THE POTENTIALS OF VALUE MAPPING TOOL IN ASSISTING COMPANIES IN TRANSITION TOWARDS CIRCULAR ECONOMY

A case study from fashion industry

By
Ayşe Ökten
MA Management
Master Thesis

YEDİTEPE ÜNİVERSİTESİ
YAYINEVİ

THE POTENTIALS OF VALUE MAPPING TOOL IN ASSISTING COMPANIES IN TRANSITION TOWARDS CIRCULAR ECONOMY

A case study from fashion industry

by
Ayşe Ökten
Karlshochschule International University: H17112-014
Master of Arts
in Management Studies

Supervisor: Prof. Dr. André Reichel

Date of Submission: February 27, 2019

Module: WS18.202.4.3 MAST
Thesis Research Project Submitted by Ayşe Ökten
Place: Karlsruhe

Cover Image: "Dress made up from green vegetables",
retrieved from (https://remake.world/wp-content/uploads/2018/06/ desktop-photo.jpg)

YEDİTEPE ÜNİVERSİTESİ
YAYINEVİ

Yeditepe University Press: 45
The Potentials of Value Mapping Tool in Assisting Companies
in Transition Towards Circular Economy

ISBN: 978-975-307-108-6
Publishing Date: January 2021

Yeditepe University Press
Yeditepe University
Inonu Mah. Kayisdagi Cad. 326A 26 Agustos Yerlesimi 34755
Atasehir – Istanbul/TURKEY
Ph. 0090 216 578 00 00 / 37 16
Certificate number: 41307

Editor: Özge Özgür
Cover and Page Design: Savaş Yıldırım

INDEX

ACKNOWLEDGEMENT

This Thesis research represents the final work for the fulfilment of the Master of Arts at Karlshochschule University. The research and finishing this thesis cannot be achieved without the help of those who were involved.

First, I would like to thank my supervisor Prof.Dr. Andre Reichel for his supportive attitude starting from the beginning, during the decision on the topic; through the registration process and after, for willingly helping me with my journey in the Circular Economy, with his valuable feedbacks;

Second, General Manager of ERA Mr. Romain Narcy and his lovely team, without their help this research cannot be achieved;

Furthermore, I would like to thank my manager PhD.Cédrick Rochet for his comments and thoughtful feedbacks to finalize my work;

Last, not least, my special thanks to my family and friends, who supported me with their positive energy, interest and comments.

Ayşe Ökten

INDEX OF ABBREVIATIONS

BM	Business Model
BMC	Business Model Canvas
B2B	Business-to-Business
B2C	Business-to-Customer
CBM	Circular Business Models
EWH	European Waste Hierarchy
GM	General Manager
LCA	Life Cycle Assessment
MLP	Multi Level Perspective
PSS	Product Service System
RND	Research and Development
RSW	Ratio Scale Weighting
SPT	Social Practice Theory
UNCC	United Nations Climate Change
VMT	Value Mapping Tool
WFH	Work From Home

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

As the circular economy is gaining attention increasingly around the world the pressure over unsustainable industries intensifies. The fashion industry is one of them to be highly resource consuming and toxic. The new practices of circular economy concept create winds of change and uncertainties in the fashion industry which makes hard to adapt especially for the incumbent mainstream firms. The manufacturing companies use several approaches as recycled fabrics, eco-friendly agents, as a first attempt and they have projects for renewable energy use, where they face financial constraints as well as legal limitations depending on the legislative and regulatory system of the country. Their brought up solutions are limited compared to their potential due to the lack of demand from the retailer end. Thus, their business model innovation is slower and incremental towards sustainability. There are few tools developed to offer help to established companies for sustainable business model innovation. This paper is based on a novel practice of applying Value Mapping Tool via workshop. The gap between empirical findings and the desired progress around the normative imperatives towards a system level change is highlighted and tried to bring a complementary approach by introducing cross evaluation criteria and a weighted index to be used in connection with Value Mapping Tool. The thesis extends knowledge on the understanding the empirical findings under the light of Multi-Level Perspective and underlined the link between Social Practice theory and Cultural Turns. Furthermore, the workshop observations suggested a redesign of the graphic expression of the Value Mapping Tool to reflect business model innovation dynamics in accordance with the arguments in this paper and a medium in transferring the information to the new developed weighted index to be more revealing when evaluated together.

Keywords: Circular Economy, Business model innovation, Value Mapping Tool, Indexing, Value creation, Fashion industry

1. INTRODUCTION

1.1 BACKGROUND

Since the industrial revolution, development has been defined by exponential economic growth where, as humans acquired understanding, this growth concept has been recognized to come to an end, considering the world's non-renewable resources will not be able to support this amount of consumption with the traditional linear "take-make-dispose" model in the long run. In view of the world's growing population, the resources of our ecosystem need to be preserved for the future. Therefore, the concept of sustainability that has gained momentum is often defined as "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (*Our common future*, 1987) As a matter of fact, rather than being understood as a point of equilibrium, the idea should be seen as a dynamic, open-ended social process through which the business world need to organize their activities, and the ways they do business.

However, we know that in today's economic climate, the industries have their business model set according to the linear model and albeit the gravity that circular economy gained in the recent years, most of them have trouble in transforming to the new circular system. Business model as a concept, defined by (Osterwalder & Pigneur, 2010, p. 14) as, "the rationale of how an organization creates, delivers, and captures value". (Schaltegger, Lüdeke-Freund, & Hansen, 2011) introduced another parameter to be economically sustainable as a prerequisite for sustainable businesses. The idea later evolved as Circular Business Models (CBM) by tagging on social, environmental and economic benefits as well (Boons & Lüdeke-Freund, 2012)

Especially for the fashion industry the need to transform has been recognized and it is becoming more visible each day that the market

leaders, big brands are getting together towards being sustainable such as, the Fashion Industry Charter that has been signed recently, between the fashion industry leaders under sponsorship of UNCC with a vision of net zero emissions by 2050 ("About the Fashion Industry Charter for Climate Action | UNFCCC," n.d.).

In the quest of configuring new and better ways of conducting business, established companies need to re-design their business models around sustainability principles. The business model concept progressed to act as a medium to redesign the value aspects of the company or to share their knowledge and entrepreneurial skills advantageously (Christensen & Raynor, 2003) and depicted as a frame called 'business model canvas' which was developed by Osterwalder and Pigneur (Osterwalder & Tucci, 2005) later developed by several authors to reflect the changes in the concepts in the economy.

A far-reaching transformation like the circular economy in industry and society can be explained best by the Multi-Level Perspective (MLP) theory of (Geels, 2002) (Geels, 2011)and Social Practice theory (SPT) as applied to sustainability by (Shove, 2010), also by addressing collaboration needs by Collaborative theory (Hurwitz & Adair, 2014).

This paper tries to explore the potentials of a conceptual tool when applied to a fashion business-to-business (B2B) company and to formulate a framework both to evaluate new circular business model and for the workshop to be handled.

1.2.CONTRIBUTIONS

The developed Value Mapping Tool (VMT) will help firms aiming to adopt sustainability principles on the way to being circular. The development is a re-interpretation of VMT based on the system archetype patterns theory (Kim, 1993); circularity ladder concept (OECD Environment Directorate & Environment Policy Committee, 2018) and (Nan-

cy Bocken, De Pauw, Bakker, & Grinten, 2016) by using Ratio Scale Weighting Method (RSW) (Chabuk, Al-Ansari, Hussain, Knutsson, & Pusch, 2017) to be a more inclusive and reinforced tool. In addition, the graphic of the tool is modified according to the needs of the workshop to be followed in its ideal structure, based on arguments of this paper.

The transition towards the circular economy has the ultimate aim of reducing the impact of production and consumption activities on our planet and resources in principal. According to Bocken, slowing down the consumption is an important instrument to take the pressure off from resources; however, it is not yet among the targets of the circular economy (Kraaijenhagen, van Oppen, & Bocken, 2016). There are many types of circular business activities that are claimed to serve this purpose but it is not easy to evaluate their differences in terms of environmental and system changing impact. Though it is a complex task, in its simplest form a scaling and weighing method is developed to be used as complementary to VMT to help enterprises in evaluating their options while selecting business practices to adopt, in relation with their current status.

1.3 RESEARCH GAP AND THE RESEARCH QUESTION

From the linear perspective and the purpose of the businesses, making a profit is the main drive. Therefore apart from the novel value of implementing sustainability to their business, companies should find more to do so, just like cost reduction in their inputs for their processes or expanding their playground to increase their market share, or avoiding negative externalities like price risks of extracting resources and growing regulatory pressures. More importantly, to protect their territory against new entrants' threat whose infrastructure and value process network designed according to the new needs of the circular economy, which are fundamentally disparate when compared to the current linear economy. Any transition period, though they have the necessary capabilities, can

be problematic for the incumbent companies due to the paralyzing effect of disruption (King & Baatartogtokh, 2015) The economic historical records are full of examples for failures of incumbent companies when their business segment was invaded by disruptive innovations and they were too late to react (Christensen, 2003) The fashion/Apparel Industry is now in such transition phase.

To help companies in integrating a new sustainable way of doing business few tools have been developed and "Value Mapping Tool" is one of them developed by (Bocken, Short, Evans, & Rana, 2013) to assist firms to create sustainable value propositions to lead them in forming their Circular Business Model (CBM). In this study the VMT has been used in a company, representing the ring between resource and retailers in the supply chain of the clothing industry, to inspire them in carrying their steps forward, towards closing or slowing the loops.

So this paper offers insights to the following research question, "What are the potentials of value mapping tool in assisting companies in a transition towards circular economy?"

1.4 RESEARCH OBJECTIVES AND RESEARCH CONTEXT

The purpose of this thesis is threefold. First, it aims to provide an angle of view to a manufacturing B2B company in configuring their circular business model with respect to their place in the value chain. Second, it aims to develop a deeper understanding of circular business practices and how they function within the circular business model canvas (BMC). Furthermore, it is important to show the technical convenience of new business models and methods to the entrepreneurs, investors, and incumbent companies by providing real-life examples through the application of VMT which will also complement the piled empirical data (Kok, Wurpel, & Ten Wolde, 2013). Lastly, it aims to explore the possibility to develop the potential of the Value Mapping Tool by re-designing it and

introducing an additional parameter, as the contribution of this thesis.

This thesis focuses on the fashion/apparel industry that is known to operate in a linear model thus is being criticized for the consequences of fast fashion practice, associated with continuous disposal as landfills. Since in the projected future materials will be maintained at its highest value as long as possible, the circular economy would form a contrast with fast fashion trends and therefore for the incumbents, a target as such appears the most difficult to pursue (Bocken, Miller, Weissbrod, Holgado, & Evans, 2018).

ERA is the case company of this research, a manufacturer at the design/make/trim phase of the value chain concentrated mostly on denim and washed woven sportswear. ERA is chosen for this study because they were on the press release with their ongoing activities towards the circular economy. The company's integration to circular economy practices is analyzed on a strategic level and circular economy concepts on an academic level as well as the manifestation of their circular strategy to real life via BMC.

1.5 RESEARCH SUB-QUESTIONS

The transition process towards being circular involves adopting innovative practices and these are expected to manifest themselves in companies' business models, to change the ways they earn money from, as well as their inner processes. According to the new circular perspective, these changes are shaped around 'the value' concept and can have system-level disruptive qualities with the potential to change the industry.

Then, the first question explores an insight for, the tendency of adopting incremental innovations versus disruptive business model innovations; the second question seeks the concerns of incumbent companies about the innovations they want to make, lastly, how VMT calls attention to the ways circular value is created for diverse stakeholders of the

firm and how different interests are accommodated;

In conclusion, this study is based on the application of Value Mapping Tool to reveal its impact in spotting the company's position in this transition, to discover its potentials and create awareness about the areas open to progress, while at the same time trying to search the answers for the sub-questions.

2. METHODOLOGY

2.1 RESEARCH STRATEGY

This research is an in-depth qualitative case study of business model innovation in an apparel/textile manufacturing company using the data provided via a semi-structured interview with the general manager and observations and comments of the technical white-collar staff, are used for assessment. The interview has been held by the General Manager of the company to review the projects and experiences of the company in this field so far as well as their plans.

Currently, operating firms facing the need to adapt their business models to the new sustainability concepts. For that, they need to understand their operation ground and their purpose in terms of value. Bocken's VMT and BMC model are used to explore opportunities with stakeholders and to analyze the company's business interactions, as well as business model (BM) innovation potentials towards their new value proposing business model (Nancy Bocken et al., 2013) By this way they will be able to see the value opportunities, value destroyed, value captured and value missed areas. The workshop activity type in accordance with Bocken's method was mainly brainstorming. However, in ERA's case, support by a creativity method was needed because the attendees' vision was framed with technical and financial realities specific for their firm and industry, and to overcome this mindset, a creativity activity (6-3-5 technique) for idea clustering with white-collar staff has been used during the workshop.

2.2 RESEARCH PROCESS AND DATA COLLECTION

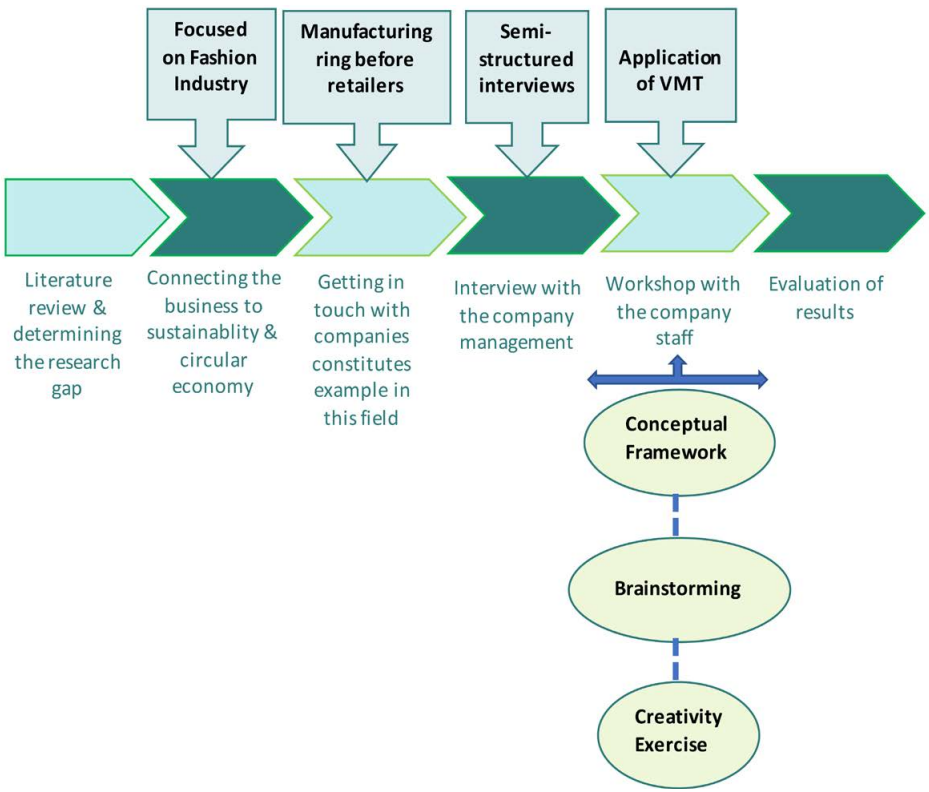


Figure 1- The schema of the research process

A schematic design of the workshop, in particular, is enclosed in Appendix B.

A semi-structured interview held by the General Manager of the Company. The transcript is added as Appendix A.

A short presentation on the circular economy was given to provide familiarity, and the focus of the workshop was clarified.

Using Eco-Asit method the problems of fashion/apparel sector is identified as a warm-up

Stakeholders of ERA identified

The participants are divided into small groups of 2-3 to represent the stakeholders of the company. They are expected to generate ideas from the stakeholder perspective they represent.

A facilitated brainstorming is made to reveal Value Captured, Value Missed, Value Destroyed of ERA. The outcomes are enclosed as table Appendix D

For identifying New Value Proposition opportunities a creativity technique has been applied in two groups and the emerging ideas have been collected. The results are included in Appendix C

Table I	List of workshop participants	
1.	Romain Narcy	GM
2.	Eylem Temizkan	Assistant GM
3.	Gamze Cetin	Assistant GM
4.	Seda Korkmaz	Domestic Sales Manager
5.	Aydem Gulener	Export Manager
6.	Eda Erel	Fabric Procurement
7.	Ertan Erol	Fabric Procurement
8.	Fatih Yilmaz	Procurement
9.	Hatice Caliskan	Procurement
10.	Ufuk Baski	Procurement
11.	Cansu Metin	Junior Customer Representative
12.	Sevil Onyuru	Senior Customer Representative
13.	Beril Karabiyik	Design
14.	Aytul Kalkan	HR Representative

Table 1- Workshop-List of attendees and their positions

3. EXPLORING THE RESEARCH DOMAIN AND LITERATURE REVIEW

In this paper Value Mapping Tool will be used to investigate the current status of the firm and to find innovative ways to modify the case company's business model with respect to circular business practices, as such preferably having a potential to make a systemic impact.

3.1. CIRCULAR ECONOMY

As an alternative to the linear economy, a circular economy points an economic growth through circular business models. In the 70s, the concept sketched by Walter Stahel, basically aiming the use of resources repeatedly to create value without being limited by the end of product life, defined as,

Industrial economy that is restorative by intention; aims to rely on renewable energy; minimizes, tracks, and hopefully eliminates the use of toxic chemicals; and eradicates waste through careful design. The term goes beyond the mechanics of production and consumption of goods and services in the areas that it seeks to redefine […]. The concept of the circular economy is grounded in the study of real-world non-linear, particularly living systems" (Ellen MacArthur Foundation, 2013, p. 22)

This restorative industrial system where the waste of one system is the input of another; is also in accordance with the idea of de-coupling of growth and resources. (Vos et al., n.d.) By this way, economic growth could continue without harming the environment or depleting resources.

Referring to these input cycles as 'economy in loops', Braungart, McDonough, & Bollinger (2007) brought the term cradle-to-cradle as a contraindication of cradle-to-grave, recommending to close the loops in a process, so that the resources will be recovered by recycling or by re-

using as an input of some other production. Later Bocken as well named three loops (1) closing loops (2) slowing loops and (3) narrowing loops as means towards circular economy (Bocken, De Pauw, Bakker, & Grinten, 2016), based on Stahel's loops, where (1) reuse of goods was about extended utilization period and (2) recycling of materials where waste is recycled to be used as resource and so closing the loop (Stahel, 1994). Slowing loops is also considered as an alternative option in resource efficiency since it involves product-life extension and intensification by reusing, repairing or remanufacturing which will eventually decelerate the resource flow. In addition to these there are Life cycle effects that occurs from sourcing to disposal and system effects that have wider impacts on the system strategies (Kraaijenhagen, Van Oppen, & Bocken, 2016) (Nancy Bocken, Miller, & Evans, 2016) On the other hand the direct aim of narrowing loops is not about flow of the resources as it is in slowing or closing the loops, instead it is only about using fewer resources per product and being efficient (Bocken et al., 2016).

(Ellen MacArthur Foundation, 2013) has summarized the same basic understanding around three principles as follows: (1) design out waste and pollution, (2) keep products and materials in use, and (3) think in systems and regenerate natural systems.

System thinking requires all actors, businesses, people, organisms are part of a complex network linked in a very strong way which the consequences of the actions of one actor impact the others in unexpected ways ("EllenMacArthurFoundation," 2015) The aim of the circular economy should be to create a system allowing long life, optimal reuse, refurbishment, remanufacturing and recycling of products while reducing virgin resource use and produce less waste ("EllenMacArthurFoundation_IntelligentAssets," 2016)

Below in Figure 2, the way how circular economy works inflows have been illustrated by the Ellen MacArthur Foundation. The foundation has

been established in 2010 with the aim of accelerating the transition to a circular economy and since then they perform as a global thought leader by influencing decision-makers in government, industries and academic world. The figure consists of two horizontal zones where left side shows Renewables Flow Management and right side Stock Management and three vertical zones addressing three principles of a circular economy as; balancing finite resources vs renewable resources, optimizing the use of resources at their highest utility, maintaining effectiveness and efficiency in the resource recovery systems.

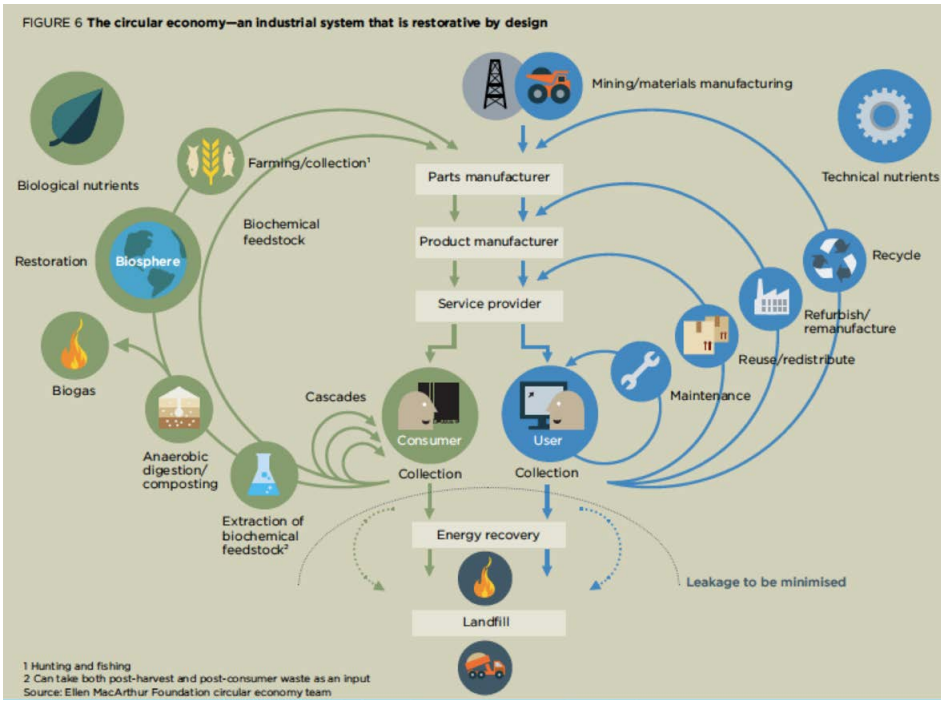


Figure 2-The Ellen MacArthur Foundation Circular Economy 'Butterfly'diagram (Ellen MacArthur Foundation, 2013, p. 24)

3.1.1 Challenges of the circular economy

Closing loops at various levels
Creating financial, social and other values,
Developing new design technologies
Shared responsibility producers, consumers, governments
Creating broad and global support
Decoupling economic growth from environmental impacts
Transition towards renewable energy (Lansink, 2018a, p. 2)

According to (Lansink, n.d.) the transition to the circular economy takes time and determination. Lansink defends the idea that economic growth is dependent on to the growth in production and consumption therefore a model of a never-ending turnover of resources ignores the natural laws of thermodynamics, as it was suggested in Cradle to Cradle which is just a mythical concept, where green growth appears as a wishful notion either, since closing cycles costs energy, proportional to the quantity of matter in the chain. Closing cycles is a necessary condition for sustainability but not sufficient, limiting production and consumption volumes is also necessary though it is difficult.

3.1.2 Implications of the circular economy

The scope of the circular economy is wide to cover all actors with different interests at all levels and encompasses ecology including social and economic dimensions. Even the most reasonable-sounding solutions have their own limitations e.g. Renewable energy as the system needs an infrastructure, material as well. And neither zero waste nor zero virgin resource use seems to work perfectly, due to technological and quality limitations in recycling (Ghisellini, Cialani, & Ulgiati, 2016). The challenges of the new circular system listed above also imply that there are major problems within the dynamics and, an economy with

totally closed loops without needing any virgin resources, and without creating any waste is not a realistic, achievable target.

Though this is the case it still worths to follow this novel direction since at least it helps to a certain extent to offset the harm we -humanity- did to the environment, and re-balance the ecological, social and economic values (Boons & Lüdeke-Freund, 2012). And in this trajectory businesses are the areas of opportunity to extend the circular philosophy to make a systemic impact since they are the dynamic actors interacts within a range between from individual (nano) level to regime level (Geels, 2002) (Wainstein & Bumpus, 2016)

3.2 BUSINESS MODELS

Companies commercialize their new ideas and technologies through their business models (Chesbrough, 2010) According to the concept of (Osterwalder & Pigneur, 2010)'s business model, there are nine pillars to cover four main areas of business as customers, offer, infrastructure and financial aspects. There are also several approaches towards describing and grouping of these pillars namely; customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, cost structure (Osterwalder & Pigneur, 2010) and several configurations like the Triple Layered Business Model Canvas (Joyce & Paquin, 2016) and the Flourishing Business Canvas (Upward, 2013)

From the sustainability point of view, it is more meaningful to see the model structure value-based, and as Richardson (2008) cited by (Bocken, Rana, & Short, 2015) where three elements were used: 'Value creation and delivery, value proposition and value capture in defining their sustainable business model outline. Therefore Bocken's business model adapted from Richardson (2008) has been used to analyze as a tool as a departure point, because of the relevance of the studies and the researcher.

Value Proposition	**Value Creation and Delivery**	**Value Capture**
Product/service Customer segments & relationships Value for customer, society and environment What value is provided and to whom?	Activities Resources Distribution channels Partners and suppliers Technology and product features How is value provided?	Cost structure and revenue streams Value capture for key stakeholders Growth strategy/ethos How does the company make money and capture other forms of value?

Figure 3- Conceptual sustainable business model framework
(Bocken, Rana, & Short, 2015, p. 71)

In essence, Value Proposition is a set of product/service solutions offered to the customers, Value Creation refers to how value is created through the value chain by using the resources and organizational skills, Value Capture defines how value propositions or cost items turned into revenue (Clauss, 2017).

The value proposition in circular business models, is based on delivering service, instead of product ownership such as; product-service-system (PSS) pay-per-use approach (Uusitalo & Antikainen, 2018a). The value creation and delivery opportunities, in a circular economy, is based on the idea of improving resource efficiency and closing the loops, slowing the loops with take-back mechanisms (Bocken et al., 2016) It emphasizes durable design, collaboration needs, all throughout the network. The value capture elements emerge due to changes in cost reduction, benefits of improved efficiency and added value retained from selling waste to other companies as in industrial symbiosis as well as non-monetary benefits as better reputation from stakeholders' view, claimed by (Nussholz, 2017 and Fraccascia, Magno and Albino, 2016 as cited by Uusitalo & Antikainen, 2018b) And there are also Value Missed elements represented by under-utilized assets, capabilities, waste streams operating below the best practices of the industry and Value Destroyed

for negative impacts on stakeholders as depletion of non-renewables and environmental damage (Bocken et al., 2013)

Business model frameworks constitute a modular instrument to reconsider the business aspects from sustainability lens and enables management to see opportunities for innovation in business activities aligned to attainable sustainable practices in economic, environmental and social areas (Boons & Lüdeke-Freund, 2012) Moreover, BM functions as a vehicle in synchronizing business level innovations with system-level sustainability (Lüdeke-Freund, 2010) (Geels, 2011). Innovations with an expected systemic impact should have significant positive benefits to the environment and the society through creating and capturing value as well as changing value propositions of the business (N. M. Bocken et al., 2014). And such systemic impact should bear social practice needs and regime level elements (Wainstein & Bumpus, 2016). For Bocken all three main pillars of a BM carries the same importance towards a circular economy, to be discussed in the discussion part.

3.3 MULTI-LEVEL PERSPECTIVE AND SOCIAL PRACTICE THEORY

Multi-Level Perspective theory of (Geels, 2002) system innovation and transitions emerges through interaction between the vertical levels of niche, regime, and landscape. The change dynamics stems from niche level to socio-technical regime level where niche level represents innovative nuclei; regime level, established practices and institutional, societal bodies; and landscape level, for the higher order of systems, long-established practices, regulations, and concepts, that are hardest to change. Such transition takes shape in time as a result of the resistance encountered from the regime and landscape levels, before being a reality in our lives by changing the systems we live in (Hargreaves, Longhurst, & Seyfang, 2013). This interaction process takes place either top-down by the

developments at landscape level causes cracks by forming windows of opportunity on regime level to serve niche innovations breakthrough or by radical grass-root (niche) innovations disrupting the landscape and regime level from bottom-up.

MLP sees the adoption of innovations as a matter of consumption, as purchase and use where there are niche level consumers who are early adopters of new practices and a mass of ordinary users, whose attachments to the incumbent socio-technical regime provide stability to that regime (Southerton & Watson, n.d.) Respectively, if more businesses modify their BM, the faster the shift and a stronger grip will be at the systems level. Recurrence of the modified BMs will also be an indicator of social support they had and that social support can be maintained by the firms' customer value propositions in their business model canvas, in forms of goods and services that act as the connection point with people, society.

Social Practice Theory concentrates in understanding people's everyday life practices. The theory focuses on individuals' mental and bodily activities, skills, emotional states, meanings, motivational knowledge while doing those practices and the ways they are organized socially (Hargreaves et al., 2013) Understanding the social dimension as a thick fabric of interconnected practices then the change of meanings and skills are directly related to diffusion, disappearance, and the emergence of new practices, as the rhythms of the society (Southerton & Watson, n.d.) In this study, it is relevant to explain the connection between the individual's practices, consumer behavior and society in terms of systemic change. Due to the interaction between elements at various levels respectively, a system level change would be unsuccessful like environmental policies have been in the past, if it does not involve behavioral change and societal transformation (Kemp & Rotmans, 2005)

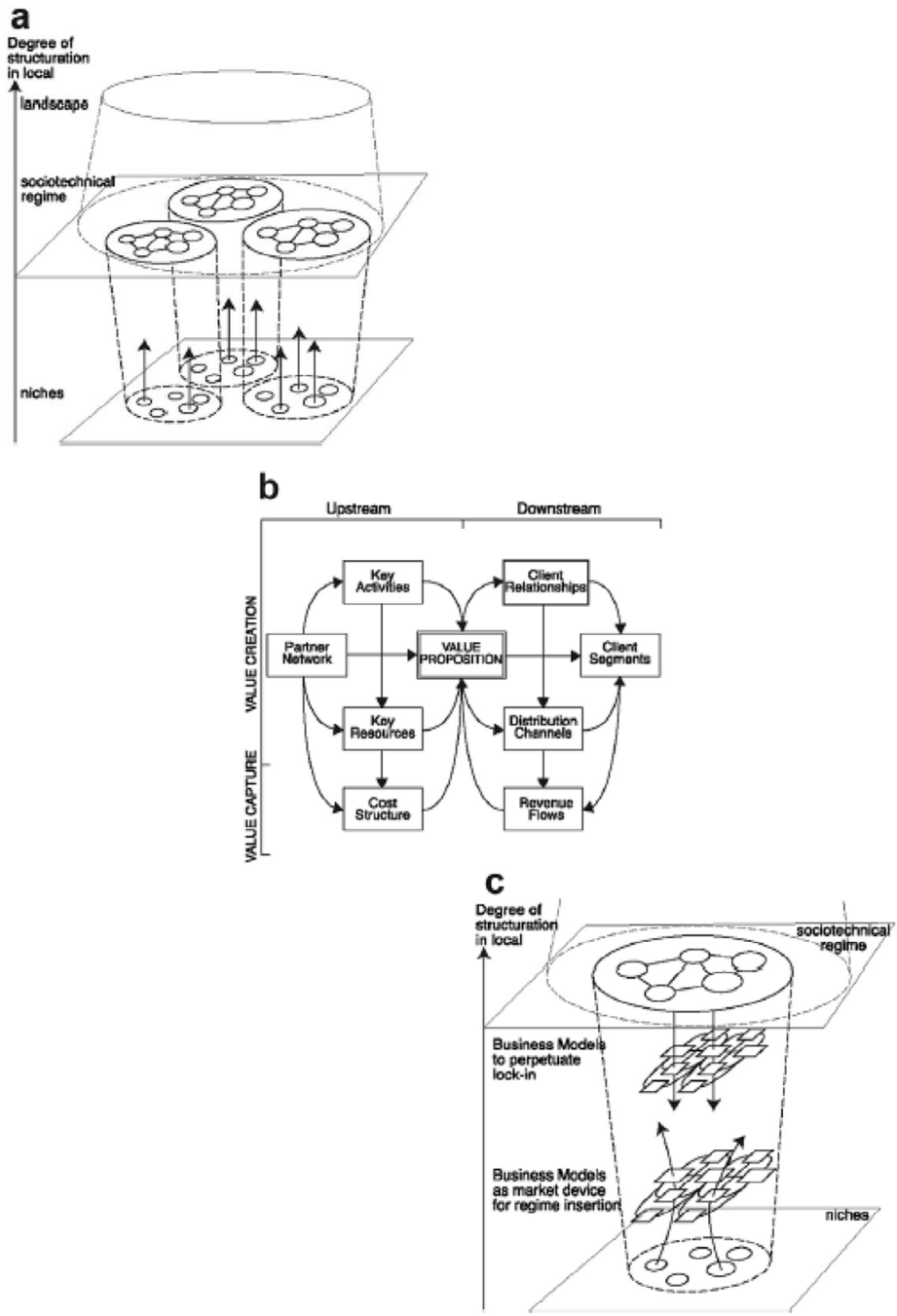


Figure 4- Multi-Level Perspective mechanism, Business Model elements and working systematic between niche and regime level (Wainstein & Bumpus, 2016, p. 3)

3.4 DISRUPTIVE INNOVATION IN BUSINESS MODELS

Strategically there are mainly three main innovation categories, incremental; disruptive; and systems level where incremental is towards the existing customer segment with enhanced and more expensive products and the disruptive is towards a new, low-end, less demanding customer segment with cheaper and more convenient products and solutions (Christensen & Raynor, 2003) In this paper, it is used in broad terms to describe any progress that destroys the patterns of the industry.

As the aim of the disruptive innovation is towards sustainability at systems level, (Wainstein & Bumpus, 2016) had an extensive approach by including BM into the interaction mechanism of socio-technical levels. They in a way conceptualized the argument of (Lüdeke-Freund, 2010) and by illustrating BM as nested in the system in reaching socio-technical regime level, as can be seen in Figure 4. About the circularity transformations and the way they are linked to system-level changes (i.e. micro, meso, macro levels) can also be observed in Figure 4 where business models actively take part in the circularity transformation mechanism by operating between niche and regime levels to provide intersection points, where they incept new practices and ideas to regime level.

System-level innovation encompasses changes at all levels of MLP transcends country or a continent and goes beyond to include nano level at which consequently embodies changes in social practices, norms, knowledge, roles, and rules (Kemp & Rotmans, 2005). "Sustainability challenge will require innovation at the systemic level to fundamentally change the way things are done and how societal needs are created and met" (Hargreaves et al., 2013, p. 402). This is where the systemic-level elements intersect with the elements of socio practical level.

Switching to a sustainable business model for incumbents is strategically disruptive in this sense since their value creation and value proposition and value captured ways need to be reconstructed by interpreting

customer preferences, cost drivers, competition differently and by re-framing the dominant beliefs. The relation between disruptive business model innovations and the advancement in CE suggests modification in value proposition pillar because the core logic of the company changes particularly when the value proposition is changed, hence the ways of value creation and value capture would be altered respectively as well (Schaltegger et al., 2011) Furthermore, sustainable business models that have inherent technological and social innovations can cause system-level change as well (Lüdeke-Freund, 2010)

Sustainable business practice options have been categorized under Technological, Social and Organizational main groups and eight business model archetype sub-groups that were introduced by (Bocken et al., 2014) as shown in Figure 5 below. The concepts were derived from industrial practices and academia, combined to address several industries and not particularly fashion industry. For the companies re-purposing their strategy in a disruptive way, BMC is a useful tool to adopt these sustainable business practices and align them with company capabilities via placing at the related pillars of BM. However, since the criteria used did not cover the environmental impact of the practices, all are needed to be re-grouped to serve for the new indexing approach.

When the progress of shifting trends encompasses the market, the time dimension gains importance to have a perception of the dynamics. The incumbent mainstream companies though they are aggressive, customer-sensitive and innovative in their strategic maneuvers their efforts result only in keeping them within the existing order, while the new entrants succeed to disrupt it. Today's large, sector-leading companies generally experience losing their earned market leading position once they actuated with their new, disruptive ideas, to these new entrants. And although the new technologies and ideas mostly emerge in these big companies, they lose their first-mover advantage by acting dubiously as

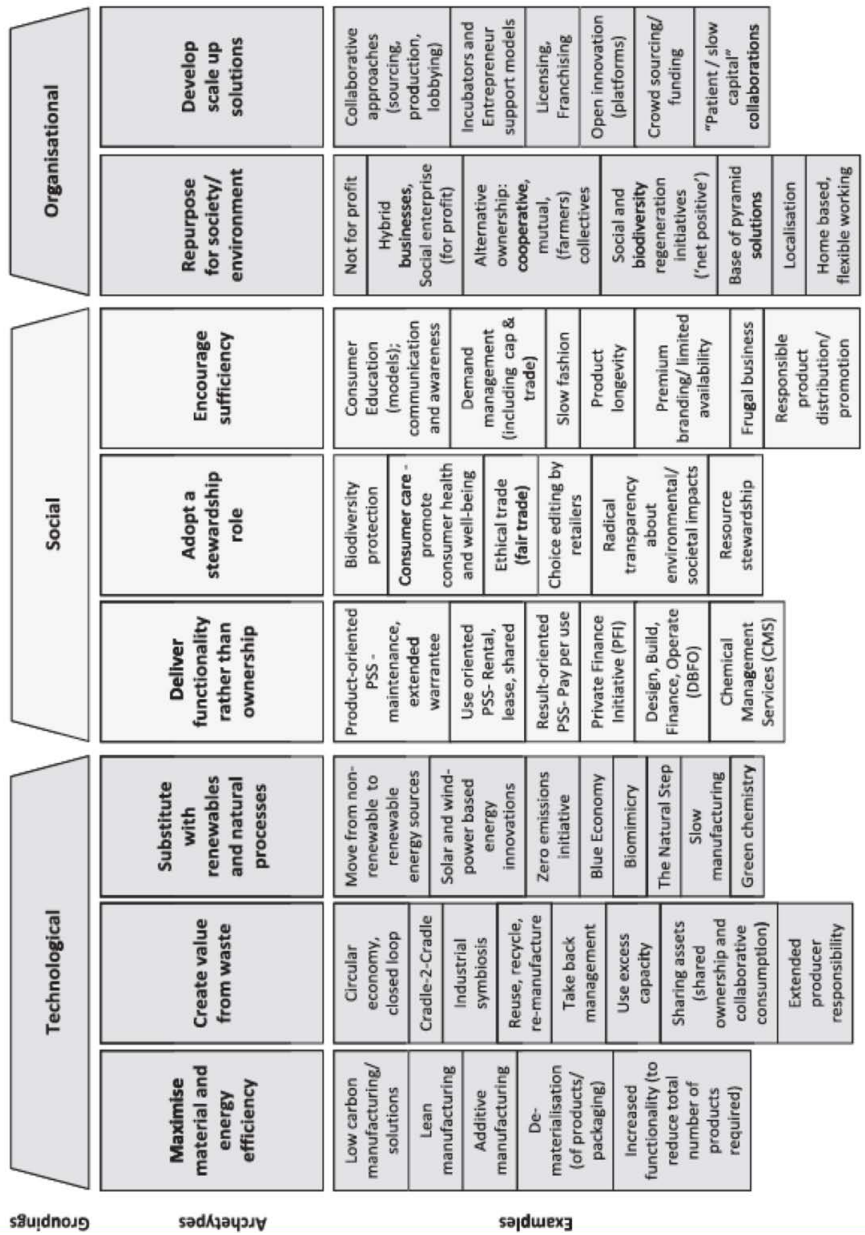


Figure 5-The sustainable business model archetypes (Bocken et al., 2014, p. 48)

if they are being captured with the current system and their customers and so stuck in sustaining what they have (Christensen, 2003)

In the fashion industry transformation towards a circular economy is a highly disruptive phenomenon because of the unsustainable aspects of the current one. However, unlike the expected lagging progress, there is a growing movement and commitment among the industry-leading brands of the current system towards this transition, evidenced by their initiating and signing the Fashion Industry Charter. And since they are the leaders in this turnaround, it is most likely that they will be the first to harness the premium for that in the financial sense. Which means the competitive patterns of the industry are not changed yet, but apt to shift soon.

Therefore we can interpret the charter signed as the big brands' strategic move to avoid the possibility of losing their leader status to the mainstream firms which also leaves them, no other option than following leaders without being too late.

3.5 VALUE MAPPING TOOL

Business model innovation for sustainability requires re-thinking of value propositions. The new business model should have sustainability in its business logic juxtaposed with a multi-stakeholder perspective to be competitive and advantageous with the existing dominant actors (Jiao & Evans, 2017). A traditional way of approaching sustainability is from the process side to offset the negative impacts of waste, the use of finite resources and other economic/customer oriented needs. Although there are some other tools, they are mostly conceptual, and none of them has a holistic perspective to combine economic, social and environmental dimensions within business planning. Including stakeholders into the equation Value Mapping Tool is developed as a practical instrument for companies to focus on value creation (Bocken et al., 2013)

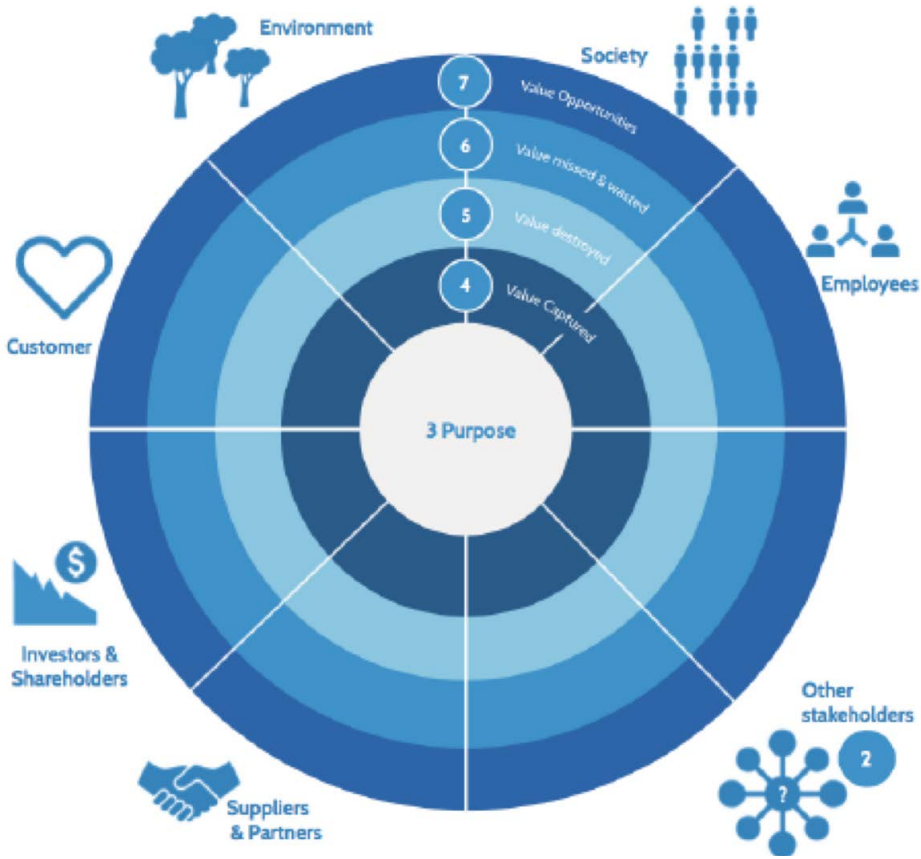


Figure 6-The Value Mapping Tool by (Bocken et al., 2013, p. 10)

In the expected working way of the tool, the stakeholder perspective performs a filter when evaluating the functioning of the firm, while each shade on the graphic requires a different way of thinking, as the title of each, indicates. The obtained result will be like a photograph of what is and, be perceived as a start point for the efforts towards solving the conflicting stakeholder needs and so for a transformation from negative to positive (Nancy Bocken et al., 2013) However there will be changes in the general configuration all the time because all actors in the equation

are dynamic. It is also possible that Value Missed and Value Destroyed can be converted to Value Captured by taking necessary actions, which also indicates their convertibility between the pillars. And every action no matter how good or novel, generates own counter-balancing action (Kim, 1993).

3.6 WASTE HIERARCHY TRIANGLE

The waste industry, sitting at the center of the new business models, economic growth and employment, has actually been the framework of the circular economy. During the 1960-1985 period, resource and waste debate focused on waste handling, pollution, and end-of-life processes, from then onwards the way dealing with resources resource value and use of waste 'as a resource' gained attention. Respectively so are strategies for product longevity, repair, refurbishment, upgradeability and remanufacturing gained traction to delay landfilling or incineration (Blomsma & Brennan, 2017) As a testament to this trend, European Union's waste hierarchy model European Waste Hierarchy (EWH) was introduced to be part of the European legislation to minimize environmental damage from waste by outlining five levels of management options, in 2008 (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Text with EEA relevance), 2008). It is a normative approach to rank practices most preferred to least where waste prevention is the most desired option, including design for re-use, repair, maintenance, second-hand retail (Hultman & Corvellec, 2012)

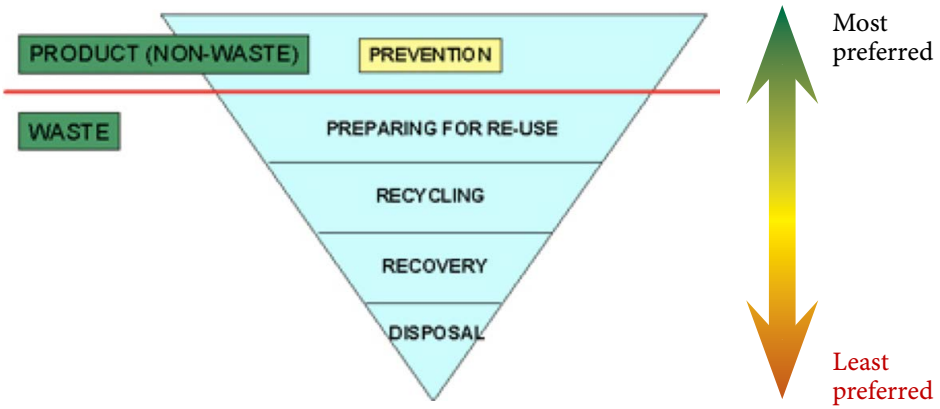


Figure 7- European Waste Hierarchy diagram (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Text with EEA relevance), 2008)

And the waste hierarchy considering all the product and material chains have key elements of circular economy embedded (Lansink, 2018b). Therefore "the EWH connects waste generation with design, production, and consumption", as quoted from Deutz et. al (2010) by (Hultman & Corvellec, 2012, p. 2417, abbreviation in the original)

In fact, the hierarchy in the waste triangle can be considered as a more detailed approach for circular economy's Reduce-Reuse-Recycle and ordered from the most desired to the least desired, where prevention is the most desired.

1. Prevention or reduction in waste generation includes practices (Using less material in design and production, stimulating the longer use of products and using less hazardous substances.) Here the product preserves its value as a product when being re-used, it is not waste.
2. Preparation for reuse gives used products a second life before they become totally waste and includes practices (Cleaning, repairing or refurbishing products or their parts without other pre-processing.)

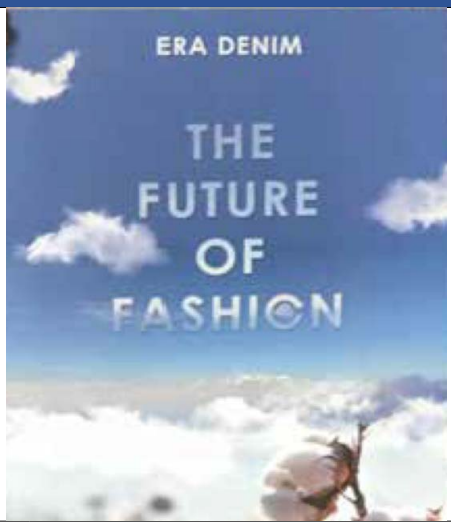
Here the product has lost some of its value but still reusable, so it is a resource to be put in use as a product again with a very less effort.

3. Recycling involves any recovery operation through which waste materials are reprocessed into new products or raw materials. It also includes composting and other reuse of biodegradable waste, such as food or garden waste.
4. Recovery produces energy and materials from waste and includes predominantly incineration of residual waste that cannot be otherwise recycled anaerobic digestion, gasification, and pyrolysis.
5. Disposal of residual waste through landfilling and incineration without any energy recovery ("The importance of waste hierarchy in circular economy | Hi4CSR," n.d.).

4. EMPIRICAL FINDINGS

4.1 VALUE MAPPING TOOL APPLIED

4.1.1 Case profile

ERA GARMENT		
		
Founded	**2011**	
Location	**Istanbul**	
Core activities	Creative design, Collection development, Sampling and pattern development, Cutting, Sewing, Finishing	
Customers	UK	Footasylum, Mint Velvet, Seraphine, Superdry
	FRANCE	Bonobo, Ekyog, Gerard Darel, Kaporal Jeans, Kariban Zadig &Voltaire
	GERMANY	H.I. Siegel, Klingel, One Green Elephant, Otto Group
	HUNGARY	Retro Jeans
	DENMARK	Selected
Capacity	100,000 pieces/month	
Production Area	6,500 Sqm	

Certification	OCS-Organic blended Content Standard GOTS-Global Organic Textile Standard CSR compliance audited via BSCI & SEDEX Member of Denim Alliance, an NGO based in Amsterdam promoting the use of recycled fibers
Background	ERA is denim and washed woven sportswear manufacturer, founded in 2011 as a sister company of EREKS Garment Company. All activities are done in-house, except washing which was subcontracted. They are located in Istanbul, and so are all their suppliers. They started working on sustainability in 2013 by using organic fabrics for one of their French customers.
Sources	Interview with GM

Table 2- Information about ERA

4.1.2 Existing environmental value propositions identified and critically evaluated

ERA had circular manufacturing experiences, therefore, the concept is not new to them, however, it has been observed that they were struggling what to do next and how to proceed. According to the dynamics of the transition period towards CE, the changing parameters suggests new collaborations, new partnerships due to the new design of doing business. Because "circular business innovations are by nature networked: they require collaboration, communication, and coordination within complex networks of interdependent but independent actors/stakeholders"(Antikainen & Valkokari, 2016, p. 7) The blurredness in the ultimate business design hinders their progress in transition.

4.1.2.1 Reuse, recycle, remanufacture

In 2014 they realized the project that ERA manufactured a collection from recycled cotton and polyester fabric and continued a couple of years. The old jeans collected in France, were shipped to Turkey to recycle. Importation of used clothes to Turkey needed special effort in

obtaining permission since the existing import /customs regulations did not allow import of used clothes as waste, e.g. Only the legs cut out of pants, could be imported ("Başbakanlık Mevzuatı Geliştirme ve Yayın Genel Müdürlüğü," n.d.). In the weaving of the new recycled fabric, polyester added for strength. This polyester is obtained from plastic bottles however these type of bottles did not exist in Turkey and the recycling company imports them from the USA (Source: Interview with GM).

From the circular perspective, cradle to cradle approach as ways of recovering material and energy from several stages of waste and use them again as a resource to obtain value and run the process over, make technicalities gain importance. With today's technology a T-shirt made up from %99 cotton %1 Spandex, cannot be saved from landfill (Gould, 2015) In the same manner, for recycling worn clothes, they have to be chopped up first, the process shortens the length of the fiber also determines the loss in quality. Therefore the raw material obtained generally mixed with polyester for strength. While the new fabric can only contain up to %20 recycled fiber to meet the quality standards, the obtained recycled raw material cannot be recycled again due to its mixed nature, (Bain, n.d.) In this respect, recycling to recover resources may not be the ideal ultimate solution but maybe a transitory one.

According to the Multi-Level Perspective theory of (Geels, 2002) governments, regulations are among the system level shift elements. ERA's experience with the Customs authorities and importation process can be considered as one of the intersection points lived where niche level practice met socio-technical regime level and landscape factors. Specifically for their country, it can be said that the upper-level elements like regulations, institutions are not ready to handle diverse claims, yet. However, the recurrence of such instances more likely to develop landscape-level changes in time.

Furthermore, the word 'recycle' has a connotation as if it is the ideal

way to be circular because of the word 'cycle' concords with 'circular' however, it is hardly the case as it can be seen in the waste hierarchy diagram at Figure 7. When compared to reduction and reuse, "recycling may be the least sustainable solution" as it has also been underlined by (Ghisellini, Cialani, & Ulgiati, 2016, p. 6). In addition to this, in this particular project of ERA, the carbon footprint of supplying the waste of used denim wear and the necessary polyester might have exceeded the good that has been done, due to long-distance importation. When configuring the ways to create value, overall burden has to be considered carefully by the partners.

4.1.2.2 Biodiversity production

ERA subcontracts washing process partly where they ensure the use of eco-friendly enzymes, wash agents. They work with the same company for a long time as a working partner sharing the same sensitivities towards nature. Their CSR commitment throughout the process also certified.

4.1.2.3 Ethical trade

ERA's blue-collar worker turnover is low thence they have been working for long years under fair conditions. Their rights are preserved in compliance within the legal frame, they have freedom of association and collective bargaining, occupational health, and safety. The transportation of workers from different parts of the city is maintained by shuttles of the company. This causes long hours spent in heavy traffic, contributes pollution. Also for White-collar workers, they do not have a WFH flexible system. The company also provides help when a worker or his family is in need.

4.1.2.4 Product longevity

ERA guarantees the quality of their products and the quality of the fabric they use, but it is not extended to the consumers yet. Their customers' business policies shape and limit their function in this respect.

4.1.2.5 Collaborative approaches

ERA's main resource company as fabric provider is ORTA Anadolu. They have even more dedicated to sustainability with an LCA approach. Working close, they produce solutions special to ERA's requirements with their own RND department. ERA works closely with its accessory suppliers as well to have special design products and offers, within synchronized production periods.

They collaborate with international washing and dyeing experts.

Their collaboration with their customers is more limited compared to their supply chain actors. They expect their customers to take the incentive to shape the business through their orders and expectations.

4.1.3 The environmental value propositions identified "in-process"

4.1.3.1 Reuse, recycle, remanufacture / biodiversity protection

ERA is working on a project to reuse the water 70 times filtered by reverse-osmosis before releasing to nature with a capacity of around 100,000 pieces/month. This will result in cost-reduction as well.

The answer to the third question, how is circular value created for diverse stakeholders of the firm and how are different interests accommodated, can be seen clearly in this case. The pollution and the amount of used water and energy issue are destroyed value from the environment stakeholder perspective. They respond it via circular value creating water filtration project and they will convert the destroyed value to captured value, however, in connection with this development, a seesaw mecha-

nism manifests itself later, this time in the supplier stakeholder section. Apparently, one of their suppliers will be harmed since for them this means losing a customer. A consecutive action will be needed to offset the impact of this situation. Being the firm at the intersection point of all stakeholders, VMT acts as a medium to view correlated opposite impacts in the "negative" and "positive" charactered value types, within the same or diverse stakeholder zone. This is a never-ending, dynamic process because, in reality, a perfect equilibrium point does not exist when the time lapse is considered until the emergence of a consequence. When we neglect time as a parameter, then it will be good for an enterprise to see a balance on paper at least, as it will provide guiding aspects. This paper tried to answer this need as the contribution of this study and examine ERA's position under the light of provided graphic depictions via this method.

4.1.3.2 Circular economy, closed loop

ERA plans to work with municipalities in collecting used clothes for recycling purposes. Then they can recycle the appropriate ones as well as they can re-distribute in the poor areas of the country, together with their collection for children.

4.1.4 The new environmental value proposition opportunities clustered during the workshop

Circular business patterns	Type of activity	Resource efficiency drive			Innovation type
		Closing the Loop	Narrowing the Loop	Slowing the Loop	
Repair and maintenance	They are open to giving post-sales repair			✓	Incremental
Refurbishment and remanufacturing	Extended producer responsibility - they are open to working with their retail customers Use oriented (maintenance, extended warranty)-they think of giving repairing service for end-users upcycling included			✓	Incremental (Unless reflected consumers-if value proposition is changed accordingly then it is disruptive!)
Recycling	Dematerialization of sampling & collection by use of augmented reality (Save resources and cost of $50/piece) Flexible WFH dematerialization of labor		✓		Disruptive (System level potential)
	Low-carbon manufacturing		✓		Incremental
	Solar or wind power energy system	✓			
	Circular production	✓			

Table 3- ERA's environmental value proposition ideas clustered in the workshop

It can also be observed from the clustered ideas that overall they are limited in number and also significant ones were rare. One reason for this, they had concerns in the realization part, so they wanted to be on the secure side. The other reason was the mixed profile of the attendees in the workshop. Being in the same group, with GM and other high-level managers' influenced the staff adversely, as their pursuing political goals being the main indicator or as staying silent and not sharing the ideas to avoid the reaction of others (Nijstad, Stroebe, & Lodewijkx, 2006)

4.1.5 The new sustainability-based business model canvas of ERA

The framework in Figure 3, applied to Era as shown in Figure 8 where there are mainly three pillars the business model built on, Value Proposition, Value Creation, and delivery, Value Capture. To obtain a view on how new BM look like the aggregated ideas in the workshop shaped around new value generation divided into these pillars according to the relevance.

Value Proposition	**Value Creation & Delivery**	**Value Capture**
Repair & Maintenance; extended product responsibility refurbishing ; Dematerialization of their service Retailers & the consumers in case of collaboration More benefits to stakeholders in case of engagement with the customer and local authorities as well as throughout the supply chain.	Prioritize energy efficiency and renewable sourcing of energy, and building new value networks accordingly Cross-industry recycling partners, Activities to eliminate or re-use of waste Extending repairing services for product life extension	Positive contribution to society in forms of help to distant and poor corners of country Fidelity and trustworthy image in the supply chain due to ethical business Protects biodiversity by using eco-friendly enzymes Staff support received for secure jobs Neighbourhood around the company developed by flourishing businesses

Figure 8 ERA's potential circular business model canvas as adapted to Conceptual sustainable business model framework of (Bocken, Rana, & Short, 2015)

When the company is B2C it is relatively easy to determine the scope of the innovative value propositions and to receive feedback. ERA as a manufacturing B2B company. The retailers, being ERA's customers, are positioned between the consumers as another parameter of interest. Therefore, if ERA is considered stand-alone, their value propositions are limited but they have the potential to broaden in case of collaborating with their customers (the retailers). As an answer to the second question, when they need to reconfigure their business to being circular, incumbent companies have many concerns like financing of the projects, their customers' reaction and the extent of the support and collaboration of their value network. Hence, in ERA's case, such collaboration dynamics and the ultimate shape of the business as the target is not defined yet. Under the light of collaborative theory when extended to ERA's situation, neither the roles nor the leader or influencer is not clear yet (Hurwitz & Adair, 2014) The circular economy is a team play within a value network with different and changing configurations. All actors within the network are in a stage of observation and meanwhile, they prefer to work on their internal processes aiming cost reduction as the main driver. Such projects generally take place in the value creation or value capture pillars of BMC and are incremental in nature.

The obtained ideas can be expanded but only two of them has the potential to be disruptive and change the way the market works: Dematerialization of a portion of their service and extended responsibility of the manufacturer. Albeit it was also stemmed from cutting costs, dematerialization has a prevention component from waste hierarchy and disruptive technology component for business model innovation.

Dematerialization, being in the first level of waste hierarchy model, it prevents waste creation at every process, saves energy and cost, at all levels. The term refers to delivering the same product or service partially or completely without using any mass material ("Dematerialization," n.d.) It

can be used for seasonal collections and sampling, as a start. The technology that will enable dematerialization is called augmented reality, which is basically adding digital elements to real, live view, already merged with virtual reality to form mixed or hybrid reality ("What's the Difference Between AR, VR, and MR?," 2017). In case of leveling up the initial use, it can work as a new digital platform to involve consumers and their preferences as parameters to be considered for the production quantities, taking orders, and even sales at shops without physically trying out the garments, insofar as the collaboration with the retailer customers of ERA is possible.

In the same manner, ERA is ready to give an extended service to the consumers, as repairing, remanufacturing, however depending on the retailer customer's decision this offer can stay limited or with a configuration mutually agreed, an in-shop application at the retail end can be possible. Extended responsibility is in the first most preferred group of circular business practices. If applied properly retailer shops and services need to be re-organized. Here, there is one aspect to be underlined that this service is operable when the fashion trends and "the look" are not changing rapidly. For people following the latest trends, such service may not be so meaningful. Slowing the fashion or steering to timeless design is a challenging topic and undermines a whole industry, maybe that is the reason for keeping it like a 'holy grail' for now.

ERA also has an ongoing project for water recycling, which has been mentioned in the company profile. They want to use energy from renewable sources and use sensors to manage energy waste. However, they have not found the necessary financing options yet. And since this is not a value proposition, a disruptive effect on BM is not expected.

4.1.5.1 Missed values for ERA to be converted to value captured

At the end of their process cut, make, trim they have yarn waste, used packaging materials, offcuts end of rolls and unsold stock. They need

to collaborate with their suppliers about reusing packaging materials and with their customers about the end of rolls in excessive quantities of delivery. Yarn waste and offcuts can be sent to recycle. Their work is demand driven, therefore as the GM of ERA stated, they produced from recycled fabric in case there was demand if not they had to use virgin resource fabric.

In either case of technological or business model innovations, value network itself can be the reason to fail, where value network is "the context within which a firm identifies and responds to customers' needs, solves problems, procures input, reacts to competitors and strives for profit" as (Christensen, 2003, p. 39). The main observation as an underpinned theme in ERA's case to manage an effective transformation towards sustainability is the blurredness of the collaboration aspect at the disposal of the retailer end.

An ideal way of seeing this would be from the systems perspective, since the supply chain and the value chain are systems operating in a bigger scheme of systems, where a system is a complex set of elements that interact, according to L.Bertalanffy (1968) as quoted by (Matkovskyy, n.d.). The value chain consisting of many organizations in a net of connections represents the fashion industry as meso (regime) level layer in a multi-layered system. Hence the organizations constitute micro-level (niche) and the economy is the macro-level in this system. The interactions between these layers are in fact, has been defined via Multilevel perspective theory by Geels (2011) When dealing with a wicked problem like maintaining sustainability in an unsustainable world, efforts only at micro-level uncoordinated with broader levels would result in captivity within incremental outcomes ("R3-BP4.pdf," n.d.). This assessment also constitutes an insight to the answer of the first question, the tendency of adopting incremental business model innovations versus disruptive innovations. Incumbent companies' innovative activities projected as new

values are mostly incremental and, cost and efficiency oriented. These type of modifications are considered as accommodative strategies and can lead only incremental degrees of innovation as indicated in Table 3. Efforts make a difference when more radical innovations are being implemented to the core logic of a company as supporting socially outstanding products or services (Schaltegger et al., 2011). As quoted from Bocken and Short (2016) moving to a circular economy is an example of a radical change "and to perform a radical change of patterns major technical breakthroughs may have to be even more emphasized to reach new ways of thinking and doing business" (Homrich, Galvao, Abadia, & Carvalho, 2018, p. 27)

A particular technology which has the capability to change the conventional platform even at the early stages of its potential use, it is not hard to guess that who follows the technology or produces its own, and adapt it to their business model, will be able to enjoy its premiums. Such change indicates an innovation in both value proposition and value creation dimensions of the business model while changing conventional ways of how the industry works, therefore creates advancement in circular practices as a disruptive business innovation example. The technological progress over connectivity and digitalization significantly facilitate some Product Service Systems (PSS) to reduce the risk associated with sharing or leasing goods rather than owning. Improvements in the green energy by providing competitive resource facilities, sensors and sorting machines also improved circular business models repair, remanufacturing and resource recovery businesses. But of course, when technological change is considered we should see both sides, that it creates many risks in resource use and also environmental pressure. Labor-saving technologies like robotics may have increased the environmental footprint of some activities. The continuing growth of green Technologies may also be shifting the burden from air to land and water e.g. Lithium, copper

mining has often toxic by-products. And some rebound effects may offset some of the reductions in resource extraction (OECD Environment Directorate & Environment Policy Committee, 2018)

Therefore, each novel way of doing business need to be considered carefully from these perspectives before adopting.

5. DISCUSSION

When it comes to the business model innovation as (N. M. Bocken et al., 2014) disagrees with the literature when she writes that the topic is framed with the value propositions, only pays attention to 'what you sell', in fact 'how you do business' is equally important, by that she is addressing all types of value a business conceives. And she defines the business model innovation for sustainability, as built around creating significantly positive and/or significantly reducing the negative effects for the environment and society, while addressing these pillars as vehicles to serve in the delivery of such values and as the core of the innovation (N. M. Bocken et al., 2014). In other words, she argues, organizations' efforts in any pillar of the business model to improve their impacts towards a sustainable world has the same importance in terms of her sustainability definition.

Everyone would agree that value delivery in all pillars is ultimately expected benevolent objective and deserves appreciation, but all kinds of revisions on the business model may not be equally important and effective at the systemic level. When a systemic impact is an ultimate aim ("EllenMacArthurFoundation," 2015) the most common pattern in business is to embed the new inventions into a product and sell the product/service rather than simply selling the idea itself as a design or intellectual property (Teece, 2010) not to live a market failure. Sustainability practices are also innovative ideas and circularity notions that take-off from niche level by the help of business models as vehicles (N. M. Bocken et al., 2014) are expected to change socio-technological regime level (Geels, 2002). In this trajectory "business models can lead to altered consumption patterns, efficiency gains, and consistent system designs when oriented towards sustainability strategies" (Lüdeke-Freund, 2010, p. 7)

"In essence innovative BM redefines the relationship between the

product and the customer by fundamentally shifting the value proposition of the existing business" (Wainstein & Bumpus, 2016, p. 4), therefore, in BM innovation, perceiving the value creation and the value capture pillars carrying the same importance as value proposition pillar would be like trying to sell the idea of sustainability to customers, instead of the product/service itself. Furthermore, business model innovation takes the business model itself as the core of the innovation, and by that, refers to the systems of products, services, and technology that transcends the company focus, where mainly systemic transformation is required and the customer value proposition plays a key role in such change provided that the other two pillars alter in a similar way (Clauss, 2017). According to a research on effects of these three pillars on business value model innovation it has been found to confirm such hierarchy and link as, among three, value proposition has the highest effect on the business model innovation, followed by value creation and value captured as second and third respectively (Clauss, 2017).

Value Mapping Tool bearing stakeholder perspective and business model value dimensions is a convenient tool to assess the organizations' position. The implementation workshop needs facilitated mediator when the group of participants are not familiar with the sustainability concepts and asked for brainstorming. In ERA's case, most of the participants had an idea about concepts but also had a strong reality frame that hindered them from making future projections freely towards the areas they can progress to be circular, especially in the value proposition pillar, for their company exclusively. To ignite idea generation using supplementary methods such as creativity techniques together with brainstorming would be better and its versatileness can be improved visually to be more self-expressive to reflect the elements that are sought.

The ideas clustered in the workshop of ERA, as expected, coincided with the common sustainability practices grouped under archetypes by

(Bocken et al., 2014) in Figure 5. However, the grouping in Figure 5, was not according to how they function or sustainability impact of the practices. When deciding on a practice in transition to a circular economy, the sustainability impact expected should be systemic rather than supplemental and only a limited number of them have the characteristics to initiate a system level change. In other words, with VMT firms can generate innovative ideas without knowing how powerful is their choice towards being circular, because they can not evaluate the impact.

That is being said, in adopting circular business practices to business models, especially at the customer value proposition pillar, the nature and therefore overall impact of the subject practice gains importance. The disruptiveness of BM canvas by adopting circular business practices with low impact on the environment (and high preference), subsequently will be followed by a change in social practices and thus transformation at socio-technical level. The act of preferring connoting a divided set of elements comes with the need for expression in values and that would be the contribution of this thesis.

When the philosophy of CE unfolded from the consumption angle, the basic existing underlying elements actually dealt with are our needs and wants, which makes you remember M. Gandhi's quote "The earth provides enough to satisfy everyone's needs but not every man's greed" With CE the actual target, besides lifting the burden of waste on this planet by re-using, is the individual's behavior change, to lead people to consume mindfully and so redesign the system accordingly. However, this creates clashes with the complex structure of the nature of man, woven with the habits; the sub-conscious dynamics; and societal association and their relation with the Social Practices Theory when the capitalist consumption-promoted economy disregarded. Man is lack of beings and runs after satisfaction and the sense of completeness via consuming (Lacan, 2006). As Noe (2009) quoted by (Kilpinen, 2012) calls the man

as “creatures of habit” according to Kilpinen referring Pentti Maattanen (2010)’s assessment, habit suggests “vehicles of cognition” for routinized behaviors where (Reckwitz, 2002) calls routinized behaviors ‘practices’ as performances. So the systemic change aimed by CE is actually a ‘practice turn’ as it is examined in cultural studies e.g. Performative turn, interpretive turn, linguistic turn. To examine the interactions of SPT and the cultural turn dynamics lying beneath where the ‘turn’ refers to “the heightened awareness of dimensions and aspects previously neglected” (Bachmann-Medick, 2016, p. 15) is beyond the scope of this paper.

But it is necessary to underline that, the intended behavioral change is a manifestation of a paradigm, as it was described by Strathern (1987) and is quoted by (Bachmann-Medick, 2016, p. 10) “paradigms provide rules for registering the nature of the problem and what its solution would look like”. Then, to overcome habitual unsustainable consumer behavior and to alter the problematic practices a paradigm shift is needed by the intervention of governments as the rule setters, hence the inertia of the governments constitute an enigma in that sense.

6. CONTRIBUTION OF THE THESIS

6.1. VALUE MAPPING TOOL INDEXING APPROACH

According to the dynamic theory of systems, accelerating growth process will encounter a balancing process as the limit of that system approached. There is no such thing as unrestricted positive behavior. There will always be limits that eventually, make themselves known and felt as an indicator of the balancing process (Kim, 2013, p. 10) Balance is the key word to explain every phenomenon in our world where "everything is connected to everything" (Boulding, 1966) it is not easy, to predict where the correction move will come from but eventually the balance will be null following the equalizing pulse. That is the reason we, as humans, are trying to convert or at least to postpone and gain time, against repercussion of the harm we have done, and what we want to reach ultimately with the circular economy is to live on earth without leaving an imprint, in other words as if we do not exist, to express it philosophically.

When analyzed deeper through this lens, this balance can also be observed in the Value Mapping Tool between the positive and negative dynamics addressed: Value proposition and value captured are the positive direction indicators; when value missed and value destroyed are negative. Logically, on paper, if the practices grouped under these categories had values, the sum of all should be '0'according to the theory of systems, when we disregard time as a parameter.

In this study, these values for such calculation will be assigned via introduction of an Index system, in this case, Circularity Ladder concept derived from waste hierarchy will be used for the purpose of assigning hierarchy to practices (OECD Environment Directorate & Environment Policy Committee, 2018) (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Text with EEA relevance), 2008)

"This hierarchy is broadly consistent with the idea of circular economy prioritizing the use of materials components at their highest value" ("What is a Circular Economy?," 2017) (OECD Environment Directorate & Environment Policy Committee, 2018, p. 45) All the described and grouped practices in the chart of Bocken have an imprint in the waste hierarchy in terms of a level of waste, therefore the way business practice works will provide an insight about the weight it should gain according to preference order.

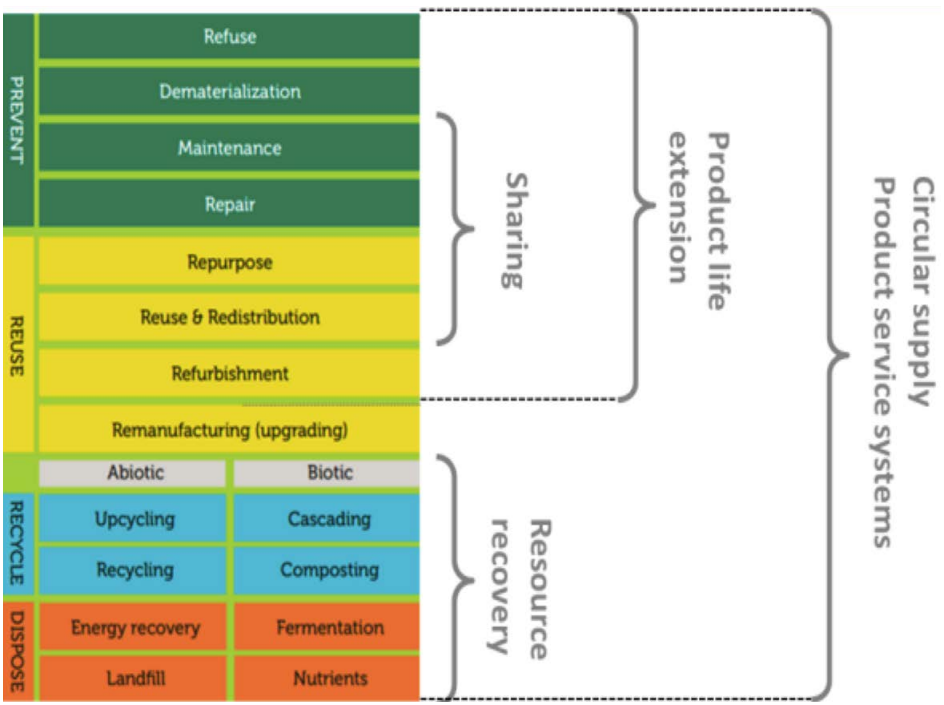


Figure 9 The Circularity Ladder concept (OECD Environment Directorate & Environment Policy Committee, 2018)

To support the idea, Ghisselini et al. (2016) have found out that only a few studies focused on the design of the indicators to be used for the purpose of evaluating CE strategies and complementary research has

been done to identify environmental assessment methodologies' effectiveness based on quantitative indicators. According to this study, the taxonomy of index approach methodologies are found to cover material flow, energy flow, land use, and consumption and other life cycle based parameters mainly (Elia, Gnoni, & Tornese, 2017). This also indicates that neither the need for indexing approach nor the need to express the impact in numeric terms is new. However, the data collection and calculation complexity of the used indicators are very high and these make the method hard to apply. In this paper hierarchy approach will be used at three levels as, to determine the group in the waste hierarchy; to indicate the array within that group, and the pillar it will function in BMC, for all practices listed by (Bocken et al., 2014, p. 48) therefore it constitutes a stable chart to be used anytime for changing scenarios.

This weighting treatment's first step is one is assigning the waste level for that practice, the other is assigning the place within that waste level since there will be more than one business types for each level. As a multi-criteria decision method ratio scaled weighting method (RSW) is used, based on opinion, where 100 is given weight for the most important criterion relative to the rest to be able to compare and the values get smaller than 100 proportionally spread out (Chabuk et al., 2017) Original weighting is calculated by dividing the value of given weight by the lowest value in that sequence. Normalized weight is the original weight divided by the sum of the original weight column. Obtained numbers are a percentage expression so multiplied by 100 to have a coefficient number.

As a second level of indicator; hierarchy of practices according to desirability is used by giving system changing, behavioral changing activities like PSS priority within the same group of each waste level, in accordance with Circularity Ladder concept, because PSS is suggested to be a key solution needed to the resource problem towards CE (Tukker, 2015)

The numeric value obtained from this process as 'coefficient' is then combined with the (Osterwalder, Pigneur, Oliveira, & Ferreira, 2011)'s powerful tool: business model canvas. The business model canvas pillars are ranked (Clauss, 2017) in order to assess the company's BMC innovation. According to their importance in business model innovation, the coefficient obtained is multiplied by, 3 for being Value Proposition; 2 being Value Creation; 1 for Value Captured for assigning importance and to produce an extensive angle. Consequently, when a high preferred type of practice in the waste hierarchy takes place in the value proposition pillar of business model, it will indicate the highest positive impact having a change at the system level due to the determinant role of this pillar in business model innovation, as explained in previous sections.

The index obtained through these calculations also has a code column, referring the respective business practice, which is also used in the analysis as shown in Table 5. The calculated results can be examined via graphs and charts, as overall or in fragments to observe contrasts or to cross-check.

Ratio Scale value	Original Weight	Normalized Weight	Value proposition	Value Creation	Value Captured	Hierarchy coeff	Code	HIERARCHY OF BUSINESS PRACTICES	WASTE HIERARCHY
100	14,29	0,04	13,1	8,7	4,4	4,37	P1	Product oriented PSS (Ownership vs maintenance,extended warrantee)	PREVENTION
100	14,29	0,04	13,1	8,7	4,4	4,37	P2	Use oriented PSS-Rental, lease, share (Car share)	
99	14,14	0,04	13,0	8,6	4,3	4,32	P3	Dematerialization of products & packaging	
97	13,86	0,04	12,7	8,5	4,2	4,24	P4	Extended product responsibility	
95	13,57	0,04	12,4	8,3	4,1	4,15	P5	Result oriented PSS- Pay per use (Chemicals & Digital content & lighting/heating)	
94	13,43	0,04	12,3	8,2	4,1	4,10	P6	Slow fashion	
90	12,86	0,04	11,8	7,9	3,9	3,93	P7	Alternative ownership: cooperative, mutual, collectives, co-ownership	
90	12,86	0,04	11,8	7,9	3,9	3,93	P8	Solar - wind power based energy innovations	
90	12,86	0,04	11,8	7,9	3,9	3,93	P9	Move from non-renewable to renewable energy sources	
89	12,71	0,04	11,7	7,8	3,9	3,89	P10	Product longevity	
82	11,71	0,04	10,7	7,2	3,6	3,58	P11	Increased functionality	
80	11,43	0,03	10,5	7,0	3,5	3,49	P12	Additive manufacturing (3D)	
80	11,43	0,03	10,5	7,0	3,5	3,49	P13	Slow manufacturing	
75	10,71	0,03	9,8	6,6	3,3	3,28	P14	Low-carbon manufacturing/Solutions	
75	10,71	0,033	9,8	6,6	3,3	3,28	P15	Zero-emissions initiative	
70	10,00	0,031	9,2	6,1	3,1	3,06	P16	Lean manufacturing	
65	9,29	0,028	8,5	5,7	2,8	2,84	P17	Ethical trade (Fair Trade)	
60	8,57	0,026	7,9	5,2	2,6	2,62	P18	Home based working	
55	7,86	0,024	7,2	4,8	2,4	2,40	P19	Frugal business (Cost saver,money saver)	
51	7,29	0,022	6,7	4,5	2,2	2,23	P20	Peer-to-peer lending (Websites match lenders with borrowers)	
51	7,29	0,022	6,7	4,5	2,2	2,23	P21	Premium branding/limited availability	
50	7,14	0,022	6,6	4,4	2,2	2,18	P22	Peer-to-peer, sharing, co-access	
50	7,14	0,022	6,6	4,4	2,2	2,18	P23	Consumer care-promote consumer health and well-being	
50	7,14	0,022	6,6	4,4	2,2	2,18	P24	Radical transperancy about environmental/social impacts	
40	5,71	0,017	5,2	3,5	1,7	1,75	R1	Remanufacture, refurbishment, repair, reuse	RE-USE RE-DISTRIBUTION
38	5,43	0,017	5,0	3,3	1,7	1,66	R2	Next life, Second hand goods	
35	5,00	0,015	4,6	3,1	1,5	1,53	R3	Incubators and entrepreneur-support models	
30	4,29	0,013	3,9	2,6	1,3	1,31	R4	Hybrid businesses, social enterprise (for profit)	
30	4,29	0,013	3,9	2,6	1,3	1,31	R5	Upcycling	
30	4,29	0,013	3,9	2,6	1,3	1,31	R6	Industrial symbiosis	
25	3,57	0,011	3,3	2,2	1,1	1,09	R7	Biodiversity protection	
22	3,14	0,010	2,9	1,9	1,0	0,96	C1	Green chemistry	
20	2,86	0,009	2,6	1,7	0,9	0,87	C2	Recycle	RECYCLING
20	2,86	0,009	2,6	1,7	0,9	0,87	C3	Circular economy, closed loop	
20	2,86	0,009	2,6	1,7	0,9	0,87	C4	Product Cascading to use multiple times	
20	2,86	0,009	2,6	1,7	0,9	0,87	C5	Industrial symbiosis	
20	2,86	0,009	2,6	1,7	0,9	0,87	C6	Demand management (Carbon emission measurementand trade of it)	
19	2,71	0,008	2,5	1,7	0,8	0,83	C7	Take back management	
15	2,14	0,007	2,0	1,3	0,7	0,66	C8	Not for profit	
15	2,14	0,007	2,0	1,3	0,7	0,66	C9	Inclusive innovation (New goods & services for lowest income)	
14	2,00	0,006	1,8	1,2	0,6	0,61	C10	Base of pyramid (BoP) solutions (people with low income)	
12	1,71	0,005	1,6	1,0	0,5	0,52	E1	Social and biodiversity regeneration initiatives	
10	1,43	0,004	1,3	0,9	0,4	0,44	E2	Cradle-2-Cradle	ENERGY RECOVERY
10	1,43	0,004	1,3	0,9	0,4	0,44	E3	Collaborative approaches (sourcing,production,lobbying)	
7	1,00	0,003	0,9	0,6	0,3	0,31	E4	Open innovation (Use of free information)	
	327,14	1,00						*Desired type of activities towards systemic change, behavioral change*	

Table 4-Hierarchy of business practices adopted from archetypes
(Bocken et al., 2014, p. 48)

When applied to ERA's workshop the valuation is as shown in Table 4 The ideas in written form is enclosed at Appendix C

	Environment		Society		Customers		Employees		Suppliers		Shareholders		TOTAL
Vcaptured	R7	1,1	C8	0,7			P17	2,8	E3	0,4			5,02
Vproposed	C2	2,6			P3	13,0					P19	7,2	22,79
			P24	6,6	P4	12,7							19,26
(Vcreated)	P9	7,9	E3	1,3	E3	1,3	P18	7,9	P21	6,7			25,02
TOTAL(+)		11,6		8,5		27,0		10,7		7,1		7,2	**72,10**
Vmissed	E1	-0,5			E3	-0,4	P19	-2,4	E3	-0,4	E3	-0,4	-4,2
	R1	-1,7							C3	-0,9			-6,86
Vdestroyed	P19	-7,2	P15	-9,8					P17	-8,5	P18	-7,9	-42,58
									P9	-11,8	P16	-9,2	-38,43
TOTAL(-)		-9,5		-9,8		-0,4		-2,4		-21,6		-17,5	**-61,22**
												BALANCE	**10,87**

Table 5- ERA's Value Mapping Tool Workshop in numbers

If the overall result is preponderant (+) this can mean:
There is a chance that Value Captured and Value Proposed may not be realistic
They are not aware of all Value Missed and Value Destroyed or some may yet to come
There may be other factors that need more diving into

If the overall result is preponderant (-) this can be interpreted as:
They need to look into the ways to convert Value Missed and Value Destroyed to Value Captured
They can focus on practices having a value close to the equation
If the result is very low they can consider more radical practices

In ERA's case, though the result is close to a balance, the imbalance can be observed via map very explicitly. The image in Figure 10 gives us a clear idea about where to look at more carefully. It tells us that ERA

makes (and plans to make with their new propositions) their customers pleased in the expense of their suppliers. Though some efforts are shown towards the environment and the employees, apart from customers all the rest seem neglected. Having more (-) than (+) at the shareholder side also suggests reviewing the operation of the company and circularity moves carefully again.

Stakeholder balance map in Figure 11 enables us to observe each stakeholder's status. The good done to the environment and the society is almost in balance with the missed or destroyed values, therefore as a quick way to capture a higher (+) impact there, they can look at these areas if there is an opportunity to convert negatives to value captured. They also need to re-consider their suppliers at least to maintain a new balance with the involvement of their customers in a network manner.

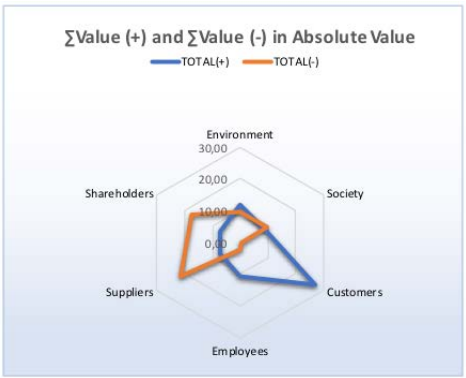


Figure 10- Performance as per stakeholders

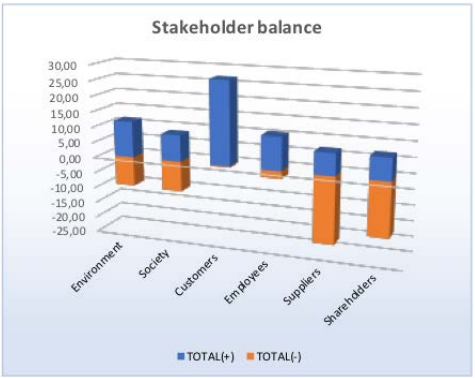


Figure 11- Performance balance of each stakeholder

It is neither realistic nor possible to maintain all have a positive stand and is against the dynamic theory of systems, as mentioned in the first paragraph of this section, however it is about managing to keep them (+/-) within reasonable interval and in the meantime to make progress towards being circular and to work towards achieving the necessary socio practical change in the society.

In this regard, how the company is doing in terms of BM innovation dynamics can be observed in Figure 12. By application of this method to BMC of ERA, as the situation of main pillars demonstrates they go very boldly towards customer value proposition. Value Capture column being so short implies there may be many Missed and Destroyed value positions as potential to be converted to positive, which we know already from previous Figure 10 and 11, that it really is the case and the Value proposition so high compared to other pillars may need a re-check with the customers before going for it, to avoid any risk.

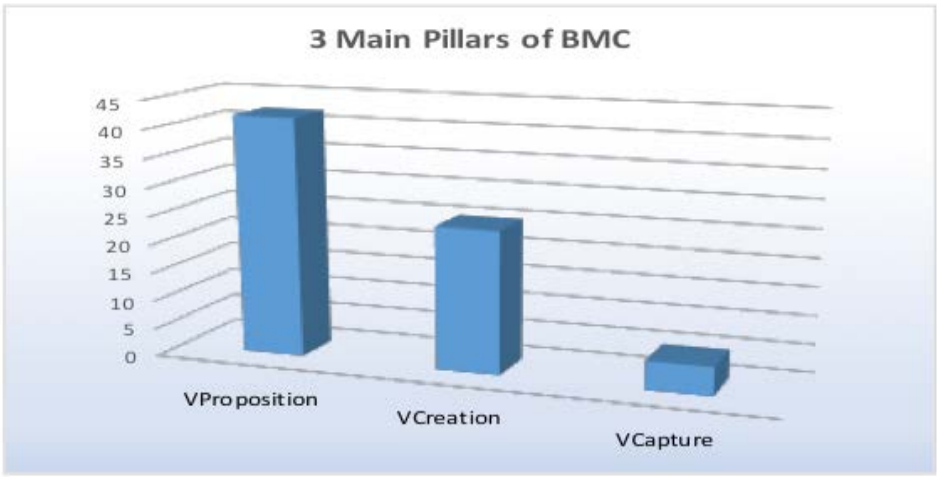


Figure 12- Main pillars valuation of Business Model Canvas

With the help of value setting through preference hierarchy systems, now it is possible to visualize and read through what is the situation in the company from BM innovation perspective or from stakeholders perspective like jigsaw puzzle pieces brought together. Consecutively, to spot potential pitfalls; to decide where to look deeper; where to begin from, and which direction to proceed, will be easier.

6.2. VALUE MAPPING TOOL GRAPHIC AND WORKSHOP MODIFICATION ATTEMPT

For companies who want to see their status and which steps towards which direction should be taken will be easier to work through in the modified form of VMT. Stakeholders are placed on the left-hand side. Value Missed, Value Destroyed and Value Captured can be assessed via brainstorming as the first phase. There is an interplay between them so that Value missed and destroyed can be converted to Value Captured, and Value Captured to Value Proposition sometimes, indicated by arrowed intersections.

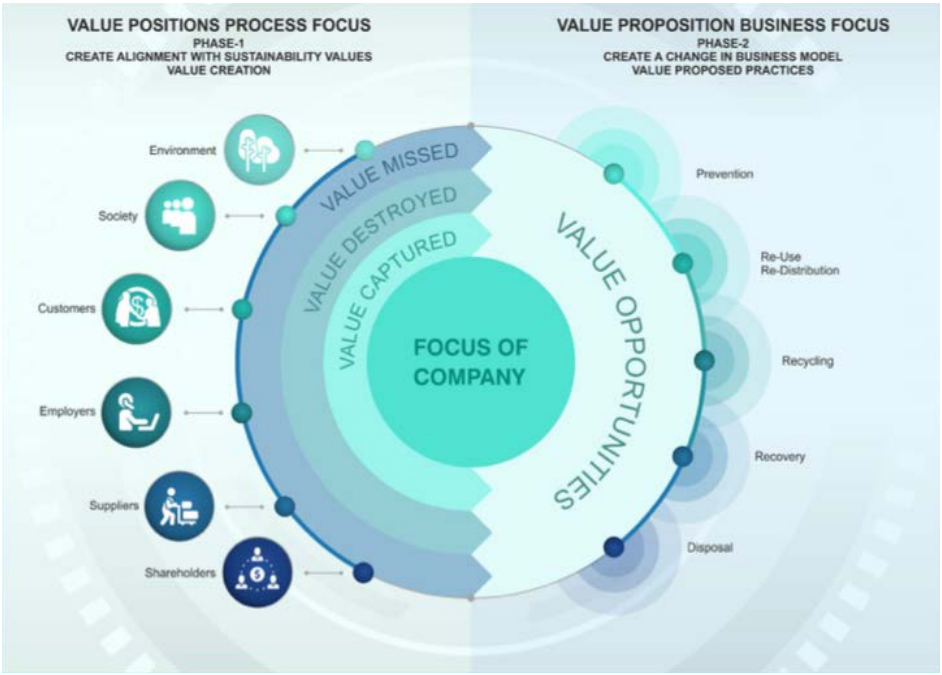


Figure 13- New configuration of Value Mapping Tool

The right hand side totally allocated to Value Proposition as the second phase of the workshop. In this section several creativity techniques can be applied for harvesting ideas on what kind of innovation as product or service, they can offer to their customers, it will be their value

proposition. At the right-hand side, there will also be the waste hierarchy. The most preferred level "prevent" is at the same time the philosophy of circular economy, but not all types of activities are there. So on the right-hand side, the values identified should be grouped according to their impact "waste degree". This is designed that way to bring consciousness to the group about the impact of the step they plan to take. It will also constitute a mediating phase to the Indexing approach.

7. CONCLUSION

This thesis explored the potentials of the Value Mapping Tool on BM level, resulting in the creation of index valuation system based on waste hierarchy and business model pillar weighting by analyzing its main three pillars and unveiling the value proposition pillar's calculated function being the first degree determinant of the business model innovation (Clauss, 2017). In doing so Circular ladder hierarchy model applied to circular business practices combined with the Ratio Scale Weighting method. In this way thesis tied a connection between the theoretical infrastructure of BM disruptive innovation provisions; an array of circular business practices and the counter dynamics of the stakeholder interests through the pursuit of an equilibrium. VMT is found useful in seeing the company's status as well as opportunities at Value Capture and Value Destroyed areas. Incorporated with the new graphic design to lead the workshop, the tool is reinforced based on arguments of this paper and its idle potential is brought to life. The use of the MLP approach in combination with the conceptual framework Value Mapping Tool is also found helpful and informative in explaining the empirical findings of the workshop.

Moreover, as a meta-level assessment, the link between cultural turns and SPT has been pointed out with the need of the paradigm shift and the role of governments, as an example of regime level elements, therein. In this respect, the systemic influence sought by CE via business practices, are identified to hinge on the individual behavior and practice change at the nano level where an intervention is needed from landscape/regime level is thereby suggested. But more is needed. Pursuing sustainability targets without touching the enigmas and 'holy grails' (e.g. Constantly changing 'Fashion' concept, promoting timeless designs), are deemed to remain superficial or at least weak, as it would take longer time than it should. The timeframe shortened, if this progress is supported by regime

and landscape level, standards and goals if adopted and monitored by governments as such UN Sustainable Development Goals ("About the Sustainable Development Goals," n.d.)

Thus the implications for sectoral formations and industry would be to encourage and support new BM formations answering various type of consumers' preferences rather than imposing one-size fits for all type of solution. And the implications for national governments would be to make necessary regime-level regulatory changes to enable recycling and industrial symbiosis. However, given the current recycling technology of worn clothes a rebound impact in terms of carbon footprint should be considered due to the technical requirements while weaving the new fabric. Therefore for the adoption of circularity in the fashion industry in general terms, ideally reduction and reuse methods can be the answer rather than recycling. Due to this one and many other challenges of the circular economy the main idea should be limiting production and consumption volumes rather than closing the loop (Lansink, n.d.) which implicitly points out behavioral change at the societal level. As can be observed from Table 4 all the highly preferred, highly ranked practices requires a different way of doing business reciprocally indicating a behavioral change with different habits, skills, and motivational meanings. Sadly in the fashion industry the trends, looks are still being changed rapidly to form a contrast with the trajectory they claim to have. Therefore a need for social engineering to orchestrate the concept of a trend, the looks, frequency of changing fashion concept well-adjusted to the new sustainable practices, has emerged so that the routinized actions which support the existing system can be reconfigured. Without a framework as such, the signed charter between the pioneers of the fashion world would remain as a wishful thinking and system-level change will not be successful if it does not involve behavioral change and societal transformation as indicated above.

The study also aimed to provide an angle of view to a manufacturing textile company in configuring their circular business model with regard to their place in the value chain and found out that circular business model transition is disruptive in nature and the disruptive business model configuration for incumbent B2B companies needs a collaboration prerequisite throughout their value network to be more effective in driving a change at socio-technical level. Without such cooperation either the modification remains incremental mostly at pillars other than value proposed or changing value proposition involves a high risk of losing customer and market share. (Ghisellini et al., 2016) expresses this as the adoption of circular economy entails cooperation throughout the value network to achieve a more effective circular pattern. In addition to these, the incumbent companies face financial constraints in the investment phase of technical recycling projects. Therefore the transformation is neither fast nor easy.

Therefore by this paper, it has been highlighted that the incumbent firms, by the help of VMT with the improved configuration the balance between stakeholder interests should be looked out in terms of the circular business practices adopted as well as which pillar they function at their BMC by using the index developed in this study. Any configuration in this respect will still require collaboration throughout firms' value network.

8. GENERAL ASSESSMENT

8.1 LIMITATIONS

This research is limited with only one case and one workshop, ideally, it should be iterative as in Bocken's workshops. The creation of ideas by the company staff is directly proportional with their engagement to the concepts, therefore it is a process to be held with several teams in the same company and in several others in a longer time frame.

The method used in the workshop was mainly brainstorming, might there be some additional guiding questions or instructions used, could not be obtained from N.Bocken. The workshop involved participants from high-level management which might have framed the personnel's idea generation or freedom to express.

In the indexing approach the array of given weight rates assigned based on author's opinion, therefore it is a suggestion and does not indicate a limitation for any modifying need, within the approximate intervals given for the groups of the waste hierarchy.

8.2 FUTURE RESEARCH AREAS

For the contribution of this study, the index type used has not been used before and does not involve measurements of any kind. It is based on the functioning philosophies of each business practice because the main aim is to improve VMT to be a practical decision tool for the enterprises in making their preferences about which practices to adopt on the way to being circular in a balance rather than a precise calculation of the environmental burden. Future studies can try substituting measurement based methods in ranking order instead and compare the outcomes.
The behavioral and practice change as described in SPT can be examined further as a cultural turn.

LIST OF REFERENCES

About the Fashion Industry Charter for Climate Action | UNFCCC. (n.d.). Retrieved January 30, 2019, from https://unfccc.int/climate-action/sectoral-engagement/global-climate-action-in-fashion/about-the-fashion-industry-charter-for-climate-action

About the Sustainable Development Goals. (n.d.). Retrieved February 22, 2019, from https://www.un.org/sustainabledevelopment/sustainable-development-goals/

Antikainen, M., & Valkokari, K. (2016). A Framework for Sustainable Circular Business Model Innovation. *Technology Innovation Management Review*, *6*(7), 5–12.

Bachmann-Medick, D. (2016). *Cultural turns: New orientations in the study of culture*. Walter de Gruyter GmbH & Co KG.

Bain, M. (n.d.). Why cotton is so difficult to recycle—and how clothing retailers hope to change that. Retrieved January 25, 2019, from https://qz.com/487423/why-cotton-is-so-difficult-to-recycle-and-how-clothing-retailers-hope-to-change-that/

Başbakanlık Mevzuatı Geliştirme ve Yayın Genel Müdürlüğü. (n.d.). Retrieved January 26, 2019, from http://www.resmigazete.gov.tr/eskiler/2015/12/20151231M4-8.htm

Blomsma, F., & Brennan, G. (2017). The Emergence of Circular Economy: A New Framing Around Prolonging Resource Productivity: The Emergence of Circular Economy. *Journal of Industrial Ecology*, *21*(3), 603–614. https://doi.org/10.1111/jiec.12603

Bocken, N. M., Short, S. W., Rana, P., & Evans, S. (2014). A literature and practice review to develop sustainable business model archetypes. *Journal of Cleaner Production*, *65*, 42–56.

Bocken, Nancy, De Pauw, I., Bakker, C., & Grinten, B. V. der. (2016).

Product design and business model strategies for a circular economy. *Journal of Industrial and Production Engineering*, *33*(5), 308–320. https://doi.org/doi:10.1080/21681015.2016.1172124

Bocken, Nancy, Miller, K., & Evans, S. (2016). Assessing the environmental impact of new Circular business models (p. 17). Presented at the Conference proceedings Conference "New Business Models"–Exploring a changing view on organizing value creation.

Bocken, Nancy, Miller, K., Weissbrod, I., Holgado, M., & Evans, S. (2018). Slowing resource loops in the Circular Economy: an experimentation approach in fashion retail.

Bocken, Nancy, Short, S., Evans, S., & Rana, P. (2013). A value mapping tool for sustainable business modelling. *Corporate Governance: The International Journal of Business in Society*, *13*(5), 482–497. https://doi.org/10.1108/CG-06-2013-0078

Bocken, NMP, Rana, P., & Short, S. (2015). Value mapping for sustainable business thinking. *Journal of Industrial and Production Engineering*, *32*(1), 67–81. https://doi.org/10.1080/21681015.2014.1000399

Boons, F., & Lüdeke-Freund, F. (2012). Business models for sustainable innovation: state-of-the-art and steps towards a research agenda. *Journal of Cleaner Production*, *45*, 9–19. https://doi.org/10.1016/j.jclepro.2012.07.007

Boulding, K. (1966). E., 1966, THE ECONOMICS OF THE COMING SPACESHIP EARTH. *New York*.

Braungart, M., McDonough, W., & Bollinger, A. (2007). Cradle-to-cradle design: creating healthy emissions – a strategy for eco-effective product and system design. *Journal of Cleaner Production*, *15*(13–14), 1337–1348. https://doi.org/10.1016/j.jclepro.2006.08.003

Chabuk, A., Al-Ansari, N., Hussain, H. M., Knutsson, S., & Pusch, R.

(2017). Landfill Sites Selection Using AnalyticalHierarchy Process and Ratio ScaleWeighting: Case Study of Al-Mahawil, Babylon, Iraq. *Engineering*, *9*(2), 123–141.

Chesbrough, H. (2010). Business model innovation: opportunities and barriers. *Long Range Planning*, *43*(2–3), 354–363.

Christensen, C. M. (2003). The Innovator's Dilemma: The Revolutionary National Bestseller That Changed the Way of Business. *Harvard Business School Press Boston, Massachusetts*.

Christensen, C. M., & Raynor, M. E. (2003). The innovator's solution: Creating and sustaining successful growth.

Clauss, T. (2017). Measuring business model innovation: conceptualization, scale development, and proof of performance. *R&D Management*, *47*(3), 385–403.

Dematerialization. (n.d.). Retrieved February 4, 2019, from https://www.ceguide.org/Strategies-and-examples/Make/Dematerialization

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Text with EEA relevance), Pub. L. No. 32008L0098, OJ L 312 (2008). Retrieved from http://data.europa.eu/eli/dir/2008/98/oj/eng

Elia, V., Gnoni, M. G., & Tornese, F. (2017). Measuring circular economy strategies through index methods: A critical analysis. *Journal of Cleaner Production*, *142*, 2741–2751.

Ellen MacArthur Foundation. (2013). *Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf*. Retrieved from https://www.ellenmacarthurfoundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf

EllenMacArthurFoundation. (2015, September 12). Retrieved February 10, 2019, from https://www.ellenmacarthurfoundation.org/assets/downloads/TCE_Ellen-MacArthur-Foundation_9-Dec-2015.pdf

EllenMacArthurFoundation_IntelligentAssets. (2016), 39.

Geels, F. W. (2002). Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. *Research Policy*, *31*(8–9), 1257–1274.

Geels, F. W. (2011). The multi-level perspective on sustainability transitions: Responses to seven criticisms. *Environmental Innovation and Societal Transitions*, *1*(1), 24–40. https://doi.org/10.1016/j.eist.2011.02.002

Ghisellini, P., Cialani, C., & Ulgiati, S. (2016). A review on circular economy: the expected transition to a balanced interplay of environmental and economic systems. *Journal of Cleaner Production*, *114*, 11–32.

Gould, H. (2015, February 26). Waste is so last season: recycling clothes in the fashion industry. *The Guardian*. Retrieved from https://www.theguardian.com/sustainable-business/sustainable-fashion-blog/2015/feb/26/waste-recycling-textiles-fashion-industry

Hargreaves, T., Longhurst, N., & Seyfang, G. (2013). Up, down, round and round: connecting regimes and practices in innovation for sustainability. *Environment and Planning A*, *45*(2), 402–420.

Homrich, A. S., Galvao, G., Abadia, L. G., & Carvalho, M. M. (2018). The circular economy umbrella: Trends and gaps on integrating pathways. *Journal of Cleaner Production*, *175*, 525–543.

Hultman, J., & Corvellec, H. (2012). The European waste hierarchy: From the sociomateriality of waste to a politics of consumption. *Environment and Planning A*, *44*(10), 2413–2427.

Hurwitz, M., & Adair, R. (2014). Collaboration Theory Stephanie Colbry Cabrini College. *The Journal of Leadership Education*, *13 (14)*, 63–75. https://doi.org/10.12806/V13/I4/C8

Jiao, N., & Evans, S. (2017). Business Models for Sustainability: The Case of Repurposing a Second-Life for Electric Vehicle Batteries

(pp. 537–545). Presented at the International Conference on Sustainable Design and Manufacturing, Springer.

Kemp, R., & Rotmans, J. (2005). The management of the co-evolution of technical, environmental and social systems. In *Towards environmental innovation systems* (pp. 33–55). Springer.

Kilpinen, E. (2012). Human beings as creatures of habit.

Kim, D. H. (1993). *Systems archetypes I: diagnosing systemic issues and designing high-leverage interventions*. Pegasus Communications.

Kim, D. H. (2013). Archetypes as dynamic theories. *The Systems Thinker*, *24*(1), 7–10.

King, A. A., & Baatartogtokh, B. (2015). How useful is the theory of disruptive innovation? *MIT Sloan Management Review*, *57*(1), 77.

Kok, L., Wurpel, G., & Ten Wolde, A. (2013). Unleashing the Powerof the Circular Economy. In *Issuu*. Retrieved from https://issuu.com/aloisclemens/docs/full_report_unleashing_the_power_of_the_circular_e

Kraaijenhagen, C., Van Oppen, C., & Bocken, N. (2016). Circular business. *Collaborate and Circulate*.

Kraaijenhagen, C., van Oppen, C., & Bocken, N. (2016). *Circular business: collaborate and circulate*. Chris Bernasco en Lucy Goodchild-van Hilten.

Lacan, J. (2006). *Ecrits: The first complete edition in English*. WW Norton & Company.

Lansink, A. (2018a). Challenging Changes – Connecting Waste Hierarchy and Circular Economy. *Waste Management & Research*, *36*(10), 872–872. https://doi.org/10.1177/0734242X18795600

Lansink, A. (2018b). Challenging Changes–Connecting Waste Hierarchy and Circular Economy. *Waste Management & Research: The Journal Of The International Solid Wastes And Public Cleansing Association, ISWA*, *36*(10), 872–872. https://doi.

org/10.1177/0734242X18795600

Lansink, A. (n.d.). Challenging Changes – Connecting Waste Hierachy and Circular Economy. Retrieved February 9, 2019, from https://challengingchanges.eu/

Lüdeke-Freund, F. (2010). Towards a Conceptual Framework of Business Models for Susutainability, 28.

Matkovskyy, R. (n.d.). A Meso-level Representation of Economic Systems: A Theoretical Approach, 9.

Narcy, R (November 29, 2018) Personal Interview

Nijstad, B. A., Stroebe, W., & Lodewijkx, H. F. M. (2006). The illusion of group productivity: a reduction of failures explanation. *European Journal of Social Psychology*, *36*(1), 31–48. https://doi.org/10.1002/ejsp.295

OECD Environment Directorate, & Environment Policy Committee. (2018). *Business Models for the Circular Economy- Opportunities and Challenges From a Policy Perspective* (Committee report No. ENV/EPOC/WPRPW(2017)1/FINAL). OECD. Retrieved from http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/EPOC/WPRPW(2017)1/FINAL&docLanguage=En

Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: a handbook for visionaries, game changers, and challengers*. John Wiley & Sons.

Osterwalder, A., Pigneur, Y., Oliveira, M. A.-Y., & Ferreira, J. J. P. (2011). Business Model Generation: A handbook for visionaries, game changers and challengers. *African Journal of Business Management*, *5*(7), 22–30.

Osterwalder, A., & Tucci, C. L. (2005). Clarifying Business Models: Origins, Present, and Future of the Concept. *Communications of the Association for Information Systems*, *16*. https://doi.

org/10.17705/1CAIS.01601

R3-BP4.pdf. (n.d.). Retrieved from https://reporting3.org/wp-content/uploads/2018/06/R3-BP4.pdf

Reckwitz, A. (2002). Toward a theory of social practices: A development in culturalist theorizing. *European Journal of Social Theory*, *5*(2), 243–263.

Schaltegger, S., Lüdeke-Freund, F., & Hansen, E. G. (2011). Business cases for sustainability and the role of business model innovation: developing a conceptual framework.

Shove, E. (2010). Beyond the ABC: climate change policy and theories of social change. *Environment and Planning A*, *42*(6), 1273–1285.

Southerton, D., & Watson, M. (n.d.). Multi-Level Perspective and Theories of Practice: a mistaken controversy? Retrieved February 22, 2019, from http://en.forumviesmobiles.org/arguing/2015/11/25/multi-level-perspective-and-theories-practice-mistaken-controversy-2972

Stahel, W. (1994). The utilization-focused service economy: Resource efficiency and product-life extension. *The Greening of Industrial Ecosystems*, 178–190.

Teece, D. J. (2010). Business Models, Business Strategy and Innovation. *Long Range Planning*, *43*(2–3), 172–194. https://doi.org/10.1016/j.lrp.2009.07.003

The importance of waste hierarchy in circular economy | Hi4CSR. (n.d.). Retrieved February 1, 2019, from http://www.hi4csr.com/en/blog/the-importance-of-waste-hierarchy-in-circular-economy/

Tukker, A. (2015). Product services for a resource-efficient and circular economy–a review. *Journal of Cleaner Production*, *97*, 76–91.

Upward, A. (2013). Towards an ontology and canvas for strongly sustainable business models: A systemic design science exploration.

Uusitalo, T., & Antikainen, M. (2018). The concept of value in circular

economy business models. Presented at the The ISPIM Innovation Forum, Boston.

Vos, M., Wullink, F., DeLange, M., Vanacoleyen, M., Van Staveren, D., & Von Meijenfeldt, V. (n.d.). The circular economy, what is it and what does it mean for you? Retrieved October 18, 2018, from https://www.arcadis.com/media/9/D/3/%7B9D33B0CB-3F9D-4C16-9C74-B763D4BA442C%7DBriefing%20Paper%20-The%20Circular%20Economy_002.pdf

Wainstein, M. E., & Bumpus, A. G. (2016). Business models as drivers of the low carbon power system transition: a multi-level perspective. *Journal of Cleaner Production*, *126*, 572–585. https://doi.org/10.1016/j.jclepro.2016.02.095

What is a Circular Economy? | Ellen MacArthur Foundation. (2017). Retrieved February 4, 2019, from https://www.ellenmacarthurfoundation.org/circular-economy/concept

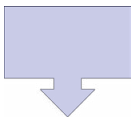
What's the Difference Between AR, VR, and MR? (2017, September 21). Retrieved February 3, 2019, from https://www.fi.edu/difference-between-ar-vr-and-mr

World Commission on Environment and Development. (1987). *Our common future*. Oxford; New York: Oxford University Press.

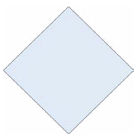
APPENDIX A: Data Collection-Interviews

TYPE	Data Source	Type of Data source		
	Name	Primary Source	Secondary Source	Data collected
Interview	Romain Narcy	,		*Please introduce yourself* Romain Narcy General Manager of ERA Completed projects: Re-cycled collection to France and Bestseller (Denmark) *Could you describe how the project was started?* In 2014 they realized the project that ERA manufactured a collection from recycled cotton & polyester fabric, and continued a couple of years. The old jeans to be recycled have been collected in France and shipped to Turkey. For the strength of the recycled fabric to be produced, polyester added for strength. This polyester is obtained from plastic bottles however these type of bottles do not exist in Turkey and the recycling company imports them from USA *Who was involved in the project inception?* This idea belongs to our customer abroad. We can produce completely recycled garments if there is demand. *What was the challenge of this project?* The import regulation of Turkey restricts old cloth import for recycling, therefore some work has been done on the collected items, only legs were cut out and sent to us. This was the challenging part. *Please describe the sustainability goals of the project.* This was an experimental project and we continued for sometime. By this way we recycled old pants as well as plastic bottles. However from carbonprint point of view it is sad that for this type of process only specific type of plastic could be used and that was imported from USA. *Do you have other projects like this?* Ongoing projects: Attending fashion fair with %100 recycled collection Water recycling system: We are working on a project to reuse the water 70 times filtered by reverse-osmosis before releasing to the nature with a capacity of around 100,000 pieces/month. This will result in cost-reduction as well. We are searching finance for this project.

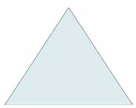
APPENDIX B DESIGN OF THE WORKSHOP



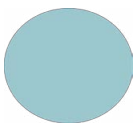
Introduction 15 minutes



Presentation 15 minutes

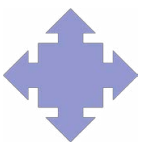


Warming up with Eco-Asit tool 10 minutes



Value Mapping Tool introduced 10 minutes

Brainstorming 50 minutes



Discussion 15 minutes

Creativity exercise 45 minutes

Wrap up

APPENDIX C WORKSHOP RESULTS-2

STAKEHOLDERS / VALUE	ENVIRONMENT	SOCIETY	CUSTOMERS	EMPLOYEES	SUPPLIERS	SHAREHOLDERS
VALUE CAPTURED	*Using eco-friendly enzymes, biodiversity protected	*Provide clothes to very poor children in the Eastern region by adjusting their out-of-date collections *Their presence caused other catering businesses flourish around the district		*They enjoy the comfort of having secure jobs	*Has trustworthy image by timely payments *They align their operating systems accordingly -prevent waste save time *Have a reflective feeling as; ERA's customers are reputable so we are.	
VALUE MISSED	*Sensitive about scraps and cuttings *Could have more green activities		*Operations could have been integrated	*Wages could be higher *Turnover could be lower *Flexible working could be adapted	*Targets could be determined mutually to find the optimum *Agreements could be made on re-use of packing materials	*More than one-Their authority zones could be segregated
VALUE DESTROYED	*Too much water usage/ creating pollution in agriculture of cotton/washing fabric contaminates *Energy consumption is high in forms of electricity and water and oil for cars and shuttles	*Location of the office is in a busy zone of the city.		*Traffic consumes time and creates stress.	*They may lose customer because of water filtration system	*Excess inventory due to purchases not to the scale *Flexible WFH system may take the control away from management
VALUE PROPOSED	*Sustainable energy invesment can be made as solar & wind *Sensored light system *Water filtration systems	*Can be worked together with municipalities in recycling the clothes they have collected. *Projects can be led by pubic bodies to inform the audience about mindful consumption.	*Track the end-user and support in the form of repairing/renewing/changing or new model developing, can be given *Support the Brands technically in their developing new sustainable products *Producing samples and collections by using augmented reality with various fabric/ design/ fit and wash options	*Flexible WFH can be adapted	*Selecting high technology fabrics	*Cutting costs by introducing digital aspect to the sample and collection preparing processes.