



# Upcycle Fashion and Textile as Sustainable Business Concept

Azni Hanim Hamzah<sup>1,2,3</sup> and Nazlina Shaari<sup>1</sup> (✉)

<sup>1</sup> Faculty of Design and Architecture, Universiti Putra Malaysia, Selangor, Malaysia

azni.hanim@gmail.com.my, nazlinashaari@upm.edu.my

<sup>2</sup> College Creative Art, Universiti Teknologi Mara, Melaka Branch, Malacca, Malaysia

<sup>3</sup> School of Graduate Studies, University Putra Malaysia, Seri Kembangan, Malaysia

**Abstract.** Upcycle is a branch of sustainability that helps overcome excess material wastage from a product. However, the lack of exposure to upcycling resulted in the communities' failure to practice it as a beneficial routine. The author studied a small number of articles involving descriptive reviews on upcycling in the fashion and textile industry. The current research investigated the latest scenario in upcycling fashion and textile-based business/industries and consumer behaviour literature. Nineteen articles related to the research were discovered through the review approach, Scopus, and Google Scholar review databases. By closely examining these articles, three main themes were identified: upcycling product material, upcycling design strategies and business, and upcycling consumers' behaviour. The author made various suggestions by emphasising the need to conduct detailed qualitative research and standardise a descriptive review approach. Adopting the suggested methods will help develop a research synthesis upcycle business framework and understand upcycling practitioner perspectives about upcycling fashion and textile. It also encourages upcycling consumers to practice reference searching, free forms of citation tracking, and snowballing as search methods.

**Keywords:** upcycle · fashion and textile · sustainable · concept

## 1 Introduction

The dumping of excess textiles and clothing waste in landfills is a result of uncontrolled raw material disposal. According to Johari et al. (2014) [1], Malaysia's National Solid Waste Management Department (NSWMD) estimates that 8.4 million tonnes of waste are generated every year. Fabric waste contributes to 4% of the total waste or about 1,000 metric tonnes of fabric waste per day.

The high number of wastage is an impact from fast fashion business model. *Fast fashion* is a term used to describe the fashion and clothing industry controlled by trends or season forecast. According to Bick, Halsey, & Ekenga (2018) [2], the term 'fast' describes retailers rapid ability to bring products quickly from the runway to the shop, fulfilling a higher volume of demand and offering various models to customers. Bick et al. (2018) [2] highlighted that the global purchase of 80 billion single new garment

bits yearly generates 1.2 trillion USD annually for the entire international fashion trade. These materials are made in the Republic of China and Bangladesh, although the United States of America (USA) has the highest consumption of outfits and textiles worldwide (Bick et al., 2018) [2]. According to Niinimäki et al. (2020) [3], this prolonging problem results from mass textile production and affordability in purchasing fast fashion products. Adopting sustainable fashion and textile usage is a way to solve this problem.

Household produces much-unused material as wastage. Jereme, MahmudulAlam, & Siwar (2019) [4] asserted that Malaysia lacks sustainable waste management practices, especially in recycling. In general, clothing and textile materials are basic needs for every individual in their daily lives regardless of the income classification group. A variety of brands with different quality materials is available, and retailers' affordable prices ease consumers' buying ability. Hence, customers are compelled to make continuous purchases without knowing how to manage used clothing and textile materials.

Consequently, abundant clothes, shoes, and fabric products no longer used are discarded in dumping areas. Consumers today, especially young fashion influencers, embrace a trend of throwaway fashion attitudes (Hur & Cassidy, 2019) [5]. Short fashion life cycle and low price have resulted in the growth of unnecessary clothing products.

## 1.1 Definition of Upcycle

Reiner Pilz of Pilz GmbH (Kim, 2015) [6] significantly introduced the term 'upcycling' to the idea of adding value to old or used items. The idea is opposed to the widely held belief that recycling decreases the products' value (Kim, 2015) [6]. A combination of environmental consciousness, imagination, ingenuity and hard work results in a one-of-a-kind, sustainable handmade product through upcycling. The purpose of upcycling is to produce goods that are genuinely sustainable, accessible, ingenious, and inventive. Through recycling, rags are made from refurbishing second value T-shirts, while upcycling transforms used tops into a high-price item similar to a distinctive handmade braided rug.

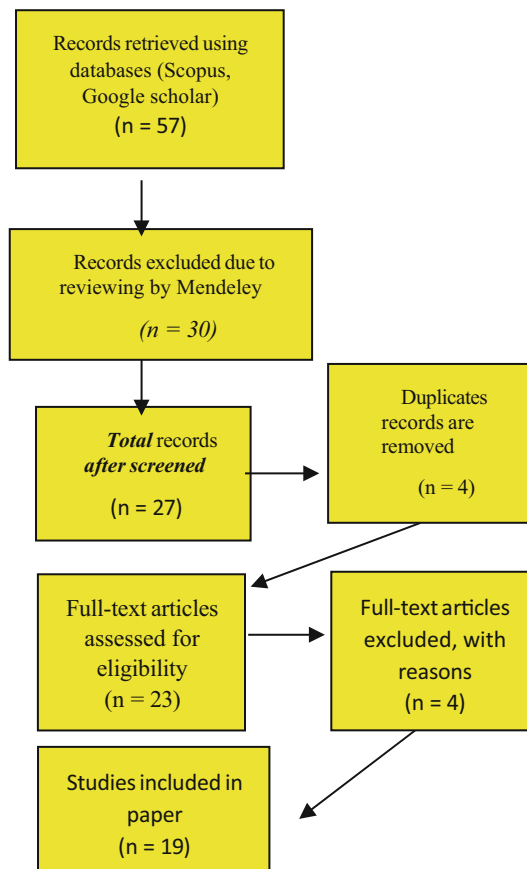
### 1.1.1 Problem Statement

A lot of studies explore sustainable fashion and textile, but a limited number of studies are available on upcycling fashion and textile. Attempts to study the literature available on this subject systematically are still lacking. This study attempts to identify practice related to upcycle fashion and textile industries besides distinguishing how it benefits life. According to the available literature, no research has summarised a literature review of upcycling (Paras & Curteza, 2018) [7]. According to Singh et al. (2019) [8], there is a lack of awareness of obstacles and success factors associated with scaling upcycling companies. The lack of awareness justifies the reason why more studies should focus on upcycling fashion and textile on the one hand, the pressure to sell used clothing continues to rise. This also supported by Ahn & Lee (2018) [9], who asserted that upcycling development lacks debates. It is crucial to identify the next step in upcycled goods which encompasses raw-materials flow aspires to cradle-to-cradle design. Therefore, identifying the focus of extent in peer-reviewed literature will help determine the subject of focus and pinpoint the additional attention required.

The research attempts to identify upcycle researches that relate to fashion and textile by emphasising human behaviour. This research aims to review the available literature on upcycling fashion and textile.

## 2 Methodology

The process of extracting themes by constructing research questions that related from the number of the article that the previous author focused on upcycle fashion and textile. Two research questions have been developed by abstract screening reading. What are upcycle fashion and textile businesses? and What are upcycle textile product and design strategies in an understanding of consumer behaviour towards upcycling? Based on this research questions come out with three components focusing that related to references. An article that is set in specific criteria by an included article that related to upcycle activity textile and fashion.



**Fig. 1.** Steps in Choosing Research Papers for Literature Review (Pati & Lorusso, 2018) [10]

Through extracting 500 articles from google scholar and Scopus about 57 articles are related to sustainability fashion and textile. Recorded excluded 30 articles in upcycling and recycling in a different field. After screening only nineteen are focusing to upcycle fashion and textile. Based on the scooping process, five articles are related to product and material, ten are described on upcycle design strategies and business, and four are related to upcycle Consumer Behaviours.

The authors selected nineteen upcycle fashion and textile research from 2010 to 2020 from journals in Scopus and Google scholar after a review by Mendeley. The research was analysed to identify the differences and presented in a descriptive study form. Figure 1 shows the steps involved in choosing the right research papers for the literature review.

## 2.1 Descriptive Review Process

The descriptive review process was carried out according to upcycle fashion and textile practices. The review consists of upcycling practices divided into three research components: product, design strategies and business, and consumer behaviour. The research were also classified according to the focus, approach, and output. Table 1 shows the description of the upcycled product, where as Table 2 elaborates on design strategies and businesses, while Table 3 explains upcycle consumer behaviour.

**Table 1.** Description of Upcycle (Product Material)

Author	Focus	Approach	Output
<b>Radhakrishnan (2017) [11]</b>	Development of a roadmap for sustainable denim recycling.	Theoretical review on previous researches and competitive case study	Roadmap for sustainable denim recycling.
<b>Teli, Valia, Kadu et al. (2015) [12]</b>	Upcycling a variety of textile materials from waste and unused fabrics by refurbishing and producing a different product.	Upcycle waste disposal and discarded substances by experimenting them with: Washing, stripping, bleaching dyeing and printing.	Different creative upcycle product from various experiments.
<b>Teli, Valia, Maurya et al. (2015) [13]</b>	Waste reduction and adding value to previously worn textile garments.	Experiment steps involving upcycle garment: Visual test and Quantitative cost analysis	Reflected the impact of a psychological obstacle on consumers' purchasing ability.

*(continued)*

**Table 1.** (continued)

Author	Focus	Approach	Output
<b>Suhartini &amp; Istighfari (2020)</b> [14]	Assess the training's execution.	Descriptive research analysis adopted. Data collection methods Observation and questionnaires	The study found that the training's implementation, the outcomes, trainee response to instructors' and trainees' activities were excellent.
<b>Thorstensson (2011)</b> [15]	Identify the potential of solely selling upcycled textile goods.	Three qualitative interviews with retailers and a producer of upcycled textile goods were used to gather up-to-date theoretical data.	Companies that sell upcycled goods are generally committed to operating as environmentally friendly. Invented waste as fresh and modern is encouraging the sale of upcycled items.

**Table 2.** Description of Upcycle (Design Strategies and business)

Author	Focus	Approach	Output
<b>Ahn &amp; Lee (2018)</b> [9]	In studying upcycling design method, the researchers discovered the importance of material life experience.	A combination of design thinking and qualitative research method through surveys and interviews focused on designers.	In developing the upcycling product design framework, a sustainable conceptual model of continuous product life cycle known as 'Iterative Upcycling Design Process Model' was created.
<b>Han et al. (2015)</b> [16]	To investigate the imaginative ways of upcycling designers in the United Kingdom (UK) repurposing recycled materials for style, value, and the benefits of this process.	Structured interviews and qualitative field trips with leading upcycling experts in the UK were utilised to explore the challenges and solutions further to develop upcycling.	Creating the innovative UK for sustainable development and production strategy addresses textile waste problems besides providing more job opportunities and training within the industry.

(continued)

**Table 2.** (continued)

<b>Author</b>	<b>Focus</b>	<b>Approach</b>	<b>Output</b>
<b>Sung &amp; Cooper (2014) [17]</b>	Understanding the determinants of upcycling critical for developing successful scaling-up strategies to change (i.e. driving and facilitating factors).	The established drivers and facilitators were analysed using the Triantis Theory of Interpersonal Behaviour as a framework (Triantis, 1977).	Despite its partiality, the analysis result indicated potential design and policy consequences from scaling up.
<b>Santulli &amp; Langella (2013) [18]</b>	Innovation and revaluation of productive industries by emphasising locally operating small and medium enterprises (SMEs).	Centred on the incorporation of various know-hows and geared towards promoting the stumbling block in the creative process.	Upcycling resulted in various ways, sizes, and business sectors by adding value to recycled products.
<b>Cuc &amp; Tripa (2018) [19]</b>	The purpose of this project is to investigate the theoretical backgrounds and definitions of sustainability and competitive advantage.	Theoretical review on competitive advantages and sustainability. Case studies.	The waste would be used to create new items. Emphasis on the benefits of adopting this approach.
<b>Paras &amp; Curteza (2018)[7]</b>	Understand the principle of upcycling and frequently used terminologies in the literature.	To choose and analyse a paper, Mayring (2002) proposed a scientific literature review with a protocol that involves the following steps: material selection, descriptive analysis and material evaluation.	The paper explained and defined different terminologies and used in the literature, such as recycling, downcycling, upcycling, and redesigning.
<b>Calvo, Morales, Utrilla, &amp; Martínez (2020) [20]</b>	Designers use the Technological Transformations framework to understand how grassroots improvements can help develop long-term strategies.	Six grassroots activists were featured in a video case study. Organisations from South Africa, Sri Lanka, Malaysia, and Brazil were used in the qualitative research study.	These grassroots innovations played an important part in creating community and innovative recycling businesses that benefit the socio- economic and environmental problems.

(continued)

**Table 2.** (continued)

<b>Author</b>	<b>Focus</b>	<b>Approach</b>	<b>Output</b>
<b>Singh et al. (2019) [9]</b>	Validation of causal loop diagrams.	Reviews studies on participant assessment. Interviews with semi-structured questions. Community model building. Creation of causal loop diagrams.	Identification of potential factors, major challenges, success factors, fundamental framework processes, and intervention strategies for scaling upcycling businesses.
<b>Shim et al. (2018) [21]</b>	Participants in each group were assessed for their attitudes and sustainable garment upcycling based on their familiarity with the upcycling system, ability to exchange knowledge, and level of understanding in the clothing-fibre production process.	These findings' significant implications are an in-depth comprehension of the attendees' behaviour in a comfortable environment through a focus design group (FDG) interview.	Increasing awareness on the outlook and facet of sustainable apparels in households from a psychological perspective.
<b>Janigo et al. (2017) [22]</b>	Gained a better understanding of the motives for the upcycling of clothing. Identify common traits among upcycle practitioner.	A method of combining surveys, in-depth interviews, and visual analysis was used to investigate the upcycling behaviour among 30 women.	Practical consequences for entrepreneurs and those looking to promote sustainable clothing best practices.

**Table 3.** Description of Upcycle (Consumer Behaviour)

<b>Author</b>	<b>Focus</b>	<b>Approach</b>	<b>Output</b>
<b>Marques et al. (2019) [23]</b>	Disseminating information and knowledge about these products in new assembly- oriented product families are required by a more conscious fashion consumer.	Fashion designing process from the upcycling project. Approach taken experimental design process and project outcome.	Fashion design process based on imagination and the mental freedom of the designer.

(continued)

**Table 3.** (continued)

<b>Author</b>	<b>Focus</b>	<b>Approach</b>	<b>Output</b>
<b>Wilson (2010)</b> [24]	Upcycling is a green form of consumer innovation identified and discussed.	Few innovative examples of user upcycling were identified. Various advantages that artistic users might seek after upcycling or buying reused commercially available innovations.	Consumer benefit enhance upcycling aesthetic appeal, conomic saving, environmental benefits and intrinsic enjoyment.
<b>Park &amp; Lin (2020)</b> [25]	Exploration of appropriate strategies on how to bridge intention-behaviour inconsistency.	A poll was conducted among young consumers who remain fashion-conscious, cognisant of their public image, and enjoy instant gratification (Akturan, Tezcan, & Vignolles, 2011).	The study found that there were differences between the antecedents of purchase intention and those of actual purchase.
<b>(Shuangxi, Z, Shaari, 2021)</b> [26]	The concept of the knowledge, awareness, and participant of supply chain players will be critical	Identify a total of 1379 usable articles published during 2000 to 2020 from WoS and Scopus through a bibliometric analysis	Consumer awareness can help the fashion apparel industry to achieve sustainability in the whole supply chain for the circular economy.

### 3 Result

Selected studies were thoroughly evaluated and analysed. The review concentrated on specific studies that provided answers to existing questions. The information was gathered by reading the abstracts and then comprehensively studying full articles in-depth to define subthemes of the subject studied. The authors identified topics related to upcycling. A qualitative analysis was organized by word frequency with specialization by using NVIVO. The authors then grouped the identified sub-topics by grouping them according to typology- driven themes. Figure 2, Fig. 3 and Fig. 4 enlists the themes by typology according to the research components.





## 5 Conclusion

The importance of upcycling in the fashion business and textile industry has been highlighted in this comprehensive review. Consequently, a variety of adaptations on upcycling textile and fashion practices have been employed. The authors identified three criteria adapted in upcycle fashion and textile industry: upcycle product material, upcycle design strategies and business, and upcycle consumer behaviour based on descriptive reviews. In conclusion through the current investigation the latest scenario in upcycling fashion and textile literature. Articles focus on suitable textiles from waste and unused fabrics by refurbishing and producing different products. These also can define as the potential of solely selling upcycle textile products. Besides that, upcycle strategy can be concluded that focusing on a successful scaling-up strategy by adding value to upcycle product. It also helped to define characteristic upcycle consumers by looking at environmental consciousness and green buying behaviour.

The authors made several suggestions for future research. More qualitative studies are required in this field as detailed explanations and in-depth analysis on the upcycling business model are needed. Future researchers should explore upcycle practitioners' perspectives about upcycling fashion and the textile industry. Second, in the context of upcycling fashion and textile, practising reference searching, free form of citation tracking, and snowballing are examples of search methods.

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