



# Transformational Economic Growth in Textile and Fashion Rental Industry: A SME Case Study of Using Industry 4.0 (Big Data And AI) Lead Initiatives in Shared Economy

**Kubiat Patrick Umoren\***

*Department of Fashion & Textile Engineering, USA*

**\*Corresponding author:** Kubiat Patrick Umoren, Department of Fashion & Textile Engineering, USA

**Received:**  March 17, 2022

**Published:**  April 11, 2022

## Abstract

The influence of industry 4.0 have branched to the core of every circular sector including textile and fashion, even-though the trend is constantly shifting in the fashion industry, the idea of consumers and manufactures responsibility check to man-made activities contribution to environmental waste is in huge debate. Regardless, of who takes the blames on fast fashion or planned obsolescence products, certain entities have started taking advantages of industry 4.0 in product designing and product lifespan extension to contribute to environmental sustainability. Willingly or otherwise, the idea of resource conservation does not only apply to the environmental sustainability solely but also to managerial decision making and investment profitability. Many surveys have pointed out how industry 4.0 empowered consumers through accessibility, which then materialized to open market source, from business to consumer interaction platform with aid from AI and Big Data. Nevertheless, the new wave of social media entrepreneur and philanthropies are changing the perspective of how fashion accessibility in the community can restructures a subset of the industry if given a change. The article is particularly focus on how transitioning to Industry 4.0 promotes circular product lifetimes M Ertz et al. [1] in relation to textile-fashion industry, how community led outreach concepts like that of Rent-The-Runway, Liquidity services, Green-closet, Style Theory etc., can provide economic sustainability and empower secondary market. This shared economic platform emergence is promoting consumer experience through self-sustainable accountability, style, practical and affordable options and is also encouraging second hand social buying experience.

## Introduction

The main objective of this case study is to highlight the benefits of industry 4.0 in rental fashion industry achievement of environmental sustainability or sustainable industry [2]. Although many fashion producing companies have been active in using the green initiatives in their production as a good source of waste control, few attentions are paid to this type of circular economy business practice model. The idea of using these technics across social buying platform like that of shared economy propagated by Run-my-runway and liquidation.com-liquidity service have aid in the project lifecycle/lifetime extension. This online software algorithm is pioneering a new look to Business Model-PLEBM activities, these activities gain more popularity through community contributions and consumer experiences [3]. This research is a continuation to How transitioning to Industry 4.0 promotes circular product lifetimes [1] and is also a highlighted example of The Impact of Exploiting Big Data and New Technologies for Extending the Product/Project Life-cycle in any sector including future adaptation in healthcare [3]. Although the general aim is for waste management solution, adoption of the fashion rental services

can provide sustainability of natural resource [4,5], this can also be a good source of job creation and financial contribution for circular economy [6]. The article shows numerous advantages how shared economy can enrich circular economy when managerial or leadership competency meets clients' needs in conjunction with new technologies [7]. Share Economy. Rental fashion industry. Small Medium Entrepreneur-SME. Secondary Products. Upcycling

## Objective(s)

This study draws comparisons from traditional clothing organizations and the immersing new rental clothing industry, the main intension is to emphasize the contributions of the modern platform usage such as Big data or Artificial and its influence in achieving rapid economic change [8] in the textile and fashion industry. The research problem initially focusses on environmental waste management incurred by the fashion industry, even with its large economic influence, the problem of fast fashion just keeps increasing, despite effort from policy makers to increase tariffs on productions and the call for consumer behavior modification to waste [9]. The core objective of this research is to see how

new initiatives and SME are tackling the situation differently, the approaches they generally agreed on considering most of the companies operate in different industry 4.0 components [5,10]. The common objective is to engage consumers directly, rather than create additional barriers or third-party system like the traditional linear economic entities [11].

## Methods

The research was to understand how Big Data and AI could be used in circular economy contribution and how this contribution leads/or relates to environmental sustainability. Empirical data was used to review the relationship between industry 4.0 (Big Data, AI), community involvement and managerial decision making. The aim was to describe the characteristics of Product Lifecycle/lifespan Extension Business Model-PLEBM activities using M Ertz, K Patrick [3] model and determined which activities are implemented more in the rental fashion initiatives. Nevertheless, during the conduction of this research an understanding to the factors that contributed to social environmental influences were emphasized as a new criterial empowering sustainability. Qualitative data was collected to express the characteristics of the PLEBM activities and interviews conducted with small medium size Entrepreneur -SME initiating the rental fashion industry. Statistical software analyzed the data and the method used was pairing PLEBM activities to differentiate occurrence in usage. These activities were categorized in hierarchy to identify recurring themes and patterns, furthermore these PLEBM activities were cross-checked with different demographics (age, gender, maternity, and special events) to analyzed which age group category patronized the rental fashion industry the most.

This method was chosen mainly to show the connection of industry 4.0 to different demographics and evaluate if age had a role to play in environmental sustainability and consumer shopping behaviors. Focusing on quantitative data alone would have helped this study with consumer experience analysis but relying on just surveys was not sufficient to showcase the business model. A collective workspace for the shared economy such as this case study of rental fashion industry might still be gaining its popularity but, looking at its rapid profit margin and increasing entrepreneur involvement in this sector it is certain that rental fashion can become even larger in the next decade [12]. Measurement of project

satisfaction using fundamental criteria (time, cost, and quality) is still a challenge because SME platforms are one of the only places to find consumer reviews. Another concern this new industry might be facing is the interference of linear economy influences on consumer experience by creating their own version of rental fashion initiatives [6,11].

## Research methodology

Business Model in this article answers the question of how small and medium-sized fashion entrepreneurs -SME contribute to the reconfiguration of merchant exchange by using some of the activities of Project Lifetime Extension Business Model-PLEBM [3]. To address the fashion industry waste pollution, comparisons of the PLEBM described by M Ertz, K Patrick [3] was used to see how the social environmental motivated initiative had contributed to resource conservation despite the short time the movements were founded. The end goal for these initiatives is for business to consumer-B2C or consumer to consumer-C2C end stage consumption [13]. The key partners that have mostly influence this change are the community (individuals, project initiators, investors) and project managers serving with effective communication channels, networking system through social media and advance technological applications [11]. The proper storage channels or store to preserve essential apparels is still in its infancy stage making it an advantage and disadvantage at the same time. Distribution channel are either through mails services or few physical locations in major cities (Figure 1). The chart illustrates representations of rental clothing industry activities, textile, fashion recycling industry performance PLEBM with technologies and social platforms aid. Majority of these activities can be said to complement PLE processes according to [3]. Maintenance: Most ripped or stains, tears get repaired as a complementary package from membership fee charged by the companies. The maintenance aspect of the business model is proprietary system responsibility, in some case most companies developed special cleaning solutions use in-house. Special event clothing's like wedding dress and men's suits or tuxedo have monthly discount and accompanies higher insurance coverage should in-case something happens to the apparel [14].

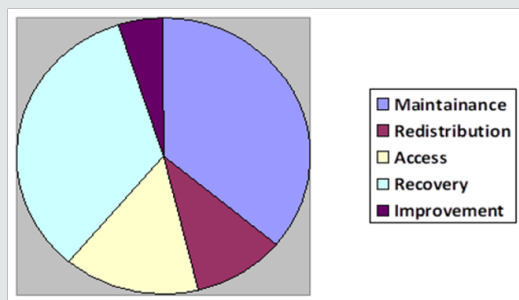


Figure 1: Representation of textile recycling industry and rental clothing industry activities performance PLE chart.

## Recovery

The systems operate on customized identification technology that can locate items even if it gets missing, damage or destroyed. This technology is also in use at the storage facilities to locate clothing items. Should consumers decide that they like the clothing items and want to keep them [11], there are options for ownership and the facility stops tracking the items. Redistribution: Some items seldom come back non repairable from consumers, in this situation these clothing items are pulled from the catalog and most of them gets donate out depending on if they can undergo in-house

## Access

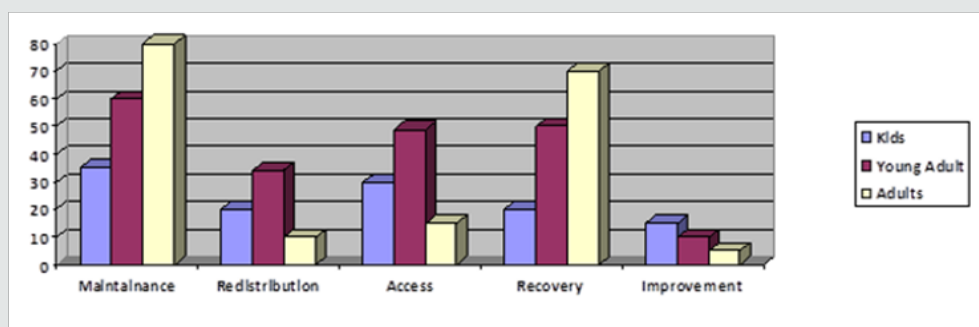


Figure 2: Age category in textile recycling industry and rental clothing industry activities performance PLE chart.

Availability of clothing items depend on clothing budget and the types of clothes that is typically worn. Access can eventually become the new ownership and the ability to have freedom without the burden of proprietorship [7]. As the demands for these services increase so does the options that covers different consumer demographics e.g., maternity options, children of all age groups etc. The gradual shift from traditional retail fashion lifestyle to an AI experience motivated fashion lifestyle might help showcase independent designers, sustainable designers, local and cheaper brand rather than high end brands [6]. Improvement: Product redesign and improvement plays little role in this sector due to the added cost of employing another professional for upcycling. Majority of the companies dedicate special provisions to bring new life and creativity into garment pieces for resale and trade in. Product improvement favors C2C section [3] and individuals that are exchanging their closets with other consumers. Upcycle garments are mainly specialty and custom apparel supported by designers or large manufacturers, so improvements depend on quality, color, the size, style of clothing available and the type of project including the level of effort for a reuse/improve piece of garment (Figure 2).

## Results

Collaborative initiatives contribute to merchandise exchange and consumer experience through networking, these exchanges encourage textile product lifespan extension and aid Eco-friendly attribute by consumers [6]. The cultural shift to technological advancement in this sector is rapid and it uses social media

refurbishing or deconstruct clothes for upcycling [6]. Renting ranges from one piece for a few days for special occasions to several pieces, some number of pieces for a month or a few months, and other SME operate more like a library where clothing items can be trade in or extended depending on the consumer [9]. Some clothing rental companies have a physical store that are accessible for consumers who prefer the thrill of trying the clothes before buying or are not certain of clothing sizes and comfortability. Newer apps and sites now offer consumers the opportunity to rent their closets and clothes to/from other consumers as needed [7].

specialized applications such as AI to reach variety of consumers. The current projectile of the business model show transactions are 99% correspondents online, emails, phone. Traditional retails and high-end fashion companies have broadened their interest, and now participating in the fashion rental business process, maximizing profit and sales through discounted secondhand returned products resale [15] (Figure 3). A collective approach to environmental sustainability pointed out by rental fashion initiators attributes it influences to the following factors: new technology, Community involvements and competent managerial decision making with emphasis on consumers centered business model. The modulators to Environmental sustainability or social change relies on community needs, economic improvement, and financial dependency [6]. Although managerial activities and decisions during rental fashion industry initiatives underwent reevaluation from the usual norm, project initiators including consumers (investors, communities) harness technology as a tool for shared economy [3]. When Online software algorithm is use as a necessary tool for change creation, it requires an effort and competency from managers (project initiators) to turn it to result acquisition. Acquisitions in this case would be creation and learning how to use this new tool to service specific demographics. The value of a community is it ability or will to adjust to change [8]. If the desired end goal is sustainability, the combination of consumers experiences and tactical managerial decision making creates a transactional fix. Regardless of duration (long-term or short term) exchange or interaction in circular economy still influences social evolution [13]. The ideal of catering for consumer

experience rather than project centered services is achievable with consumers (community) participation using the new technology (AI, Big Data) in driving the new venture. Participation goes both

ways, by using the result from the tools (influencer) and change determinant (value) in combination with other elements to acquire environmental sustainability.

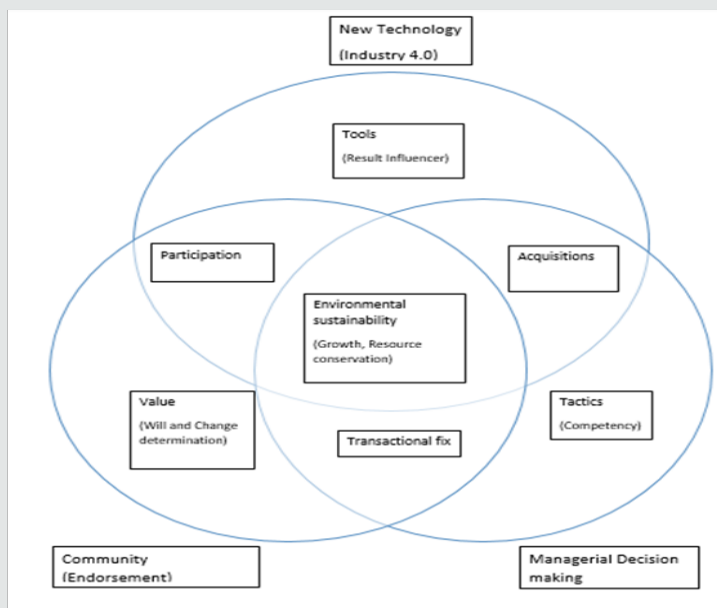


Figure 3: Social environmentally influenced chart for Textile and Fashion rental activities.

## Discussion

The research problem initially focuses on environmental waste management incurred by the fashion industry. This study illustrates how consumer behavior and experiences to waste management is modifying with help of industry 4.0 and good managerial decision making. The research result indicate that certain factors influence consumers behaviors in rental clothes fashion industry and this criterial have a directly coloration with the PLEBM activities and the three key fundamental satisfaction of business (time, cost, and quality) [6]. The result from this study means a new focus research should be conducted to understanding these criterial more in-depth. These factors will contribute to answering the research questions, thus the social environmentally influenced chart for Textile and Fashion rental activities in Fig. 3 can have some approaches to interpreting the data, identifying the correlations, patterns, and relationships among consumer behaviors to environmental waste management. Although the results met the expectations and supports the hypothesis, the implications for not fully understanding consumer buying behaviors in the fashion industry can hinder complete or overall knowledge of industry 4.0 influences in the economy. The existing knowledge of the impact of industry 4.0 in the economy is substantial in some fields like engineering and automaton, the fashion industry could benefit from sizable research contribution as well [4].

The limitations to the research design were the lack of anticipated obstacles in wide-range consumers reviews while using rental fashion garments. The result to this study does answer the

question of industry 4.0 influence in circular economy and validate the purpose of the research. Nonetheless, it is beyond the scope of the study to address the question of fashion producing enterprise practices and consumer behaviors to fashion waste management. Further research is required to establish whether the social environmentally influenced on Textile and Fashion rental activities are factors that can affect consumer behavioral pattern in waste management contributions. The combination of qualitative and quantitative study to further investigate the proposed model across diverse cultures is needed.

## Conclusion

Project Lifetime Extension Business Model usage in the rental fashion industry can reshape how SME function and explore project initiatives that benefit social economy. The call to change the current method of functional operation in the fashion industry might be extremely bold to request but, looking at the Long-term benefit on social construct it is apparent that technology will have an inevitable ascendancy if use appropriately (M. Ertz, et al, 2022). This paper has developed insights into how certain factors influences environmental sustainability with the help of industry 4.0 and as a driver to circular economic growth and new business model innovation. The paper also offers an important extension to the limited extant literature on rental fashion industry as a shared economic. The application of this business model across the fashion industry might not be profitable for big brand names, but the added advantage for SME is enamors providing feasibility to the newly untapped industry. The paper offers interesting template



for social environmentally influenced on Textile and Fashion rental activities which in conjunction with PLE business models can drive sufficiency and achieve success in environmental sustainability. The model can perhaps offer a blueprint for future research into consumer behavior in rental fashion industry and its advantages in circular economy. This research was limited on information from direct consumer review and few cases globally. This might limit generalizability to wider contexts, but it provides a positive base for further exploration of this emerging area. Further work is necessary to develop the concept of shared economy with industry 4.0 influence as a key indicator for Product lifecycle/lifespan business model extension. The distinctions between consumers rental clothing culture and societal interaction are an important key to understanding circular economy profitability, clothing consumption behavior to waste management and the quest for environmental sustainability. Increasing shared economic practice through industry 4.0 might be the instigator for complete transition into circular economy.

## References

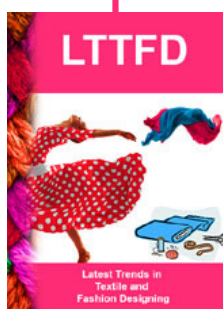
1. M Ertz (2022) How transitioning to Industry 4.0 promotes circular product lifetimes. *Industrial Marketing Management* 101: 125-140.
2. M Ertz (2021) Augmented Products: The Contribution of Industry 4.0 to Sustainable Consumption. *Marketing for Sustainable Development: Rethinking Consumption Models* 1(14): 261-282.
3. M Ertz, K Patrick (2020) The future of sustainable healthcare: Extending product lifecycles. *Resources, Conservation and Recycling* 153: 104589.
4. R LeBlanc (2020) The Basics of Textile Recycling Growth of Textile Recycling Promises to Divert More Material from Landfills.
5. Environmental Protection Agency (2020) *Advancing Sustainable Materials Management* p. 8.
6. EA Elnashar (2021) Economic Aspects to Stakeholders of Education Institutions Between Fashion Design of Seamless Clothes. *Trends in Textile & Fash Design* 4(3): LTTFD.MS.ID.000187.
7. IG Klepp, K Laitala (2018) Shared use and owning of clothes: borrow, steal, or inherit.
8. G Santos (2018) SA 8000 as a Tool for a Sustainable Development Strategy. *Corporate Social Responsibility and Environmental Management* 25: 95-105.
9. P Morganti (2021) The New Renaissance of Beauty and Wellness Through the Green Economy. *Trends in Textile & Fash Design* 4(2): LTTFD.MS.ID.000185.
10. A Huber (2022) Does Sharing with Neighbours Work? Accounts of Success and Failure from Two German Housing Experimentations, *Housing, Theory and Society*.
11. G Santos (2018) Fashion and Sustainability. *Trends in Textile & Fash Design* 3(1): LTTFD.MS.ID.000155.
12. DE Uitdenbogerd (1998) Domestic energy saving potentials for food and textiles: An empirical study. Wageningen: Wageningen Agricultural University, Household and Consumer Studies.
13. K Fletcher, L Grose (2012) *Fashion and sustainability: Design for change*. Laurence King, London, UK.
14. M Collins, S Aumônier (2002) Streamlined life cycle assessment of two Marks & Spencers plc apparel products. *Environmental resources management*, Oxford, USA.
15. Secondary Materials and Recycled Textiles Association (2020) *Frequently Asked Questions*. Select How Are Textiles Recycled?



This work is licensed under Creative Commons Attribution 4.0 License

To Submit Your Article Click Here: [Submit Article](#)

DOI: [10.32474/LTTFD.2022.05.000200](https://doi.org/10.32474/LTTFD.2022.05.000200)



### Latest Trends in Textile and Fashion Designing

#### Assets of Publishing with us

- Global archiving of articles
- Immediate, unrestricted online access
- Rigorous Peer Review Process
- Authors Retain Copyrights
- Unique DOI for all articles