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# Bridging the double-gap in circularity.

## Addressing the intention-behaviour disparity in fashion

Alana M James<sup>a\*</sup>, Lizette Reitsma<sup>b</sup>, Mersha Aftab<sup>c</sup>

<sup>a</sup> Northumbria University, Newcastle

<sup>b</sup> Interactive, Research Institutes of Sweden (RISE), Sweden

<sup>c</sup> Northumbria University, Newcastle

\*alana.james@northumbria.ac.uk

**Abstract:** The contemporary fashion industry is a broken system in need of reform, moving away from a dated linear model to adopt principles reflective of modern societal challenges. Through initial explorative studies and a thorough literature search, a fundamental engagement gap with principles of circularity has been identified, which continues to challenge the application of sustainable innovation methods. This paper focuses on the role design can play in the application of a circular model through product-life extension strategies. A multiple-stakeholder perspective was adopted during data collection, with a range of qualitative methods utilised through the engagement with both consumers and companies. Conclusions support the need to consider design as a key tool for change, with methods such as co-creation and participatory design facilitating greater awareness levels in consumers. A holistic approach to responsible action and an increase in product value can facilitate a move towards a circular model for fashion

**Keywords:** Circular innovation, design for longevity, intention-behaviour gap, fashion product lifecycle

## 1. Introduction

As the second most polluting industry in the world (Greenmatch, 2018), the consumption of fashion continues to support a linear business model with an estimated £140 million worth of clothing going to landfill each year. An additional £30 billion worth of clothing is said to be purchased and remain unused in consumer wardrobes (Wrap, 2018). The level of consumption of new clothing in the UK has been recorded as the highest in Europe at 26.7kg per capita. This compares to a consumption rate of 16.7 in Germany, 16.0 in Denmark, 14.5 in Italy, 14.0 in the Netherlands and 12.6 in Sweden (Commons Select Committee, 2018). This linear model, also referred to as the make, take, dispose approach, is said to no longer be fit for the contemporary world (McDonough & Braungart, 2010). The outdated reliance on large quantities of easily accessible resources and energy remain one of the key factors driving forward change towards a closed-loop system (Stahel, 2010). It is this approach that is heavily used in the fashion industry, with polluting production methods and increasing

consumption from consumers reinforcing the need for change. Increasingly, there is the need to move from a linear production system, where the focus remains throughput in a take, make, use approach to a more sustainable, circular model.

The definition and application of a circular economy (CE) in fashion however is not easy, with many differing descriptions discussed and a general lack of consensus to the parameters of the concept (Kircherr et. Al., 2017). The circular economy relies on principles of material and resource efficiency and more importantly sufficiency, with a reduction in linear consumption aiding in the reliance of non-renewable resources (Webster, 2017). It is the reuse of value within an existing system which enables circularity, curtailing value loss embedded in products by keeping them in a circular model (Medkova and Fifield, 2016). The Ellen Macarthur Foundation, established in 2010 to aid in the acceleration of the transition to a CE, describes the CE to be restorative by design, keeping products, components and materials to their highest utility and value at all times (Ellen Macarthur Foundation, 2017). Charter (2018) expands on this, describing product circularity to focus on an extended lifecycle perspective, with the re-use phase being central in end-of-life strategies. Aho (2016) emphasises the need for a system which is functional, consisting of optimum materials to deliver the best performance while minimising negative impact along the whole product lifecycle. Also described as a system, approaches to circularity focus on establishing a framework towards a resilient structure able to function in the longer term (Webster, 2017).

## Project Aims

This paper focuses on circularity for product longevity, adopting the loop system principles developed by Stahel in the performance economy (2010), to apply life-extension strategies to fashion product lifecycles. This will be explored utilising a multiple stakeholder lens, focusing on the importance of engagement of both companies and consumers in the implementation of the technical loop principles (i.e. reuse, repair, reconditioning). Through the analysis of existing knowledge, two gaps in engagement have been identified, one of which sees the resistance of consumers in the application of product-life extension strategies and the other with companies, who fail to position and correctly implement design functions towards a circular business model.

This paper aims to explore the role design can take in addressing the engagement of key stakeholders in the application of circular principles in fashion. Through the study of consumers and companies, the complexities of the corresponding relationship, the importance of collaboration and positioning of responsibility will be explored. In doing so, conclusions reached will provide a series of recommendations towards the systemic changes needed to help move towards circularity in the industry.

The following questions will be explored in the application of primary and secondary research methods:

1. How can the application of creative design strategies aid collaboration between stakeholders (consumers and companies) to further promote life extension strategies in the product lifecycle?
2. How can consumer-product value be increased to encourage engagement with product longevity techniques such as re-use, repair and recondition?

## 2. The Circular Economy

The circular economy aims to challenge the linear industrial infrastructure utilised within contemporary society, moving away from the cradle-to-grave approach developed during the industrial revolution. The systemic shift to a circular-systems however is not simple, requiring problem solving from multiple disciplines in the development of a series of models and systems. This multi-stakeholder perspective has resulted in differing steps to circularity being adopted, with the number of models and approaches needed to make the shift to circularity also being disputed. Bocken et. Al. (2016) believes there to be six models in the circular economy including encouraging sufficiency and extending resource value. Comparatively, in 2013 The Royal Society for the encouragement of Arts, Manufactures and Commerce (RSA, 2013) published a report focusing on the role of design in a circular economy, stating there to be only four models: design for longevity; design for service design; design for reuse in manufacture and design for material recovery.

Although the core principles of a circular system are agreed by many, the approaches taken to the implementation of circular methods vary considerably. One of the most widely discussed approaches to the adoption of a circular system is the Cradle to Cradle model developed by McDonough & Braungart (2010). The authors believe modern industries to be still operating according to models developed when people had a very different sense of the world, referring to the ignorance of product environmental impact. Focusing on product longevity to counteract built-in product obsolescence, it is thought that materials must flow in one of the two cycles; biological, which borrows its principles from nature in the metabolic regeneration of molecules, and technical, where non-biological products retain value through levels of quality for future use. McDonough & Braungart's (2010) biological cycle reflects the thinking adopted in biomimicry, where nature inspires in three different ways to aid in the product lifecycle to become regenerative. Nature as a model, a measure and a mentor informs and leads the way in solving human problems (Benyus, 2002).

The Performance Economy developed by Walter Stahel focuses on a circular way of thinking consisting of multiple models, all of which strive towards the creation of wealth and jobs through a reduction of resource consumption. It is based on four key principles; product-life extension, long-life goods, reconditioning activities and waste prevention. A core model within the performance economy is the loop economy which utilises two different cycles focusing on the product life extension of goods (through repair, reconditioning and upgrading), and the recycling of materials. This approach builds the foundation of the cradle-to-cradle approach of McDonough & Braungart but differs in focus, with the performance economy moving towards a functional service economy, where services are sold opposed to products.

### 2.1 Challenges of Engagement

Due to increasing sustainable pressures, the circular economy over the past decade has increasingly become contemporarily relevant and as a reflection of this, many companies are attempting to incorporate circular strategies in to their existing business models. This approach however poses issues as it counteracts the systems thinking approach underpinning the circular economy as companies often try to target a single business area. McDonough & Braungart (2010) suggest that to move towards a circular system a shift to optimising the whole system, rather than focusing on one element is needed. Maldini & Balkenende (2017) support this, stating that issues lie where established companies are beginning to take the lead, but are not innovating, with disruptive innovation more likely to occur in start-up companies responding to societal change.

The positioning of circular strategies in the product lifecycle is also pertinent to the success of implementation, with emphasis often being on the need for strategies to be focused on the design

phase. This approach utilises design approaches as a key tool in the application of a circular model, in preference to solving issues later in the product lifecycle during the disposal phase. The focus of effective design is also said to be necessary for the successful implementation of a closed-loop model, with design ensuring optimum material use through innovative systems (Webster, 2017). With the focus of circularity being positioned in the design and development phase of the product lifecycle, the opportunity for change is substantial as it is at this time when 80% of a products environmental impact is determined. A further challenge presented is when companies adopt a more myopic approach to the implementation of such strategies, facilitating trade-offs, opposed to complex problem solving to achieve isolated changes toward circular innovation (Maldini & Balkenende, 2017).

Similarly, to companies consumers are also experiencing engagement issues through initially a resistance to participate in product-life extension strategies such as repair or reconditioning. In addition to this, consumers also often lack a sense of meaning and value with a garment, having a consequential negative effect on product longevity due to the increased willingness to dispose of the product. Evidence shows that a distinct lack of caring on the part of the consumer can have a very negative impact on the loop economy which is said to stem from a psychological resistance due to negative connotations associated with second hand goods (Stahel, 2010). This lack of consumer engagement in responsible behaviour has been previously documented in studies exploring the intention-behaviour gap. This concept explores consumer purchasing, with studies showing that 30% of consumers have the intention to purchase responsibly, however when translating this into actual behaviour, only 3% of consumers follow through their intentions into behaviour (Bray et al., 2011). Also referred to as the 30:3 syndrome, this gap between intentions and behaviour presents a potential problem space when engaging in a closed loop system.

In addition to a lack of connectivity to garments and the maintenance of these products, it has also been evidenced that consumers lack a meaningful connection with environmental and social responsibility in the context of fashion. This lack of connectivity, and therefore compassion can often lead to non-responsible behaviour, however Carrigan and Attalla (2001) believe that if these social and environmental issues were to personally effect the consumer, more care would be applied. The extent to which a consumer feels that their individual contribution can make a difference, labelled as Perceived Consumer Effectiveness (PCE), is also affecting consumer engagement (Ellen, 1994).

## 2.2 The Role of Design

The definition of design and the role this can take in varying scenarios is heavily debated, being not an event or a Eureka moment but rather a process in which design thinking is required (Brunner, Emery and Hall, 2009). Design as a tool is said to be *adaptive*, *resilient* and *transformational* (Miemis, 2010) but design thinking approaches cause business strategy and innovation to be much more human-centric (Lockwood, 2010). It is believed that this involvement of humans takes design from just a tool to be focused on problem solving for the general welfare of humanity (Brown, 2009), suggesting that design thinking could encourage more responsible business practices. When thinking about models of design, these are again plentiful and varied. Saunders and Stappers (2008) discussed a *fuzzy front end*, showing the complex and erratic process undertaken by designers to reach a successful outcome. The Design Council UK (2007) also developed the heavily utilised *Double-Diamond* approach which demonstrates four distinct phases of design; *discover*, *define*, *develop* and *deliver*. However, this model focused on process rather than stakeholders, overlooking their involvement during the different phases and the valuable role they can play. It is when design is acknowledged to be participatory that people in the form of users, consumers and participants can

become involved through multi-stakeholder collaboration. This is acknowledged by the model developed by The Hasso Plattner Institute of Design at Stanford (Dschool, 2009), which follows a similar model to that of the double diamond, however positions *empathize* as the first stage, reflecting a human-centric approach from the very beginning. The positioning of this reflects the need for the designer to respond to human needs, ensuring that outputs are meaningful and useful to people. Collaboration between companies and users are needed to achieve this through vital approaches such as co-design and participatory design.

Although the environmental and social impact of a product is not traditionally within the remit of the designer (Stahel, 2010), it is during the design phase of the product lifecycle where designers have the opportunity to consider durability, compatibility, modularity and multi-tasking functions in the shift towards a more circular system. However, the concept of 'waste' is said to not be a direct consequence of a linear production system, but rather a design flaw, further emphasising the crucial role of design and responsibility of the designer (Medkova and Fifield, 2016). Despite playing a crucial role in this systemic shift, it is to be acknowledged that it is not the sole responsibility of the designer (RSA, 2014) but rather a joint effort needing a multi-stakeholder approach (Medkova and Fifield, 2016). Bakker et. Al. (2014) believes it is essential for designers to attain a deep knowledge of the products they design, enabling them to know how a product will age, how long the parts should last for and if it is expected to be refurbished.

When observing the role of design within this problem space, design functions adopt varied perspectives, each emphasising the role of a different stakeholder. This paper focuses on two primary functions; *design for longevity*, which focuses on the consumer and their engagement with product-life extension strategies and *design for service*, which explores the way companies can begin to reposition their offering to their customers, shifting from that of a tangible product to a product-service offering. Other functions to be acknowledged, but lay out with the scope of this project, include *design for reuse* and *design for material recovery* (Niinimaki, 2017).

When considering the engagement of the consumer, two functions of design can play a crucial role within the capacity of *design for longevity*; *emotionally durable design* and *design for behaviour change*. *Emotionally durable design* (Chapman, 2005; Chapman, 2009; Mugge, 2007; Van Hemel & Brezet, 1997; Van Hinte, 1997) devotes attention to *the consumer-product relationship* and the role of design in strengthening that relationship in order to lengthen the product life. Personalisable items, such as Nike's NikeiD, where consumers can customize shoes, trainers and bags, are examples of implemented emotionally durable design strategies. However, designing for an emotional connection is difficult, with designers finding effective simulation of product-attachment particularly challenging due to the end-user adding meaning and consequently value to a product and therefore not something which can be added prior to this (Mugge, 2007). A study by Aftab and Rusli (2017) ascertained that people's emotional attachment to products resulted in the products not being discarded. It concluded that users were most likely to keep broken furniture beyond its usefulness if they had an emotional story assigned to the memory of the furniture. Contrarily, individuals did also purchase furniture which was picked up from the junk yard and upscaled, however, their connection to such products was only at visceral and functional level. The study confirmed that it is the reflective level attachment that makes users think twice before throwing an item. Norman (2004) makes a strong case in favour of designing products that do not just solve a problem but also connect with the consumers at an emotional level. Nevertheless, it is only when industry believes consumers have more than just purchasing power (McDonough & Braungart, 2010) that they will be motivated to change the way they design products.

*Design for behaviour change* (Lilley, 2007; Rodriguez & Boks, 2005; Wever, van Kuijk, & Boks, 2008) is an approach that focuses on the influence that users' behaviour can have on the overall impact of a product. An example of this in action is the use of additional information on garment labels, advising users to wash clothing less frequently and at lower temperatures. This design intervention however has been criticised, with the extent to which designers and companies are entitled to drive user-behaviour being questioned (Brynjarsdóttir et al. 2012; DiSalvo et al. 2009; Dourish, 2010; Kuijer and De Jong, 2011).

Within the function of *design for service*, the responsibility for making the product life cycle sustainable lies with the company. There are multiple approaches which can be adopted, for example, product-service *design for eco-efficiency*, which focuses on the design of product-service propositions where the economic and competitive interest of the providers seeks environmentally beneficial new solutions. The company, rather than selling the product, provides a service. Examples of these include wardrobe swapping initiatives, where clothing is returned to store for donation to charity or recycling purposes. The ownership of the product, as well as the responsibility for product-life extensions strategies lies with the company, pushing forward the agenda for a closed-loop system. However, design for service initiatives developed by fashion companies are said to often be used to enhance brand value, rather than promoting a circular business model.

### 3. Methodology

The methodology designed to address the project objectives integrated a multi-stakeholder perspective, with a dual focus involving both consumers and companies (figure 1). In addition to key stakeholders, the study also explored the role of design, focusing on a global company with research and innovation at the core of their business. This three-staged approach was designed to explore the role of three core areas emerging within the project; consumers, companies and design.

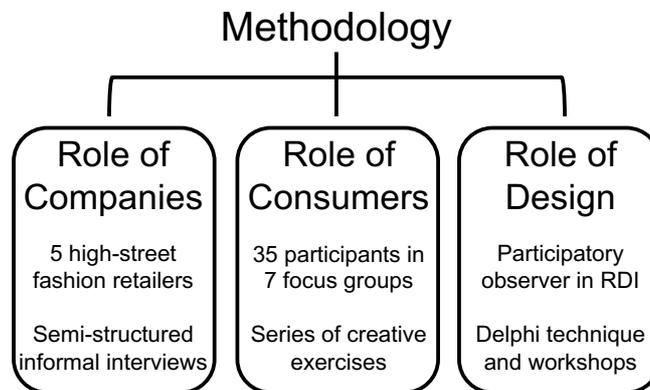


Figure 1. Methodology map illustrating the three-stage approach adopted during data collection (Authors).

Data collection with relevant industry partners involved working with five high-street fashion companies, comparable in their retail size and provision. Semi-structured, informal interviews were utilised during engagement with the five high-street fashion retailers, with representatives from their corporate social responsibility or ethical trade teams. The interviews explored the actions currently being taken by the individual companies to achieve responsibility within their supply chain and day-to-day business. This also questioned where and when these values were implemented and how engagement with consumers and other stakeholders influenced these actions.

Interaction with consumers involved multiple focus group sessions, each comprising of a series of creative activities to obtain the required information. A sample of consumers with an existing level of knowledge of environmental and social responsibility in fashion were selected. This was due to prerequisite knowledge being needed in order to explore their engagement with product-life extension strategies such as reuse, repair and reconditioning. A total of 35 participants engaged in the activities, split into seven smaller focus groups. Examples include asking participants to consider the clothing they were wearing and the responsible implications of the product, including what they planned to do with the product at the end of its desired or usable life. This exercise also explored their level of knowledge and awareness and how this, if at all, impacted on their decision making.

In order to explore the role of design, a relevant company was selected who focus heavily on the design process within a dedicated Research Development and Innovation (RD&I) department. The researcher was positioned within the team embedded as a participatory observer in order to obtain an authentic insight whilst retaining an unbiased view during the data collection process. During this time the design process was mapped in terms of operational focus and collaborative participants. The methods utilised during this phase included Delphi technique and workshops with fellow team members and relevant third-party participants.

Due to aspects of the project exploring sensitive, and in the case of the consumers, personal information, the methodological tools utilised needed to be carefully considered (Auger and Devinney, 2007). Within research of this nature, consumers are said to have little to no incentive to answer truthfully if survey methods utilised are not appropriately designed (Dickson, 2013). In previous studies a weak or ill-considered methodology has been blamed for the both the identification of a gap in consumer engagement with responsible behaviour (Carrigan and Attalla, 2001) and creating a larger gap than there perhaps is (Carrington et al., 2010). This investigation acknowledged these previously identified issues and designed a methodological approach which avoided the use of simple rating scales and dichotomous questions in favour of more descriptive qualitative answers.

Analysis methods reflected the qualitative nature of the data obtained, which included content analysis, where emerging themes and underlying concepts were identified. This primary level of analysis was followed up with methods of coding applied, where patterns and groupings within the data were conceptualised and integrated towards the development of conclusions.

## 4. Results and Discussion

### 4.1 The Role of Design

As a participatory observer, the researcher mapped the design innovation process which was done within the context of the double-diamond model as developed by The Design Council UK (2007). The data evidenced that there were 13 stages within the research, design and innovation process as illustrated in figure 2. Of the 13 stages it was found that 4 stages had the involvement of people, these stages have been highlighted in red indicating where extensive collaboration between the design team and users occurred. Observations recorded during these processes demonstrated that the RD&I team no longer worked in isolation internally but sought the participation, opinion and interaction from selected user groups. The evidence found from each of these four highlighted stages has been detailed below:

- Stage 2 (Scenario Building) – this phase of the design innovation process engaged users to identify people’s needs through empathy-led socio-cultural investigations.

This is typical of a participatory design approach, however the data from this stage was used to inform the consequential stages of the process and to create value propositions.

- Stage 4 (Creative Outlook) - this stage of the process began to build on the initial user findings from stage 2, however it began to really consider the users perspective. In stage 4, the design team take a back step to become empathetic listeners, while the users step up to become the role of advocates. This is where collaboration could begin to make a real difference in the consideration of longevity within the design process, opposed to finding solutions to problems later in the use phase. The incorporation of people at this phase creates empathy and begins to consider the longer impact of the product.
- Stage 7 (Debate) – while this stage does involve users in the design innovation process, this involvement is minimal, with the decision-making being retained by the design team. What this stage does facilitate however is the debate of future scenarios. This is a significant finding, with the consideration of future stages of the product lifecycle allowing scope for product longevity to be incorporated into the final design of the product.
- Stage 8 (Develop Contextual Insight) – this phase sees design adopt a prominent role in facilitating the collaboration between multiple stakeholders through methods of co-design and co-creation. It is during this time when principles of circularity have the potential to be embedded in the design process. As both stakeholders (consumers and designers) at this stage have equality in decision making, the responsibility could also adopt a similar approach opposed to the sole responsibility lying with the designer. The prominence of this finding provides significant validation of the objectives presented in this paper.

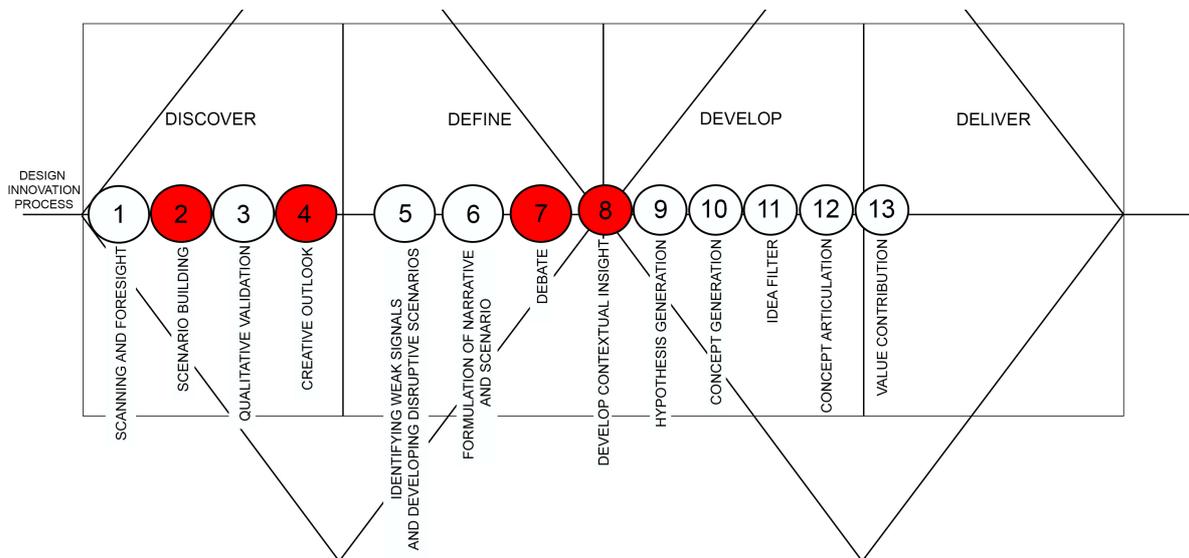


Figure 2. Design innovation process map demonstrating the 13 stages undertaken with four stages (highlighted in red) evidencing extensive stakeholder collaboration (Authors).

## 4.2 Multi-Stakeholder Collaboration

When asked about the company’s engagement with the longevity of their garments, two of the five company representatives identified a series of recycling and reuse activities currently being

implemented across the clothing department, with examples including clothing take-back schemes and partnerships with charitable organisations. Both respondents emphasised the scheme's success relying on the involvement and collaboration with their customers, and more importantly, their active engagement in the initiative. One participant went into detail regarding their engagement techniques, which included monetary in-store offers and thank-you campaigns used as an incentive for repeat behaviour. However, another emphasised that their customers '*came to store to be inspired and not to be preached at*' and therefore they took a much subtler approach to encourage customer engagement. Although this does evidence moderate levels of engagement with end-of-life solutions, it does also demonstrate an isolated focus to circularity opposed to a more integrated and systems thinking approach needed.

Extended Producer Responsibility (EPR) as discussed by Niinimäki (2017) can be considered further, where closed-loop thinking can encourage companies to consider the end-of-life solution during the design process. Current solutions discussed include take-back schemes, actively implemented in-store by 2 of the 5 companies studied, presents a solution focusing on providing a second-life for an unwanted garments in preference of promoting product-life extension strategies. However, these initiatives are often used to improve brand value opposed to promoting principles of circularity. While building a positive image for the fashion brand, these schemes also provide rewards to participating consumers in the form of vouchers to be spent on future purchases promoting further consumption. Furthermore, this activity supports the continuation of a linear, *take, make and dispose* model rather than retaining value in the garment lifecycle for greater product longevity.

### 4.3 Consumer Engagement

During the focus group activities, participants were asked to respond to the following question; *what actions do you take when you no longer want to wear a garment?* This question purposefully avoided terminology such as *disposal* and *donation* to ensure that no bias was imposed on the participant. The answers provided were broad and varied, these included giving to charity (31%), returning garments to store (9%) and passing items on to friends (26%). Strategies focused on end-of-life disposal methods, with all answers given not relating to product-life extension strategies such as repair or recondition, in preference for how they can dispose more responsibly. The data also evidenced that a seven of the 35 participants would not consider end of life options, in preference of putting garments in the bin due to ease of disposal. While this accounted for only 20% of the participants, this did demonstrate not only a complete lack of engagement in product-life extension strategies but also a lack of value within the product (figure 3).

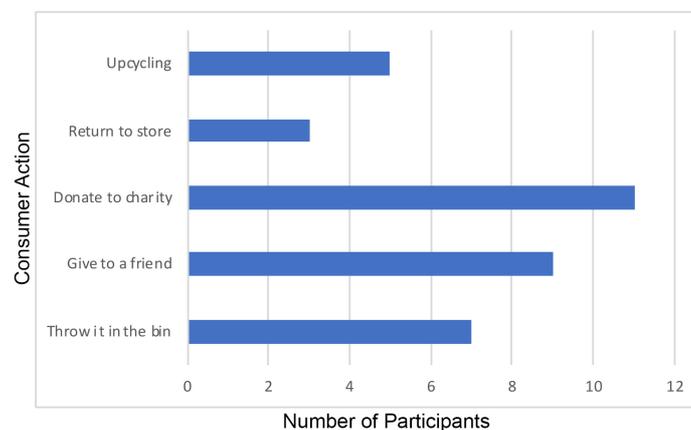


Figure 3. A bar chart illustrating consumer garment disposal actions.

Five of the participants discussed upcycling as an alternative method to disposal, making it more desirable through alteration and customisation and creating additional value. One participant claimed *'I like to customise and combine different pieces when I can to make my look individual... it makes me keep my clothing longer but also I become kind of attached'*. This addition of value to a product has been coined as the IKEA effect, where users who produce, construct or customise products using their own labour increase their personal connection and worth of the item (Norton et. Al., 2012). This concept has been adopted into many retail business models with popular examples including Build-a-Bear Workshop, where customers can customise their soft toys to be individual and unique to the recipient. A greater time touching objects has been proven to increase feelings of ownership and value (Peak and Shu, 2009), with the physical craft of upcycling requiring the user to not only touch but to also invest time and effort, resulting in a greater sense of value in the end result. While upcycling creates value late in the product lifecycle, consumer-product attachment could be created earlier if considered during the design phase implementing emotionally durable design strategies. As discussed earlier however, it is to be acknowledged that designers find the creation of value very difficult due to meaning and value being very personal and individual to the end-user (Mugge, 2007). Implementing considered principles of design could aid the fashion industry in greater product longevity and the creation of consumer-product attachment and meaning.

## 5. Conclusions

As demonstrated in the data, the product lifecycle has at certain stages harnessed human-centred approaches, however this social interaction is not consistent. Involvement of users in the design process has been welcomed by many product organisations, such as LEGO and UNILEVER who have reaped the benefits by creating new ideas, gaining real-time feedback and starting new business ventures. Partly this unique involvement is due to the two processes namely, co-production; (Etgar, 2008; Hyde & Davies, 2004), where consumers are part of the production of service, and co-creation; (Prahalad & Venkatswamy, 2004) where multiple stakeholders including consumers are involved in several stages of the product development process. Both these processes are focused on creating shared value amongst multiple stakeholders with progression towards circularity relying on this cooperation and collaboration (Medkova and Fifield, 2016). This approach to collaborative value creation was significantly evidenced during the study into the role of design, where users were incorporated in four of the thirteen stages of the design innovation process. These pockets of collaboration facilitated shared responsibility, future scenario building and the consideration of future stages of the product lifecycle, allowing design to play a fundamental role in the application of longevity strategies.

When engaging with both consumers and companies, both demonstrated a fundamental misunderstanding for principles of circularity within a product longevity context. Both stakeholders provided answers more aligned with end-of-life disposal methods opposed to product life-extension strategies. This paper suggests that a greater level of knowledge and awareness in circular values could create the connection needed to close the identified engagement gap, promoting participation in product life-extension strategies such as repair and recondition. Furthermore, customisation and personalisation could aid in the creation of greater product value, again encouraging longevity, with a direct correlation between value and willingness to engage in maintenance. As reflected in industry, companies are shifting from viewing customers as recipients of value to viewing them as co-creators of value (Norton, et. Al., 2012).

Responsible strategies currently in practice focus on responsive end-of-life solutions in preference to prevention techniques implemented through complex design approaches embedded in the product

lifecycle. Again, design methods could promote a more holistic, systems thinking approach to the current fashion system, where circular innovation could provide solutions for a multitude of social and environmental issues. Consumers are key in this systemic shift, needing to go beyond the role of a product user and move into the realm of influencing how these products are produced and discarded. This paper has shown that this change in the level of the use of relevant design methods and collaboration of multiple stakeholders can lead to positive behavioural change, addressing the gap in vital links between stakeholders to work towards a circular model in the fashion industry.

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#### About the Authors:

**Dr Alana M James** is a Senior Lecturer in Fashion, her research explores responsible social and environmental practices in the fashion supply chain through a design lens. Her PhD explored this problem space from the perspective of fashion consumers and companies.

**Dr Lizette Reitsma** is a Design Researcher at RISE. In her work, she uses design as a tool for dialogue to address complex issues connected to sustainability. She holds a PhD in co-design and her expertise lies in research-through design.

**Dr Mersha Aftab** is a Senior Lecturer in Innovation in the Department of Design, Mersha's interest lies in exploring the role of design as a leader in multinational organisations. Her PhD was a collaboration with Philips Design.