Slowing resource loops in the clothing industry through Circular Business Model Experimentation

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Abstract
The fashion industry is characterised by downward pressures on prices, fast consumption, and a high ‘disposability factor’, where textiles and clothing have become consumables rather than durables.

Circular Economy, focused on slowing, closing and narrowing resource loops provides a promising approach to tackle these issues. This chapter explores how a large retailer can incorporate the more challenging strategies of the Circular Economy, those focused on slowing resource loops, in their business model.

The chapter provides an in-depth case study of a large international clothing retailer embarking on a journey of circular business model experimentation. An iterative process is presented as well as opportunities and barriers associated with slow consumption business models as part of the business model experimentation process.

Based on this, suggestions for researchers, policy makers and practitioners are made to address slow consumption as part of business models.

Key words: Slow consumption; circular economy; business model experiment; sustainable business model; circular business model; clothing retailing.
1. Background

Sustainability has become a major issue in the fashion industry. While there is downward pressure on prices and increasing competition, there is a growing concern about social and environmental issues (Miller, 2016; Bocken et al., 2017a). Unsustainable levels of clothing consumption and associated disposal patterns are driving demand exacerbating the issues in the industry (Niinimäki and Hassi, 2011). It is estimated that in the past 15 years clothing production has doubled, driven by a growing middle-class and increased per capita consumption in mature economies (EMF, 2017). This is linked to the fast fashion phenomenon, characterised by quicker turnarounds of collections and styles per year, lower prices and a disposable nature of fashion: it has been estimated that half of fast fashion produced is disposed of within a year (EMF, 2017). If the current trajectory continues going forward, the clothing industry will account for using 300 million tonnes of non-renewable resources by 2050, triple the amount of the 98 million tonnes in 2015 (EMF, 2017).

The Circular Economy may be viewed as a potential paradigm to combat sustainability challenges (Blomsma and Brennan, 2017; Geissdoerfer et al., 2017; Ghisselini et al., 2016). While the Circular Economy paradigm has been criticised for emphasizing the ‘easier’ corporate environmental strategies such as recycling (Allwood, 2014), the discourse is shifting towards including strategies of slowing resource loops and tackling unsustainable consumption patterns (Bocken et al., 2016a). However, in reality business practice is behind and the concept is still in its infancy (Blomsma and Brennan, 2017). The ‘radical’ forms of circular business model innovation, such as those associated with slowing resource loops and consumption (e.g. sharing, product-service systems) and remanufacturing models are still relatively low on the corporate agenda to date, based on a content analysis of corporate reports of S&P 500 firms (Bocken et al., 2017b).

The linear economy is characterised by taking (materials, energy), making (production) and disposing products after a limited number of uses (Bocken et al., 2016a, EMF, 2017). In contrast, the Circular Economy can be defined as a ‘regenerative system in which resource input and waste, emission, and energy leakage are minimised by slowing, closing, and narrowing material and energy loops. This can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling’ (Geissdoerfer et al., 2017, p. 759). At the same time, other reviews of Circular Economy literature have highlighted the necessity of not neglecting the social dimension (Blomsma and Brennan, 2017; Murray et al., 2015). It is argued that “what aids or inhibits socioinstitutional change in waste and resource management can be enriched by paying attention to how material flows are shaped by, and interact with, nonmaterial flows, that is, the different forms of social embeddedness.” (Blomsma and Brennan, 2017, p.611).

The current textiles system can be described as predominantly linear: non-renewable resources are extracted to produce that are often used just once or twice after which the materials are landfilled or incinerated (EMF, 2017, p.3). Clothing represents over 60% of the total textiles used (EMF, 2017). The Ellen MacArthur Foundation estimates that USD 500bn of value is lost every year due to ‘clothing underutilisation and the lack of recycling’ (EMF, 2017). In contrast, in a future circular economy, materials such as textiles should be maintained at the highest level as long as possible through strategies such as maintenance and repair, service and warranties as well as reuse over time (Achterberg et al., 2016). Currently, material, environmental and economic value are destroyed rather than maintained (Figure 1). This linear take-make-dispose model has numerous negative environmental and societal impacts related to greenhouse gases, water use, toxic emissions, and landfilling, and associated health, safety, and wellbeing impacts (EMF, 2017). Hence, new ways of doing business are urgently needed.
Circular business model innovation may be viewed as a systemic way to tackle the take-make-dispose paradigm. Business models include a value proposition (product-service offering to the customer and wider society), value creation and delivery (what value is created and how) and value captured (the way in which money and other forms of value are captured) (Richardson, 2008; Teece, 2010; Bocken and Short, 2016). Sustainable business models are about creating positive value for the environment and society, in addition to the customer; they integrate a multiple-stakeholder perspective in the way business is done, and specifically include environmental and societal parameters into the business purpose and metrics in addition to economic concerns (Stubbs and Cocklin, 2008). As an example of a sustainable business model, circular business models emphasise environmental aspects and in particular how to shift away from a take-make-dispose paradigm to narrowing (efficiencies), closing (recycling) and slowing (reuse, slow consumption, remanufacturing) loops (Bocken et al., 2016a, Geissdoerfer et al., 2017).

To tackle the impending sustainability crisis, firms urgently need to innovate new business models. However to switch from a known model to an alternative one is risk laden (Chesbrough, 2010; Teece, 2010). As a result, there is a need to trial new ways of doing business. Business experimentation is seen as a way to remain competitive in the long-term (Chesbrough, 2010), while tackling key sustainability issues and the transition to a Circular Economy specifically (Kraaijenhagen et al., 2016; Weissbrod and Bocken, 2017).

Business experimentation is a potential key avenue for accelerating change for sustainability by exploring diverse possibilities around how a business could create value, or understand what works in which particular situations in a real-life business context to address key sustainability challenges (Bocken et al., 2016b, Weissbrod and Bocken, 2017). In contrast to pilots, experiments are fast, small scale and low cost (Ries, 2011; Osterwalder et al., 2014). While popular with startups, ‘large businesses can also find inspiration in business experimentation to develop sustainable business models and accelerate positive change for sustainability’ (Bocken et al., 2016b). Examples of experimentation practices include co-creation sessions, focus groups, Facebook A/ B tests (comparing the viability of two campaigns), and rapid service prototyping (e.g. digital prototyping through creating web landing pages or physical prototyping through creating low fidelity, e.g. simple paper versions) (Schuit et al., 2017).

This book chapter explores the case of a large international clothing retailer who has embarked on a
journey of circular business model experimentation. It reports on the approach taken and overall findings obtained regarding slow consumption initiatives as an example.

2. Case study approach

The case study covers a 2.5-year collaborative research project (August 2014-November 2016) part funded by Innovate UK, between the University of Cambridge and an established international clothing retailer. The aim for the retailer was to eliminate clothing waste being disposed in landfill, using a circular business model approach. The project was about identifying pathways to transform the current linear business model to a more circular one, through business model and supply chain innovation facilitating recovery and reuse of clothing, using experiments.

Slowing resource loops - a focus on waste prevention in the first place by encouraging clothing reuse - was the emphasis of the project. A secondary objective was to learn from this new approach and develop a circular business model experimentation capability. In the project, experimentation was undertaken, building on Lean Startup techniques (Ries, 2011; Blank, 2013), characterised by rapid learning iterations in a low cost and resource manner (Ries, 2011; 2017). While developed for startups, the Lean Startup approach could also apply to large businesses (Ries, 2017; Weissbrod and Bocken, 2017).

Figure 2 includes the process taking in the project. In this case study, we focus on the experiments that focused on slowing resource loops. The authors were all involved in the research project. Insight from the case study was acquired through workshops and meetings attended (observations and recordings), documents and templates used during workshops, materials prepared in advance of meetings and workshops, notes taken during and after meetings and meetings and discussions and interviews with project members.

We split up the findings according to outcomes from the experimentation process and outcomes from the sewing club experiment focused on slowing resource loops. We also discuss additional experiments emerging from the sewing club experiment.
3. Experimentation process findings

The project largely followed the steps in Figure 2 and during the project the focus was on ideating, experimenting and refining, and repeating this process multiple times. The process was effectual; the project team was building on emerging opportunities inside and outside the business, and continually engaging with key stakeholders (e.g. senior management) and bringing in new stakeholders (e.g. NGOs, other societal actors) that could support the project (Sarasvathy, 2001; Bocken et al., 2017a). This emergent approach is also similar to the Lean Startup approach (Ries, 2011). However, some broad recurring activities emerged throughout the project: prepare market, customer and environmental data; conduct stakeholder ideation workshop; generate new solutions for further analysis; run experiment to gather more insight (Bocken et al., 2017a). In the ‘prepare market,
customer and environmental data stage’, supporting data were collected to gain a better understanding of the market potential and business traction (e.g. searching for growing startups, market reports and trends and investigating how it would fit the business). Also, the potential environmental impact of options was assessed using secondary data (e.g. Allwood et al., 2006; WRAP, 2012; 2017) and rules of thumb, e.g. whether the innovation would contribute to slowing, closing or narrowing resource loops (Bocken et al., 2016a). This data collection process occurred throughout the project to support arguments and gain a better understanding of the new business models’ potential.

During the first ideation and clustering phases taking place during a 2-day workshop at the beginning of the project, over 200 ideas emerged. These ideas were clustered into themes: four themes focused on extending the useful life and retaining the value of clothes, and one theme was about improving circularity by recycling used clothing (Bocken et al., 2017a). This case study reports on one of the themes, focused on retaining the value of clothes.

The easiest way to retain the value of clothes is to make them last longer. One key strategy to do this is to maintain and repair clothes and reuse them over time (WRAP, 2012; 2017). During the brainstorm the idea of a ‘sewing club’ in shops emerged to create greater awareness about making clothes last longer, build skills, and create social interactions (in the shop, amongst young and old etc.) in addition to contributing to the environmental theme of making clothes last longer. The additional social benefits envisaged made this strategy fundamental for the large retailer and the experimentation process.

Based on this, as part of a larger sustainability event, an initial experiment was set up in a retail shop. The authors attended as participants and observers. In line with the Lean Startup approach and ideas on business experimentation (Ries, 2011; Osterwalder et al., 2013), some hypotheses were formulated to test traction and interest with customers. Experiment cards were developed to start mapping the experiments taking place (Appendix A for an example).

4. Sewing club experiment findings

Multiple lessons could be extracted from the ‘sewing club’ experiment in the clothing retail shop:

1. While initial hypotheses were formulated, there was a felt need to track all types of learning. The focus moved away from testing just the hypotheses and to understanding the broader context and business benefits of doing a sewing experience in a large retail shop. This became critically important to the business as from observations and interviews made during the in-store experiment, even onlookers (i.e. people passing the sewing experiment location) became engaged with the concept linking the sewing, repairing and generally looking after clothes and the environment.

2. The focus of the experiment was on identifying the traction of the sewing concept with customers and specific hypotheses were formulated around this. However, the initial experiment retail shop manager (who was not part of the project team running the experiments) became highly enthusiastic about the event as it created a lot of customer traction and positive responses from the public, which resulted in the retail shop running more such events. In addition, this had a spill-over effect extending the trial events to other parts of the country. Potentially, in contrast to applying Lean Startup techniques in startups, the environment in large business is so complex and unpredictable (Miller, 2016), and decision-making dispersed, the potential actions following an experiment become rather unpredictable. In some cases, this may be positive, for example when an experiment has failed the hypotheses test, but gets embedded because of other reasons (e.g. community spirit; building the brand; footfall in shop).

3. It remains hard to derive environmental impact improvement from snapshot experiments. For instance, the impact of business models focused on retaining the value of materials and clothes thus slowing resource loops will only be evident over time, in comparison to efficiency gains in manufacturing and design (narrowing resource loops) of which benefits
are more instantly observable (Bocken et al., 2016a). It is recommended to test environmental impact or the ‘environmental value proposition’ while designing the business model (Weissbrod and Bocken, 2017; Manninen et al., 2018).

The experiments in the shop were seen as highly successful from a business and social perspective and as such activities were absorbed in current business practices. The experiment was subsequently repeated in nine other UK store locations. However, as noted above, the environmental impact improvement and understanding of changes in consumer behaviour were not immediately evident.

5. Additional experiments

To generate more learning, additional experiments were set up. These included a large-scale survey to test consumer behaviour. A large online survey was developed, which yielded 1009 useable responses to test people’s sewing skills, interests and knowledge and how these elements extended garment lifespans. Findings from the online survey strongly supported the link between people sewing and repairing clothing and their attachment to the garments, extending their lifespan and reducing the volumes being disposed of. Furthermore, data were gathered in desk research and in customer interviews on the benefits of making clothes last longer. The secondary data confirmed that the single most important factor to reduce the impact associated with clothes would be to keep clothing for longer - while not buying more - thus reducing total production and consumption of fibres (e.g. Allwood et al., 2006; WRAP, 2012).

The findings show that even within one ‘theme’ multiple types of experiments took place, ranging from desk research type of activity to online surveys and a set up in the store. This resonates with Ries (2011) and Schuit et al. (2017) who recommend multiple types of experimentation activities depending on the specific need.

Finally, in addition to the enthusiasm at the company itself for the concept, other large clothing retailers started to set up similar activities (or experiments) in their flagship stores, indicating that this concept provides an attractive value proposition indeed.

6. Discussion and conclusions

The current business models in the fashion industry are largely linear (EMF, 2017). Circular business model innovation could potentially serve as a solution. However, there is a lack of frameworks supporting business model innovation within the context of the Circular Economy (Antikainen and Valkokari, 2016). Addressing this gap, this chapter presents an overview of a method for circular business model innovation based on an experimentation approach. Experimentation with new business models is needed for long-term competitiveness (Chesbrough, 2010) and addressing pressing sustainability challenges to change the way business is done (Weissbrod and Bocken, 2017).

This chapter reports the case of a large retailer as an example of ‘slowing loops business model experiments’ to retain the value of clothes and thus sloop the use of resources over time. Slowing loops is a possible resource strategy for achieving more circular business models but initiatives currently co-exist with existing linear business models. For instance, the sewing club initiative co-exists with existing sales models. Within the snapshot of an experiment, it is difficult to find evidence for environmental impact improvement as well as sales cannibalisation. These aspects would be more evident over time once the initiatives are put in practice. Hence, when implementing new business models sustainability concerns would need to be built in (e.g. an environmental value proposition) and progress needs to be tracked over time (Manninen et al., 2018; Weissbrod and Bocken, 2017).

It was found that the social dimensions of the Circular Economy provide great potential for gaining traction in a business context (see also, Blomsma and Brennan, 2017; Murray et al., 2015). The positive social aspects and community feel generated through the sewing experiments did create a
strong case for the company to pursue these types of initiatives further. This gave the project leeway to investigate the potential environmental benefits (and how to improve the environmental value proposition) in more detail.

It should be noted that de-growth and absolute decoupling (Wells, 2018), focused on absolute reductions in consumption and environmental impact, remain a challenge in particular in a single business context under increasing market pressures. Moreover, frontrunners have failed in their de-growth experiments in the past. Patagonia for instance experimented with a zero-growth model, but struggled to keep up employee motivation in a zero-growth environment (Chouinard, 2006; Bocken and Short, 2016)

Business model experimentation for sustainability and circularity can reveal the challenges and opportunities for a business to address sustainability and business challenges in parallel. It prompted a different way of thinking and capability within the case study retailer (as is also recommended in Ries, 2017). Business model experimentation has the potential to set in motion change in an organisation (Chesbrough, 2010; Ries, 2017). However, to create true transformations, failure needs to be responded to with more experimentation and pivoting rather than stagnation in order to move beyond the status quo.
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References


### Appendix A:

Experiment cards used in the project (building on Osterwalder et al., 2014)

<table>
<thead>
<tr>
<th>Extending clothes life</th>
<th>Primary learning:</th>
<th>Secondary learning:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) A clothes repair service in store + (b) Sewing lessons in cafes to provide customers with basic skills to repair clothes themselves – possibility to repair clothes leads to <strong>extending the use and retaining the value of their clothes</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Will people come to the store (a) to have clothes repaired (for a charge, only minor repairs) or (b) to acquire basic skills for repairing clothes?**

Will people purchase less clothes or throw away less clothes as a result of being able to repair them (themselves or with the repair service)? Extended service: Will people come to the stores for clothes alterations and refurbishment? Will they come for a “refashion” workshop where their old clothes are transformed into new ones or other items? Social dimension: Will people come to store cafes for social activities (organised & linked to sewing)?

**Experiment description:** Investigate whether people use their clothes longer if they learn how to repair them or there is an easily available service to have them repaired/minor alterations. Additionally, would people be willing to bring other clothes for refashioning and will this change their behaviours towards unworn clothes/clothes that would be thrown away? Thirdly, would a social dimension (e.g. meet-ups in store café) increase any of the above behaviours?

**DRAFT Experiment 1:**

- **Demand test:** Advertise a repair service on the store website, where customers can search by inputting their post code. This would gauge demand as well as geographical spread. They can be surveyed on what type of repair would they require.
- **Additional qualitative questionnaire (online or in person surveys):** would people be interested in such a service? Would it make a difference to have the service offered by a trusted brand in a convenient location? Would they buy less clothes/throw away less clothes/wear their clothes more as a result of having them altered?
- **Key learning:** is there demand for such a service; what are the best locations to place a physical shop?
- **Extension:** Based on results, set-up a physical location to place a pop-up alteration shop in a store. Analyse activity and interview customers: are they satisfied with the service? Do they buy less clothes/throw away less clothes/wear repaired clothes more as a result of having them fixed?

**DRAFT Experiment 2:**

- **Behaviour change test:** Recruit xxx customers to participate in one or a set of repair classes in cafes or community rooms (recruitment could be done during sewing-related events to get access to early adopters and by other means to get two control groups)
- **Opportunity to test during a sustainability event.**
- **Key learning:** do they find it useful? Do people go back home and repair their own clothes? Do people buy less clothes? Do people use their own clothes more?

**DRAFT Experiment 3:**

- **Behaviour change:** Organise workshops for transforming old clothes into new ones or other items (bags, phone cases etc.). Customers bring their old clothes and their ideas to modify/remake them and the company help them to realise it. A first test could be done during a sustainability event, but will need to repeat in other locations to for the completion of the experiment.
- **Key learning:** Do people perceive a value increase to their clothes? Do they use them afterwards? Does this reduce the number of clothes they buy?

**Additional details**

- **What are the issues we are trying to address with this solution:**
  - Disposal of clothes with minor damage, e.g. missing button/s
  - Lack of knowledge on repair and alterations, even in local shops

- **Additional questions we might need to understand better:**
  - If people are willing to come to store cafes for social activities, is there an opportunity to organise other events such as swapping events?
  - Ride on the maker-movement wave

- **Desktop research:**
  - Analyse data from store repair service regarding the most frequent alterations we perform at the moment.
  - Work with other established alterations shops to understand the types of alterations they perform.
  - Any other research available on why people throw away clothes (from secondary sources)
  - Repair guides online: if repair advice / guides are available online, would people be interested on them? Would they use them?