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Hur, Eunsuk and Beverley, Katharine J.

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# **Design and optimisation of a user-engaged system for sustainable fashion**

*E.S. Hur, K.J. Beverley, University of Leeds, UK*

The environmental and social impact of fashion throughout its lifecycle has been well-publicised and documented (see, for example, Fletcher, 2008). A wide range of environmental and ethical initiatives exist within the fashion industry, but there are few which wholly embrace a holistic view of sustainability. Although the use of low impact materials and cleaner production are valuable practically and relatively straightforward to implement in the industry's current configuration, the fact remains that the 'fast fashion' paradigm is linear, continuously encouraging people to greater levels of consumption and waste generation. Allwood et al (2006) and Procter & Gamble (2008) have determined that the major environmental impacts of many individual garments occur in the use and end-of-life phases and are heavily influenced and determined by consumer behaviours; it is the constant purchase and disposal of fashion apparel which is the 'bread and butter' of the industry. Clearly, to provide truly sustainable fashion, a radical change to the business model is necessary.

Fletcher (2008) has proposed that more participatory models of fashion design in which consumers become co-partners in the process may encourage more sustainable consumption. Currently, the adoption of co-design in the fashion industry is limited; the dominant practice that has been explored is through on-line customization, particularly in the later stages of product development. This serves to further strengthen the linear business model. This paper proposes an alternative model of co-design in which designers and consumers work more closely together to create more sustainable fashion. Initially, the business model is proposed as a craft-based system; however, the paper will discuss the potential for adoption partially or wholesale by the industry. The possible benefits of co-design in the form of the development of new knowledge, higher revenues and stronger brand loyalty will be discussed.

We will discuss how co-design can lead to sustainable fashion, and propose a multi-platform model which involves consumers and designers in the process of co-design at increasingly deeper engagement levels. This model offers initiatives ranging from the simple involvement in the product development process to more complex 'idea generation toolkits'. The idea generation toolkits serve to help people understand the context for sustainable fashion and encourage them to create new solutions, both in terms of sustainable consumption or through sustainable co-creation using a 'learning by doing' process.

The paper will also discuss the ongoing development of a web platform which fulfills part of this model. This website utilizes design thinking to provide a learning and sharing environment, encouraging co-design activities which allow enterprises to develop ideas internally or through communication with the consumer. Consequently, participants can collaboratively build an inspirational source through a 'learning, making, sharing' process and progress from surface to deep engagement with sustainable fashion.

The proposed platform offers the potential to bridge the gap between research, design and industrial practices with potential stakeholders including researchers, designers, businesses and consumers. The concluding argument will explain how all stakeholders may ultimately benefit from the co-design experience.