products are given human-like characteristics (Ishigaki et al., 2025). This can achieve stronger product attachment leading to extended use, as well as triggering behaviours through direct messages such as 'recycle me' (Ishigaki et al., 2025). However, design interventions merely predict possible behaviour changes. There is no guarantee that the intended behaviour change will in fact occur, as this depends on the individual consumer (Balikci et al., 2021; Irizar-Arrieta et al., 2020). Within DfCB, therefore, assumptions are made about consumers and how they will react to the intervention (Lockton et al., 2012). Accordingly,

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designers need to be able to modify product designs using effective design interventions to induce the intended behavioural change in line with the CE principles.

3. State of the art in DfCB research

Early investigations into how design can influence consumer behaviour in the context of sustainability emerged in the early 2000s. A key contribution was made by Jelsma and Knot (2002), who established the concept of *scripts* as a design strategy within the DfCB research field. Scripts refer to product designs that act as embedded user manuals, prescribing how the product should be used (Jelsma & Knot, 2002; Zachrisson & Boks, 2012). For example, a plastic coffee cup is perceived as a disposable product, whereas a porcelain cup encourages more careful handling (Elias, 2011). Building on this, Lilley et al. (2005) developed the three strategies of *scripts and behaviour steering*, *eco-feedback*, and *intelligent products and systems*. While the first strategy continues to focus on guiding and steering consumer behaviour, the eco-feedback strategy raises consumers' awareness of the environmental impact of their actions (Lilley et al., 2005). For example, visual or acoustic signals can be used to draw consumers' attention to inappropriate behaviour, enabling them to self-regulate (Froehlich et al., 2010; Lilley et al., 2005). By contrast, the intelligent products and systems strategy takes control away from the consumer by forcing them to perform certain actions through the product itself (Zachrisson & Boks, 2012). One example of this is the automatic start-stop function of car engines at traffic lights to reduce CO_2 emissions (Lilley et al., 2005). These three strategies provide the basis for numerous subsequent studies focusing on their further development and classification. Comparable formulations of these strategies can be found in the studies of Wever et al. (2008), Tang and Bhamra (2008), Lockton et al. (2008), Steg and Vlek (2009), and Tromp et al. (2011). Zachrisson and Boks (2010, 2012) categorised these strategies by the extent of control, ranging from user- to product control. Accordingly, strategies either guide, maintain, or ensure behavioural change (Zachrisson & Boks, 2012).

In addition to the identification, formulation, and application of DfCB design strategies, the literature also covers the development of methods to empower designers to influence consumer behaviour. The studies conducted by Lockton et al. (2010, 2012) support behavioural design by outlining 101 patterns for influencing behaviour and dividing consumers into three user models, providing designers with a spectrum of representative consumer types. Both Michie et al. (2011) and de Medeiros et al. (2018) provide support for designers to assist them in selecting suitable design strategies. In their study, Daae and Boks (2015) analyse methods explicitly for user studies within DfCB. Tang (2010) provides a guide that maps the identification of consumer factors and the selection of design strategies into a five-step process. Similarly, Selvefors et al. (2011) developed a six-step process and mapped it onto the generic product development process. Finally, the study conducted by Wastling et al. (2018) deserves particular attention, as it is the only study that explicitly addresses the topic of DfCB. The authors present a comprehensive overview of the essential components of a developed DfCB process, encompassing the design of the product and business model (Wastling et al., 2018).

Several studies within the DfCB research domain address the identification of barriers and success factors. Among these, Coskun et al. (2015) conducted a literature review to assess the current state of research and outline future research directions. Their review revealed several barriers throughout the design process, including the absence of systematic criteria for selecting target behaviours and user groups, limited research on behaviours beyond energy consumption, and a lack of longitudinal studies demonstrating the long-term success of behavioural change (Coskun et al., 2015). Gustafsson et al. (2021) also conducted a literature review to identify potential barriers and success factors of DfCB within the context of product-service systems. They reported challenges including high diversity among consumer groups, oversimplification of user characteristics, and difficulties in maintaining desired behavioural changes over time (Gustafsson et al., 2021). Kuijer and Bakker (2015) analysed four case studies in the DfCB context to identify limitations of the field of research. Among others, they stated that intended behavioural changes are not always achieved, and that opportunities for broader impact often remain unexploited (Kuijer & Bakker, 2015). Lopez and Legardeur (2024) conducted a literature review to identify barriers to, and motivators for implementing circular business models in relation to consumer behaviour. In their study, they identified factors such as accessibility of information about product quality, product ownership types, and demographic characteristics including education level and age (Lopez & Legardeur, 2024). Finally, Camacho-Otero et al. (2018) examined the state of research on

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consumption within the CE and identified factors influencing consumer acceptance, including personal characteristics such as the desire for change, perceived risks and uncertainties such as disgust, as well as psychological factors like consumer attitudes and social norms.

An examination of the current literature in the field of DfCB research shows that the focus is on the formulation and classification of design strategies on the one hand, and on the investigation of consumer acceptance and intentions on the other, although the latter is not taken into account in this study. To date, support has mainly focused on enabling designers to select design strategies and identifying consumer factors that can be addressed. Only a few studies focus on identifying barriers that need to be overcome or influencing factors that determine the effective design of consumer behaviour. Only the contributions of Lopez and Legardeur (2024) and Camacho-Otero et al. (2018) explicitly examine factors in the context of consumer behaviour. However, these studies consider the influence of consumers on CE rather than how design can influence consumer behaviour. To the best of our knowledge, there is no research that examines factors that determine the extent to which designers can effectively promote circular behaviour through product design. This contrasts with the literature, which often emphasises the relevance of designers in influencing consumer behaviour to promote the CE.

4. Research design

A literature-based approach was used to develop the conceptual model, following the systematic literature review procedure described by Xiao and Watson (2019). According to this procedure, a systematic literature review is divided into the three phases of planning, conducting, and reporting. During the planning phase, the research questions introduced in Section 1 were defined with the aim of identifying the factors and relationships that determine the extent to which designers effectively facilitate circular behaviour through product design. To conduct the literature review, the SCOPUS and EBSCO databases were used to collect literature using the formulated search string shown in Table 1.

Table 1. Search string used in the systematic literature review

Topics of this paper				Focused objective of this paper
(„consumer“ OR „customer“ OR „user“) AND „behavi*r“	A N D	„circular*“ AND („design“ OR „behavi*r“) OR „sustainable product design“ OR „design for sustainability“ OR „design for sustainable behavi*r“	A N D	„barrier“ OR „challeng*“ OR „obstacle“ OR „driver“ OR „enabler“ OR „factor“ OR „causal*“ OR „method“ OR „tool“ OR „guid*“ OR „framework“ OR „principle“ OR „competenc*“ OR „skill“

The search string combines the topics of consumer behaviour and CE in the context of product design. Additionally, the search string includes terms to tailor the review according to this study's objective, while simultaneously covering a broad range of literature in order to extract factors and relationships. A total of 1,800 publications were identified at the beginning of the review. The collected publications were screened based on titles and abstracts. In addition to removing duplicates, the publications were filtered based on their suitability for answering the research question. Publications investigating the perception, intention, and acceptance of consumers were analysed and filtered particularly carefully with regard to the perspective used and the relevance to product design. This resulted in a total of 65 publications being reviewed in full. Alongside the removal of publications considered unsuitable, additional literature was included through a forward-backward search. In total, 22 publications were used to develop the conceptual model. From these publications, factors were identified and extracted. As explicit investigations of relationships between factors are absent in DfCB research, these were derived from statements within the texts. The extracted data were then subjected to a thematic analysis following the procedure described by Braun and Clarke (2006). This involved initial coding, through which themes were identified, named, reviewed, and revised iteratively. The developed themes form the elements and relationships of the conceptual model, which represents the result for the reporting phase.

5. Research results

The literature-based conceptual model is shown in Figure 2. It explains which factors need to be in place and how they must interrelate in order for designers to facilitate circular behaviour through product design effectively. At the same time, the conceptual model explains why designers have difficulties in promoting circular behaviour through product design.

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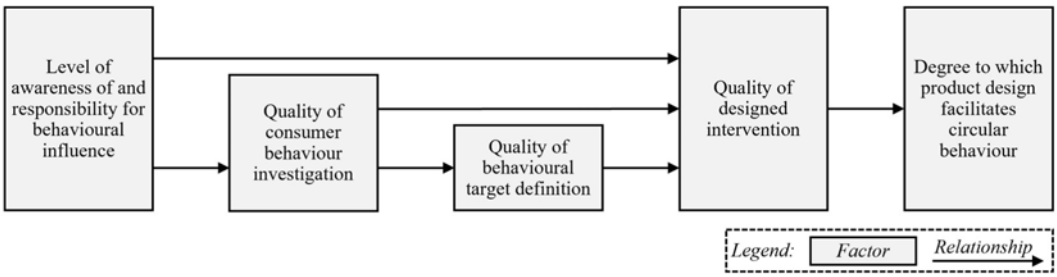


Figure 2. Conceptual model for facilitating circular behaviour through product design

The consolidated factors are represented as rectangles, and the relationships as directed arrows. To improve the understanding of the model, an example is given of how it works in general before each factor and the relationships are described in detail. As an illustration of the model's logic, a situation can be considered in which designers are highly aware of their influence on consumer behaviour *(level of awareness of and responsibility for behavioural influence)*. This enables careful investigation of consumer behaviour, including a conscientious exploration of potential consumers, relevant behaviours, and the context of use *(quality of consumer behaviour investigation)*. It also enables designers to reflect on decisions and thus counteract potential biases in the selection and design of interventions *(quality of designed intervention)*. A high *quality of consumer behaviour investigation* provides a solid foundation for specifying target consumers and target behaviours *(quality of behavioural target definition)* and for selecting and realising design interventions *(quality of designed intervention)*. Furthermore, a precise definition of target behaviours *(quality of behavioural target definition)* allows the design of effective interventions *(quality of designed intervention)*, resulting in an increased *degree to which product design facilitates circular behaviour*.

5.1. Level of awareness of and responsibility for behavioural influence

The influencing factor *level of awareness of and responsibility for behavioural influence* describes the extent to which designers consciously perceive their role and responsibility in influencing consumer behaviour. In the literature, this factor is mentioned both directly in passages of the text and indirectly through the neglect of DfCB due to its associated high complexity. Designers misguidedly tend to consider the design of circular behaviours as beyond their sphere of influence and responsibility (Lockton et al., 2012). The insufficient consideration of DfCB is attributed to the perceived complexity of the research field (Wever et al., 2008). This is described and explained in the literature as being dependent on numerous individual consumer characteristics (Coskun & Erbug, 2017; Zachrisson & Boks, 2012). Furthermore, the research field itself is perceived as a broad and rather unmanageable spectrum of literature, which increases the perceived complexity (Zachrisson & Boks, 2012). As a result, designers do not realise the potential of DfCB strategies to change behaviour and influence consumer characteristics (Coskun & Erbug, 2017; Zachrisson & Boks, 2012). This lack of awareness is also evident in designers' negligence of existing approaches to shaping behaviour, or their inadequate application of these approaches (Montecchi & Becattini, 2020).

The *level of awareness of and responsibility for behavioural influence* affects the *quality of the designed intervention*. According to Lilley and Wilson (2017), designers must be aware of their influence and act mindfully to avoid unintentionally introducing bias into their design decisions. Montecchi and Becattini (2020) also note that some designers irresponsibly skip relevant DfCB activities due to the high effort involved, which affects the quality of the interventions they design. For the model, this means that a higher *level of awareness of and responsibility for behavioural influence* enables designers to critically reflect on their decisions, mitigate potential biases, and ensure that interventions are designed at a high quality. The factor further influences the *quality of consumer behaviour investigation*. Lilley and Wilson (2017) emphasise that designers' awareness of their own influence is essential for conducting careful, unbiased investigations of consumers. In the model, a higher *level of awareness of and responsibility for behavioural influence* allows designers to conduct more thorough and careful investigations, thereby enhancing the *quality of behavioural investigation*.

5.2. Quality of consumer behaviour investigation

The influencing factor *quality of consumer behaviour investigation* describes the extent to which designers comprehensively identify, analyse, and understand relevant elements of the underlying

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problem. This includes identifying opportunities that need to be addressed, such as potential consumers, behaviours, or even products, as well as the associated characteristics, such as consumer attitudes or the contextual influence (Coskun et al., 2015; Parajuly et al., 2020). Although this factor is only mentioned indirectly, its relevance is evident from the frequency of its occurrence. The literature emphasises the relevance of conducting user studies in the DfCB context, which is considered a part of consumer behaviour investigation (Nemat et al., 2023; Withanage et al., 2016). In this context, potential biases in user statements are mentioned as a barrier that designers must deal with, which can occur both consciously and unconsciously (Clark et al., 2020; Daae & Boks, 2015; Lilley & Wilson, 2017; Montecchi & Becattini, 2020). In their study, Lilley and Wilson (2017) emphasise the high amount of resources required to conduct comprehensive user studies, while simultaneously stressing the unparalleled necessity of conducting such studies in order to gain a comprehensive understanding of the prevailing situation. In addition to the frequently cited user studies, the literature generally stresses the importance of detailed analyses in the DfCB context in order to gain a better understanding of the problem to be addressed (Clark et al., 2020; Lilley & Wilson, 2013; Zachrisson & Boks, 2012).

The factor *quality of consumer behaviour investigation* directly influences the *quality of designed intervention*. Boks and Daae (2017) argue that a thorough analysis of the prevailing situation is necessary for the selection of suitable design interventions. A similar argumentation is provided by Lilley and Wilson (2013), Nemat et al. (2023), and Sohn and Nam (2015), who emphasise that a better understanding of product-user interactions enables designers to predict the effects of interventions and thus select effective interventions. For the model, this means that a higher *quality of consumer behaviour investigation* enables designers to make better-informed decisions in selecting and realising interventions. The factor further influences the *quality of behavioural target definition*. Lilley and Wilson (2017) and Zachrisson and Boks (2012) emphasise that a detailed understanding of consumer characteristics, behaviours, and contextual influences is crucial for defining specific targets. Following this argument, the extent of the investigation influences the precision of the behavioural target definition.

5.3. Quality of behavioural target definition

The influencing factor *quality of behavioural target definition* describes the extent to which designers define target variables within a solution space. It encompasses defining target consumers as well as target behaviours within the respective environments. This factor is mentioned directly in the literature and indirectly derived from studies of user models. Defining targets is described as a challenging but central factor, as narrowing down the broad range of possible solutions and factors to relevant aspects of behavioural design forms the basis for solid design decisions (Lilley & Wilson, 2017; Zachrisson & Boks, 2012). The DfCB-led development of user models to describe stereotypical consumer groups highlights not only the narrowing down of target consumers, but also the balance between an individual and a generalised consideration (Boks & Daae, 2017). Targeting specific consumer groups with certain behaviours can trigger negative behavioural reactions in other consumer groups. It is therefore important to avoid defining the target group inadequately, for example, by oversimplifying target groups (Boks & Daae, 2017; Gustafsson et al., 2021; Lockton et al., 2012).

The *quality of behavioural target definition* influences the *quality of the designed intervention*. Boks and Daae (2017) emphasise the importance of clear target definitions, noting that what is appropriate for one consumer may be unsuitable or counterproductive for another. This is supported by Lockton et al. (2012), who highlight that oversimplification of targets can lead to ineffective interventions. Lilley and Wilson (2017) similarly underline this relationship, indicating that the identification of primary targets reveals and defines further relevant stakeholders that need to be considered in interventions. For the model, this implies that a precise definition of target consumers and behavioural targets directly shapes the *quality of designed interventions*.

5.4. Quality of designed intervention

The influencing factor *quality of designed intervention* describes the extent to which designers implement suitable interventions to shape circular behaviour. This factor is indirectly mentioned in the literature as the designers' ability to identify, select, and implement suitable intervention strategies. Considering that not all design interventions are equally effective in influencing specific behaviours, it is highly relevant for designers to identify possible interventions and understand which intervention influences which behaviour (Nemat et al., 2023; Parajuly et al., 2020; Strömberg et al., 2015). This

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phenomenon is particularly reflected in the informed selection of suitable interventions for defined targets (Lilley & Wilson, 2017; Nemat et al., 2023; Zachrisson & Boks, 2012). However, the selection of the most suitable strategy is challenging due to inconsistent terminology (Oğur Aydın & Doğan, 2022). Gustafsson et al. (2021) underscore the significance of this factor by pointing out that the existing DfCB methods mainly involve the selection of suitable behavioural interventions. Despite the prevalence of studies addressing the formulation of design strategies, their practical application remains limited (de Medeiros et al., 2018; Oğur Aydın & Doğan, 2022). An insufficient application of the strategies is explained by their inadequate intuitiveness and a lack of guidance (Balikci et al., 2021; Nemat et al., 2023; Sohn & Nam, 2015). Furthermore, the extent of this factor is determined by the suitability of the designed intervention for achieving the intended behaviour, but also by the comprehensive coverage of possible opportunities for behavioural change (Kuijer & Bakker, 2015).

The *quality of designed intervention* influences the *degree to which product design facilitates circular behaviour*. This relationship is implicitly reflected in several definitions. For example, Oğur Aydın and Doğan (2022) and Nemat et al. (2023) describe DfCB as achieving sustainable behaviour change through design interventions. Kuo et al. (2018) and Sohn and Nam (2015) reinforce this through the definition of design interventions that aim to facilitate circular behaviours through product design. Furthermore, this relationship is highlighted by emphasising the need for effective or suitable design interventions (Gustafsson et al., 2021; Nemat et al., 2023; Sohn & Nam, 2015). Ultimately, it can be deduced from mentions of rebound effects resulting from poor implementation of interventions (Lilley & Wilson, 2017; Lockton et al., 2008). Therefore, in the model, well-designed interventions increase the *degree to which product design facilitates circular behaviour*.

5.5. Degree to which product design facilitates circular behaviour

The *degree to which product design facilitates circular behaviour* represents the target factor of the conceptual model. It describes the extent to which product design promotes circular behaviour and thus realises the intended effect of DfCB. In line with the perspectives outlined in Section 2, this factor also represents the point at which the consumer reacts to product design, resulting in a behavioural change.

6. Discussion

This study presents a literature-based conceptual model illustrating the factors and relationships that determine the extent to which designers can effectively facilitate circular behaviour through product design. By going beyond fragmented investigations, it contributes to the scientific discussion, providing a literature-based foundation for the development of effective support for designers in the DfCB context. The model shows that, while the quality of the designed intervention contributes directly to the aim of DfCB, its effectiveness depends largely on prior factors. Key among these are the designers' awareness of and responsibility for their behavioural influence, and their understanding of the problem and the target behaviours. Contrary to the current status quo, the results highlight that the establishment of DfCB should not be promoted by developing further support for the selection and implementation of design interventions. Instead, the existing strategies should be improved by making them more applicable.

Building on these insights, several recommendations for design practice can be derived. First, designers should develop an awareness of their responsibility within the DfCB process and consciously integrate this responsibility into their design activities. Second, the relevance of consumer behaviour investigation for designing product-induced circular behaviour should not be underestimated, as it constitutes a critical foundation for informed design decisions. Thirdly, these insights should be built upon by designers to define behavioural targets and target consumers. Finally, based on these defined targets, designers should critically engage with existing intervention strategies, selecting and implementing those most suitable for effectively fostering the intended circular behaviours.

A review of the current literature shows that a significant part of DfCB research focuses on the investigation of specific consumer intentions and acceptance. However, the model highlights the need to examine consumer behaviour on an individual level, which contrasts with studies generalising results of the theory of planned behaviour. Nevertheless, the developed model has certain limitations. The present study is based solely on implicit statements in the literature, as no explicit studies exist in the DfCB research that examine factors from the designers' perspective. Future research could investigate whether such studies would underscore the results or reveal potential areas for improvement. Furthermore, the focus of the study limits the considered literature used to extract the factors and relationships of the

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model. Therefore, the developed model does not explicitly consider literature on product design unrelated to sustainability. Future research should analyse and integrate established product design literature to identify potential gaps in DfCB research, to extend the model to incorporate a broader perspective.

7. Summary

The relevance of considering consumer behaviour to enhance product circularity is increasingly recognised, yet research remains limited and practical applications are scarce. Current literature primarily focuses on the (re)formulation of design interventions and the investigation of consumers' perceptions, acceptance, and intentions, while neglecting an explicit examination of factors and their relationships from the designers' perspective. This study presents a literature-based conceptual model illustrating the factors and their relationships that determine the extent to which designers can effectively facilitate circular behaviours through product design. The model emphasises the relevance of increasing designers' awareness and understanding, while highlighting potential causes for the insufficient establishment of the DfCB. In addition to formulating recommendations for design practice, the results contribute to the scientific discourse by providing a foundation that highlights potential areas for improvement. Future research should improve the applicability of existing strategies, develop support for investigating consumer behaviour, and increase designers' awareness and responsibility. Limitations include the reliance on implicit statements in the literature and the focus limited to behavioural influences in a CE. Future research directions should investigate factors from the designers' perspective and integrate established literature on product design unrelated to sustainability in order to identify potential gaps in DfCB. Overall, this work contributes to establishing DfCB and the transition to a CE.

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