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Transitioning IKEA Towards a Circular Economy: A Backcasting Approach

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Abstract

As population and affluence are set to increase, so will the impacts on the environment. The Circular Economy is seen by businesses as a potential solution to decouple these impacts from profits, but many companies are left asking what and how to start the transition, including the multinational home furnishing retailer IKEA. This thesis combines several tools from the areas of Organizational Change Management and Industrial Ecology in order to provide a vision of what a circular business model could look like for IKEA, as well as a pathway to transition towards it. These tools include the backcasting, Kotter's stepwise model for organizational change, and Osterwalder's business model canvas.

Based on this study, in order to transition to circular business models, companies would need to create collaborations, promote experimentation and innovation mindsets within the company, redesign products and processes to fit reverse logistics, and lobby for pro-circular economy waste legislation. However, a longitudinal study is required to confirm these findings, and more case studies are needed.

Keywords:

IKEA, backcasting, circular economy, circular business models, organizational change

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1. INTRODUCTION

1.1 Background

As population and affluence increase, our globalized society will require an ever-growing amount of resources extracted from the Earth to sustain our way of life, if the current linear economic system continues. This system results in externalities that lead to many undesirable environmental and social consequences, including, but not limited to: climate change, resource scarcity, and income inequality. One proposed solution to these issues is shifting the current linear economic paradigm to that of the circular economy.

According to the Ellen Macarthur Foundation (2015), a Circular Economy is “one that is restorative and regenerative by design, and which aims to keep products, components, and materials at their highest utility and value at all times, distinguishing between technical and biological cycles”. The Circular Economy utilizes principles from biological systems, for example closing material loops and systems thinking, to reduce the waste and increase energy efficiency from our current techno-industrial system. It is estimated that the Circular Economy is a \$4.5 billion business opportunity, which many companies are beginning to take interest in (Lacy & Rutqvist, 2015).

Due to their scale, multinational corporations have a large impact on the economy, environment, and society. One potential outcome of the Circular Economy is to decouple profits from impact and reduce dependence on material resources. With this incentive in mind, most multinational companies are embedding sustainability and circular economy principles into their operations, such as prolonging product lifetime through reducing, reusing, and recycling. However, it has been argued that businesses go through several stages of Sustainability: first reducing risk and complying to legislation, then improving value chains through efficient operations and products, designing circular products and services, developing new business models, and finally working towards regenerative systems (Nidumolu et al, 2009; Schuit et al, 2017). To fully transition to a circular economy, radical transformation of business models will be required to avoid the impacts of the current linear system. Due to their large size, multinational corporations can have a significant impact on the economy, environment, and society if they transition their business models towards circular ones. However, due to their immense size, it will be complicated to make radical changes to their business model, and managers question where and how to start. Previous research has studied various aspects of the development of the circular economy, such as product design, supply chain, and the roles of technology, yet the question of how to systematically transition an organization towards circular business models remains.

The IKEA Group is Swedish multinational group of companies and the world’s largest furniture retailer with over 390 stores across 48 countries (IKEA, 2015). One of the groups is Inter IKEA Systems B.V. (IIS), the owner of the IKEA Concept, worldwide IKEA franchisor, and responsible for developing and improving the IKEA Concept and its sustainability initiatives. In pursuit of their vision of “creating a better everyday life for the many people,” the leadership of IIS has recently set the Circular Economy as one of the future strategic directions of the group of companies. With higher leadership support, Inter IKEA Systems, in partnership with TU Delft, Chalmers, and Erasmus Universities, aims to explore how the company can begin to transition towards the circular economy.

In this study, theory from the fields of Transition Management and Organizational Change Management are combined into a methodological framework to explore how large organizations like IKEA can begin to make the change. Kotter’s (1995) Stepwise Model for Organizational Change is complemented with Holmberg’s (1998) Backcasting Methodology and Osterwalder’s Business Model Canvas, to identify a possible circular business model for the company in the year 2025, and create a pathway for IKEA and other companies to begin the transformation of their organization.

1.2 IKEA Background

IKEA was founded in 1943 by Ingvar Kamprad in the countryside of southern Sweden, evolving from a mail-order business selling general products into a unique, worldwide home furnishing concept. Kamprad’s winning strategy was to design inexpensive and easy to assemble furniture with detailed instructions, so that customers could choose, transport, and assemble furniture themselves. The cost savings were then passed down on to the customers, which received furniture at 20-50% less than the competition. The first store was opened in 1953, which evolved over time

to include restaurants and children's play areas, and now has over 390 stores worldwide (The Natural Step, 2008; Inter IKEA Systems B.V., 2016j).

Financially, the IKEA Group has grown exponentially since its beginning. In the last decade, it has grown from €20 billion in revenue in 2007 to €35.1 billion in 2016 (Inter IKEA Systems, 2016j). Now, it designs, partially manufactures, distributes, and sells approximately 10,000 unique products, including furniture, home accessories and decoration, and foodstuffs.

The group of companies is owned by a non-profit organization, Interogo Foundation, and its holding company, which includes Inter IKEA Systems B.V., IKEA of Sweden (IOS), IKEA Supply, and IKEA Industry. The company runs on a franchise- system, and there are 14 other companies that own and operate the retail centers. The INGKA Group owns a majority of the stores. In August 2016, the management structure was changed to simplify decision-making. Ownership of product design (IOS), distribution (IKEA Supply), and manufacturing (IKEA Industry) was transferred from the INGKA group, to Inter-IKEA Holding B.V. This will be detailed in section 4.1.3.

IKEA has a strong company culture and a guiding vision to create a better everyday life for the majority of people. This results in sustainability being incorporated into the core of IKEA's operations. The company has recently identified the circular economy as a strategic direction in order to reduce its impacts from its activities, as well as give it a competitive advantage in the marketplace. The company is currently starting to implement circular economy practices such as modular design and product takeback services, however these are only at small-scale at the moment.

1.3 Aim and Research Questions

A future Circular IKEA customer experience was desired by Inter IKEA Systems B.V. (IIS) to create urgency about the need for circular business models within the organization. IIS is responsible for the development of the "IKEA Concept," the rules that IKEA franchisees must adhere to. As a result of a partnership between IKEA and the Ellen MacArthur Foundation, a research partnership was formed between Inter IKEA Systems B.V. and local universities, namely Delft University of Technology in Delft, the Netherlands, and Erasmus University in Rotterdam, the Netherlands. One student from each of these universities was chosen to work with the Sustainability Specialist at IIS, hereforth called the "Circular IKEA Vision Team," to answer the following **assignment question**:

AQ: *What would be an ideal circular IKEA customer experience in 2025 for product revival at the end of life in a world where autonomous delivery vehicles are common and cheap, and all products are connected?*

The question was formulated by the Sustainability Specialist at IIS. It specifies the use of future technologies such as Internet of Things and autonomous vehicles in order to teach others about these future technologies and how they can be applied for circular business models at IKEA.

The aim of this thesis is twofold. The first is to answer the IKEA assignment question presented above to create a vision for the company to provide a direction for sustainable change. The company will be able to use this vision to educate internal and external stakeholders about the application of circular economy within the company and inspire future ideas. The second aim is to explore how IKEA can begin to reach this or a similar vision. It is the intention that other multinational companies who want to start the transition towards circular business models can use this case study as a starting point.

This study will answer the following **research question** and subquestions:

RQ: *How can multinational corporations, like IKEA, transition their current linear business models towards circular ones?*

Organizational change management offers theories and models of how to change an organization, however there have been no studies done on their application on the transition towards circular business models. This thesis aims to explore the initial steps and a possible pathway that a multinational company like IKEA can follow in order to aid the transition process.

S1: *What are the strengths and weaknesses of the backcasting approach in the creation of a Circular IKEA vision for 2025?*

In order to answer the **assignment question** proposed by IKEA, and to create a vision to guide the transition process for the company, it was proposed to apply the backcasting methodology. This question explores the strengths and weaknesses of this process in order to provide evidence to answer the main research question.

S2: *How would the business model change from linear to circular in the case of IKEA?*

Based off a business model canvas analysis, the changes between the present state analysis and future vision from the backcasting study, can be identified in order to assist in creating a pathway for the transition.

2. THEORY

2.1 Organizational Change Management

Due to the ever-changing nature of markets, companies are required to evolve over time in order to remain competitive. The field of Organizational Change Management offers an immense amount of research on the content, context, needs, challenges, and processes used for managing significant changes within an organization (Armenakis & Bedeian, 1999). Although several change management models exist in the literature (Judson, 1991; Kotter, 1995; Galpin, 1996; Armenakis et al, 1999), there are several themes common to all of them. Due to its step of creating a vision, which overlaps with other literature focusing on sustainable development (Quist, 2007), this thesis focuses on one model in particular, that of John Kotter (1995).

2.1.1 Kotter's Stepwise Model for Organizational Change

First published in Harvard Business Review in 1995, Kotter's Stepwise Model is a popular tool used in the area of Organizational Change Management due to its straightforward and practical format. Although it is based mainly on empirical evidence from Kotter's personal and business experience and research, studies have been conducted that found support for most of the individual steps. Critics of the model argue that no formal studies were found covering the holistic structure of the model (Appelbaum et al, 2012).

It suggests eight steps for general transformation of an organization:

- 1. Establishing a sense of urgency**
The first steps involve examining the market, what the competition is doing and how customers are changing to identify potential threats and opportunities.
- 2. Forming a powerful guiding coalition**
A group of individuals with enough power should be organized to lead a change effort.
- 3. Creating a vision**
The creation of a vision assists to direct the change effort, and includes developing strategies for achieving that vision.
- 4. Communicating the vision**
After the vision is created, it should be discussed via every channel possible so that employees understand. The guiding coalition should set an example for new required behaviors.
- 5. Empowering others to act on the vision**
This step involves identifying and eliminating obstacles to change, by altering organizational systems and structures that prevent the vision from coming to reality. Risk-taking and nontraditional ideas, activities, and actions should be encouraged.
- 6. Planning for and creating short-term wins**
In order to increase confidence, performance improvements should be planned and measured. Appropriate recognition and rewards should also be given to those involved with the improvements.
- 7. Consolidating improvements and producing more change**
As the improvements gain credibility and employees gain confidence, the organization can continue to improve the systems, structures, and policies that are in the way of the vision. This can include hiring or developing new employees who can assist in the vision.

8. Institutionalizing new approaches

Root new behaviors into the company culture further and create leadership development programs to stimulate succession.

2.2 Backcasting

One of the most widely used visioning approaches in strategic planning for sustainability is the backcasting methodology. This is a systematic, step-by-step approach which develops scenarios based on the attainment of a preferred future vision, and explores the possibility and consequences of achieving those endpoints (Holmberg, 1998; Robinson, 1982). As opposed to forecasting, in which current trends are projected into the future, backcasting accelerates into the future, releasing current day barriers, to create a desirable and sustainable vision and pathway that an organization or multiple organizations can work towards (Robinson, 2011).

Backcasting was first introduced as a method by Robinson in 1982, who credits it to Amory Lovins, in the context of energy future studies (Dreborg, 1996). The early uses were from a governmental perspective, focused on exploring and assessing desirable energy futures as a potential for policy analysis and supporting policy makers. In the 1990's backcasting was applied to other sustainability issues such as water and mobility (Quist, 2007). Several methods emerged, particularly the participatory approach in the Netherlands, Sweden, and Canada (Vergragt & Quist, 2011). This type of backcasting has the benefit of bringing together expert stakeholders, citizens, consumers, and/or end-users to create a shared desirable vision, thus increasing engagement and learning, under the guidance of a research team (Quist, 2016).

The Natural Step (TNS) methodology, is a type of backcasting methodology focusing on strategic planning for sustainability in companies, and proves that backcasting can be used on an individual organizational level (Quist, 2007). This framework has been used by over 100 organizations, including multinational corporations in Europe and the US, to guide their strategic sustainability initiatives (Broman et al, 2000). It can be seen as participatory, but it focuses on internal stakeholders and employees (Quist, 2007). It differs from other methods of innovation, in that it incorporates four principles to ensure sustainability. These principles state that in order for a society to be sustainable, nature's functions and diversity must not be systematically:

- i. Subject to increasing concentrations of substances extracted from the earth's crust
- ii. Subject to increasing concentrations of substances produced by society
- iii. Impoverished by over-harvesting of other forms of ecosystem manipulation
- iv. Resources must be used fairly and efficiently in order to meet basic human needs worldwide (Holmberg, 1998)

These principles have been continuously improved over the years by scientists, corporations, and municipalities. Because disagreements between experts in a particular field are based on the actions that should be taken, rather than the final state, these principles can be used to guide experts to focus on what is already agreed upon, rather than disagreed upon, to find solutions faster (Holmberg, 1998).

There are four steps in the backcasting process, as defined by Holmberg (1998) (Figure 1). In the first step, a set of criteria that indicate the desirability and sustainability of the future vision are defined and discussed. This theoretically comes from the idea that the future is unknown, but we can lay out a set of criteria, or conditions, that make the future clearer. The Natural Step principles, discussed below, are typically applied here, but can be adapted for the specific company's context (Alänge & Lundqvist, 2014). In the second step, the present state, along with current activities and competences are evaluated based on the criteria developed in the first step. This aids in identifying unsustainable activities and can be used as a stepping stone for step 3. In this step, ideas for the future are envisaged in a variety of manners. In this step, it is crucial to be open-minded and brainstorm a number of future options. These options are then assessed against the criteria from Step 1, and various scenarios are developed to find the most feasible and sustainable option. In the final step, the current and future situations are connected by creating a transition pathway to achieve the future outcome in a timely manner (Holmberg, 1998).

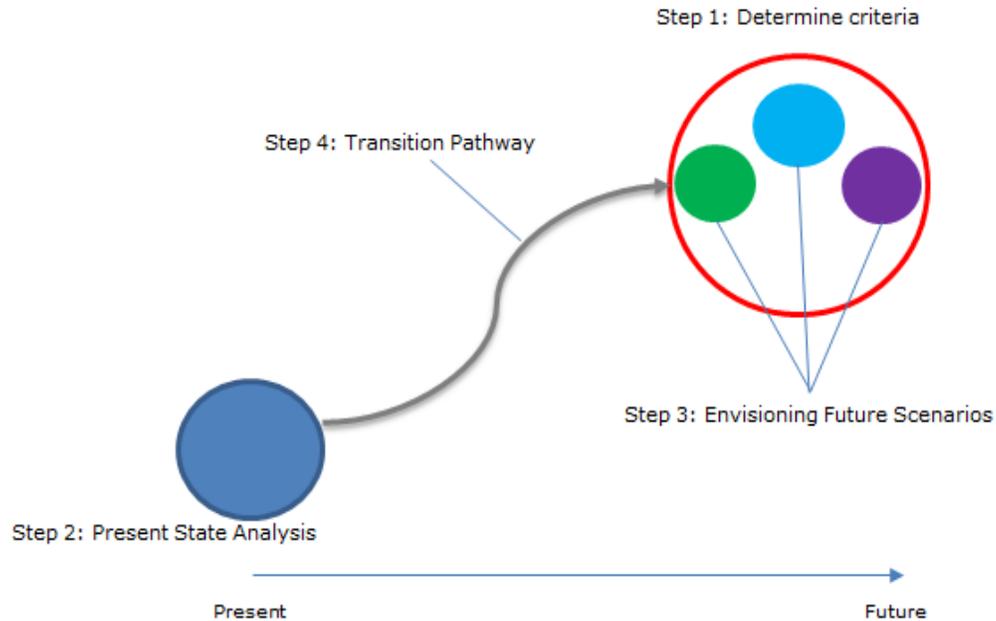


Figure 1: The four backcasting steps

According to Dreborg (1996) backcasting is a suitable method when the issue at hand is complex, that it affects many sectors and levels of society and when there is a need for a radical transformation, rather than small, incremental steps. It is also useful when dominant trends are part of the problem and when the problem is a matter of externalities, and the market cannot fix itself. Finally, Dreborg states that backcasting should be used when the time horizon is far into the future, to allow enough time and flexibility for the ideal state to come about.

Backcasting has been applied and evaluated to the circular economy in previous studies, but not on an individual organizational level. Feijen (2015) concluded that backcasting is a possible method to explore transitions to a circular economy on a sectoral level, with a case study on the Dutch furniture industry. A practical methodology based on the Dutch backcasting method was developed for consultants and other service providers to assist businesses in implementing circular economy principles within their operations. This method is similar to backcasting since it includes the strategic problem orientation, and a participatory workshop that includes visioning and transition pathway. It differs from traditional backcasting in that it has an elaboration phase focused specifically on consultant work, for example elaborating the proposal for the clients, and a step for clients to provide feedback and discussion. This method was found to be effective for identifying opportunities for businesses within CE, however it is best applied when participants are already familiar with CE, and when it includes participants with different perspectives and interests who are looking for a way to apply CE principles.

IKEA has applied the Natural Step (TNS) framework or backcasting approach in the past. In 1990, IKEA experienced environmental problems with their particle board product lines, which were emitting too much formaldehyde according to Danish standards (The Natural Step, 2008). In response, TNS was used as the structure for creation and implementation of its company-wide environmental policies. Since then, TNS has been used to make more sustainable changes to their products and services. In 1997 TNS was used for IKEA's campaign for compact fluorescent lamps, and as of 2000 the company was found to be using the framework in all its product development (Broman et al, 2000). Broman et al. (2000) found that the TNS framework was effective in aligning short term actions with long term goals in the direction of sustainability at IKEA, resulting in improved communication and strategic planning.

Furthermore, Lundqvist et al. (2006) describe a process based on backcasting for sustainability strategy planning within large companies, one of them being a specific product development team at IKEA. The process uses the four backcasting steps, using TNS principles as criteria, and brainstorms potential business opportunities based on

different roles the company plays in society (the company as a purchaser, resource converter, supplier, and communicator). It was found that the TNS principles were one strength of the approach, but in order to be more effective, should include people from various roles in the company rather than only those in environmentally-related roles. The approach was well received by IKEA, although it is not evident if and in which part of the company the results and process were integrated.

IKEA's sustainability processes were again studied when Alänge et al. (2016) conducted a comparative study between the approaches to integrate sustainability into product development in two Swedish multinational companies, one of them being IKEA. It was found that IKEA has a more culture-based management system, which best integrates sustainability principles into the culture, rather than specific documents or tools, as is the case of the comparison company SCA. These findings indicate that as every company is diverse, some methods of sustainability integration can be more powerful than others depending on the company.

2.3 The Circular Economy

The concept of the Circular Economy (CE) is attributed to Pearce & Turner in 1989, who investigate the linear relationship between natural resources and the economy, however principles of CE, such as servitization and closed loops, were introduced even earlier, but in the context of industrial economics (Stahel & Reday, 1976; Stahel 1982). It has been further developed by several areas that share the idea of closing resource loops such as cradle-to-cradle, regenerative design, and industrial ecology (Geissdoerfer, 2017). The Ellen Macarthur Foundation is a non-profit organization that acts as a hub for collaboration between businesses, policy makers, and academia, of which this thesis work is one result. Their "butterfly diagram," see Figure 2, is the classic illustration of the relationship between natural and technological systems and the activities required for industrial systems to close resource loops.

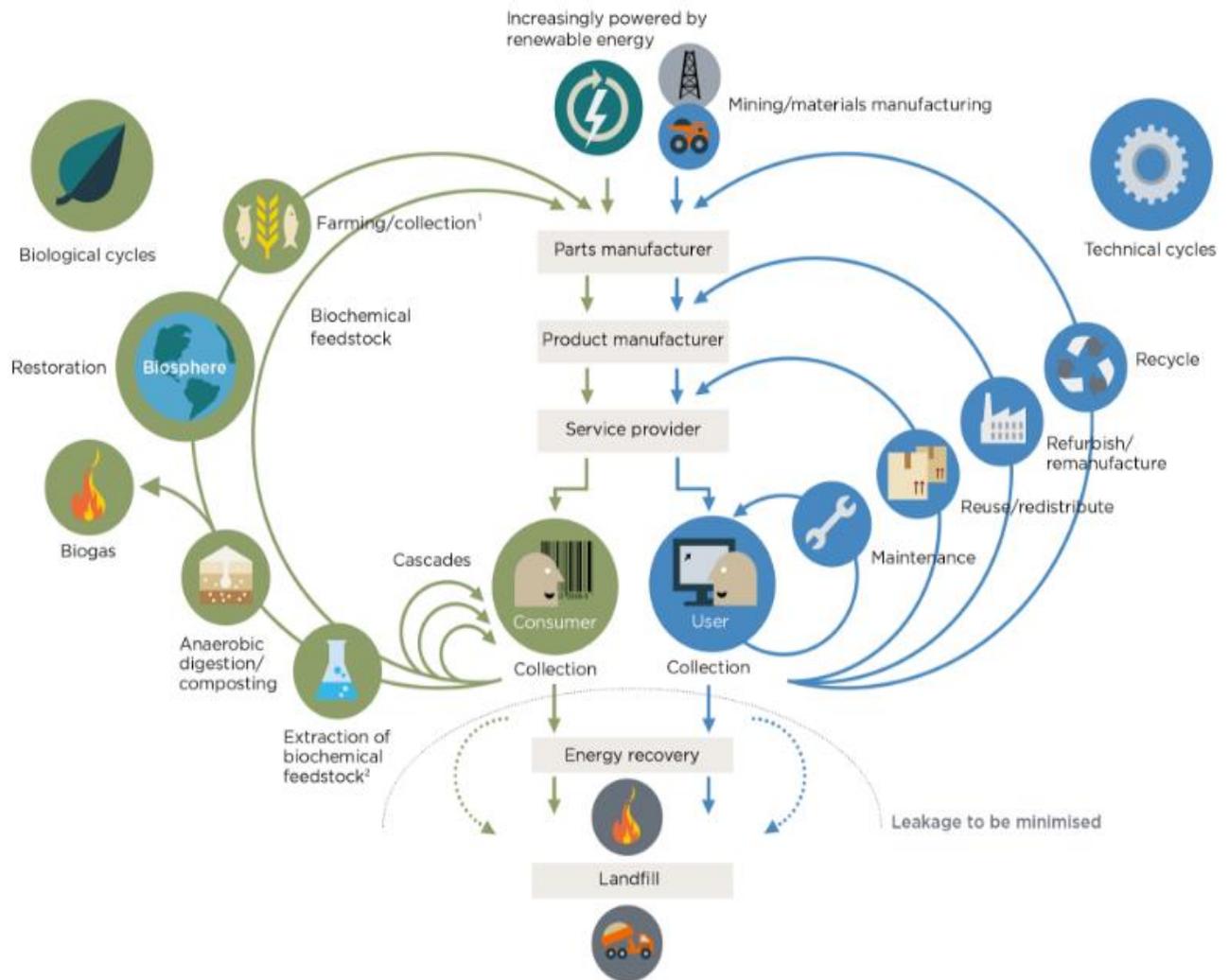


Figure 2: The butterfly diagram (Ellen MacArthur Foundation, 2017)

The middle of the diagram, the “body” of the butterfly demonstrates the current linear economic system, in which raw materials are transported and transformed among various stakeholders until the end-of-life incineration or landfilling. The loops, or “wings” on either side represent the processes that can be employed in order to transform the current system to a circular one. The left-hand side represents the “biosphere” or biological processes, while the right-hand side represents the “technosphere” or man-made industrial system and the associated activities to facilitate the minimization of waste and extraction of raw materials. By incorporating and increasing these activities into the business models of organizations, resources can flow in a continuous manner without excess harm to the natural environment, while still creating value for all stakeholders involved.

A review of over 20 organizations’ definitions of CE, further describes 7 common principles that CE requires, as shown in Figure 3 and described below (Circle Economy, n.d.).

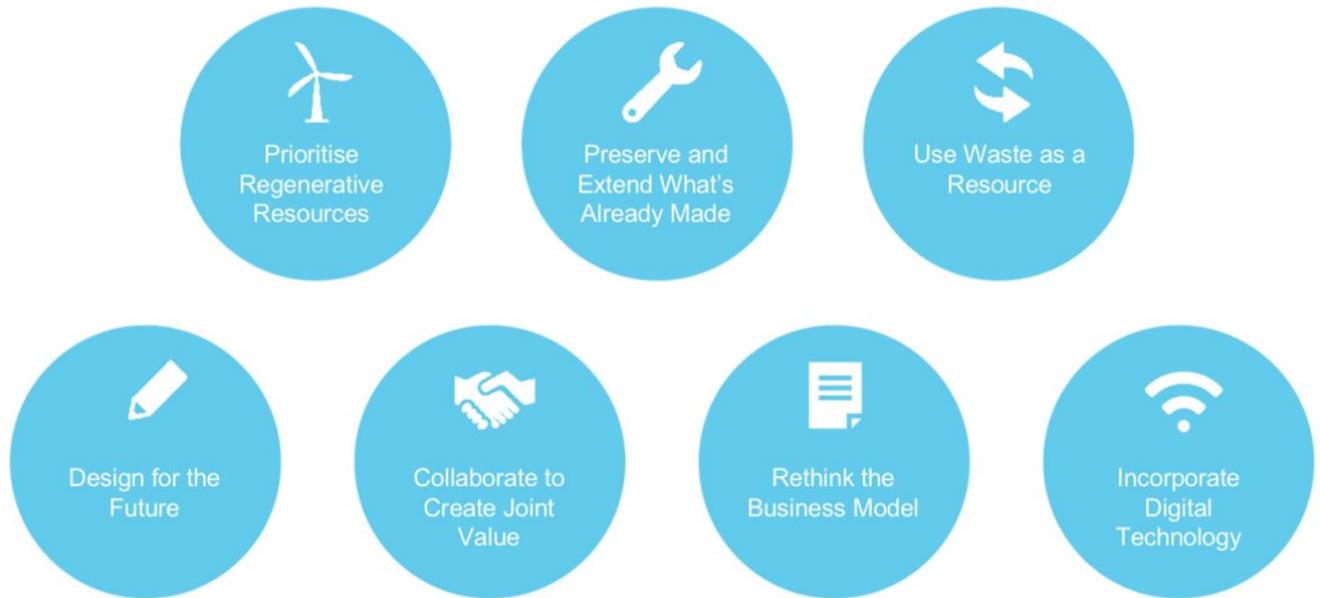


Figure 3: The seven principles of a circular economy (Circle Economy, n.d.)

A circular economy is one that:

1. Prioritizes regenerative resources
Resource efficiency is a priority, and renewable energies and non-toxic materials are used
2. Preserves and extends what is already made
Products in use are maintained, repaired, and at the end-of-life are collected through takeback systems for appropriate future use or recycling
3. Uses waste as a resource
Waste is minimized, through design, reuse, recycling, and recovery of resources
4. Designs for the future
Products are designed to facilitate the other principles including appropriate material selection and lifetimes
5. Collaborates to create joint value
Individual organizations create joint value internally, as well as with other organizations throughout the supply chain and with the public sector
6. Rethinks the business model
Opportunities are assessed to create value from sources other than physical materials, such as services, and the interaction between products and services
7. Incorporates digital technology
Emerging technologies are used to assist in the exchange of knowledge or resources between collaborators

These principles can serve as a self-assessment tool for any type of organization to evaluate to what extent they are employing circular economy practices, and what still needs or could be done in order to aid the transition.

2.3.1 Circular Economy Drivers

Much interest has been expressed into the development of the Circular Economy in business in recent years. In the last century, economic development in Europe and North America has rapidly increased efficiency in resource extraction, and trends indicate that this is likely to continue in Asia and Africa in the coming century. Companies are beginning to see the growing global competition for resources as a potential threat, as well as the fact that many natural resources are scattered unevenly around the world, thus increasing the volatility of market prices, and potentially provoking conflicts (European Environment Agency, 2016; Ellen Macarthur Foundation, 2015; McIntyre & Ortiz, 2015).

This increasingly rapid resource extraction is also having damaging effects on the natural environment and the humans and other species that live there. Effects such as air pollution, climate change, habitat destruction, and water and soil toxification, lead to biodiversity loss, ecosystem imbalances, and negative human health impacts (European Environment Agency, 2016; Ellen Macarthur Foundation, 2015).

The Circular Economy is seen by some as the next industrial revolution, driving innovation of products, business, models, and creating a plethora of new jobs (European Environment Agency, 2016). The nexus between CE principles and innovation of new business models presents a new challenge for companies: to create a competitive advantage in new forms of value for various stakeholders, including customers, suppliers, and the environment (Witjes & Lozano, 2016). Research has shown that by adopting CE principles, Europe has the possibility to create a net benefit of €1.8 trillion by 2030, or €0.9 trillion more than in the current linear development path (Ellen Macarthur Foundation, 2015).

Within a company, the motivation to transition towards sustainable and/or circular business models can be differentiated between external and internal drivers (Rauter et al, 2017). Internal drivers that can initiate the change include leadership and organizational culture: the more a company's values are aligned with sustainability, the more likely they are to act. This requires commitment from leadership, which can influence the organizational culture and employee engagement (Bansal, 2003). External drivers for sustainability initiatives include customer preferences and supply chain demands, such as material scarcity. However, it was found that although these can provide an advantage or support for the business case, they are not necessarily a driver of transformation (Rauter et al, 2017; Bechtel et al, 2013).

2.3.2 Circular Business Models

Due to the fast pacing change of the market, multinational corporations are realizing the importance of innovation and new business models. The field of business model innovation is regarded as one of the most powerful enablers of the circular economy (European Environment Agency, 2016). The overlap between visioning in a business/sustainability context with the circular economy can be considered to be the field of study of circular business model innovation. In order to provide a general overview of how businesses are disrupting themselves towards a circular business model, this section will explore the literature on business models, followed by types of circular business models, and methods of innovation that are currently being used by various companies.

2.3.2.1 Definitions

A business model is a concept that helps to explain exactly how a company does business. It has three distinguishing elements: the value proposition (design and value of product or service, customer base and relationships), value creation (key activities, resources, partners), and value capture (cost structure and revenue streams) (Bocken et al, 2014; Boons et al, 2013).

A sustainable business model (SBM) is one that not only focuses on the economic or financial scheme of the business, but also on the social and environmental influence that it has. This is referred to as the "triple bottom line approach," because it incorporates people, planet, and profit (Bocken et al, 2014). In an SBM, the boundaries of the three main elements mentioned above widen to include a large range of stakeholder interests, from focusing on just customers, employees, and stakeholders, to including society as a whole and the environment. Sustainability can be used as a value proposition to customers in the design of the product or service, or in the value creation via efficient or lean operations, or in the value capture through indicator accounting.

A circular business model (CBM) is one in which value is created from secondary products, those that have already been used once and returned into the manufacturing stream. Metink (2014) defines the circular business model as "the rationale of how an organization creates, delivers and captures value with and within closed material loops." This is opposed to the current linear business model, in which only raw materials are harvested and transformed to create value, after which they are disposed and lose their value (Linder & Williander, 2017).

Because businesses are a part of a larger system, purely circular business models do not exist in practice, and a business model does not need to close material loops within the boundaries of the business to be considered circular. Rather, circular business models are networked by nature, demanding collaboration between complex systems of interdependent stakeholders (Antikainen & Valkokari, 2016). The challenge towards identifying a successful circular business model is to find the “win-win-win” setting, the configuration that balances the interests of the involved stakeholders so that their actions are incentivized for success (Antikainen et al, 2013).

2.3.2.2 Types of Circular Business Models

In 2014, Bocken et al proposed a list of eight sustainable business model archetypes, categorized into three groups: technological, social, and organizational (Figure 4).

Groupings	Technological			Social			Organisational	
	Maximise material and energy efficiency	Create value from waste	Substitute with renewables and natural processes	Deliver functionality rather than ownership	Adopt a stewardship role	Encourage sufficiency	Repurpose for society/ environment	Develop scale up solutions
Examples	Low carbon manufacturing/ solutions	Circular economy, closed loop	Move from non-renewable to renewable energy sources	Product-oriented PSS - maintenance, extended warrantee	Biodiversity protection	Consumer Education (models); communication and awareness	Not for profit	Collaborative approaches (sourcing, production, lobbying)
	Lean manufacturing	Cradle-2-Cradle	Solar and wind-power based energy innovations	Use oriented PSS- Rental, lease, shared	Consumer care - promote consumer health and well-being	Demand management (including cap & trade)	Hybrid businesses, Social enterprise (for profit)	Incubators and Entrepreneur support models
	Additive manufacturing	Industrial symbiosis	Zero emissions initiative	Result-oriented PSS- Pay per use	Ethical trade (fair trade)	Slow fashion	Alternative ownership: cooperative, mutual, (farmers) collectives	Licensing, Franchising
	De-materialisation (of products/ packaging)	Reuse, recycle, re-manufacture	Blue Economy	Private Finance Initiative (PFI)	Choice editing by retailers	Product longevity	Social and biodiversity regeneration initiatives ('net positive')	Open innovation (platforms)
	Increased functionality (to reduce total number of products required)	Take back management	Biomimicry	Design, Build, Finance, Operate (DBFO)	Radical transparency about environmental/ societal impacts	Premium branding/ limited availability	Base of pyramid solutions	Crowd sourcing/ funding
		Use excess capacity	The Natural Step	Chemical Management Services (CMS)	Resource stewardship	Frugal business	Home based, flexible working	"Patient / slow capital" collaborations
		Sharing assets (shared ownership and collaborative consumption)	Slow manufacturing			Responsible product distribution/ promotion		
		Extended producer responsibility	Green chemistry					

Figure 4: Eight sustainable business model archetypes (Bocken et al, 2014)

Circular business models can be seen nested under “create value from waste.” However, Bocken et al (2016) later developed two classifications of circular business models, slowing down and closing loops, which have overlapping categories between the archetypes proposed in 2014. They describe slowing resource loops as designing products for a longer life so that the use phase is extended through repair or remanufacturing. In slowing the resource loops, there are four categories, which include one called “encourage sufficiency” and the access/performance models such as the PSS types in “deliver functionality rather than ownership” archetype of Figure 4. Closing resource loops is done through recycling products at the end-of-life, so that they are implemented into the stream of new or virgin

materials. This type includes the “industrial symbiosis” example under “create value from waste” archetype in Figure 4. Because the 2016 classifications are most recent, they will be used in this research and further described below.

Bocken et al (2016) differentiate the two loops types from a third type of resource flow; resource efficiency. This can also be called narrowing resource flows, in this types of CBM less materials are required, but not necessarily in a circular, closed fashion, and unrelated to the speed of the cycles (Bocken et al 2016). For these reasons, it is excluded from further discussion. The differences between the three types of loops is illustrated in Figure 5.

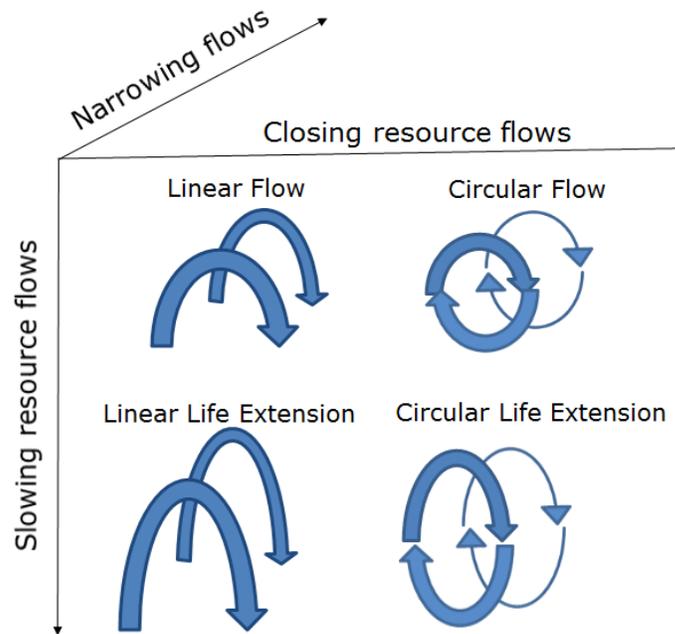


Figure 5: An illustration to distinguish the difference between slowing, closing, and narrowing resource loops based on Bocken et al (2016)

2.3.2.2.1 Circular Business Models for Slowing Resource Loops

2.3.2.2.1.1 Access/Performance Model

Also known as Product-Service Systems (PSS), the performance model is one manifestation of CBM in which manufacturer/retailers' ownership over the product is retained, thus internalizing negative impacts of a product within the company. Instead of paying and taking responsibility for a product immediately, the customer pays for the service provided by the product throughout its lifetime, and at the end of use of the product, it is returned to the manufacturer for proper reuse or recycling (Linder & Williander, 2017). The pricing is per unit of service provided, therefore businesses are incentivized to create long-living products, thus slowing down the loops (Bocken et al 2016).

There are several variations of PSS business models. It is mostly agreed upon that there are three distinct classifications of PSS: product-oriented, use-oriented, and results-oriented (Emili et al, 2016). Within these three types of PSS, Tukker et al (2004) proposes eight archetypes, which can be seen in Figure 6. In product oriented, a product is still sold, and services are provided in the form of maintenance contract or takeback agreement at end of life, as well as advice for most efficient use. In use-oriented, the ownership lies with a provider, and products are leased, shared, or pooled. The differences between these three are the timing between users. Lease can be

individual on a longer-term basis, whereas renting/sharing is sequential and short term and product pooling is simultaneous. Result-oriented models are when the provider outsources services activities, and when the customer pays for the outcome or result of a product, rather than the result itself (Tukker et al, 2004).

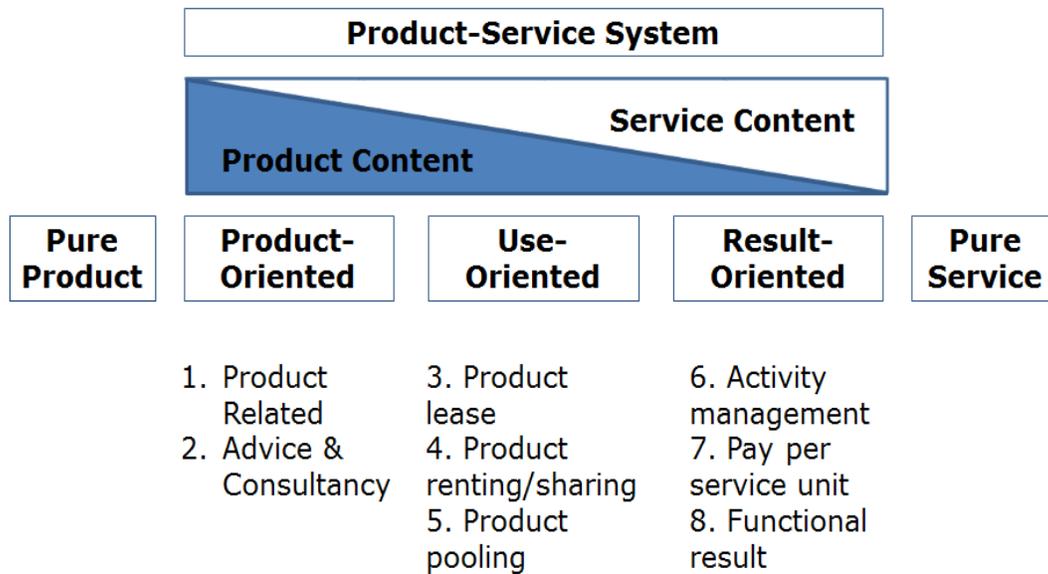


Figure 6: Eight archetypes of PSS systems as defined by and based on Tukker et al (2004).

The most recent publications define hybrids of various business models in an attempt to transition firms from traditional BM to CBMs. Pialot et al. (2017) introduce the concept of “Upgradable Product Service Systems” (Up-PSS) which combines upgradability, or the ability to update functionality during operation or remanufacturing stage, with servitization of the offer. Up-PSS offers more flexibility for the consumer than regular PSS, since it can address changing needs, wear, or obsolescence, whereas PSS is more based on functionality. The customer benefits from upgrades with added services, and environmental gain is maximized at end-of-life of components. Because many consumers are still uncomfortable with renting rather than owning traditional products, this hybrid system offers customers an additional benefit which can potentially convince them to switch to full result-oriented PSS systems.

Overholm (2017) defined and further studied the emergence of intermediary PSS business models, where a third-party acts as the service supplier between the manufacturer and user, specifically within the car-sharing and solar industries. The results indicate that intermediary PSS business models require a number of key alliances to be formed, and specify which ones are essential, but it is possible for companies to integrate products that they do not own the intellectual rights to, into an optimized system.

Offering products as a service has been a recent trend in disruptive business models, and there are several examples of PSS in multinational companies. Perhaps the best known multinational company employing this is the Dutch lighting company Philips, which, rather than selling lightbulbs, the customer pays for the service of lighting, per hour rather than per bulb (Philips, 2017). This has proven to be financially successful, as it accounts for 8% of their revenue model, and is projected to increase to 20% by 2020 (Anzilotti, 2017). More recently, American-based company HP launched their Device as a Service Program (DaaS), offering all types of markets, from home user to SME’s to governmental departments, the possibility to outsource their entire IT departments in place of maintenance contracts and product rental (Hewlett Packard, 2017; McIntyre & Ortiz, 2015). Earlier studies done have shown that customer feedback was good and the business model was financially sustainable. In order to ensure success, several best practices were recommended. These include ensuring that the service is what the customer wants, i.e. desirable, and must be fun and easy to use. The rented products must be equal or higher value than purchased products, and the business model must be profitable for the company to continue closing/prolonging loops and eliminating waste (McIntyre & Ortiz, 2015).

2.3.2.2.1.2 Extending Product Value

This CBM type is focused with cascading or capturing value with residual parts of products, for example by collection and remanufacturing through the original manufacturer or a third party. This is a relatively old business model, and is currently the basis of Extended Producer Responsibility legislation (Bocken et al 2016). For example, according to the WEEE directive all manufacturers of electronics must collect old electronic products back for reuse and recycling in EU countries.

2.3.2.2.1.3 Classic Long Life Model

Also referred to as the “premium business model,” this CBM type is centered around the creation of value via long-lasting products, designed for durability and easy repair. Customers pay a premium price that includes high quality, long-lasting products, and good customer service (Bocken et al, 2016).

German based appliance company Miele produces high quality washing machines that are guaranteed for 20 years, plus a service company. In order to accomplish this, the company employs several design strategies such as: design for durability, design for upgradability (service engineers can provide software upgrades), reduced energy consumption, and minimized resource use (Bocken et al, 2016). The Dutch smartphone company Fairphone designs for a long life by making smartphones modular for easy repair and reuse of components, as well as transparency in the supply chain (Bocken & Short, 2016).

2.3.2.2.1.4 Encourage sufficiency

Similar to the “long life model,” a sufficiency-based approach highlights long-lasting products, but additionally counters the current global trends of over-consumption. This business model focuses on steering consumption through education, foregoing trends, and away from aggressive marketing and sales tactics. Typically, businesses must employ the premium business model in order to encourage sufficiency, but not always. Additionally, the decrease in repeat business requires that other forms of revenue are made, for example through repair services (Bocken & Short, 2016).

One of the most famous examples of this business model is when the outdoor clothing company Patagonia ran a one-time, high-profile advertisement indicating “Don’t buy this jacket,” in order to promote its repair and recycling program, “Common Threads” (Bocken & Short, 2016). Counter-intuitively, sales of Patagonia products rose, although the sales of the particular jacket were the same. The founder of Patagonia, Yvon Chouinard, is a large proponent of sufficiency, favoring organic growth, and has even experimented with a zero-growth model. However, this was found to be ineffective due to lack of employee motivation and companies who need funding can struggle to get it when adopting this approach.

2.3.2.2.2 Circular Business Models for CLOSING loops

2.3.2.2.2.1 Extending Resource Value

In this CBM type, “waste” materials are collected or sourced and created into new products. This can be an attractive business model because it reduces material costs and product price, while the “green” image makes it more appealing to a niche set of customers (Bocken & Short, 2016).

Interface is a carpet company from the United States that produces modular carpet tiles. They are extending resource value by implementing the Net-Works program, which employs people in impoverished communities to source used

fishing nets from coastal areas, which are then used to create recycled yarn for their carpets (Interface, 2016). Similar initiatives of using ocean waste to develop shoes are being done by athletic wear company Adidas (Adidas, 2017).

2.3.2.2.2 Industrial Symbiosis

This CBM takes place on the process/manufacturing level and compares the industrial manufacturing system to natural systems, in which the waste of one factory is used as an input for another. Although challenging to geographically place it in a way that ideal collaborations can happen, if successful the business network can reduce overall operating costs and risks (Bocken & Short, 2016).

Several examples of eco-industrial parks exist, such as Kalundborg in Denmark and AB Sugar in the UK. Although AB Sugar's core business is sugar, they expanded to new product lines by producing animal feed and bioethanol from sugar by-products, as well as using heat from industrial processes to grow tomatoes nearby. This demonstrates how a company can expand their linear business model to incorporate circular flows and gain value from their waste, thus getting a competitive advantage (Bocken et al, 2016).

2.3.2.3 Methods of CBMI

This section examines the literature to identify tools that companies can use to innovate towards circular business models.

2.3.2.3.1 Business Model Canvas

The business model canvas (BMS) is a popular strategic management and lean startup tool to support the business modelling process (Osterwalder et al, 2010). It outlines nine elements that make up the business model in four core areas of a business: customers, offer, infrastructure, and financial viability (Table 1). The business model canvas (Figure 7) has been applied to PSS concepts for the business-to-business context in the aerospace industry. It was found that the BMC is an effective tool to assist in modifying or creating new business models at a faster pace. However, it should be expanded to widen the perspective and consider business risks in the transition to a PSS model (Wallin et al, 2013).

Table 1: Description of the nine elements of Osterwalder's business model canvas

Business Element	Description
Customer Segments	The different groups of people or organizations an enterprise aims to reach and serve
Value Propositions	The bundle of products and/or services that create value for a specific customer segment
Channels	How a company communicates with and reaches its customer segments to deliver the value proposition
Customer Relationships	The types of relationships a company establishes with specific customer segments.
Revenue Streams	The cash a company generates from each customer segment.
Key Resources	The most important assets required to make a business model work.
Key Activities	The most important things a company must do to make its business model work
Key Partnerships	The network of suppliers and partners that make the business model work.

Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
	Key Resources		Channels	
Cost Structure		Revenue Streams		

Figure 7: Business model canvas template based on Strategyzer (2017)

Furthermore, although it is widely-used and academically grounded, it has been argued that the business model canvas is too focused on the customer in order to apply it to sustainability/circularity, in which more or all stakeholders should be considered (Bocken et al 2015). The value-mapping tool developed and tested by Bocken et al (2013) for sustainable business models, can be applied to incorporate a multi-stakeholder perspective when brainstorming the value created, destroyed, or missed by a company. It has been piloted with thirteen companies varying from startups to multinationals, and was found to be effective in creating awareness of conflicts between values and outcomes in terms of sustainability.

The BMC has been adapted several times to be used in the context of circular business models. Lewandowski (2016) added two elements to Osterwalder's BMC to create the Circular Business Model Canvas. These two include reverse logistics, how the company will take back products, and adoption factors, the organizational capabilities and external factors that will assist in the business model being successful. Metink (2014) extensively analyzed existing business modeling tools and proposed the business cycle canvas. This canvas integrates the BMs of multiple stakeholders, in order to drive users to think in business systems and to visualize a closed chain of economic activities which close the material loop. The visualization can be used to facilitate communication and innovation between multiple stakeholders.

2.3.2.3.2 Lean Startup

More recently, multinational companies are employing the lean start-up approach in their operations and culture for general innovation, as well as circular business model innovation. The lean startup is a methodology to create new businesses and products, first proposed by Eris Reis in 2008, through experimentation, shortened product development cycles, and validated learning through iterative customer feedback. It has since been applied by many startups and large companies, mostly within the software industry (Lean Startup, n.d.).

Weissbrod & Bocken (2017) focused on the implementation of the lean startup method within an unnamed multinational clothing corporation to facilitate experiments towards a circular economy and the triple bottom line. They found that experiments were not conducted as fast as expected within the time frame of the study, however confidence in the learning by doing approach increased.

Schuit et al (2017) examined eight case studies including companies of all sizes, such as Phillips, Peerby, and Mud Jeans, to determine different approaches to fast and easy experimentation to move companies towards a circular economy. They found that when innovating, it was essential to focus on the customer experience to ensure customers retain value in the new business model.

2.3.2.4 Challenges in Circular Business Model Innovation

Several challenges have been identified for the transition towards a circular economy and specifically towards CBMI. Public ownership over a company, with a focus on maximizing short-term shareholder value can conflict with the necessary long-term investments for CE. Small disruptive startups will also struggle to win market share against multinationals, which have large marketing budgets and economies of scale, but are not willing to invest in other, riskier business models (Bocken & Short, 2016; Bechtel et al, 2013).

Challenges can also be technological, due to the lack of necessary recycling technologies, and legal, since complexity of regulations and international regulations could hinder widespread adoption of CE business models (Bechtel et al 2013).

Consumer attitudes can present a barrier. Gullstrand et al (2016) studied consumer attitudes of sharing and renting of different ranges of IKEA products. It was found that consumers are very willing to rent “hard” products such as appliances, chairs, tables, etc. whereas there were “very negative” attitudes to renting “soft” goods: home textiles and mattresses. Obstacles that prevent consumers from renting out products were concerns about hygiene, having a desire to own, and unfamiliarity with the concept.

Regarding challenges of specific types of circular economy business models, Tukker et al (2004) found that overall PSS types can lead to a decreased or “at least no worse” impact on the environment. However, some types of PSS, such as product leasing, can lead to an increase in environmental impact, due to irresponsible consumer behavior.

3. METHODOLOGY

This thesis investigates how a multinational corporation like IKEA can transition its current business model towards a circular one. In this chapter, a methodological framework is presented as well as the application of backcasting within the company.

3.1 Methodological Framework

In order to start the investigation of how IKEA can begin the transition process, Kotter’s (1995) model for organizational change was used as a guide, in combination with the backcasting methodology defined by Holmberg (1998) and described in the next section, as well as Osterwalder’s Business Model Canvas. The relationship is outlined in Figure 8 and described below.

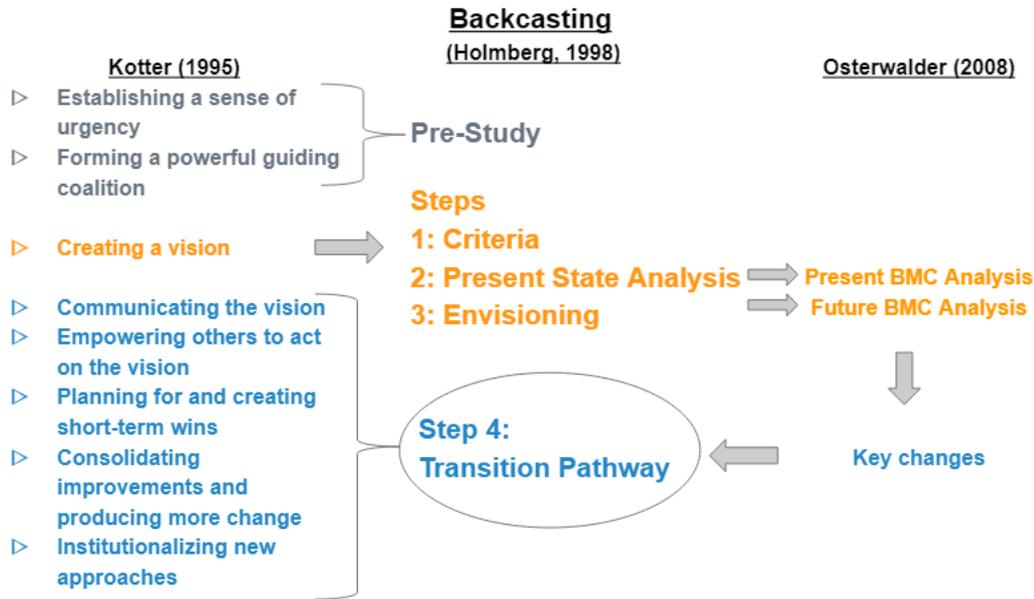


Figure 8: Methodological framework to research the transition to a Circular IKEA. Colors indicate the timing and correlation of each of the steps of each model

The first two steps of Kotter’s model indicate the need for urgency and creation of a guiding coalition. This urgency for implementation of circular economy within IKEA was communicated prior to the start of this research by higher leadership, and with the formation of the Circular IKEA Working Group (CWP). This group consists of the Inter IKEA Systems Sustainability Specialist, and two others from IKEA of Sweden.

The third step of Kotter’s model mandates the creation of a vision to guide the change. Another team, the Circular IKEA Research Team, was created consisting of the same Inter IKEA Systems Sustainability Specialist from the Circular Working Group, the author, and another Master’s student from Erasmus University in Rotterdam. In order to create this vision, the Research Team employed the backcasting methodology to envision a future circular customer experience for the company, one that is sustainable.

Within the second and third steps of the backcasting process, Osterwalder’s Business Model Canvas was employed twice. The differences in the two business model canvases was used to identify key changes that need to be made, then incorporated into the last step of backcasting, the transition pathway, along with the final steps of Kotter’s model.

The vision and pathway produced in this research by the Research Team were communicated to the Circular Working Group for decision-making and implementation. The process was used to answer the main research question and associated subquestions.

3.2 Application of Backcasting to IKEA

Backcasting has proven to be successful for strategic planning for sustainability on a multi-organizational, sectoral level, and for specific process changes within an organization, however sustainability is typically only one aspect of an organization. The next phases of sustainability towards a circular economy will require transformational change of an entire organization’s business model. The backcasting methodology is distinguished as a sustainability tool which provides strategies and activities to achieve a particular goal, however it has not been tested in the context of circular business model transition for a multinational corporation.

According to the theory, backcasting is best applied when a problem is complex, a matter of externalities, long-term, major change is required, and dominant trends are a part of the problem. The transition from a linear business model

to a circular one for large multinational corporations, such as IKEA, can be quite complex, due to the size, organizational structure, and number of stakeholders. It is also a major change, as it will affect the company's entire business model. The business model is the core of how a company operates, and transitioning to a new one requires many elements to change, thus adding to the complexity. The timeline in the case of IKEA is quite short, because it instills a sense of urgency to act. The dominant linear business model also presents a challenge. Because it is so successful, the company will be less motivated to change than if it was not as successful, resulting in dominant trends hindering progress.

To stimulate engagement and social learning, the participatory backcasting methodology, which includes stakeholders, was chosen to examine how IKEA can create a circular vision. IKEA is a large and complicated organization, therefore there are many varying perspectives regarding how to approach circularity within the company. In this way, common ground can be found amongst various groups, and there is a greater chance of implementation. Participatory backcasting has been applied to multinational companies via The Natural Step Framework before, however not in the context of circular economy and business models. It provides an additional benefit, in that it also includes creating a pathway and action steps towards the vision.

Information for each of the steps, detailed below, was gathered through primary sources, mainly through semi-structured interviews- and unstructured conversations with various members of the Inter-IKEA Sustainability team and IKEA publications. Secondary sources via external publications were also used to maintain objectivity. Tools and best practices from the literature review were applied for select steps.

The backcasting methodology outlined by Holmberg (1998) was applied to the case of IKEA to create a vision that answers the **assignment question**:

What would be an ideal circular IKEA customer experience in 2025 for product revival at the end of life in a world where autonomous delivery vehicles are common and cheap, and all products are connected?

The overall process of employing the backcasting methodology and the use of the results were used to answer **Subquestion 1**:

S1: *What are the strengths and weaknesses of the backcasting approach in the creation of a Circular IKEA vision for 2025?*

Within the second and third steps of the backcasting methodology, to be detailed further in sections 3.2.3 and 3.2.5, Osterwalder's Business Model Canvas was used to answer **Subquestion 2**:

S2: *How would the business model change from a linear to a circular IKEA customer experience in the case of IKEA?*

The following sections describe how each of the backcasting steps were employed in detail.

3.2.1 Problem Orientation

Before beginning the backcasting process, pre-work was done by defining the aim, system boundaries, and identification and mapping of stakeholders. The aim and system boundaries of the backcasting study were determined by the Circular IKEA Vision Team in line with the assignment question. All IKEA stakeholders were identified by individual brainstorming of potential parties, as well as validation with the IKEA 2016 Sustainability Report for potential external stakeholders. Several conversations with members of the Sustainability and Consumer & Business Intelligence teams at Inter IKEA Systems were done to understand the internal organization of the company. Based on the author's understanding of the internal organization of the company, as well as other external stakeholders involved specifically with a Circular IKEA, a power-interest grid was drafted by the author and confirmed by the Sustainability Specialist to have an idea of who would be invited to the workshop. Those who were on the right-hand side of the grid, meaning they all have high interest but various degrees of power, were invited to participate in the Circular IKEA backcasting workshop.

3.2.2 Step 1: Criteria Formulation

To assess the sustainability and desirability of the current situation and future vision, a set of qualitative criteria was iteratively developed, pertaining to all three pillars of sustainability; environmental, social, and economic. The draft social and economic criteria were first created based on informal conversations with members of various positions and parts of the organization. The Circular Vision Research Team synthesized these conversations by consistently asking “why does IKEA want this?” to reach conditions or states that they want to be in, rather than actions to get them there. According to Holmberg (1998), these conditions act as non-prescriptive starting points to guide actors to ask themselves relevant questions so that they can draw their own conclusions on how the criteria will affect their own activities. In the case of IKEA, the criteria form a checklist used by the author that ensures that all aspects of sustainability are taken into consideration throughout the process. They are used later in Step 2 as a basis to analyze the present state and identify key gaps and challenges, as well as in Step 3, to evaluate the sustainability of the ideas brainstormed in the visioning phase.

The draft environmental criteria were inspired by the Natural Step principles shown in section 2.2. Because IKEA’s main resource uses include organic products that are harvested, such as wood and cotton, the first principle, regarding not increasing concentrations of substances extracted from the earth’s crust, was not included in environmental criteria. Rather, the two regarding over-harvesting and increasing concentrations of societal substances, were reworded to fit the specific context of IKEA. The last principle regarding meeting basic human needs is regarded as social and thus covered under the social criteria that were developed.

The drafted criteria were presented and discussed with five other internal IKEA stakeholders from various parts of the organization via an online video call. Only internal stakeholders were asked to participate in the discussion so that the organization would feel like the criteria were their own, which is important to IKEA’s closed culture. Stakeholder feedback was then incorporated into the final criteria.

3.2.3 Step 2: Present State Analysis

The second step of the backcasting method is an analysis of the current situation at IKEA. The purpose of this step is to understand where IKEA is in relation to the defined desired future, including the challenges that need to be overcome in terms of sustainability. This is a qualitative description of activities that can support or potentially violate the conditions outlined in Step 1.

IKEA’s current situation was evaluated in relation to the criteria developed in Step 1. Qualitative information was gathered using desktop research from internal and external sources, as well as semi-structured interviews with members of the Inter IKEA Sustainability Team. The challenges identified in the present state analysis are used to support the implementation of the ideas created in Step 3, some of which are solutions to the current dilemmas IKEA is facing.

In order to acquire a better understanding of IKEA’s current business model, an analysis was conducted according to Osterwalder’s Business Model Canvas Framework, presented again in Figure 9 and described in Section 2.3.2.3.1. Based on Osterwalder’s descriptions of various categories within each of the nine elements, the categories that seemed most applicable were chosen and recorded based on internal IKEA documents and the author’s understanding of how IKEA operates. This analysis sheds light on how IKEA is currently making money in its linear form and is useful later when the same BMC is applied to the Circular IKEA vision in Step 4. Comparisons between the two business models can be made, and this serves as a platform for identifying key activities and changes IKEA will need to make in Step 4, the transition pathway, dictating how it can transition towards a circular business model.

Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
	Key Resources		Channels	
Cost Structure		Revenue Streams		

Figure 9: Framework for Osterwalder's Business Model Canvas based on Strategyzer (2017)

3.2.4 Step 3: Envisioning of Future State

The aim of the third step of backcasting is to envision and brainstorm ideas for a Circular IKEA. This took place in three phases: the workshop, vision development, and evaluation.

Phase 1: Workshop

In order to gather ideas for the Circular IKEA vision, a workshop was held as a participatory way to brainstorm creative ideas for the future vision from various stakeholders, both internal and external. This workshop did not include the criteria or transition pathway development, due to a lack of time. This section describes the type of outcomes of different parts of the workshop.

The workshop planning was done by the three members of the IKEA Circular Vision Team, along with two students from the Royal College of Art (RCA) in London who developed the concept for a modular sofa, the Strata Layer sofa. This was used during the workshop as a sample product that the customer experience could be built around, as desired by the Sustainability Specialist. Additionally, two consultants from a circular economy cooperative in Amsterdam who have experience in running such workshops with other multinational corporations, also helped to structure and co-facilitate the workshop.

The main question of the day was the same as the **assignment question** presented in the introduction:

What would be an ideal circular IKEA customer experience in 2025 for product revival at the end of life in a world where autonomous delivery vehicles are common and cheap, and all products are connected?

There were multiple goals of the workshop from the Circular Vision team:

1. To envision one common Circular IKEA future with a diverse set of stakeholders
2. To connect stakeholders from various circular economy-interested organizations
3. To inspire and increase social learning for participants about the topics of circularity, future technologies, and customer experience

Specifically for this thesis, the goal of the workshop was the first, envisioning one common Circular IKEA future.

The workshop took place at the Inter-IKEA Systems headquarters in Delft, the Netherlands, with a total of 25 internal and external stakeholders, based off a stakeholder inventory done in the pre-work problem orientation phase of the backcasting process. A full list of stakeholder organizations and number of representatives present at the workshop is located in the Appendix. The workshop lasted approximately seven hours and consisted of presentations and one activity in the morning, and two additional exercises in the afternoon. These will be detailed below.

The day started with a video of a future story of how IKEA can interact with the customers in 2025. It depicted the story of a young woman who wanted to redecorate her living space, and how this was facilitated by IKEA, including robots as delivery vehicles, which can scan and provide preventative maintenance, and gather unwanted items to deliver to another IKEA customer. This was created by the two design students from RCA, in order to assist participants to visualize what the world would look like in 2025 to facilitate brainstorming.

The participants were then asked to introduce themselves, why they are present, and also one fact about relevant future technologies that surprised them, that they were asked to prepare in advance. The purpose of this was to influence participants to think about the technologies that are coming and how they can be applied to make IKEA circular. Participants shared facts expressing the speed and proximity at which these technologies are approaching.

In the morning, four presentations were given by the workshop planning team, in order to ensure that all participants understood the different concepts and how they were connected. One presentation done by the author introduced the backcasting process, along with the boundaries and preliminary results, such as stakeholder map, draft criteria, and draft present state analysis. It was intended to introduce the concept here so that participants would have a clear understanding of the context, next steps, and later participate in the criteria development. The Sustainability Specialist then presented on the motivation for the assignment and the workshop. He explained IKEA's need for new circular business models, competing startups in various countries, as well as the role that digital technologies can play in this transition. The third member of the Circular IKEA team then presented on the different technologies available for IKEA. This included an in-depth explanation on the Internet of Things, physical objects that are connected to the internet and able to send and receive data, artificial intelligence, and autonomous vehicles. Other technologies briefly described include robots, drones, virtual/augmented reality, 3D printing, and blockchain.

The last presentation was from the two RCA students, who presented their Strata Layer Sofa. This product and concept is based on the problem that different parts of products have different life expectancies, which leads to products being discarded as soon as one part is broken or outdated. Their prototype is a sofa composed of three layers: skin, middle, and base. The skin layer is the fabric of the sofa, which tends to expire quite quickly, and cannot be easily removed, personalized, and/or recyclable. The base layer is the opposite, designed to be durable, mass-produced, and heavy and all components are designed to be modular and parts can easily be exchanged. The students also presented different target groups and business models around the product system, such as landlords renting base layers, which renters can easily purchase their own personalized middle and skin layers.

The final presentation was also used to introduce the concept of *personas*, or different "characters" that participants can use to brainstorm problems and potential circular solutions. By putting themselves in other people's shoes and brainstorming from various perspectives, creative solutions could be identified that could later be used in the final vision. Personas were applied in the afternoon, during the three exercises that were done with participants, which will be detailed more below.

Exercise 1

The first exercise was the CeX template (Figure 10). This tool compares the customer journey with symbols from a traditional fairy tale so that pains and gains are easily understood in the context of business, and can more easily brainstorm solutions. In the template, the customer is represented by the knight, who in order to get his princess (desired feeling), must slay the dragon (customer pain). Since the sword (traditional value proposition) is not enough, he must receive help (collaborate with other companies) in order to transform the sword into a ring (new value proposition) and go directly to the princess (Schuit et al, 2017).

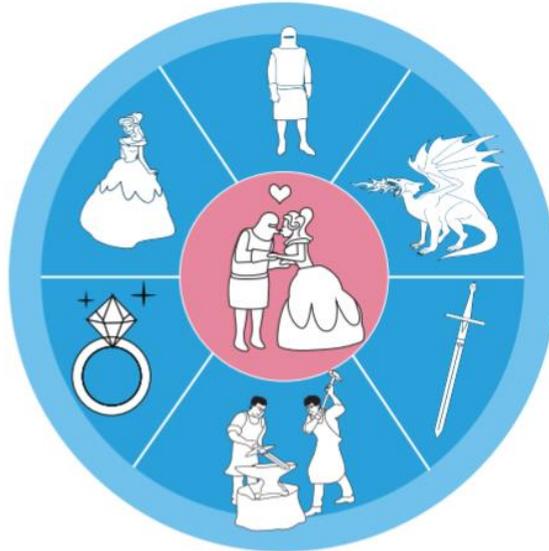


Figure 10: CeX template analogizing the customer experience to a traditional fairy tale to stimulate discussions and circular business model innovation, focusing on the customer’s perspective (Schuit et al, 2017)

The CeX template provided and facilitated by Innoboost was used to come up with the “pains” or problems of different customer personas, in order to later use this as a basis to innovate solutions that the customer experiences in a circular way. The template was partially used, particularly the brainstorming of “dragons,” or potential problems of a persona/customer were brainstormed.

Participants were divided into four groups, and were allowed to choose their own personas. The following were chosen:

1. A young professional moving into their first home
2. A student moving away from parents
3. A divorced woman
4. An expat moving to a new country

Exercise 2

The second exercise was for each participant to create a story of their ideal customer experience in 2025 at different moments in a product’s lifetime: purchase/acquisition, maintenance, and end-of-use. A template storyboard, shown in Figure 11, was handed to each participant, so that they could draw or use magazine cutouts, as well as describe what was happening in each box. Participants were then asked to share their stories to the larger group. Ideas were recorded on a whiteboard, and later captured from the storyboard worksheets in Excel. Responses that were without an explanation or not comprehensible were excluded from the final list.

Title: _____

Participant: _____

Page: ○

Figure 11: Storyboard template used in Exercise 2 of the Circular IKEA Workshop

Exercise 3

For the final exercise, the main question of the day was shown on the board, regarding what the ideal customer experience would look like in 2025, and participants were asked to return to their groups from Exercise 1 to collectively brainstorm in a free-form fashion. The participants discussed for approximately 45 minutes, using plain white paper to record their ideas, and were then asked to present their ideas to the group. These ideas were also later captured from paper onto Excel.

Phase 2: Vision Development

After the workshop, the ideas from the participants were used by two members of the research team to come up with idea “themes.” This was to combine or repeat similar ideas into five categories: community creation, personalization, facilitate transport, facilitate maintenance & repair, and servitization. These were later combined with elements of the **assignment question**, circular economy and exponential technologies, to make the final vision. Because the exercises included storytelling, this resulted in drawings without a clear explanation, therefore elements had to be translated through the interpretation of the research team.

From the second and third exercise, each story was reviewed for elements, symbols, or words that were potential solutions to the **assignment question**, for example “autonomous vehicle.” If it was unclear on how the drawings related to the assignment question, then it was not included in the data collection. After a list was made, commonalities were found and “themes” were introduced. Each idea was then clustered into a theme, based on the intention of the idea. For example, if an element was a smart home device, the intention is to be able to connect products to a central home organizer, which can manage the device according to your personal tastes, depending on the item. Therefore, it was categorized under “personalization.”

These ideas were combined with business models found in the literature that IKEA has not taken advantage of yet. These include Product Service Systems and Classic Long Life Model. These elements (Figure 12) were combined by the Circular IKEA Research Team to create one holistic story of the customer’s journey in this future vision. The story

was then separated into nine main ideas, which can be used modularly, meaning that IKEA can pick and choose from the ideas what they would like to implement and when, in order to reach the full vision by 2025.



Figure 12: Elements used to create the ideas for the Circular IKEA 2025 vision

Phase 3: Evaluation of ideas

In line with the backcasting process, the ideas were then qualitatively evaluated by the author according to the criteria developed in Step 1. This is done in order to assess whether they were contributing towards or away from sustainable development. Potential impacts of each idea according to each criterion were rated according to three outcomes: “meets the criteria,” “does not affect the criteria,” or “uncertain how it affects the criteria.” Because some of the ideas are futuristic, meaning there is little to no evidence of the validity of each idea, this evaluation is subjective and based on the *intention* of the idea. An idea “meets criteria” if the idea has already been proven or that the intention is that the criteria will be met when implementing that idea. For example, a community platform will intend to create added shared value for local communities, and it is highly likely it will do so. A “does not affect criteria” is given if there is no intention of affecting that criteria. For example, product passports are intended to help IKEA gather information for beneficial recycling, therefore the desirability and convenience for the customer will not be affected. Finally, an idea is deemed “uncertain how criteria is affected” if the uncertainty of the impacts are too great due to inherent principles of the idea. For example, the intention of a furniture product service system is to extend product lifetimes and reduce raw material extraction, therefore there is no knowledge on how desirable or profitable such a system could be and thus too uncertain to tell.

3.2.5 Step 4: Transition Pathway

In this step, a pathway for IKEA is conceived, including steps and activities it might do to achieve this future vision. This was outside of the scope of the **assignment question** from IKEA, however it was done to be fully in accordance to the backcasting process. It was done by the author, without participation from other stakeholders.

Before initiating the pathway, Osterwalder’s Business Model Canvas was used again to define the vision in business model terms, so that it could be compared with the current linear business model developed in Step 2. Again, since these ideas take place in the future, the analysis was subjective based on the intention of the idea, rather than based on fact. This was done not only to be able to answer the **research question** of this thesis, regarding what a circular business model would look like for IKEA in 2025, but also assisted in identifying key activities and other elements that will have to change in order for IKEA to meet the 2025 vision.

In order to guide the creation of the pathway, the final five steps of Kotter's (1995) model were employed. Recommendations according to communicating the vision, empowering others to act, making improvements and institutionalization were made based on this model.

4. RESULTS

This chapter includes the results of the backcasting study, which are used to be able to answer the **research question**, and the two connected sub questions:

How can multinational corporations, like IKEA, transition their current linear business models to create a circular business model?

S1: *What are the strengths and weaknesses of the backcasting approach in the creation of a Circular IKEA vision for 2025?*

S2: *How would the business model change from a linear to a circular IKEA customer experience in the case of IKEA?*

4.1 Problem orientation

4.1.1 Aim

The goal of the backcasting study is *to create one vision for the customer experience when IKEA is incorporating use of circular economy principles* in order to be able to answer the **assignment question**:

What would be an ideal circular IKEA customer experience in 2025 for product revival at the end of life in a world where autonomous delivery vehicles are common and cheap, and all products are connected?

4.1.2 System Boundaries

Temporal boundaries include from the present day to the year 2025. The vision was created with assumptions that certain technologies (autonomous vehicles, internet of things, etc.) will be widespread. This will most likely take place in North America and Europe initially, therefore these two regions were chosen to be the primary geographic boundaries of the vision, and were the only IKEA countries taken into account for all steps of the method.

Because the assignment question focuses solely on the customer experience, several elements are excluded from the backcasting analysis. Ideas that are brainstormed and presented in the study focus solely on how IKEA will interact with the customer in 2025 in a circular and connected world. This excludes ideas about the specific financial aspects, how much the customer will pay for the service or any specific target market and the size of that market. It also excludes the "back-end aspects," such as the reverse logistic supply chain that will have to be created in order to make the customer side feasible, as well as specific product design and/or technical specifications.

4.1.3 Stakeholder Inventory

Stakeholders identified from IKEA's 2016 Sustainability Report and conversations with the Sustainability Specialist were separated into two groups: internal vs. external, see Figure 13. A stakeholder map indicating the relevant stakeholders for a Circular IKEA, as well as the relationships between them were drawn according to multiple conversations with several business units at Inter IKEA Systems. This assisted in facilitating the understanding of the organization and the purpose of each stakeholder. A detailed overview of each stakeholder is provided below.

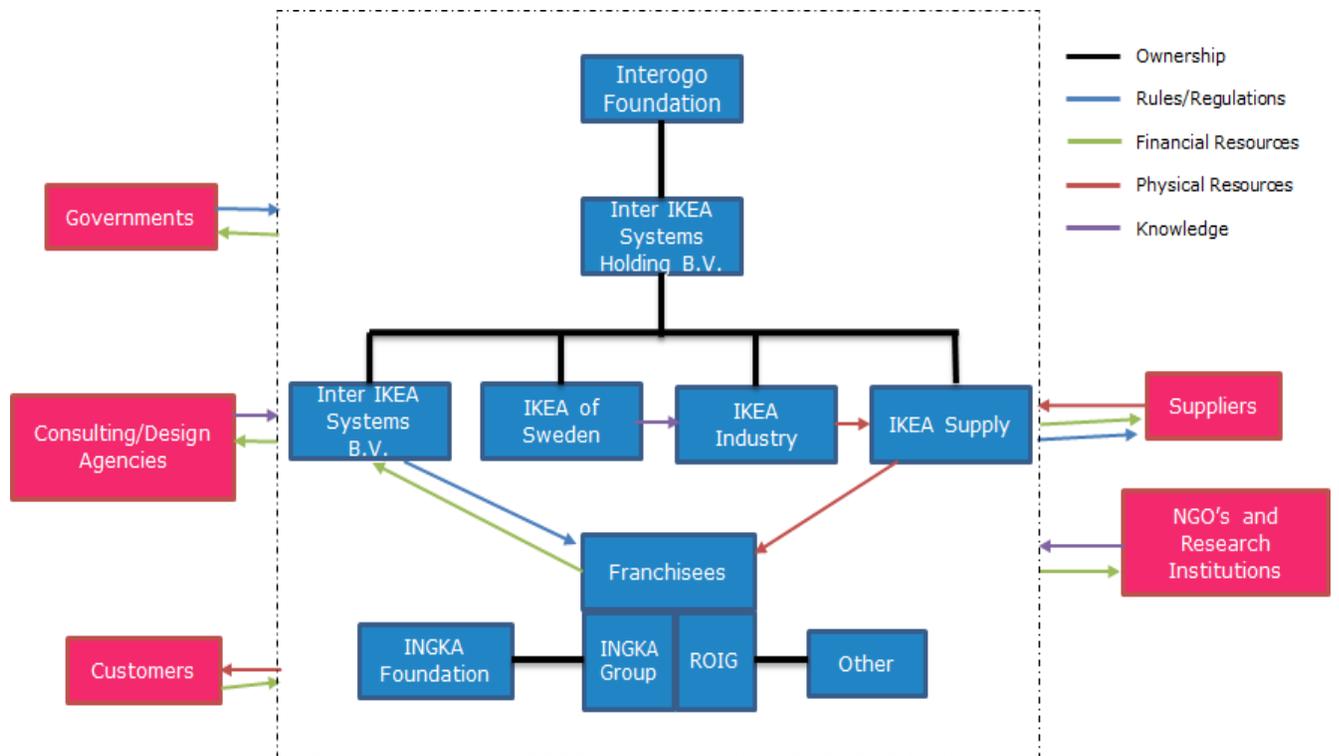


Figure 13: Stakeholder map of Circular IKEA

Then, the power and interest in a Circular IKEA vision of each stakeholder were evaluated and mapped out on a grid, see Figure 14. The results were used when deciding who should be involved in Steps 1 and 3 of the backcasting method, criteria development and future state visioning. The participants of the workshop include all those on the right side of the diagram, those with high interest in the outcome who would be interested in participating. For the criteria development, only internal stakeholders were invited, as they have high interest and higher power.

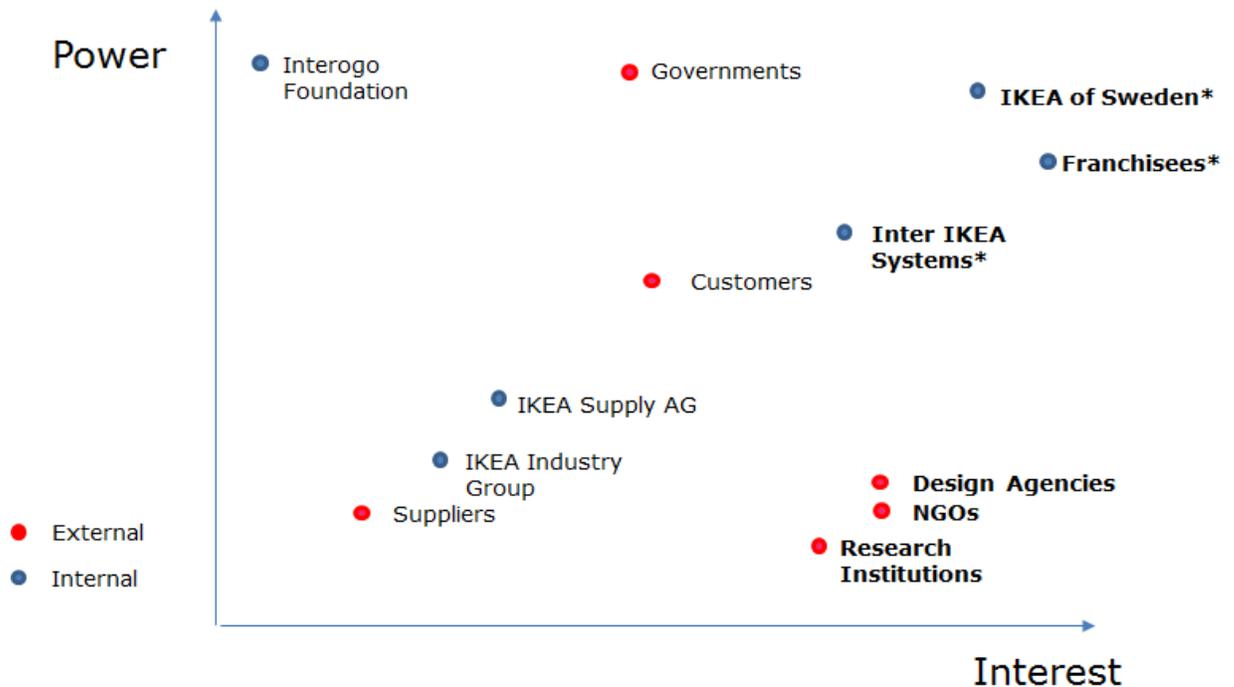


Figure 14: Power-interest grid of IKEA stakeholder groups, those in **bold** indicate participation in the workshop, and those with asterisks were involved in both the workshop and criteria development

Below is a brief description of both internal and external stakeholders and their roles in a Circular IKEA.

Internal stakeholders:

Interogo Foundation

This is the owner of Inter-IKEA Holding B.V. and all its subsidiaries. Founded in Liechtenstein in 1989, its main purpose is to maintain private ownership and secure independence and longevity of the IKEA Concept (Inter IKEA Systems, 2016a). To avoid generational changes of ownership and avoid the public listing of the companies, the Interogo Foundation is set up as an enterprise foundation under Liechtenstein Law, indicating that it maintains ownership over itself. Earnings from the Foundation’s holdings are thus reinvested into the business and conservatively invested into possible future needs (Inter IKEA Systems, 2016a). Due to their high position within the company, they have high power for a Circular IKEA, however they are far removed from daily operations with relatively small interest.

Inter-IKEA Holding B.V.

Located in Leiden, the Netherlands, this is the holding company of the IKEA related businesses, also known as the Inter IKEA Group (IIG). They are owned by the Interogo Foundation, and the owners of Inter IKEA Systems B.V., IKEA of Sweden AB, IKEA Supply AG, and IKEA Industry AB (Inter IKEA Systems, 2017). Similar to the Interogo Foundation, IIG is a legal entity with some power, but relatively little interest in the Circular IKEA vision.

Inter-IKEA Systems B.V.

Located in Delft, the Netherlands, Inter IKEA Systems BV (IIS) is the worldwide franchisor and owner of the IKEA Concept. They are responsible for developing the Concept and providing franchisees with the requirements to comply with in order for them to make use of the IKEA brand. In return they, receive 3% of the franchisee’s revenues. Within IIS there are four business units: IKEA Concept, Markets, Competence Development and Business and Consumer Intelligence, and five support units: Human Resources, Corporate Communications, Business Transformation, Digital Business, and Business Support. Within the IKEA Concept business unit, there are 9 “sectors”, one of them being “People and the Environment.” Within this group, sits the Sustainability Team and the

Sustainability Specialist, the company contact who organized the project. Therefore, IIS has high power and high interest in the outcome of this project.

IKEA of Sweden AB

IKEA of Sweden (IOS) is headquartered in Almhult, Sweden and is owned by the Inter IKEA Group. They are responsible for product development for the entire IKEA range, approximately 10,000 products, as well as the IKEA catalogue and other communications (Inter IKEA Systems, 2016b). IOS is investing in circular design and modular products, and have the most interest and power in the outcome of the project.

IKEA Supply AG

Owned by the Inter IKEA Group, IKEA Supply is the main wholesale company. It owns the goods in the distribution centers and is responsible for international flows of goods to various IKEA Retail companies. It is also responsible for logistics development, transport, purchasing, quality, and supplier support (Inter IKEA Systems, 2016b). Due to their function of logistics, especially reverse logistics in a circular business model, they have relatively average power and interest, although less than IIS and IOS.

IKEA Industry Group

The Industry Group is responsible for the wooden products along IKEA's value chain, from forestry to sawmills, and production. They are the world's largest producer of wooden furniture, with 40 production units in 10 countries (Inter IKEA Systems, 2016c). Like IKEA Supply, they will have a stake in coming years when the Circular vision is successful, but low power and interest at the current time.

Franchisees

There are 13 franchisees who operate the retail stores around the globe (Inter IKEA Group, 2016). The IKEA franchisees are independent entities of the Inter IKEA Group, although the largest owner of franchises is the INGKA Group. This group and IIG have the same founder and intertwined histories, but have operated under different owners and management since the 1980s (Inter IKEA Systems, 2017). INGKA group owns a majority of stores, mostly in Europe and North America. Most other countries, including the Middle East and Asia, are owned by a group referred to as "Retailers Other than INGKA Group" (ROIG). Since the retailers, and thus the franchisees are where the customer traditionally meets the company, they have a very high power in the outcome

External Stakeholders:

Suppliers

IKEA has almost 1000 suppliers in 50 countries (Inter IKEA Group, 2016). These suppliers must follow certain codes, and their performance is monitored, however the scale that IKEA requires can offer a large financial boost to suppliers. Suppliers could be affected by a Circular IKEA vision if there is a change in material sourcing and if the reuse/recycling rate is so large that it would decrease the need for raw materials from certain suppliers, therefore putting their business at risk. However, because IKEA is growing, it is unlikely that the demand would decrease significantly. Therefore, suppliers will have little to no interest or power in the outcome of a Circular IKEA.

Customers

IKEA caters to a variety of customers, aiming to appeal to all ages, genders, and locations. One common quality among customers is the value of price preference (IKEA, 2015). One of IKEA's values is "Democratic Design" which aims to engage and listen to customers in the design phases, giving them a voice in the process. Since the project is centered around IKEA's mission of serving their customers, they have some power in the discussion. Their interest could be considered average based on research that finds that consumers generally know or care very little about sustainability (Inter IKEA Systems 2016e).

Governments

IKEA is subject to ever-changing legal requirements; however their progressive values and practices make them a leader in industry, therefore there can be a multi-directional influence on both parties. Governmental organizations are working together with the private sector to benefit the environment and stimulate the economy. For example, IKEA is already involved with the United Nations' Sustainable Development Goals, and could be involved

with the EU Commission's Circular Economy Action Plan and other national governments initiatives (i.e. Dutch government "Circular Hotspot NL"). Governments generally have high power, and in the case of IKEA's scale, would be relatively interested in the outcome of the project.

Consulting and Design Agencies

Many consulting and design agencies are supporting IKEA in their quest to become circular. IKEA is already working with design and consulting companies, such as KPMG and Space10, an innovation agency in Copenhagen that serves IKEA as their sole client. Due to their financial stake in the process, these companies have a high interest, but relatively low power in decision-making.

NGO's & Research Institutions

IKEA works with eleven partners to monitor sustainability of their practices, consumer's behaviors, and supply chain. These NGOs, for example World Wildlife Fund, Better Cotton Initiative, Forest Stewardship Council, Ellen Macarthur Foundation provide feedback and advice that IKEA takes into consideration to improve their CSR performance (Inter IKEA Group, 2016a). Specifically for this project, universities such as TU Delft, Erasmus University, and Royal College of Art in London, will take an active role to assist IKEA. Therefore, there is a high interest from these groups, but again relatively low power.

4.2 Step 1: Criteria Formulation

A set of eight criteria addressing conditions for social, environmental, and economic sustainability were developed in partnership with internal stakeholders from IKEA. These are used to evaluate the company's current activities and describe challenges facing the company in the field of sustainability, and later to evaluate potential ideas for the vision.

4.2.1 Social

Desirable, affordable, accessible, and convenient for the "many people"

The greater mission of IKEA is to "create a better everyday life for the many people." This is the main driver of the organization and the foundation of the company culture. Affordability and accessibility are key qualities, meaning that their products are within financial and physical reach of the "many people". Desirability, whether it is what the customers want, and convenience, the level of ease of transacting with the company, are vital factors for IKEA.

Safe and fair working conditions for all engaged throughout the resource chain

IKEA engages with many stakeholders in its operations, not just its employees, but also suppliers, subcontractors, etc. A desirable future will maintain high standards for safe, fair, and equal working conditions along the resource chain, from creation of the materials to the end of a product's usable life.

Creates added shared value for local communities

Shared value can be defined as "policies and operating practices that enhance the competitiveness of a company, while simultaneously advancing the economic and social conditions in the communities in which it operates" (Porter & Kramer, 2011). In the desirable future, IKEA adds shared value for the surrounding areas in which it operates.

4.2.2 Environmental

Biodiversity and productivity of the land are conserved

One of the main drivers for IKEA to take part in the Circular Economy is to decouple their profits from their negative impacts onto the environment. These impacts tend to disrupt habitats, leading to decreased biodiversity of species. A sustainable future maintains a high level of biodiversity. Land will not be depleted so as to deem it unusable.

Does not systematically increase amount of harmful artificial substances into air, water, and soil

A sustainable future will not increase the (net) amount of man-made substances that have proved, negative consequences (carbon emissions, toxic chemicals) emitted into the natural environment.

4.2.3 Economic

IKEA is a driver of positive changes in the market

Multinational companies are being disrupted by startups faster than ever. Due to their large scale, IKEA is susceptible to be slow in responding to the ever-changing needs of their customers. In order to remain relevant to the market in 2025, IKEA will not only respond to customer's needs in a quick and efficient manner, but also be a leader of positive changes and consumer behavior in the market.

Business model must be profitable and scalable to sustain operations into the future

In order to be financially sustainable, the business model of a company must generate more money than it spends. If it does not generate a profit, then it will not be able to continue to exist. The business model will be scalable, in that it can be applied to various markets across geographies without a directly linear investment of resources.

Growth is not limited to availability of key resources

As sustainability becomes incorporated into the mainstream, there will be a higher demand for sustainably-produced, virgin materials for IKEA (FSCI-certified wood, Better Cotton, MSC-certified fish). In a desirable future, the growth of the company will not depend on the availability of these materials.

4.3 Step 2: Present State Analysis

In this section, the results of the current linear business model as described by Osterwalder's Business Model Canvas, see Figure 15, are presented. Next, the present state of IKEA in relation to the predefined criteria are described within the system boundaries, North America and Europe. In order to identify the gaps between the current and future states, the descriptions include key activities currently being used to address the criteria, and challenges that IKEA is still facing towards meeting them.

4.3.1 Business Model Canvas

Key Partners <ul style="list-style-type: none"> • Social entrepreneur • Non-profit organizations • For-profit companies 	Key Activities <ul style="list-style-type: none"> • Design • Manufacture • Distribution • Retail • Marketing 	Value Propositions <ul style="list-style-type: none"> • Price • Novelty • Design 	Customer Relationships <ul style="list-style-type: none"> • Community • Self-service and assembly 	Customer Segments <ul style="list-style-type: none"> • Mass market
	Key Resources <ul style="list-style-type: none"> • Physical • Human • Financial • Intellectual 		Channels <ul style="list-style-type: none"> • Stores • Online • Catalogue 	
Cost Structure <ul style="list-style-type: none"> • Cost-driven 		Revenue Streams <ul style="list-style-type: none"> • Franchise fees • Asset sales 		

Figure 15: IKEA's current business model as outlined according to the Business Model Canvas (Strategyzer, n.d.)

Key Partners

IKEA's main strategic partnerships are with organizations that help fulfill its social mission. IKEA partners with social entrepreneurs, artisans, and several non-profit organizations in different areas including but not limited to: UNICEF, World Wildlife Fund, Ellen MacArthur Foundation, Forest and Marine Stewardship Councils (Inter IKEA Systems, 2016a). It has also partnered with for profit companies, such as Nike, Neste, and Uber for various environmental and social initiatives (Nike, 2013; Inter-IKEA Systems B.V., 2016k; Neste, 2016).

Key Activities

IKEA owns all parts of its value chain, from production of raw materials to product sales. IKEA of Sweden is responsible for product design and research and development. IKEA Industry represents the manufacturing component of IKEA, with 40 production units in 10 countries (Inter IKEA Systems, 2016c). IKEA Supply is responsible for purchasing and logistics of goods throughout the group's worldwide supply chain. The retail centers are responsible for sales and marketing, as well as after-sales services such as customer support and returns (Inter IKEA Systems, 2016b; 2016j).

Key Resources

IKEA's dominance over the entire value chain indicates that it has many different types of resources to deliver value to its customers. Physical resources include assets such as property, manufacturing plants, and equipment. The IKEA Group owns over 340 physical stores in 28 countries, as well as 22 pick-up and order points, 41 shopping centers, and 38 distribution sites, and a number of manufacturing facilities (Inter IKEA Systems, 2016j). Financial resources include investments in several external companies such as hotels and even recycling plants (Gould, 2017).

With over 160,000 employees within retail, distribution, and services, IKEA has many human resources (Inter IKEA Systems, 2016j). The IKEA culture is unique and quite strong, emphasizing trust and capacity development. This produces engaged and motivated employees, ultimately leading to strong company performance (Inter IKEA Systems B.V. 2016h).

Intellectual resources include the IKEA Concept, which consists of the IKEA vision, business idea, product range, and all the trademarks and copyrights associated with the brand (Kamprad, 1976).

Value Proposition

IKEA's business idea is "to offer a wide range of well-designed, functional home furnishing products at prices so low that as many people as possible will be able to afford them" (Inter IKEA Systems, 2016h). It offers value to its customers based on price, but also offering novelty in the store experience, in which they seek to inspire their customers to create a better home life. They do this through the design of almost 10,000 uniquely designed product lines (Inter IKEA Systems B.V. 2016h).

Customer Segments

IKEA does not have a specific target group, but reaches out to the mass market as a whole. They create products for all ages and style preferences, and market them accordingly. They specialize in reaching cost-conscious consumers through special offers, such as their IKEA breakfasts.

Customer Relationships

IKEA has built a community relationship with its customer through its IKEA Family Loyalty Program. As of 2016, there were 100 million members of the program, and 10 million new members join every year (Inter IKEA Systems, 2016j). IKEA has limited in-store assistance, and operates mostly on self-service. Customers are responsible for retrieving, transporting, and assembling the products themselves, and are willing to do so based on the low price point. There are options for delivery and assembly at a higher cost.

Channels

IKEA reaches its customers through three main channels: physical stores, digital interfaces, and the IKEA catalog. In 2016, IKEA had over 1 billion visits to its stores and shopping centers (Inter IKEA Systems, 2016j). Its digital interfaces, including the website and mobile phone applications, are the most popular channel. In 2016, there were 2.1 billion visits to IKEA.com and 110 million visits of the store and catalogue mobile applications (Inter IKEA Systems, 2016j). Finally, IKEA's catalog is the world's largest print production, reaching 255 million people per year, translated into 33 different languages (Inter IKEA Systems, 2016i).

Cost Structure

IKEA's identity is settled in its cost-driven structure, it strives to reduce costs as much as possible to serve as many people as possible. Its size allows the company to leverage economies of scale. Fixed costs include salaries, marketing costs, and operating costs for the manufacturing and retail facilities, such as equipment and rent. Variable costs include materials, manufacturing, and distribution costs.

Revenue Streams

IKEA's main revenue streams throughout the organization are from asset sales and franchise fees. Asset sales from its products, accessories, and food totaled 34.2 billion in 2016, and is steadily growing each year. From these sales, franchises are required to return 3% back to Inter IKEA Systems B.V., which is then redistributed to the holding companies and other organizations (Inter IKEA Systems, 2016j).

4.3.2 Criteria Performance

IKEA has long included sustainability into their processes. In August 2016, a restructuring of the organizations was completed, which now requires an ongoing update of their sustainability strategy and operations. The overarching document that governs sustainability in the organization is their People and Planet Positive Strategy, which describes three change drivers, including:

1. A more sustainable life at home
2. Resource and energy independence
3. Better life for people and communities

These change drivers are measured with quantifiable goals, and progress is reported in the annual sustainability report.

In the next two years, IKEA is shifting their strategy to adapt their business model to the changing market. They aim to make IKEA more affordable, reaching many more of the many people, and creating a positive impact for people and planet, through social responsibility and circular economy initiatives.

4.3.2.1 Social

Desirable, affordable, accessible, and convenient for the "many people"

IKEA's vision is "to create a better everyday life for the many people," therefore the customer experience is a vital one in all of their operations. There are several departments and processes dedicated to surveying the customer on all aspects of the company. The IKEA Customer Satisfaction Survey is conducted every year, both for the store and for experiences away from the store (i.e. website). This survey contains indicators based on customer expectations, including several based on convenience and affordability. Additionally, the IKEA Brand Capital is a biannual research study of customer perception of the IKEA brand. These studies help IKEA set targets and specify activities to meet customer's needs.

Based on the above studies, IKEA is not necessarily known to be a desirable brand, but more one that is affordable. Market research shows that the established markets within the boundaries of this research are in decline, due to the key challenges of quality perception, accessibility, and sustainability. These factors affect the overall desirability of the brand, and the company has a strategy to address these factors.

In particular, accessibility is one of IKEA's key challenges. IKEA stores are generally located outside city centers, where public transport can be limited. Even with access to public transport, it is difficult to transport large items, even if it is flat-packed. The longer the travel time to IKEA, the less likely customers are willing to shop at the store (Inter-IKEA Systems, 2016e). The company is currently addressing this with the use of pick-up/order points, inner city stores, and through its website. These are proving to be effective ways of addressing accessibility, but have their own challenges to meet the needs of the consumer (Inter IKEA Systems, 2016e).

Although affordability is one of IKEA's strengths, in some key markets IKEA is consistently more expensive than competitors. The competitors also have the advantage of being more convenient and accessible, some with online deliveries arriving the next day or even within a few hours (Inter IKEA Systems, 2016d). Consumers find that in store shopping takes too much time, and online deliveries are also delivered with some delay and extra cost and at inconvenient times (Inter IKEA Systems, 2016h).

Safe and fair working conditions for all engaged throughout the resource chain

One of IKEA's greatest strengths are its motivated employees and its reputation as a popular and attractive international employer (Inter IKEA Systems, 2016h). As of 2016, IKEA had 163,600 employees worldwide (Inter IKEA Group 2016a). Standards regarding occupational health and safety, including appropriate policies and trainings are in place. In 2016, there were no on-site fatalities of employees and accidents with lost time decreased, despite the increase of employees (Inter IKEA Systems, 2016a).

The Inter IKEA Group has standards on employee relations that promote compliance to local legislation, as well as requirements for dialogue and competence development. For example, it is mandated that employee perception is evaluated at least every second year, and this is currently done with their VOICE annual survey. Furthermore, guides are provided for the individual on how to work with the results and improve upon them (Inter IKEA Systems, 2017b).

Since 2013, IKEA has partnered with the Fair Wage Network to use their formal assessment methodology to evaluate wage structures and conduct pilots in their direct operations in ten countries. This led to an improved wage structure in the US, China, and Japan, and IKEA is currently working on formalizing the assessment into their employee and supplier management systems (Inter IKEA Systems, 2016a; Oxfam International, 2014).

There is a dedicated approach for diversity and inclusion at IKEA so that all employees are treated equally. This includes global goals on gender, nationality, age, sexual orientation, gender identity, and physical ability to measure progress. For example, they have a goal of 50% women in leadership positions, and are currently at 48% (Inter IKEA Systems, 2016a).

In certain areas, IKEA controls the entire value chain from raw materials to retail of their products, but for other areas, it works with thousands of suppliers from all over the world (Inter IKEA Group, 2016). The IKEA code of conduct, The IKEA Way (IWAY) on Purchasing Materials and Services, targets key issues such as working conditions, environmental care and social responsibility among suppliers. It was launched in 2000, and is continuously being developed, including recent additions on requirements on prevention of child labor in the supply chain. It requires internal and external audits of suppliers, some of which are unannounced (Inter IKEA Systems 2016f). In 2016, IWAY non-compliance rate ranged from 3-37% for different supplier types (Inter IKEA Systems 2016a). Certain suppliers struggle with IWAY compliance due to common industry or regional practices. In the US, some suppliers do not meet the requirement for maximum working hours.

The IKEA Supplier Sustainability Index is an additional process used to measure supplier performance in strategy & management systems, sourcing, procurement, manufacturing, resource use, and non-utilized resources. This is used to incentivize sustainable supplier behavior in these areas while fulfilling environmental reporting requirements (Inter IKEA Systems, 2015).

Creates added shared value for local communities

IKEA is committed to serving more people than just their customers, employees, and suppliers. The IKEA Foundation is the owner of the IKEA group of companies, and its primary mission is “to create substantial and lasting change by funding holistic, long-term programs in some of the world’s poorest communities that address children’s fundamental needs: home, health, education, and a sustainable family income, while helping communities fight and cope with climate change.” The Foundation partners with global and local non-profit organizations such as the United Nations, Save the Children, Water.org, and more to bring basic necessities to help vulnerable communities access basic human needs in impoverished communities. Additionally, they provide grants for climate change adaptation and supporting refugees.

In other parts of the organization, IKEA has a social entrepreneur initiative which works with small businesses in the supply chain, particularly artisans. A majority of these are women in rural areas without access to independent income (Inter IKEA Systems, 2016a). Strategic partnerships are organized with local entrepreneurs in the field of textiles, such as a limited collection partnership with a Dutch startup, which manufactures new products from surplus IKEA fabrics, and employs those who are distanced from the labor market (I-did, 2017). However, one challenge with working with social entrepreneurs is that the demand that IKEA requires from social entrepreneurs is often larger than what they are prepared to provide (Wiren, 2017).

IKEA countries are provided with an IKEA Group Standard and Rule on Community Involvement that encourages stores to engage with the community on a local level. Their Community Involvement working group is currently examining metrics to track community impact, and will be systematically assessed as part of the environmental, health, and safety audits (Inter IKEA Systems, 2016a). Within North America and Europe specifically, IKEA experiences challenges with adapting their community efforts to emerging social issues, such as the refugee crisis (Wiren, 2017).

4.3.2.2 Environmental

Biodiversity and productivity of the land are conserved

A majority of IKEA’s 10,000 item product range consists of naturally-occurring materials such as wood and cotton (Leroy, 2017). Due to their economies of scale, the harvesting of these materials can result in large impacts on local ecosystems. IKEA’s Sustainability Strategy for 2020, the People & Planet Positive strategy, has three areas of focus; one of them being to “strive for resource and energy independence” (Inter IKEA Systems, 2016f).

In order to achieve this IKEA has specific goals and standards for more sustainable sourcing of natural materials such as wood, cotton, palm oil, and fish. Within the IWAY code of conduct, IKEA has a specific Forest Standard that covers wood, board, and bamboo procurement. The company buys their own forests, and requires Forest Stewardship Council (FSC) certification for sustainable management. In 2016, 61% of their wood was FSC certified (Inter IKEA Systems, 2016a). There have been incidents of illegal harvesting with sub-suppliers, but as soon as IKEA is aware of them, they have taken mediatory measures, for example stopping business with the supplier, or providing assistance towards FSC certification (Inter IKEA Systems, 2016a; Leroy, 2017).

IKEA uses about 1% of the world’s cotton supply, resulting in huge impacts. They have achieved their goal of sourcing cotton from 100% more sustainable sources. This includes the use of Better Cotton, a standard that addresses sustainability issues in the cotton supply chain, such as reducing pesticide and water use, and providing farmer training, and fair labor practices (Better Cotton Initiative, 2017). It also includes the use of cotton from farmers working towards this standard, as well as recycled cotton (Inter IKEA Systems, 2016a).

The circular economy has been identified as one of IKEA’s new strategic directions, which are still in development (Loof, 2017). IKEA has several goals reducing waste, and incorporating recycled materials into new products. By FY17, 50% of non-renewable materials (not including wood, cotton, etc.) should come from recycled materials. Additionally, by end of FY20, all collection systems are part of a circular economy set-up, with less than 1% of collected materials going to landfill (IKEA of Sweden, 2016). According to Bocken et al’s (2016) classifications of circular business models, IKEA is already making use of two of them. It is currently working on closing the loops by

designing and manufacturing products from waste from their production processes, such as glass vases, plastic spray bottles, and kitchen cabinet fronts (Inter IKEA Systems, 2016a). There are many initiatives in IKEA countries, mostly those in Europe and North America, to slow down resource loops, mainly by making use of old packaging or wasted materials (Post, 2017).

For the ongoing initiatives, the main challenges are legislation and economics. Even within the European Union it is difficult to transport waste products without specific permits, or between countries depending on the material. This is quite challenging since the company's supply chain is quite complex and requires transportation of goods. In some countries, IKEA stores take back used furniture and sell it in their "As Is" section, in return for IKEA credit. However, these items must be checked and handled appropriately, and oftentimes the man hours required to do so cost more than the item is worth, making the model not financially sustainable (Post, 2017).

Additionally, IKEA's business model is still based on a linear sales model and progress is still measured in amount of money in sales. A key challenge for IKEA will be to maintain a profit without incentivizing sales of unintended purchases, resulting in unnecessary resource use.

Does not systematically increase amount of harmful artificial substances into air, water, and soil

IKEA's Chemical Strategy, valid from 2016-2021 states that they believe "all people have the right to safe and healthy products that are free from harmful chemicals." This contains five objectives and even more key performance indicators that for increased assessment, awareness, and transparency of chemical usage along the supply chain, and phasing out substances that can cause harm. IKEA has already banned harmful substances such as PVC, lead, and optical brighteners, and phased out oil-based expanded polystyrene (EPS) Foam (Inter IKEA Group 2016f). However, some harmful substances, such as formaldehyde and flame retardants are still in use, due to legal requirements (Leroy, 2017).

Carbon dioxide and waste are a substantial amount of IKEA's emissions. The amount of waste produced has steadily increased over the past three years, mostly waste from the shopping centers. In 2016, 90% was recycled or incinerated, however the remaining 10% was landfilled (Inter IKEA Systems, 2016a). Although IKEA has reduced their carbon emissions 49% over their 2010 baseline, they produce almost 40 million tons of CO₂ per year, including Scope 1-3 emissions. The INGKA Group aims to produce 100% renewable energy by 2020, and as of 2016 produced 61% of their total energy consumption from renewable sources (Inter IKEA Systems 2016a). However, the INGKA group consumes only 3% of IKEA's total energy usage, leaving 97% of carbon emissions as a key challenge for IKEA (Leroy, 2017).

4.3.2.3 Economic

Business model must be profitable and scalable to sustain operations into the future

The current linear IKEA business model has demonstrated to be incredibly profitable and scalable. With EUR 34.2 billion total in sales in 2016, IKEA reports EUR 4.2 billion net profit for the year. In FY16 they had 390 stores in 48 countries, and are currently planning on expanding up to 430 stores in new countries by end of 2018 (Inter IKEA Group, 2016a; Loof, 2017).

IKEA is a driver of positive changes in the market

IKEA's economic success can be considered due to its innovative leadership in different aspects of the company, such as product design and sustainability. Constant improvement and unconventionality were instilled into the culture by the founder (Kamprad, 1976). In the area of product design, they have research & development initiatives as well as a Strategic Innovation Council which recommends investments on disruptive materials, techniques, capacities, production, and new businesses with IKEA of Sweden's Range & Supply (Inter IKEA Systems, 2016g). However, outside of this area of the company, IKEA is susceptible to be slow in responding to the ever-changing needs of their customers. Leadership is aware that the IKEA culture does not promote innovation or risk-taking, and the legacy and strong financial position can make employees complacent (Loof, 2017; Inter IKEA Systems, 2016h). Since 2015,

IKEA has partnered with an external design agency to create Space10, an innovation laboratory in Copenhagen which explores solutions for smart and sustainable living.

Growth is not limited to availability of key resources

As IKEA expands in the next few years, it may become more challenging to source materials responsibly, or the economic costs will increase. As corporate responsibility becomes more mainstream for other multinational companies, there will be a higher demand for sustainably-produced materials for IKEA (FSC-certified wood, Better Cotton, MSC-certified fish). The company is currently finding it difficult to source FSC certified wood, as well as more sustainable cotton sources, such as organic (Leroy, 2017).

4.4 Step 3: Future State Visioning

In the step, the goal was to brainstorm new ideas for a Circular IKEA, with a selection of the stakeholders identified earlier. This consisted of three phases: a participatory workshop, vision development, and vision evaluation.

4.4.1 Workshop

The first exercise consisted of the CeX template, in which participants were in groups and brainstormed problems or “pains” faced by different types of customers, or “personas.” After the workshop, the brainstormed pains were consolidated and classified into two groups: logical and emotional, shown in Table 2.

Table 2: Results from Exercise 1, the CeX Template, about customer’s pains regarding furniture ownership

Emotional	Logical
Don't like to throw away things you are emotionally attached to	Don't want to tie a lot of money into temporary furniture ownership
Insecurity about asset ownership	Not easy, difficult to transport, time consuming, I hate shopping
Don't feel at home in new city	No 1-stop shop, constant trade-offs, top-end offer
Everything holds memories	Owning is not flexible
Afraid I don't have style	Small space, space saving
	Cannot take with them
	What do I do with stuff after I leave?
	But I still have stuff
	Not flexible
	Complex to manage
	Not developed
	Can't afford it

The ideas generated from the second and third exercises are presented in Tables 3 and 4, respectively.

Table 3: Ideas generated in the second exercise

Drawing #	Community	Personalization	Servitization	Facilitate Maintenance	Facilitate Transport
1					Affordable delivery service
2		Mobile phone application for modular sofa			
3			Modular bed rental for growing child		
4		Smart Home Device			
5	Secondhand online platform				
6	Exchange repair for home-cooked meal	Smart Home Device		IKEA repairs broken china set	Autonomous vacuum
7		Modular "skins"			
8		Modular "skins"	Rental service, monthly subscription fee		
9	Secondhand online platform	Mobile phone scans room, local repair, 3D printing, modular skins			Autonomous vehicle
10		IKEA hosts workshop to transform products			
11	IKEA product identifier and disposal options	Distributed repairs, blockchain protected			
12	Create social interaction with furniture				
13				Products for repairing	Autonomous vehicle

Table 4: Ideas generated from the third exercise

Drawing #	Community	Personalization	Servitization	Facilitate Maintenance	Facilitate Transport
1		Personalization of life events; Modular		Product Passport	
2	IKEA as building communities			Facilitates maintenance/repairs	
3	High street store				Automated Transport
4	Incentive systems	Local production	Subscription for B2B/landlord/student		

4.4.2 Vision Development

After the workshop, ideas from the gathered materials left from participants were analyzed and clustered into higher level concepts. These themes were:

1. Community creation
This theme includes slowing down resource loops by fostering an emotional attachment to IKEA products by connecting people with each other and facilitating interactions either online or in person. This could be through leveraging the trust consumers have in the brand through IKEA's own online secondhand marketplace or a product sharing platform, where IKEA can facilitate the transactions of customer supply and demand, and use the data. Community creation can include partnerships with existing organizations, such as local maker spaces, places where individuals can gather to ideate, create, and build using tools and materials provided by the space, or even hosting workshops in the stores.
2. Personalization
Another way to create an emotional attachment, thus extending the product lifetime, is to personalize IKEA products to the individual. This could be done through tracking of past purchases, life events, or designing modular products that can be tailored to the individual.
3. Facilitated maintenance and repair
In order to slow down the resource loops, IKEA could assist in the logical pain of maintenance and repair of their products during the use phase. This could be through preventative and/or automated maintenance for certain product lines, including the use of technologies such as augmented reality to facilitate the repair process.
4. Facilitated transport
To increase convenience, the transportation of products between the customer and other customers or the store could be facilitated by IKEA. This includes the use of automated vehicles, either owned by IKEA, or part of a larger city/community initiative, such as mobility as a service, which is an emerging concept which integrates several modes of transportation into one easy to use platform and subscription. This relates to the circular economy because the automation of transport could lower costs of delivery, but also of product take back, and transport between consumers for reuse.

5. Servitization

As a radical transformation to their value proposition, IKEA could offer their products as a service. In this business model, ownership of products would stay with IKEA. This could be valuable for the customer and their specific needs, since the non-ownership offers flexibility, such as families with growing children, and students or expats, who tend to change living situations frequently.

Following these themes, concrete ideas were contributed on behalf of the Circular IKEA Research Team based on the outcomes of the workshop, as well as the assignment question. These were combined into one vision of how all of the ideas and themes can be integrated (Figure 16).

1. Community Platform [Circular, Community, Maintenance & Repair]

The community platform is a place where customers can go to get information about maintenance, repair, sharing, and product transformation options for their furniture. It facilitates peer-to-peer interactions by making use of the brand's consumer trust and loyalty program.

2. Transport as a Service [Facilitating Transport, Exponential Technology]

IKEA can purchase their own autonomous vehicles to increase accessibility for customers to their stores. Or it can make use of abundant transport pods that run throughout cities in order to ensure on-demand delivery, return and redistribution.

3. Furniture as a Service [Servitization, PSS]

IKEA maintains ownership over its products, therefore the customer is paying for the services of functionality and design. IKEA is then entitled to more data and the return of the products at the end-of-use to maximize the product's longevity. A subscription-based revenue model could be used to support IKEA as service provider. Customers pay a monthly, quarterly, or annual subscription fee to get access to any type of furniture, even short-term day or weekend rentals.

4. Furniture that Grows with You [Circular, Personalization, Classic Long Life Model]

IKEA's furniture is all modular by design, optimized for assembly and disassembly, and repair, so that they can be shaped to the customer's needs at any time in their life, for as long as the customer desires.

5. Store-No-More [Exponential Technology, Personalization, Maintenance & Repair]

Large roadside stores will be transformed into distribution centers, in which products are stored, refurbished, but also manufactured. Distributed manufacturing technologies, such as 3D printing, enable local and personalized production. For the IKEA experience, customers now stay in the city centers and restaurants for browsing and for smaller furniture and decorations.

6. Product Passports [Circular, Exponential Technology]

Each piece of furniture has a QR code that contains basic information: the product's design, location and basic user information. This is to support reuse, recycling, refurbishing and remanufacturing activities. This type of information will not track user behavior or the product's environment and is therefore privacy 'safe'.

7. Smart Home Solutions [Circular, Exponential Technology, Personalization]

Optional modular sensors can be added to any piece of furniture to provide another source of value to the customer-personalized data. By making smart use of basic sensors, various solutions and applications can be created for customers, for example, a built-in baby monitor that tracks the baby's sleep patterns for optimal parent sleep.

8. DIY with Augmented Reality [Exponential Technology, Maintenance & Repair]

As part of or separate from the community platform, IKEA's product expertise is available in text, video, but also in augmented reality. This allows customers to gain confidence in their DIY projects and learn to maintain and repair their furniture easily and in a fun way. E.g each step of a repair sequence is shown right in front of your eyes, you just have to repeat. Advanced AR can even let you know if you are doing something right by tracking your moves.

Circular IKEA 2025

What would be the ideal customer experience for a Circular IKEA in 2025?

Furniture that Grows with You
IKEA provides modular furniture that can serve the customer and their family throughout their lifetime.

Furniture as a Service
Customers can rent durable furniture for a low monthly price, with the flexibility to change their interior whenever they want or need to move.

New technology

DIY with Augmented Reality
Augmented reality can be used to help users with their Do-It-Yourself projects by real-life projections that guide the customer.

Community Platform
Customers who want to repair, share, transform, or sell their products can access IKEA's digital platform, where they can communicate with each other and IKEA in a trusted space.

Product Passports
All furniture is embedded with RFID tags that tell the customer the Journey of their product.

Smart Home Solutions
Optional modular sensors can be added to any piece of furniture to provide extra data, such as health and wellness data, to the customer.

"Store-No-More"
Customers can easily access the city center stores to get the full IKEA experience. The large roadside stores are now used for local manufacturing for on-demand, personalized production.

Transport as a Service
Autonomous delivery vehicles now make IKEA products more accessible and make product transport and take back at end-of-use more affordable.

This content is based on research and findings produced by Claudia Skarkevičiūtė and Rutana Chitra, under the supervision of Matthew Lacey, as part of their Masters thesis on the circular transformation of business.

Figure 16: Final Circular IKEA vision poster

4.4.3 Evaluation of Ideas

The ideas were then qualitatively assessed in relation to the criteria, to determine if they are leading in a positive direction to sustainable development for IKEA, or in a negative direction (Table 5).

Table 5: Evaluation of ideas

	Community Platform	Transport as a Service	Furniture as a Service	Furniture that Grows	Store-No-More	Product Passports	Smart Home Solutions	DIY with AR
Desirable, affordable, accessible, and convenient for the "many"	●	●	○	○	●	○	○	○
Safe and fair working conditions for all engaged throughout the resource	●	●	●	●	●	●	●	●
Creates added shared value for local communities	●	●	○	○	○	○	○	○
Biodiversity and productivity of the land are conserved	●	●	●	●	●	○	○	●
Does not systematically increase amount of harmful artificial	●	●	●	●	●	○	○	●
IKEA is a driver of positive changes in the market	●	●	●	●	●	●	●	●
Business model must be profitable and scalable to sustain operations into	●	●	○	○	●	○	○	○
Growth is not limited to availability of key resources	●	●	●	●	○	○	○	●

● Meets criteria
○ Does not affect criteria
○ Uncertain how criteria is affected, further research required

1.) Community Platform

Creating an online community platform around sharing and secondhand sales of IKEA's products would be an easy, affordable, and accessible way to engage customers in the reuse phase of circular economy. It is already being done informally through social media platforms such as Facebook, and external platforms such as Blokket in Sweden, therefore it is proven to be desirable. It would not impact working conditions, while creating shared value for IKEA through the use of its brand capital and IKEA Family Loyalty Program. It would benefit local communities, due to an increase in interactions and social capital, as well as emotional engagement. Since it is facilitating connections rather than using physical resources, it can be easily scaled, and its growth would not be affected by the availability of resources. If it is successful in prolonging product lifetimes, it would not have a systematic negative impact on the ecosystem.

2.) Transport as a Service

One of IKEA's largest challenges at the moment is accessibility between cities and the stores, as well as delivery. Facilitating transport via autonomous delivery vehicles for example, could be one solution to the challenge, provided that it is affordable and accepted among customers and the general public. Autonomous vehicles have been argued to be safer than human drivers (European Transport Safety Council, 2016), thus leading to an increase in safety in the resource chain. IKEA does not necessarily have to own them, but can support the widespread use by partnering with for-profit companies providing this service, thus leading to a creation of shared value for communities and a positive change in the market. The use of autonomous vehicles can reduce the need for car ownership, and therefore the number of cars on the road, since they will most likely be shared and constantly moving. Therefore, less cars will be necessary, less materials will be required, thus conserving biodiversity and if electric, decreasing air pollution in cities. Economically, the

increased accessibility could attract more customers, especially those in cities, who don't have a car, or people who have difficulty leaving their homes, therefore being profitable for the company. Depending on the type of car and the materials required, growth of this idea or the company would not be affected by the resources required.

3.) Furniture as a Service

Offering IKEA products as a service would create a new value proposition for the customer, by increasing convenience and flexibility. By allowing them to pay for the service of using its furniture, instead of the product itself, customers who move frequently can easily change their furniture. Because IKEA would retain ownership over the product and be able to reuse or recycle them into new products, it would decrease the amount of raw materials required, thus maintaining ecosystems and not producing more harmful substance in a systematic way. The reverse logistics would create new jobs, which would most likely be done according to IWAY standards, thus providing a safe working environment across the resource chain. It would most likely not have any impact on local communities, unless partnerships are formed with local businesses or entrepreneurs. One aspect that is uncertain is how desirable this would be for customers, based on Gullstrand et al (2016) research that consumers are still unwilling to rent "soft" goods, such as mattresses and sofas. This can impede the use of the business model, thus affecting how profitable or scalable this could be for the business. At first it would serve niche markets in which it is convenient to have a furniture subscription on the short-term, for example students or expats, and depending on how IKEA implements this, it is uncertain how or when such a business model would bring the company profit.

4.) Furniture that Grows with You

Like furniture as a service, the use of modular furniture design could also create convenience and flexibility for certain customer groups, such as families with growing children, who need to buy furniture more often. Modular design is intended to reduce material usage; therefore, it would reduce its impact on the environment. By making modular furniture widespread, IKEA can drive positive change for modular design and make them the norm. Local communities would not be impacted by this change, and growth would not be limited to resource availability. It is uncertain how desirable and practical this could be for the customers; therefore, the profitability is uncertain.

5.) Store-No-More

Transforming the highway stores into distribution and local manufacturing centers would have a large positive impact on the environment, since materials, water, and energy would be conserved when refraining from building and maintaining new stores. The current ones could be downsized. For example, the parking lots can be transformed into parks, conserving biodiversity and productivity of the land. IKEA could grow by increasing the number of stores in city centers, which would additionally reduce transportation distances for customers and products, leading to more energy savings. It would also be much more convenient and accessible for customers, leading to greater profits. There would be negligible effects on the local communities, however the key resource that may become scarce is the amount of space available in city centers.

6.) Product Passports

Making use of product passports, such as RFID tags, would be a passive way of collecting data on a product's current and historical condition, location, and availability, therefore adding more knowledge to facilitate reuse, repair, and recycling. This would reduce the amount of virgin materials required, therefore benefitting the environment. However, the tags themselves would require materials, including batteries which can contain scarce materials. The precise material balance would have to be investigated further, therefore it is uncertain of the effects on biodiversity, productivity and the amount of harmful artificial substances in the environment. It is also uncertain how profitable or scalable it would be to make use of these product passports, and how it would impact the growth of the company. Because it collects data in a passive manner thus not breaching privacy, customers nor local communities would be affected by their implementation.

7.) Smart Home Solutions

By incorporating more active sensors that collect data about a product, as well as providing consumers feedback on their health and wellness, IKEA can create shared value for customers, as well as gathering even more data on product use, location, condition, and availability. By connecting products to each other or a central home hub, this could personalize the products and increase the product's longevity, leading to decreased material use and impact on the environment. Like product passports, it is uncertain if the increase in use of metals in the electronics would offset the decrease in material use from the furniture, as well as the use of scarce materials for batteries impacting the growth. Additionally, it is uncertain if customers are interested in having these sensors in their furniture due to privacy reasons, which can affect profitability and scalability.

8.) DIY with AR

Using augmented reality to assist customers with repairing their products would slow down resource loops and thus reduce environmental impacts from material consumption. IKEA excels in providing easy to comprehend instructions, and this would facilitate it even further, ideally in a safe manner. It would most likely not have an impact on local communities. However, it is uncertain if customers would be willing to repair items themselves, and furthermore whether they would pay for it, thus uncertainty in how profitable it would be. It could indirectly be profitable by improving customer service and the software is easily scalable. If the augmented reality was attached to smart phones that people already own, growth would not be impacted by resource availability.

4.4.4 Final Vision Description

The following is a description of all the ideas integrated into one vision, to better illustrate one possible customer experience for a Circular IKEA in 2025:

IKEA has grown to be the expert in life at home. It has been building up its knowledge about life at home from the very beginning, enabling them to develop a completely new way of serving the many people. To provide the best offers, they take on a more intimate relationship with their customers. They will be there at the biggest moments of their lives, starting with a warm welcome:

Homer and Marge Simpson are a young couple in urban America, and have just found out they are expecting their first child, a baby boy, due in September 2025. There is a lot to do, starting with furnishing the nursery, and they are feeling very overwhelmed.

They explore different options with the augmented reality IKEA app that allow them to see how different furniture and styles fit in their nursery. They decide on IKEA's baby furniture package due to its affordability, flexibility and convenience. In this package, Homer and Marge can easily obtain all the basics they need for the nursery, including the crib, diaper changing station, and drawer set, which will be delivered to them conveniently by an autonomous vehicle. Homer and Marge do not pay for the products, they are paying for the services that the furniture provides for the first few years of Bart's life, when he is growing fast and they need the flexibility to change furniture. With the subscription, they also have access to the IKEA Baby Community, which is an external online community that provides access for new parents to ask questions and have experts support them.

While they wait for baby Bart to arrive, Homer and Marge can walk conveniently to the city center IKEA, where they have lunch of Swedish 'in-vitro' meatballs and pick out colors and decorations for the nursery. They can also experiment with the different add-on options available for their basic IKEA products. They can choose to add a decoration subscription, to personalize the nursery, or even get a personalized IKEA-designed look for the rooms in their house. The crib has the option to include sensors, which collect real-time data on baby Bart's condition and sleep patterns. This information goes straight to Homer and Marge's central interfaces, even Grandma and Grandpa can check in on Bart from their old smartphones. If Homer and Marge allow it, information about the product's design, location, condition, usage, user and environment are sent to IKEA so that the data can be used by the company to design better products, plan demand to avoid overproduction, and to offer better services to their customers.

Every basic item is modular, therefore when baby Bart outgrows the crib, the base of the crib can be connected to another base component, to make a toddler bed. Homer can use his Subscription Manager, which automates the family's food, clothing, transport, and home subscriptions, to inform IKEA that Bart has outgrown his crib by scanning the RFID chip on the crib. Based on the sensor data in the crib, IKEA gives a range of suggestions of modules and accessories that Bart will most probably like. Of course, Homer can choose any module he wants.

Homer disassembles the crib modules that he doesn't need anymore and hands them over to one of the many transport pods. There is always one available right in front of his door. Because of the improved mobility as a service transport system in the city combined with the central distribution centres of IKEA right outside each city, it is only a matter of minutes before the new parts arrive. The same happens into Bart's child and teenage years, whenever he has a growth spurt and needs a bed extension again.

When Bart eventually moves out to go to university and becomes more and more independent, he can take over the furniture he wants in his own subscription, since the modularity makes it easily transportable and the familiar furniture helps him feel at home in a new place. OR his family's subscription allows him to leave the bed, and get a new one in the new location, even if he chooses to study in a different country. Marge and Homer are bored as new Empty Nesters, and can experiment with turning Bart's unused base components into a new sofa, table, or chair for the living room.

Eventually Marge and Homer decided to get a divorce. Instead of splitting up and selling the assets, they can easily split their shared furniture subscription into two, and return the rented products from their home. They can then use their individual subscriptions to get a fresh new start with a new style and set of products in their new homes.

4.5 Transition Pathway

To achieve this vision of a Circular IKEA, a transition pathway was created detailing what could be done and by whom. First, the changes to the business model are outlined using the business model canvas, then a transition pathway is constructed to suggest activities IKEA can engage in to reach such a business model.

4.5.1 Future Business Model Canvas

In order to assist in identifying how the business model would change towards a circular one compared to the current one, Osterwalder's business model canvas was again used to analyze the future vision in terms of a business model (Figure 17).

Key Partners <ul style="list-style-type: none"> • Social entrepreneur • Non-profit organizations • For-profit companies 	Key Activities <ul style="list-style-type: none"> • Design • Manufacture • Distribution • Retail • Marketing Key Resources <ul style="list-style-type: none"> • Physical • Human • Financial • Intellectual 	Value Propositions <ul style="list-style-type: none"> • Price • Design • Performance • Customization • Accessibility • Convenience 	Customer Relationships <ul style="list-style-type: none"> • Community • Self-service and assembly • Automated Services Channels <ul style="list-style-type: none"> • Stores • Online 	Customer Segments <ul style="list-style-type: none"> • Mass market • Niche
Cost Structure <ul style="list-style-type: none"> • Cost-driven 		Revenue Streams <ul style="list-style-type: none"> • Franchise fees • Subscription fees • Lending/renting/leasing 		

Figure 17: The Circular IKEA vision mapped out on a circular business model canvas, items in pink indicate that they will change from the present state business model

Key Partners

Changed: For-Profit Company (Type)

Currently, IKEA's main strategic partnerships are with organizations that help fulfill its social mission, but not its business activities. Because several elements of the vision require delivering value that is not in IKEA's line of business, such as sensors from Product Passports, Smart Home Solutions, autonomous vehicles from Transport as a Service, or other electronics, IKEA will have to make new strategic partnerships in order to make the vision come to fruition. This could be with vehicle manufacturers or electronics companies.

Key Activities

Changed: All

IKEA will have to adjust all of their current activities in order to achieve the Circular vision. Because the purpose of Furniture as a service is to retain ownership over the products and be able to reuse or remanufacture them, the entire value chain will have to be adjusted to do so. Additionally, from Furniture that Grows with You, the product design would include mostly modular design and design for repair and reuse, while being made of recycled materials from products that have reached the end-of-life phase. Manufacturing facilities will have to be redesigned to incorporate flows of previously used products, and must adjust production equipment based on the new furniture designs. Distribution will change to include the transportation of products from the stores to the customer, and also the reverse logistics of products from the customer, back to manufacturing facilities for recycling. Because this is so geographically widespread, legislation will prove to be an issue, and some lobbying will have to occur. Retail will change from the stores being built outside cities in Store No More, to more city center stores and more use of digital platforms such as online and virtual sales, therefore more "behind-the-scenes" activities such as website management, and order fulfillment will be required. Finally, marketing will have to adjust to the new value propositions, and change IKEA's brand image to fit the Circular vision and ensure customers know about the offer.

For the technology-related ideas (Smart Home Solutions, Product Passports, DIY w/ AR, Transport as a Service) IKEA will have to also redesign the products to incorporate the use of these technologies. Additionally, IKEA will have to manage the data that is received from the use of these technologies, as well as establish feedback loops so that the data is used in the product design.

Key Resources

Changed: All

IKEA's physical resources will expand, since it will include ownership over the products, those distributed at the customer's homes. Depending on how the autonomous vehicles develop, IKEA may have to purchase their own fleet of delivery vehicles. This can also influence the financial resources, in case IKEA invests in the delivery companies earlier in the development process.

Intellectual resources will expand to include trademarks and copyrights over new designs from Furniture that Grows with You, as well as software related to Community Platform and DIY with AR.

Human resources will include a more innovative culture, with employees more willing to engage in experiments that can later provide value to the company, including the development of "intrapreneurs."

Value Proposition

Added: Performance, Customization, Accessibility, Convenience

Removed: Price, Novelty

Perhaps the most changed element is the value propositions offered for the customers. IKEA will change from offering based on price and novelty to offering value based on performance, customization, accessibility, and convenience. They will offer value in the form of accessibility through the use of facilitated transport from autonomous vehicles and online channels from Community Platform and DIY with AR. New modular designs from Furniture that Grows with You and customized production from Store No More allow customers to have personalized furniture and exchange parts according to their needs, offering value in customization and convenience in the flexibility. The longer-lasting durable furniture and data from sensors from Smart Home Solutions and Product Passports will lead to value in performance for the customer in better-performing furniture but also more information on the customer's own performance in the areas of health and wellness.

Customer Segments

Added: Niche Markets

IKEA will continue to reach out to the mass market, however it should also adjust to serve certain niche roles, for example Furniture as a Service may better suit short-term renters such as expats, students, or business customers.

Customer Relationships

Added: Automated Services

IKEA will leverage the community aspect, and include other programs other than the IKEA Family community. This could include the online platform or Circular communities. Additionally, with the use of autonomous vehicles, IKEA will begin to provide automated services.

Channels

Changed: Stores (Type), Online (Type)

Removed: Catalogue

In a Circular IKEA, the company will focus less on physical touchpoints such as its stores, and more on digital ones. Mobile applications, third party online retailers, and virtual/augmented reality will allow IKEA customers to gain a new and more convenient perspective on IKEA products and their features. Physical stores will exist, primarily in city centers rather than large highway stores, where customers can get the physical IKEA experience including restaurants and play center. With a focus on on the digital sphere, the IKEA catalogue is no longer used as a channel.

Cost Structure

Changed: Cost-driven (Types of costs)

IKEA will maintain its cost-driven structure because it is a core of its identity. Even if it changes its revenue stream or value proposition, it should still strive to compete on price, offering Furniture as a Service and Furniture that Grows with You at the lowest prices possible. The fixed costs of salaries and marketing may increase due to the growth and new activities and labor required. The variable costs would change because the materials at the end of life would become the sources for new products, and if IKEA maintains ownership, they will have decreased costs of raw materials. However, in order to transport these products to and from manufacturing facilities and customer homes, there will be increased costs as well. Therefore it is likely that there will be tradeoffs in the variable costs.

Revenue Streams

Added: Subscription fees, Lending/renting/leasing

Removed: Asset sales

From Furniture as a Service, the company will gain revenue by shifting from asset sales to subscriptions, including lending, renting, and/or leasing for the short term. It can maintain its franchise fee structure.

4.5.2 Pathway

In this section, the key activities and changes that IKEA could make towards this Circular Vision are briefly described (Figure 18). Each step inspired by Kotter's (1998) stepwise model for change is indicated in each description.

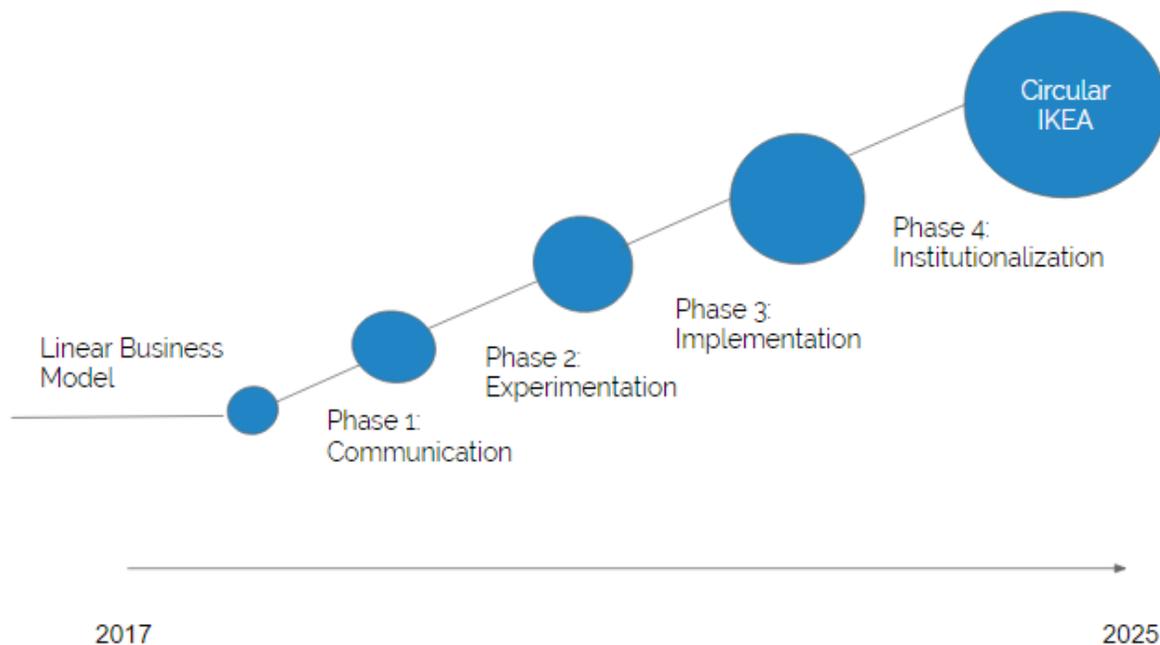


Figure 18: Four phases for IKEA's circular transformation

Phase 1: Communication and Capabilities (2017-2019)

Inspired by Step 4 and 5 of Kotter's model, IKEA can make use of the vision to guide the organization towards its goals of a circular business model by communicating the vision and empowering others to act. This could include the use of the visualization created for the assignment and the tools to inspire employees, raise awareness about the need for circular economy, and instill a sense of urgency about the digital technologies emerging. During this phase, IKEA should clarify and finalize its sustainability and strategic objectives, and use all its channels to communicate its circular economy direction. The company already has a Change Management Process that specifies proper communication the IKEA way through newsletters, leadership talks, and even daily conversations on an individual level.

In order to achieve this vision, IKEA can take advantage of external partnerships such as Space10 Design Agency or the new Startup Bootcamp program in Sweden, to develop the ideas in the most risk-averse way. However, IKEA can also develop its own internal innovation capabilities. There is already an immense amount of talented people within the company that have their own ideas or desires to take the vision further. In order to take advantage of this, IKEA can make use of an "intrapreneurship" program, used by several companies such as Mastercard, Swiss Post, and Leroy Merlin. These programs identify high potential or interested employees who have an idea to improve the company, and assist them with the resources, knowledge and capital, to bring the ideas to reality, thus empowering them to act on the vision. This has been proven to be an effective and cost-efficient way to develop internal innovation capabilities, which IKEA requires. Furthermore, IKEA will have to conduct experiments that have not been done before, requiring risk-taking and uncertainty. IKEA leadership can encourage this behavior by leading by example, discussing uncomfortable feelings in an open and honest way, and rewarding or even incentivizing fast and frequent failure. Developing these innovation capabilities will prepare the organization for the next phase of experimentation.

Phase 2: Experimentation (2019-2021)

In accordance with Step 6 of Kotter's model, IKEA should plan for and create short-term wins. Each of the ideas presented in the vision require more research and experimentation, particularly on how customers perceive the idea. This task identifies how IKEA can go about testing and developing the ideas on a small-scale.

Market research

In order to answer the uncertainties in customer desirability for each idea, each idea should be tested according to Lean Startup method. This consists of constant iterations of feedback between the company and its customers, to identify the best ideas to be implemented at the current time. It could be that certain ideas are more popular. For example, Facebook A/B tests are a commonly used method for testing customer interest, due to its inexpensive and less time-consuming nature (Schuit et al, 2017). These entail creating two different Facebook advertisements toward a desired target group, and testing which one gets the most clicks, indicating preferred interest in one advertisement over another. Other forms of market research to test the ideas could be customer interviews and surveys, perhaps to identify a niche group interested in a particular idea. This could be done in various countries, either by the centralized Business and Consumer Intelligence business unit at Inter IKEA systems, or by external or internal entrepreneurial teams.

Market nudging

Based on market response, IKEA can develop and pilot the accepted ideas first. For ideas that are traditionally not accepted, for example renting out “soft goods,” such as mattresses, innovative design solutions will have to be brainstormed to engage customers to change their perspective. IKEA also has the resources to “nudge” the market, implementing tools, such as pricing models, sales and marketing techniques, that could change customer perception and behavior in favor of adopting circular products and services.

Find the “win-win-win”

Each idea is capable of producing value for all parties involved, but involves more experimentation. Pilots will be required to identify the best arrangements. These should be done on the store or regional level.

Phase 3: Implementation (2021-2023)

Step 7 of Kotter’s model suggests to consolidate improvements and produce more change. In this phase it is assumed that each idea has been “accepted” by the market, that the optimal combination of value exchange has been found, and that successful pilots have been conducted and that the company intends to bring them closer into the centralized parts of the organization. It will outline for each idea the key activities that IKEA needs to do to implement the full vision, based on the future BMC analysis in section 4.5.1. The activities are grouped together by similarity and ease of implementation of an idea, in the order of increased difficulty.

Community Platform and Autonomous Vehicles

Based on the evaluation presented in section 4.4.3, these two ideas are most likely to be easy wins for IKEA to bring about change. The company can begin with experimenting and developing the community platform and autonomous vehicle ideas because they can complement the linear business model, and do not require massive changes throughout the organizations.

For the community platform, IKEA can develop its own software, or partner with external companies, like what is being done with Blokket in Sweden. The advantage to developing its own platform, is that it can leverage the brand trust in order to engage those who would not normally make use or do not know of other platforms, as well as monitoring and ensuring quality. This can build on the IKEA Family Community at first to test with those already engaged with the IKEA channels, and expand to a more widespread audience later.

Even within the context of IKEA’s linear business model, autonomous delivery vehicles would make IKEA’s products much more accessible to more potential customers, solving one of the company’s key challenges. IKEA should monitor progress on autonomous vehicles, invest in and even collaborate with car companies to facilitate the speed of autonomous vehicle development and implementation. In certain cities in Scandinavia, there are discussions about offering transport as a service, in which all modes of public transportation are offered into one monthly subscription fee to reduce car ownership. IKEA can choose to lobby in favor of these initiatives and other autonomous vehicle legislation in order to lead positive changes in the market and bring shared value to the surrounding communities.

Digital Technologies [Product Passports, Smart Home Solutions, and DIY with Augmented Reality]

To make the most efficient use of product passports, and/or active sensors, IKEA will most likely have to engage in partnerships with electronics companies, unless they want to go into the business of electronics, which seems unlikely. They will have to first define what data they need in order to best implement the circular operations and reverse logistics, as well as which types of technologies can help them achieve it. Potential useful data could include back-end information for the company, such as location, condition, and availability of the item, as well as customer-facing information, such as what data do customers want and what are they willing to share with the company. Feedback loops should be put in place so that collected data on maintenance requirements are used by the design department to make more durable and longer-living products. Data security will also need to be put in place, in order to prevent data breaches and keeping customer trust. For augmented reality, the software needs to be written for the repair and maintenance of each product, or perhaps the most easily broken ones. Safety precautions should also be taken to prevent accidents and liability in case of injury when self-repairing.

Product Service Systems [Furniture that Grows with You, Furniture as a Service, Store-No-More]

The key product development activities that will have to be put in place are the design, manufacturing, and logistics of the new modular products. IKEA will retain ownership over the products, therefore customer and product management, linked with the data management in the technology section previously, will be crucial. Processes such as reverse logistics and product demand and supply management must be set to properly manage the flow of products to and from customers, distribution/retail centers, and manufacturing facilities. New store designs and configurations can include the space required for these operations, as well as the use of distributed manufacturing technologies for local, on-demand production. Furthermore, marketing and sales will change to support the subscription model and new Circular IKEA brand image.

Phase 4: Institutionalization (2023-2025)

The final step of Kotter's model includes institutionalizing the vision. Once a majority of stores are implementing these ideas, the best practices can be introduced widespread over the organization, by incorporating it into the Concept, which franchisees are required to adhere to in order to become an IKEA franchisee. The ideas can also start to be implemented outside the boundaries of this research, such as Asia and the Middle East. Documents such as communication, marketing, logistics and safety standards (IWAY) will have to be updated for each new idea, to ensure that the IKEA standards are upheld and that the ideas are brought to reality in the most sustainable way possible.

5. DISCUSSION

This study applies models from different areas of research to explore how multinational corporations can shift towards circular business models. This chapter discusses the results of the backcasting study as well as the methodological framework used here.

5.1 Discussion of Results

5.1.1 Vision

The Circular IKEA vision produced from the backcasting study written was developed to fit the specific assignment question provided by IKEA. The final ideas and the process were described in detail in a 26-page report, and presented in an hour-long presentation to the Inter IKEA Systems Sustainability Team, Innovation Managers, a Customer Relations Specialist, the Director of IKEA Denmark, and two members of the Circular Working Group from IKEA of Sweden. The ideas were distributed physically and digitally, by means of posters that were hung up around the Inter IKEA Systems office, and online via an interactive-PDF that was posted on the internal IKEA website, along with the 26-page report.

The ideas were received well by those at the presentation, based on comments from the IKEA members present proposing to hold the presentation again for more decision-makers at IKEA, and that these ideas will be incorporated into discussions regarding steps forward for the company. Due to time constraints, it was not possible to formally evaluate the perception of these ideas, or how effective they were to engage or motivate employees in the transition process. This is one limitation in the research, and could be further investigated.

5.1.2 Transition Pathway

The main research question of this thesis investigates how companies can make the transition toward circular business models. The transition pathway presented to IKEA was based off Kotter's (1995) Stepwise Model for Organizational Change as a guide of the changes IKEA will have to make. Due to the future-oriented nature of the pathway, it is not possible to conclusively state from this study that this is what similar multinational corporations can or should do. For this, a longitudinal study is required in 2025 which would retrospectively assess the effectiveness of the steps offered here. The final conclusions offered here are based on identified needs for IKEA and theories that have been applied effectively in other organizations, not necessarily in the context of circular economy.

5.1.3 Business Model Canvases

The future vision created in the backcasting process was used as the basis to analyze a potential circular business model for the company. The vision itself consisted of themes such as product-service systems, modular design, local and distributed manufacturing, as well as the use of digital technologies, such as autonomous vehicles, augmented reality, and sensors for data acquisition.

The greatest change between the current and future BMs found in this analysis can be seen from the changes in value proposition, key activities, and key resources. In order to incentivize product take-back for circularity, IKEA will have to offer different types of value for their customers than what it is offering today. Rather than focusing on price and novelty, the company will have to provide value in personalization, accessibility, performance, and convenience for the customer. By incorporating product service systems, new technologies, and new designs into their business model, IKEA would maintain ownership of the whole supply chain and thus the associated key activity types in its linear business model, however in a circular business model the specific activities within design, manufacturing, distribution, retail, and marketing would change to reflect the reverse logistics and data acquisition. Key resources would expand to include the ownership of physical products throughout the use phase, intellectual software and copyrights to the new Concept, and human resources through the innovative culture that was gained from the incentivization of risk-taking and experimentation.

Other elements of the business model that would change, although not as drastically, are the key partners, customer segments and relationships, and cost structures. In order to achieve the vision and circular business model found in this research, IKEA will have to be open to collaboration with other large for-profit companies, mostly technical ones since it is outside of their business scope. In regard to customers, although it is currently targeting the mass market, the company should start with identifying and targeting niche groups that will be most attracted to the Circular IKEA offerings first, and then slowly expand them to the mass market as they become more socially accepted or attractive. Although IKEA would remain cost-driven when it comes to cost structure, the types of variable and fixed costs will change to suit the circular business model. Specifically, the use of product-service systems may require high upfront costs that the customer will pay over time. As seen in the literature, many companies are not willing to make such investments, particularly because they are publicly owned (Bocken & Short, 2016). However, since IKEA is privately owned, it has greater autonomy to do so, and can use this as a competitive advantage.

5.2 Discussion of Methodology

5.2.1 Development of Research Question

The original study was meant to be a simple backcasting study answering the assignment question provided by IKEA. However, over time other interesting questions surfaced, and backcasting seemed to be insufficient to answer them. Other models and theories of change were incorporated into the research in order to be able to fully answer the research questions, resulting in the development of the methodological framework used in this thesis.

5.2.2 Assessment of Backcasting

A participatory backcasting approach as defined by Holmberg (1998) was selected by the Circular IKEA Research Team in order to structure the process of creating a future vision of a Circular IKEA in 2025. Each of the steps will be discussed here to determine the strengths and weaknesses of the overall method in creating a vision for IKEA.

5.2.2.1 Step 0: Problem Orientation

In order to allow enough time for developments to come about, backcasting is typically recommended for long-term time boundaries, more than 20 years into the future (Dreborg, 1996). The year 2025, 8 years from the current state was kept the same in order to instill a sense of urgency in participants of the workshop, and motivate them to act in a timely manner. Because the time boundary was set so soon, this could have impeded the creative process during the workshop, since it is far enough to not fully understand what the future could look like, but close enough to project current trends into the future. Additionally, IKEA has a history of changing very slowly, therefore it is quite unlikely that the vision will be met in the given time frame (Leroy, 2017b).

Because of IKEA's immense global presence, and the requirement to make use of future digital technologies, the geographical boundaries were limited to North America and Europe. The assumption is a larger chance of implementation of the future technologies in these regions, than other regions such as Southeast Asia. However, it is equally likely that there are many regions that could indeed benefit and develop the vision, especially the technological ideas, faster and further, such as North Asia and Australia, especially in light of China's recent Circular Economy legislation (Geissdoerfer et al, 2017). Other areas such as Southeast Asia could benefit from certain ideas in the vision as well. In these areas, IKEA products are not perceived as affordable, and the spread of secondhand or rentable products could make IKEA's products able to reach more people in those areas.

5.2.2.2 Step 1: Criteria Formulation

In this study, eight criteria describing a sustainable and future state of IKEA were outlined and adopted by the Circular IKEA Research Team. These were first developed by the author, based on the desires of the organization and in line with the backcasting method, before the workshop. Preliminary criteria were presented briefly during the workshop to the participants, but were not discussed during the workshop due to time constraints. Instead, a phone call took place with interested, internal participants from the workshop. Of the nine IKEA workshop participants outside of the Circular Research Team, two of them were on the phone call, and one was engaged over email. The low participation could have resulted due to the phone call having taken place the day after a holiday in the Netherlands, or due to a lack of participant time or interest. However, although there were many participants who attended the workshop, there was also low participation in the evaluation of the workshop, perhaps an indication of low engagement. There were some questions about the process that arose, mainly since the backcasting process was another way of doing things that were different from the usual way at IKEA, which will be discussed later.

The final criteria themselves described requirements for sustainability, but were unrelated to circularity or technology, which were two of the main requirements of the assignment question and this study. This is due to the nature of the criteria, in which they must describe a condition, rather than actions to take. This is beneficial because it makes for a timeless checklist that IKEA can use to assess activities. However, this made it difficult during the development process, since participants made many suggestions, which could not be included since it described actions to take, rather than conditions for sustainability. However, they quickly understood the concepts and agreed on the finalized criteria.

Because IKEA can be considered a social enterprise, a business that has a strong social mission, the social and economic criteria are already embedded into the culture. Their social mission of helping the many people can be overheard in daily conversations as a guiding question for discussion and decision making, and IKEA excels in the area of social sustainability. The economic criteria of being profitable is inherent to the concept of business, and did not necessarily require explicit criteria to be met. Therefore, it seems that a greater emphasis should be placed on the environmental criteria in the backcasting process, in the context of a social enterprise like IKEA. Rather than using all three aspects of sustainability in the criteria, it seemed that only environmental criteria could be used in this case. However, in other business cases without a social mission, social criteria should remain to ensure that all aspects of sustainability are met.

It could be argued that in this case the environmental criteria that were developed were not ambitious enough. The use of words such as “does not systematically increase” does not indicate a high level of ambition. There was a discussion in the Circular IKEA Research Team to incorporate next generation practices such as “renewability.” Renewable practices are those which IKEA would do in order to provide positive value to the environment, rather than merely have a neutral or less negative affect on it, for example planting more trees than it uses for raw materials. However, it was decided that it was unrealistic to expect that from such a large company, because it is so far in the future and these practices are almost unheard of. It can be argued that since the criteria are like a foundation, the backcasting process is only as strong or ambitious as the criteria set. In order to make them more ambitious, the idea of providing *more* value to the environment can be introduced. However, it is already quite an effort for IKEA to transition to the circular economy, therefore for this research it was decided to take a conservative approach.

5.2.2.3 Step 2: Present State

The present state was also conducted out of order as outlined by Holmberg (1998), as it was analyzed after the workshop and official criteria creation, instead of as the second step. This was done briefly at first, according to the main activities that IKEA was already engaging in, as well as its largest challenges in each area. Most written sources were positive about IKEA’s sustainability performance, but lacked information about its challenges. Due to time constraints, only three interviews were conducted in order to identify the challenges IKEA faces in sustainability, all three from the Inter IKEA Systems Sustainability Team. Therefore, the environmental and social challenges according to the team can be considered complete, however economic challenges were not investigated in detail.

The present state according to the criteria did not address the current business model of IKEA, which is a key component of this study. Therefore, an additional analysis of the present business model was added using Osterwalder’s business model canvas to capture a more holistic understanding of how the company currently operates. Comparing the current and future business model canvases showed explicit changes of how the business model of a company would change when transitioning to the circular economy, to be discussed later.

5.2.2.4 Step 3: Visioning

Phase 1: Workshop

A participatory workshop was held with both internal and external stakeholders in order to brainstorm ideas of what a customer experience would look like for a Circular IKEA.

The planning process took about four weeks, but the agenda was constantly changing up until the morning of the workshop. This was most likely due to the large amount of people planning the workshop. In addition to the three members of the Circular IKEA Research Team, two more students from the Royal College of Arts in London were asked to assist in the workshop planning. Their input was very valuable, since they had previous experience planning creative workshops, and enthusiasm for the idea and circularity in general. Two of the survey respondents stated that learning about the Strata Layer concept was a strength of the workshop. This could be due to the innovativeness of the concept, the students, and the potential applicability to IKEA. One week before the workshop, contact was made with Innoboost, a consulting company specializing in creating customer experiences for the circular economy. Their assistance was helpful when coming up with brainstorming activities for the visioning process, as well as moderating the activities, but one respondent from the survey indicated that their presence did not add value to the day. One possible reason for this could be that the facilitation of the exercises was unclear or perhaps not in the same style as a workshop normally held within IKEA would be. Due to the large number of people planning the day, each with their own interests in the outcome, it became unclear who was making decisions. This, amongst other factors, led to confusion and divergence from the main task of the day. Although we had the individual skills to lead a proper workshop from several different people on the planning team, systematically it did not flow as intended.

Another factor leading to divergence, was that the assignment question itself was very specific, with concepts that were slightly disconnected. Several presentations were required in the morning in order to ensure that participants had the information they need to be aligned with the Research Team on the topic, and that it was clear why it was logical and why we were having the workshop. One of the results of the participant survey suggested that there were

too many presentations, which could have resulted in the loss of attention or engagement in the workshop, and confusion throughout the day.

There was a large number of diverse stakeholders present at the workshop, which had its own strengths and weaknesses. This was positive since it added to the diversity of ideas collected, however it also made it difficult to reach and maintain alignment on the various themes presented throughout the day. It is possible that some individuals were more skeptical about the technologies presented throughout the day, leading them to innovate from today's perspective, rather than that of the future. One key group that was not represented were external customers. Participants could technically be considered customers if they had shopped at IKEA in the past, but it would also have been useful to immediately test ideas with external customers without knowledge of circularity and technologies to evaluate from a different perspective whether the ideas are desirable or not.

The exercises themselves were experimental and had their strengths and weaknesses. The first exercise was the CeX template, which was quite structured and done in groups. This was to put the participants into the customer's shoes, and brainstorm potential pains they may experience. It was identified that there are two types of pains that customers experience when it comes to furniture: logical and emotional. Although this observation was not used in the brainstorming or vision development process, it can be useful for IKEA in the future for innovating new value propositions.

The second exercise was to create a story of the participant's ideal customer experience, to be done individually. There were some misunderstandings on the task, and it resulted in a wide range of ideas, many outside of the scope of the assignment question. Rather than provide a character's journey and interaction with IKEA during the use and end-of-use phases in the future, some participants used magazine cutouts or abstract concepts or drawings that were unclear to the Research Team on how relevant they were to the assignment task. Most responses were set in the present day, or were ideas IKEA is already implementing in certain areas. Therefore, some of the ideas from the second exercises were not captured.

After the second exercise, participants were asked to share, in order to identify common elements that could contribute to one vision. Because the ideas were quite diverging, it was not possible to create a shared vision. The facilitators from Innoboost attempted to stimulate a discussion on assumptions and next steps, which ideas need to be validated and how could it be done. However, a philosophical discussion emerged on what IKEA's role should be in the future. There seemed to be divergent opinions on various issues of the organization. One interesting observation from the consultant was how for the first exercise, it was clear how much knowledge that the IKEA participants have about their customers. However, once the focus shifted internally towards the organization, there was a divergence of opinions and perspectives on how IKEA should be in 2025. This is where it would have been good to have the sustainability criteria discussed earlier, by the whole group, to remind participants of what was already agreed upon, what conditions IKEA wants to meet in the future.

In order to converge the group discussion back to the assignment question, the participants were asked to work in small groups to again come up with an ideal customer experience. Even though this was rather open and unstructured, discussions emerged on track with the topic. It seemed that the group exercises were much more energetic and had better, clearer outcomes than the individual exercise. One survey response was that the group exercises was a strength of the workshop, confirmed by the Research Team (Oliana; Leroy, 2017).

The explicit goal of the workshop was to gather ideas from a diverse set of stakeholders for the purposes of this research. Overall, the workshop was an effective way to gather ideas for a vision, however it lacked consensus or support for any particular ideas. This made it difficult to come up with next steps, and the lack of a clear link from the ideas to fulfillment was also indicated in the survey as a weakness of the workshop.

The workshop also had the implicit goals of connecting stakeholders from various circular economy-interested organizations, and inspiring and increasing social learning for participants about the topics of circularity, future technologies, and customer experience design. Two survey responses mentioned that a highlight of the day was meeting people from different backgrounds, indicating that some connections were made. Of the five survey responses, at least one respondent indicated "yes" in each case when asked if the workshop changed their

perception of the future of IKEA, of a Circular IKEA, and of the technologies presented that day, therefore it is possible that some learning occurred.

Overall, the backcasting workshop was a practical way to engage stakeholders and resulted in ideas that were used for inspiration for the final vision. The large number and diversity of participants was a challenge, due to the different mindsets about technologies, and the difficulty to get them to think seven years into the future.

Phase 2: Vision Development

As a result of the workshop, the Research Team was left with many stories, drawings, and phrases that had to be interpreted. This was done by identifying key terms and symbols that were relevant to the assignment question, and clustering them into themes. Based on the themes, a story was created, and again broken down to identify and communicate key elements that a Circular IKEA 2025 should have. The ideas that were developed are not exhaustive, there are many more ways that IKEA can make use of technologies for a circular business model or to meet the customer. This selection was based on ideas from the workshop, literature, and other requirements, and which most fit IKEA's mission and company culture, however there could be many more ideas that were not included.

Phase 3: Idea evaluation

When evaluating each idea according to the criteria, there was a high level of uncertainty on how each criterion would be impacted by the idea. For example, one main uncertainty is the volume of resources that would be saved by implementing business models that reduce, reuse, recycle using sensors and RFID tags, in comparison to the amount of materials required for the electronics themselves. It could be that a high volume of resources is saved, but most likely they would be bio-based, such as cotton and wood. Compared with the materials required for electronics, such as metals, the environmental impacts could be greater when using electronics, even with the intention of saving resources through product life extension or recycling. Therefore, more information is needed to more accurately be able to assess whether the criterion is met or not, specifically a material or substance flow analysis of the volumes saved of each type of material, along with life cycle analysis of each material to assess the environmental impacts of each. It may be unrealistic given time and budget constraints, however should be considered when implementing certain ideas.

It was beneficial to evaluate the ideas according to the sustainability criteria because it forced the Research Team to reflect on the impacts each idea would have on environment, society, and the business itself, and these impacts associate with risks presented for the company. However, there could be some impacts that were not considered and could not be foreseen, including rebound effects in which elements of the system combine to produce the opposite effect originally intended. For example, a subscription or rental model could decrease the amount of furniture waste, however if the value proposition is attractive to customers, it could also incentivize consumption, leading to more products and materials needed, which cannot be satisfied by used products being recycled in a circular fashion, ultimately requiring more raw materials. The criteria should be reassessed as more information is acquired through the experimental phase. They can also be used for future strategic decision making, as a way to assess options if they meet the conditions for sustainability.

Although not explicitly mentioned in the evaluation, the vision developed for IKEA does not solve all of the sustainability problems IKEA is facing and indeed creates new problems. Certain ideas solve the problems of accessibility and convenience of IKEA's current state; however many ideas are questionable of how desirable or affordable they are. Because they take place in the future, it is not possible to make an accurate prediction, and require further studies, recommended in the transition pathway. Although the vision ideas can lead to a decrease in raw material usage, waste, and the associated environmental impacts, it does not solve the issue of high levels of CO2 emissions, as well as the legal and economic issues. This could be due to the aim of the backcasting study maintaining a focus on circularity and the customer experience, and creating attractive value propositions to engage customers, rather than directly solving IKEA's sustainability challenges. Although backcasting created a potential vision for IKEA to use and solve some of its current problems, certain challenges remain and could create future challenges as well.

5.2.2.5 Step 4: Transition Pathway

The pathway presented in this research is very speculative and offers one way of achieving the vision. It is more likely that the actual circular business model will be very different, because its success depends largely on customer adoption. This variable made it difficult to come up with detailed activities that the company should take to bring the vision to reality, therefore it was recommended that Lean Startup methods, such as market research and constant iterations of customer feedback, be adopted to find the “win-win-win.” However, in order to make a complete pathway, the assumption had to be made that customers would be favorable of the ideas presented in the vision and activities required to achieve the vision were based off of this assumption. IKEA should review and update the pathway on an iterative basis, since it should be constantly experimenting with the ideas in different locations to find the best combination of value for the company, customers, and local communities.

In order to fully understand how the business model would change in a Circular IKEA, Osterwalder’s business model canvas (BMC) framework was used again before starting the transition pathway. The business model canvas provided a framework for what needs to change, as a starting point for defining key activities that can be used for the transition pathway. In the literature review, it was addressed that there are certain issues with Osterwalder’s BMC when applying it to sustainable or circular business models, and several adaptations have been made to address these issues. It was decided that it was best to use the Osterwalder BMC in order to be able to make a comparison between the current and future state. The analysis indicates that the biggest changes to the current versus circular business model would be in the value propositions, key activities, and key resources. It seems that the value propositions would change the most, offering completely different categories of value, such as performance, customization, accessibility, and convenience over the current offers of price, novelty, and design. This is in alignment with the literature, which indicates that the customer experience must be central when innovating in general, and should also be applied to circular business models. The key activities and resources also change, but still within the existing categories of what IKEA currently does or has as activities or resources. For example, IKEA would still be responsible for design, manufacture, distribution, retail, and marketing, however it would have to adjust the way they conduct those activities to become circular. Similarly, for key resources, IKEA would still have physical, human, financial, and intellectual property, however within those categories, they will add physical ownership of products within a PSS system, or trademarks/copyrights for the new updated IKEA Concept. The other elements of the BMC are also slightly affected, for example the addition of for-profit partnerships or new customer segments. Most elements that changed include additions to the current business model. For example, additional customer relationships would be facilitated through automated services such as autonomous vehicles, or new customer segment niches would be added to the current mass market segment.

Rather than Osterwalder’s traditional BMC, the BMC adaptations by Lewandowski and Metink were considered for use in order to address the sustainability and circularity aspects. Lewandowski’s model incorporates two additional elements: reverse logistics and adoption factors. However, it seemed unnecessary to create a separate category for reverse logistics, when it can be included in the “key activities” section of the original business model, which was done in this research. Adoption factors could be useful to indicate the strengths of a company that would enable the business model to exist, but do not necessarily have to be included in an analysis of the business model itself. Furthermore, Metink’s Business Cycle Canvas requires a large amount of information about the business model elements of several stakeholders, making it very complex. For an already complex organization such as IKEA, this would require a tremendous amount of data, which was outside the scope of this research. Osterwalder’s BMC offers a simple outline of activities, resources, etc. that can describe any kind of business model, including a circular one. Separate frameworks solely for circular use could be useful for innovating new circular business models from a step-by-step approach, but since we were backcasting, there are too many uncertainties about the future business model. However, it should be noted that the future business model analysis conducted is also speculative, based on predictions of what, who, and how the future business model would look like.

Additionally, a thorough and holistic understanding of the company is needed to make accurate predictions of what needs to change, and because of its focus on the sustainability criteria, the present state analysis did not offer the depth required. When creating the pathway, questions arose such as: what skills will be required, how should the organization be designed, and what capabilities does it need in order to achieve the circular strategic direction and vision? In order to strengthen the pathway in the context of organizational effectiveness of achieving a specific strategy or goal, tools from the areas of Strategic Management and Organizational Behavior can be applied. Kotter’s

(2007) stepwise model for organizational change was used in the transition pathway for inspiration as to how IKEA should proceed after the vision creation process. Another potential tool to complement the backcasting process is Galbraith's Star Model, used for organizational design to support a firm's strategy.

5.2.2.6 Overall Assessment of Backcasting

Overall, the backcasting approach was positive in the context of vision and circular business model generation for IKEA due to its structured approach, stakeholder engagement, and consideration of sustainability. Because visioning and business model innovation is very abstract, the backcasting method provided a proven basis to guide the Research team towards the end goal of vision development. Although the workshop was not as straightforward as it could have been, it did identify and engage a few key stakeholders, such as the IKEA countries, which could actually implement such circular experimental business models. It also gave the vision more credibility as the ideas came from a wide range of stakeholders, including internal employees, and Circular Economy experts.

It should be noted that the approach taken here differed slightly from that of Holmberg (1998) to account for practical reasons, such as timing. For example, the sustainability criteria and present state analysis were conducted after the workshop, because it was decided that backcasting should be introduced at the workshop in person, in order for it to be better understood by participants. Additionally, in other backcasting approaches the idea evaluation phase requires a robustness test, which typically requires the creation of scenarios and the assessment of the ideas for each scenario. As mentioned earlier, the backcasting process was complemented with external theory to be able to fully answer the research question, with Osterwalder's business model canvas to "translate" the current and future state into business models, as well as a more thorough and researched transition pathway using Kotter's (1998) Stepwise Model for Change.

One finding of the participatory backcasting methodology in the context of IKEA is that it is a completely different approach to how IKEA usually works, which is more of a cautious, step-by-step approach (Leroy, 2017b). This was beneficial because it possibly resulted in more radical ideas and perhaps shifted the mindset of the participants of the workshop. However, it was not ideal because the difference in working may have resulted in low engagement throughout the process, and a lack of robust results from the participatory parts. Additionally, the backcasting process was found to be slow-moving. From the start of the process to the end, about five months, there were several key changes that affected various parts of the process, from staff changes to strategic shifts. For example, in the time that the ideas were brainstormed and evaluated, IKEA publicly released a slew of future innovations that highly resembled the ideas created in this research. This includes an IKEA Bootcamp, a 3 month accelerator program for startups in IKEA of Sweden's Almhult office, and a virtual reality application launched in partnership with Apple (Inter IKEA Systems, 2017c; Turula, 2017). It seems that the pace of change in the business world is much faster than the full backcasting process requires, and it should be adjusted accordingly so that it is more resilient to the changes. A semi-iterative approach was taken here and certain parts were completed out of order to account for these changes, and other real-world practicalities. Additionally, the inexperience of the researchers with the methodology could have accounted for the slow pace. Having a student researcher conducting the backcasting process provided a fresh perspective on the company's present situation, however an internal researcher would be able to conduct it faster, since they would already have an understanding of the complexity of the organization.

5.2.3 Recommendations for IKEA

It is recommended for IKEA to use the ideas and transition pathway developed in this research as a guide towards developing their circular business models. The vision offers eight potential ideas for IKEA to adopt separately, or all together if desired. Due to the external perspective, the pathway offers high level actions to take, and considerations to make for future work, such as the development of the reverse supply chain on a global scale. However, it is recommended that IKEA create their own, detailed transition pathway based on the one presented here, to communicate it company-wide, and update it or mark progress every year or two.

Furthermore, a follow-up study researching how closely IKEA follows the transition pathway, what is beneficial and what is not, would provide better knowledge on how to make an effective transition to the circular economy, for other similar socially-oriented companies to be able to adopt best practices.

5.2.4 Recommendations for General Further Research

IKEA is a relatively special case, therefore the findings in this study could be completely different in another setting. Being privately owned, it has more control in the decisions of the company than if it were publicly-owned by investors with little to no knowledge of circular economy. As Alänge et al (2016) found when analyzing differences in environmental management systems between IKEA and SCA, IKEA has a quite bottom up approach and a flat organizational structure. In a company with a strict hierarchical structure and explicit, top-down processes, backcasting could be adopted in a very different manner. Every company is quite different and has a different way of working, therefore the application of backcasting can still be relevant in another context, with some adaptations.

During the research, a gap was identified between the fields of Organizational Change Management and Industrial Ecology (IE). As a strategic planning tool commonly used in IE, backcasting adds criteria to ensure the future strategies are in line according to sustainable development, however it lacks the tools to analyze in depth the current capabilities of an organization towards change, as well as how to transition towards the change. Further research should develop a generic conceptual framework that integrates traditional strategic planning tools such as Strength/Weakness/Opportunity/Threat (SWOT) analyses and Porter's Five Forces, with the sustainability perspective that the backcasting methodology offers. By combining the two areas, sustainability in the form of criteria in the backcasting approach can be integrated with the overall discussion of business model development and innovation, instead of as a separate process.

Finally, there was a link discovered between implementation of circular business models and general innovation within large companies. Based on the attendance of a conference regarding innovation in multinational corporations, it seems that many large companies that have mature innovation programs are not taking advantage of the circular economy as a strategy for innovation (Crowd Companies, 2017). In the case of IKEA, however, it is the opposite. IKEA realizes the potential of the circular economy as a competitive advantage, however aside from its relationship with Space10, it lacks the innovation programs and culture required to bring it company-wide. Therefore it was recommended that IKEA invests resources in developing innovation thinking throughout the organization, perhaps through an intrapreneurship program. However, there are many other types of corporate innovation programs available for use which IKEA can take advantage of. But generally, the relationship between circular economy and business model innovation and traditional corporate innovation programs could be investigated further to assist companies in optimizing and incentivizing circular innovation and experimentation within the company.

6. CONCLUSIONS

6.1 Answers to the Research Questions

S1: What are the strengths and weaknesses of the backcasting approach in the creation of a Circular IKEA vision for 2025?

Backcasting has proven to be an effective tool in the area of sustainable development (Quist, 2016) and in this thesis, it was hypothesized to be applicable in the transition from a linear to circular business model for the case of IKEA, through the creation of a desired vision to guide the change for the company. The Circular IKEA vision that was created was presented to several members at IKEA, and it was received well based off of their comments afterwards. It was indicated that the vision and ideas created in this research would be incorporated into the future planning process of the company by the Circular Working Group, as well as distributed throughout Inter IKEA Systems through physical and online methods to teach other employees.

According to the members of the Research Team including the author, strengths of the backcasting process include its structured and participatory approach, and the use of criteria to identify risks when striving for sustainability. Visioning tends to be a rather abstract activity, and backcasting offers guidance and a sense of control in order to ensure sustainability is maintained in a scientific manner. This approach, including the criteria and workshop, led to increased credibility of the Circular IKEA vision. The evaluation of the criteria identified risks that the company will face going forward, giving IKEA a general idea of what to expect. Furthermore, by engaging several stakeholders in the workshop, their input and reputations increased the value of the final Circular IKEA Vision. Another strength of the

approach was the present state analysis. The results of this provided an external perspective to the company which could shift perceptions about how the company currently operates and what needs to change, specifically within the area of sustainability.

Although the use of backcasting was overall positive, there were negatives aspects. Perhaps not the fault of the process, the aim of this study when creating the Circular IKEA vision was too specific, leading to a sense of confusion and lack of engagement during the workshop. The period, seven years, was also very narrow, as backcasting is recommended for longer time frames (+30 years). Due to the lack of engagement, there was no agreement on one shared vision among the stakeholders, instead several ideas which were used by the Research Team to brainstorm the final vision.

It was also found that the present state and the transition pathway alone, were insufficient to make well-informed recommendations for the company. In order to get a better understanding of the present state of the company, Osterwalder's business model canvas was used, and more tools could have been used to strengthen the analysis of the economic criteria. To provide a more thorough pathway, elements from Kotter's (1995) model and again Osterwalder's business model canvas were used to identify specific changes that the company would have to make and guide them based on proven literature.

S2: How would the business model change from a linear to a circular IKEA customer experience in the case of IKEA?
In order to identify key changes that could be made in order to attain a circular customer experience, the vision created in the first three steps of the backcasting process was translated into a business model using Osterwalder's business model canvas for both the current and future states.

The main changes to the business model are to the value proposition, key resources, and key activities. Rather than competing on price and novelty, IKEA will have to offer new types of value in the form of convenience, accessibility, customization, and performance in order to achieve the circular vision proposed in this research. Although the categories of the key resources remain the same, the types of physical, intellectual, and human resources will increase due to IKEA retaining product ownership throughout the use phase, as well as the addition of technologies, and new skills within the company. The categories of key activities will also remain the same, although it will require the redesigning of the products, manufacturing facilities, distribution systems, and retailing channels.

Other changes include addition of key partners, customer segments, and customer relationships to fit the use of technologies. Channels to reach the customer will reflect the value proposition of convenience. Revenue streams will change from focusing on asset sales to the offer of subscriptions. Because of this change, the types and temporal distribution of costs would change, although this requires further study.

The identified changes, specifically the key activities that will change, were then incorporated into the final step of the backcasting process, the transition pathway, and used to answer the final question of this thesis.

RQ: How can multinational corporations, like IKEA, transition their current linear business models towards circular ones?

Three models from Industrial Ecology and Organizational Change Management were combined in order to explore how companies can begin the change process towards the circular economy. As dictated by Kotter's (1995) stepwise model for change within an organization, the first two steps- creating urgency and a guiding coalition- were already done. A Research Team composed of one of the members of the coalition and two students from local universities, used the Backcasting Methodology in order to satisfy the third step of creating a vision to guide the change. The final steps of Kotter's model, as well as the key activities from the business model canvas analyses in the first subquestion were used as guidance to create a transition pathway.

In order to fully answer this research question, a longer study would have to be conducted, since the full transition was not completed for the case of IKEA. However, given the time frame, several findings indicate the initial steps that companies can take towards achieving a circular business model. IKEA is a unique case due to its strong social mission, closed culture, private ownership and environmental progressiveness. It was found that these factors put

IKEA in the perfect position to lead the change towards a Circular Economy. Similar companies can use the following steps as a guide on how to initiate the transition:

1. Gain and Communicate Leadership Support

Perhaps the most essential component for companies to transition to a Circular Economy is the support of company leaders. This research discovered low engagement with the backcasting process until the announcement from senior leadership brought attention and urgency to the strategic direction of Circular within IKEA. Clear communication plays a large role, in which IKEA already excels.

2. Create a powerful guiding coalition

A group of internal employees should be formed to explore and guide the change process. The members should have enough seniority to be able to effect change within the group. In IKEA, the Circular Working Group (CWG) consists of members from various parts of the organization, and is tasked with leading the change. In this thesis, a Research Team was formed under the guidance of one of the CWG members, and the results were communicated to the CWG at the end. In order to be more effective, the CWG could be the one to directly lead the backcasting process and the transition pathway, in order to increase the quality of the results and engagement from stakeholders.

3. Develop a Circular Vision

A vision is commonly used by corporations in order to guide decision-making and change within a company, as well as in the context of sustainable development. IKEA already has a clear mission and strategic direction, but lacked a specific Circular vision. The ideas gathered in a participatory approach were transformed into a vision, including a visualization that is being spread throughout the Inter IKEA Systems organization, digitally and physically. This was used to educate and raise awareness of the potential of the Circular Economy and what it would look like in the case of IKEA, and establish more urgency for the change. Backcasting can be used to develop a vision that is sustainable, although should be adapted to fit the company's way of working and culture.

4. Create Collaborations

Going forward, IKEA will have to open its rather closed operations and work with partner companies that specialize in technology. Although technology itself is not essential for circularity, it can assist in the process of knowledge acquisition to optimize product take-back, repair, reuse, recycling, etc. Additionally, partnerships with various universities can enhance the network and knowledge acquisition that can assist in the transition, of which this thesis is one result.

5. Promote Experimentation and Innovation Mindsets

Because the uncertainty in the transition towards a CBM is so high, a culture of innovation will have to be fostered within organizations wishing to become circular. An innovation culture is one in which many or all employees are willing to take risks and experiment to find new approaches to solving existing problems, and this behavior is rewarded, even through failures. IKEA is initiating this innovation culture by using external agencies, however they can take advantage of the ideas and willingness of its own motivated employees. With the aid of IKEA's vast resources, small experiments can be run by entrepreneurial teams or "intrapreneurs" within the organization to find the winning combination of value exchange in a Circular way.

6. Invest in Big Changes

It is likely that companies willing to transition to circular business models will have to make changes, and multinationals will have to make even changes on an international level. Particularly through the use of product service systems, companies will have to redesign their products, manufacturing, logistics, and retailing processes to incorporate products at the end-of-life back into their value chain in a circular manner. These changes may include a high upfront investment, which many companies are not willing to do. Because IKEA is privately-owned and financially sound, it is in the right place to make this happen, thus giving it a competitive advantage in the marketplace.

7. Lobby for Policy Changes

Legal challenges for the circular economy remain, particularly in waste legislation. Companies who are progressive on sustainability issues, like IKEA, can work together with governments to redefine waste and prohibitions against international transportation, in the case of safe and circular practices. Other potential policy changes could include financial incentives for circular business models to reduce payback times and stimulate the required investments.

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8. APPENDIX

APPENDIX A: List of Stakeholder Participation at Workshop

Internal:

Inter IKEA Systems:

Sustainability Team (4)

Business and Consumer Intelligence (1)

Customer Relations (2)

INGKA (3)

IKEA of Sweden (1)

IKEA Denmark (1)

External:

Royal College of Arts Design School (2)

Erasmus University (1)

TU Delft/Chalmers University (1)

Innoboost (4)

Except Integrated Sustainability (3)

SPACE10 (1)

Ellen Macarthur Foundation (1)