“Show Me the Value” – Business Benefits of Co-creation and How to Effectively Communicate Their Value to SMEs Developing Circular Economy Business Models

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Laurea University of Applied Sciences **Abstract**
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There is a need for more discussion on the communication challenge involved in demonstrating the benefits of co-creation from the business perspective. The discussion on co-creation also seems to be missing something of the ecosystemic environment of co-creating within circular economy. Circular economy is key in reducing the detrimonious environmental impact of the use of natural resources (OECD 2019), but the business transformation involved in the change from linear to circular economy can be a complex challenge for the businesses. However, there is not enough experience of facilitating collaborative innovation in complex settings (Ritala et al. 2013).

The objective of the thesis was to find out what are the business benefits of co-creation and how these benefits can be effectively communicated to SMEs which are developing circular economy business models (CEBMs). These themes are explored on a general level as well as in the context of the business owners taking part in the CIRC4Life project.

A circular economy approach for lifecycles of products and services (CIRC4Life) is a project funded under the European Commission's Horizon 2020 Framework Programme (CIRC4Life 2018). One of the main goals of the program is to ensure that barriers to European innovation are removed (Horizon 2020). The aim of CIRC4Life, with a consortium across 8 European countries, is to develop three CEBMs that will be demonstrated in four industrial sectors by five SMEs (CIRC4Life n.d.-a).

Laurea University of Applied Sciences is one of the partners of the CIRC4Life project and the commissioner of this thesis. In the project, Laurea is in charge of co-creative Living Lab activities, interaction between project stakeholders and end-user involvement. To make the co-creative activities in the project more efficient, Laurea has a strong interest in increasing the understanding of the business benefits of co-creation among the project partners. The main questions that needed answers were, what are the business benefits of co-creation and how can these be effectively communicated to SMEs developing CEBMs.

To address this challenge, a design process following the Design Council's (n.d.) Double Diamond approach was conducted. As a result of the development work, a concept was developed based on which it is possible to further develop a modular tool for communicating the business benefits of co-creation to SMEs which are or consider developing CEBMs. Service design and more particularly business design was used as the broader framework of the development work. 29 persons from different fields of specialty participated in the development work in the form of interviews, surveys, workshops and feedback.

The information basis of the thesis consists of discussion on co-creation, open innovation, business models, business ecosystems and circular economy. A literature review on the business benefits of co-creation was also conducted and the data analyzed using inductive category formation (Mayring 2014). The most popular business benefits according to literature are related to creativity, knowledge and customer loyalty. Based on interview and survey results the most useful business benefits among business owners participating in the CIRC4Life project seem to be those related to customer insight and improvements to products and services.

Keywords: Co-creation, open innovation, business model, circular economy, business design

Laurea University of Applied Sciences **Tiivistelmä**
Palvelumuotoilun koulutusohjelma
Restonomi (YAMK)

Suvi Seikkula

“Mitä se hyödyttää” – Yhteiskehittämisen edut liiketoiminnalle ja tehokas viestiminen niiden arvosta kiertotalouden liiketoimintamalleja kehittäville pk-yrityksille

Vuosi 2020 Sivumäärä 169

Yhteiskehittämisen etujen osoittamista liiketoiminnan näkökulmasta ei käsitellä riittävästi. Keskustelussa ei myöskään juuri oteta esille kiertotalouden kontekstissa tapahtuvaan yhteiskehittämiseen liittyvää ekosysteemistä ympäristöä. Kiertotalous on keskeinen tekijä pyrittäessä vähentämään luonnonvarojen käytöstä ympäristölle aiheutuvaa haittaa (OECD 2019), mutta kiertotalouteen siirtymiseen liittyvä liiketoiminnan transformaatio voi olla kompleksinen haaste liiketoiminnalle. Kokemusta yhteisen innovoinnin fasilitoinnista monitahoisissa puitteissa ei kuitenkaan ole riittävästi (Ritala et al. 2013).

Tämän opinnäytetyön tavoitteena on selvittää, mitkä ovat yhteiskehittämisen edut liiketoiminnalle ja miten näistä voi viestiä tehokkaasti pk-yrityksille, jotka kehittävät kiertotalouden liiketoimintamalleja. Näitä teemoja tarkastellaan sekä yleisestä näkökulmasta että niiden liiketoiminnan edustajien näkökulmasta, jotka ovat osallistuneet CIRC4Life-hankkeeseen.

CIRC4Life on EU:n Horisontti 2020 -puiteohjelmasta rahoituksensa saava tuotteiden ja palvelujen elinkaaria kiertotalouden näkökulmasta tarkasteleva hanke (CIRC4Life 2018). Yksi ohjelman päätavoitteista on purkaa esteitä eurooppalaisten innovaatioiden tieltä (Horizon 2020). CIRC4Life-hankkeessa, jonka osallistujat edustavat kahdeksaa Euroopan maata, on tavoitteena kehittää neljällä eri liiketoiminnan sektorilla kolme kiertotalouden liiketoimintamallia, jotka viisi eri pk-yritystä demonstroivat liiketoiminnassaan (CIRC4Life n.d.-a).

Laurea-ammattikorkeakoulu on yksi CIRC4Life-hankkeeseen osallistuvista tahoista ja tämän opinnäytetyön toimeksiantaja. Hankkeessa Laurean rooli on vastata Living Lab -toiminnasta, sidosryhmien välisestä vuorovaikutuksesta ja loppukäyttäjien osallistamisesta (CIRC4Life n.d.-b). Yhteiskehittämiseen liittyvän toiminnan tehostamiseksi on Laurealla vahva pyrkimys vahvistaa ymmärrystä yhteiskehittämisen liiketoimintaan liittyvistä eduista hankkeen sisällä. Keskeisimmät kysymykset olivat, mitkä ovat yhteiskehittämisen edut liiketoiminnalle ja miten näistä voi viestiä tehokkaasti kiertotalouden liiketoimintamalleja kehittäville pk-yrityksille.

Haasteeseen vastattiin suorittamalla Design Councilin tuplatimantti-mallin mukainen muotoiluprosessi. Kehittämistyön tuloksena on konsepti, jonka pohjalta on mahdollista kehittää modulaarinen työkalu yhteiskehittämisen liiketoimintaan liittyvistä eduista viestimiseksi tehokkaasti kiertotalouden liiketoimintamalleja kehittäville pk-yrityksille. Laajempana viitekehyksenä on palvelumuotoilu, erityisesti liiketoimintamuotoilu. Kehittämistyöhön osallistui opinnäytetyön tekijän lisäksi 29 eri alojen asiantuntijaa haastatteluin, kyselyin ja työpajoin.

Opinnäytetyön tietoperusta koostuu yhteiskehittämisen, avoimen innovaation, liiketoimintamallien, liiketoimintaekosysteemien ja kiertotalouden käsittelystä. Lisäksi siihen sisältyy kirjallisuuskatsaus, jossa tarkastellaan yhteiskehittämisen etuja liiketoiminnalle. Kirjallisuuskatsauksen pohjaksi kerätty data on analysoitu käyttäen induktiivista luokittelua (Mayring 2014). Kirjallisuuden perusteella suosituimmat yhteiskehittämisen edut liiketoiminnalle liittyvät luovuuteen, tietoon ja asiakkaiden sitoutumiseen. Haastattelu- ja kyselyvastausten perusteella hankkeeseen osallistuvat liiketoiminnan edustajat kokivat hyödyllisimmiksi asiakasymmärryksen keräämiseen ja parannuksiin tuotteissa ja palveluissa liittyvät yhteiskehittämisen edut.

Asiasanat: Yhteiskehittäminen, avoin innovaatio, liiketoimintamalli, kiertotalous, liiketoimintamuotoilu

Abbreviations used

CEBM	Circular Economy Business model
DEMO owners	Leaders of the CIRC4Life work packages where the CEBMs are demonstrated
DD model	Double Diamond design process model
EC	European Commission
H2020	European Commission's Horizon 2020 Framework Programme
Laurea	Laurea University of Applied Sciences
LL	Living Lab
MEAEF	Ministry of Economic Affairs and Employment of Finland
OI2	Open Innovation 2.0
SDL	Service-dominant logic
SMEs	Small and medium-sized enterprises
VCC	Value co-creation
WWF	World Wildlife Fund
WP	Work package (in the CIRC4Life project)

Contents

1 Introduction

With the ever-faster pace with which the natural resources of our planet are diminishing (World Wildlife Fund (WWF) 2019), there is all the more need for circular economy business models (CEBMs) that can help reduce the environmental impact of the use of natural resources (OECD 2019, 3). However, a greater understanding of how to facilitate the business transformation related to shifting from linear to circular economy is needed.

One of the projects related to European Union's efforts to remove barriers along the way of innovation (Horizon 2020) is CIRC4Life, an EU-funded project the aim of which is to develop, in various industrial sectors, CEBMs, which are then demonstrated by SMEs that are participating in the project (CIRC4Life, n.d.-a). Laurea University of Applied Sciences is one of the partners in the project and in charge, among others, of the co-creation activities conducted within the project. A challenge has been, however, that there is not enough understanding of the business benefits of co-creation within the project, which has made the co-creation activities less effective.

The knowledge basis, including a literature review, and development work that are part of this thesis shed more light on these benefits and effective communication of them, both on a general level and more specifically in the context of the CIRC4Life project.

1.1 Background

Today, stakeholders are demanding a bigger role in the value creation processes of organizations. On the other hand, companies are, to an even greater extent than before, using insights gathered from stakeholders to improve their business. Co-creation is seen as a valuable tool by many in achieving these goals. There seems, however, not much discussion on what constitutes the real benefits of co-creation from the business point-of-view and how these benefits can be effectively communicated to stakeholders, for example.

Even though there is plenty of literature on co-creation, the focus seems to be more on the interaction between a company and its customers than in a larger selection of stakeholders. The benefits of co-creation seem to be discussed on a quite general level. There seem not to be many mentions of the communication challenges involved in demonstrating the business benefits of co-creation. Also, the various models on co-creation and its different aspect seem to miss something of the ecosystemic environments co-creation can be used in, such as open innovation frameworks and circular economy. Finally, there does not seem to be much discussion on co-creation specifically in the context of CEBMs. These are some of the gaps that this thesis attempts to fill.

1.2 Research Objectives

This thesis sets out to explore what are perceived as the business benefits of co-creation, especially in developing business models, according to research, the focus group selected for the thesis work and the participants of the development project. The aim is also to study how these benefits can be effectively communicated in a way that relates to business model developers and implementers operating in SMEs within circular economy. The focus group of this study are the demonstrators of business models developed in the EU funded project CIRC4Life[1].

The research questions this thesis attempts to answer are:

1. What are the business benefits of co-creation?
2. How can the benefits of co-creation be efficiently communicated from the business perspective?
3. What are the implications of the benefits of co-creation in developing and implementing SME business models within circular economy?
4. How can the benefits of co-creation be efficiently communicated to the stakeholders within the CIRC4Life project?
5. What would be an efficient tool for communicating the business benefits of co-creation in developing and implementing SME business models within circular economy?

The information basis is built around the themes of co-creation, especially within the framework of open innovation, value creation based on the service-dominant logic (SDL) of doing business, and business model development within circular economy. The themes are also interwoven, especially in the discussion on value creation in business ecosystems.

This scope and focus were selected due to the development project revolving around developing SME business models in circular economy. The scope of the development project, again, was defined together with the thesis commissioner. However, the discussion concerning co-creation and its benefits is not limited in the thesis within the scope of circular economy. This hopefully makes the study relevant and applicable for a wider audience interested in the theme of the business benefits of co-creation.

Service design is the framework used in the development work. More particularly, the focus is on business design, which is, in this thesis, seen as a service design approach to business. Empirical evidence is collected through interviews, benchmarking, case studies and workshops, as well as from material gathered at earlier stages of the CIRC4Life project. Based on data-

[1] For more on CIRC4Life, see chapter 4.1

analysis, insight and criteria are derived and defined and solutions are developed with the help of these. The aim is to co-create a solution that can be used as an effective tool for communicating the business benefits of co-creation. Especially, but not exclusively, those relevant to SMEs which are developing CEBMs.

The practical co-creation environment of the case project and the co-creation perspective of the thesis is provided by the CIRC4Life Living Lab (LL) approach and the wider framework of open innovation. The literature review on the business benefits of co-creation is based on inductive category formation[2], and the development project is based on the Design Council's (n.d.) Double Diamond design process model (DD model).

1.3 Structure of the Thesis

Chapter 1 introduces the broader context of the thesis work, background and the aim.

Chapter 2 discusses co-creation from a business perspective. It defines the key concepts and introduces the theoretical and practical approaches selected for this thesis. Subchapters are formed based on different aspects of co-creation. It is crucial to get an understanding of the elements that can affect the success of co-creation. Otherwise, the benefits of co-creation are nothing more than a list of things that could happen, if the conditions were right. For this reason, special emphasis is put on how co-creation is enabled in companies. After the basic aspects of co-creation have been discussed, focus is shifted to the business benefits of co-creation and the ways they can be communicated. All this knowledge is then applied to the discussion of business model development and business ecosystems within circular economy. The viewpoint throughout the work is that of business, and everything is discussed from the business perspective rather than that of individuals.

Chapter 3 describes in detail some central concepts driving the development work, as well as the methods and the design process model used.

Chapter 4 consists of the empirical part of the thesis. The various aspects discussed in chapter 3 are first explored in the context of the case project CIRC4Life, after which activities carried out during the design process are described.

Chapter 5 gives answers to the research questions, presents the result of the development work and summarizes key findings of the thesis work.

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[2] A technique with which qualitative content analysis can be summarized. In inductive category formation categories are created directly based on the material that is analyzed, as opposed to deductive category formation, where the categories are created based on theoretical consideration (Mayring 2014, 12)

Chapter 6 includes discussion on delimitations and ethical aspects of the thesis work, both the development work and the overall thesis work as a learning process of the author, the impact and transferability of the results and some ideas for further research. A short summary is given at the end.

2 Knowledge Basis

The knowledge basis contains all the knowledge that forms the author's understanding of the relevant concepts guiding this work.

2.1 Forming the Knowledge Basis

In preliminary research conducted for the creation of the information basis the focus was on academic articles validated by a peer-review process. The aim was to have a comprehensive and generic sample. Any specific case studies and discussions of the concept in extremely specific context lying far outside the scope of the study were excluded, unless such works shed important light on a specific subject discussed.

For the most part, the research process was executed using electronic libraries, which were searched via Google Scholar using relevant key words. Google Scholar was used because of its comprehensiveness. Reference lists in the academic articles were another important source of information. In the end, they proved to lead to the most useful material, perhaps because the subject matter in the useful article and the ones it refers to are so closely linked together and form a kind of a path of information. On the other hand, using only articles referred to in a small selection of articles might make the perspective biased and exclude completely different perspectives, so this method was not emphasized.

Finally, the literature base was completed with other articles, especially by scholars and organizations that are notable in their respective fields of study. These include Henry Chesbrough for open innovation, EMF (previously the Ellen MacArthur Foundation) for circular economy, Venkatachalam Ramaswamy and C. K. Prahalad for co-creation, Stephen Vargo and Robert Lusch for value co-creation and Seppo Leminen for Living Labs, for Example.

The main focus of this thesis is on co-creation. It is included in all five research question described in chapter 1.2. First the focus directed to what co-creation is, the basic premises and how it relates to open innovation. Focus is then shifted to the business perspective and the ways a company can employ co-creative innovation activities in the most effective way. After this basis has been formed, the business benefits of co-creation are discussed in more detail, in order to get a better idea of what it is that we are communicating, when we are attempting to demonstrate the benefits of co-creation.

Lastly, the focus turns to co-creation and its application in developing SME business models in the context of circular economy. The aim is to create a systemic perspective, where co-creation, open innovation, business models and circular economy form a whole at the end. This way, the dynamics affecting the system thus created can be discussed and analyzed. Co-creation within an open innovation framework and circular economy form an ecosystemic approach, and it is argued that business model developers focusing on these areas need to adopt this ecosystemic view.

Figure 1 below illustrates the relationships of the themes of co-creation, open innovation, circular economy and business model development and the case project CIR4Life and its Living Labs in this thesis.

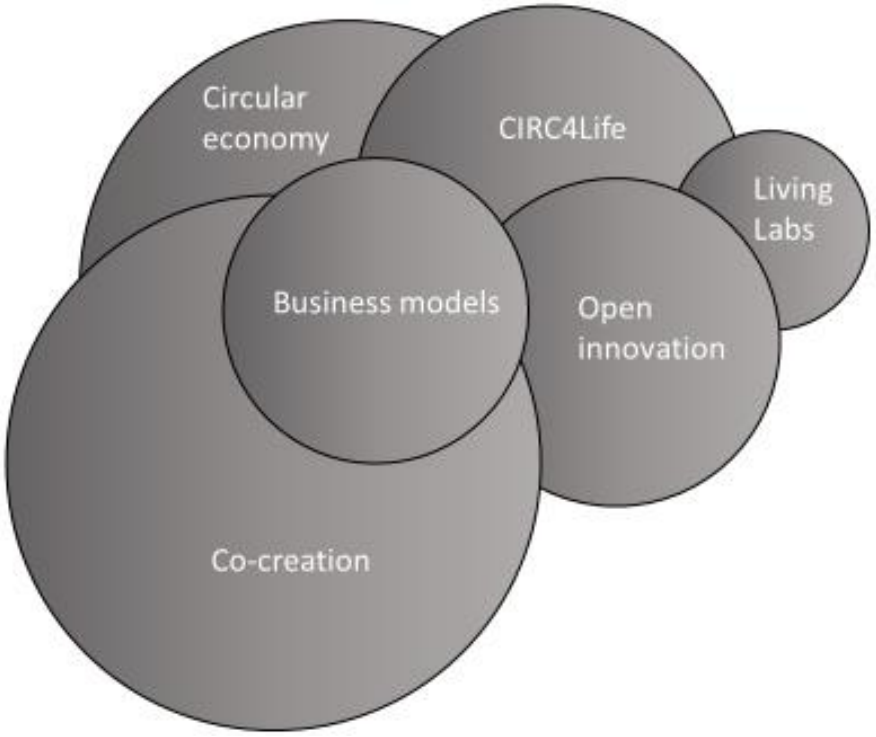

Figure 1: The focal themes in this thesis and their relations

As noted above, the main focus is on co-creation and business models give the practical context. Open innovation is discussed as a more specific approach to co-creation and Living Labs are a practical context for these. Circ4Life is the real-life context of the more theoretical discussion, and circular economy is the broader business context. There is one exception to how the themes are discusses, however. Namely the literature review on the benefits of co-creation (chapter 2.5) and discussion on their effective communication (2.6). In these chapters the focus is not narrowed down to open innovation, LL or any other framework of co-creation usage. This is done so as not to unnecessarily narrow the discussion down. After all, it can be argued that co-creation, seen in the sense it is seen in this thesis, can be applied to any

business context and any framework. For this reason, the only general focus in these two chapters is that of business.

Before proceeding to discuss co-creation, some key concepts are defined for a better understanding of how and in what scope the concepts are treated in the thesis.

2.2 Key Concepts

This chapter defines the way in which the main concepts of this thesis are understood and used. For a more thorough discussion on the key concepts, please see chapters 2.3 (co-creation and open innovation), 2.4 (value, value creation, service-dominant logic), 2.7 (circular economy, business models and business ecosystems), 3 (business design) and 4 (the concepts in the context of CIRC4Life)[3].

Co-creation

Co-creation is a process of collective creativity where the aim of the co-creation activities of the participants can have many purposes, such as to inform, create, evaluate or consult (Mattelmäki, Sleeswijk and Visser, 2011, 1, 2, 11). Unlike co-production, which puts the companies at the center of focus (Chathoth et al. 2013, 11; Payne, Storbacka and Frow 2008, 84), co-creation creates value in a way that places interaction and individual experiences at the center of value creation. Value is created in a joint effort utilizing the skills and other resources of individuals, networks and/or organizations in the co-creation process. Co-creation considers whole networks and ecosystems of resources and other possibilities that are in constant motion and work together for the benefit of common goals (Ramaswamy and Ozcan (2014, xvii). Instead of isolated innovations it is about creative processes where ideas are detected, built upon and exploited to the full (Ind and Coates, 2013, 7). In this thesis, co-creation is seen in the context of service-dominant logic (SDL).

Open innovation

Open innovation is an innovation process where knowledge flows penetrate organizational boundaries in a purposeful manner (Chesbrough and Bogers, 2014, 12). These flows can be divided into two parts. The first one flows outside in and in it, the innovation process of an organization gains something from an external source of knowledge. The other one flows inside out and in it, the organization's unused knowledge can be used by others outside the organization. Some descriptions of open innovation describe, in fact, only a part of it. For example,

[3] To get a better understanding of how the key concepts are related to other concepts with a similar semantic field, see the mind map illustrated in Figure 2 and the description below it.

crowdsourcing, stakeholder interaction and open sourcing all ignore the view of open innovation as a system of knowledge flows (Chesbrough, 2017, 36).

Open Innovation 2.0 is the next phase in the evolution of open innovation. It emphasizes multidisciplinary collaboration, innovation ecosystems and innovation adoption, and is driven by a shared vision that leads to shared value (Curley 2015, 9, Curley and Salmelin 2013, 2). The new paradigm is marked by making full use of networking and co-creation between the different sectors in society in order to generate shared value (Curley and Salmelin 2013, 5). Government, industry, academia and citizens form a 'quadruple helix' to maximize innovation resources and impact (Curley 2016, 315).

Circular economy

An economic system that replaces the 'end-of-life' concept and aims at eliminating waste by reducing, reusing, recycling and/or recovering materials in the material processes that lead to consumption (Ellen MacArthur Foundation 2012, 7, Kirchherr, Reike and Hekkert 2017). In doing so, it tries to accomplish sustainable development leading to environmental, economic and social value (Kirchherr, Reike and Hekkert, 2017). It operates on the micro, meso and macro levels, which refer to companies and consumers, economic agents in symbiosis and cities, and regions and nations respectively (Kirchherr, Reike and Hekkert, 2017, Prieto-Sandoval, Jaca and Ormazabal (2018, 607).

In this study the main focus is on the micro level and in the way organizations, especially SMEs, can benefit from co-creation in creating CEBMs.

Business model

Shafer, Smith and Linder (2005, 200) analyzed 12 definitions of a business model created between 1998 and 2002. The definitions included 42 different components altogether. Based on the grouping of these components into four categories they conclude that a business model is a "*representation of a firm's underlying core logic and strategic choices for creating and capturing value within a value network.*" The definition contains the four categories: strategic choices, creating value, capturing value and value network. Core logic refers to the "*internal consistency of strategic choices*" (Shafer, Smith and Linder (2005, 202-203). The categorization is similar to that of Al-Debei and Avison (2010, 360 and 364), who identify four primary business model dimensions, synthesizing 22 scholarly definitions of the concept derived from literature within the field of information systems. These four value dimensions are value proposition, value architecture, value network and value finance. These reflect, among other things, product or service offering, infrastructure, stakeholder collaboration, and revenue and pricing, respectively (ibid., 367-368).

Both mention value networks, emphasizing the importance of partnerships in creating value. Value proposition in the categorization by Shafer, Smith and Linder can be likened on a certain level to the strategic choices in the categorization by Al-Debei and Avison. And finally, value creating and value capturing in the Shafer, Smith and Linder is similar to the value finance dimension in the Al-Debei and Avison categorization. When taken to a more general level, these can be seen as forming the strategic, network and financial aspects of a business model.

Business ecosystem

Business ecosystems are one way to perceive the business world around us (Peltoniemi 2004, 2). As early as in 1990, M. E. Porter (1990, 83-84) talked about *clusters*, which are concentrations of industries that are often regionally close. The conduits are formed by suppliers or customers using the services of several competitors in the cluster. Through these conduits information flows and innovation diffuses, enhancing and improving competition in mutually reinforcing processes (Porter 1990, 83-84). A business ecosystem can be seen as a type of a cluster, but one that does not necessarily have clear regional or industrial lines. It forms networks not only based on stakeholder interaction or competition, but also based on direct collaboration (Peltoniemi 2004, 5-6). There are different types of network structures in a business ecosystem. Each of these form a structural entity that can have either formal or informal cooperation between two or more companies or a combination of the two (Wulf and Butel 2017, 14-15).

Business ecosystems are not the same as knowledge ecosystems, which focus on knowledge creation and retention or innovation ecosystems, where the focus is on integrating knowledge co-creation to value co-creation. In business ecosystems the focus is on business relationships and economic outcomes (Valkokari 2015).

Value

Value refers here to the importance or worth that something has for someone else. Consequently, it is a much broader concept than benefit, which refers to something that is intended to help or an effect that is helpful (Cambridge English Dictionary n.d.). Benefits can be valuable to a person, but do not, by themselves, define the value of something. Value is always tied to how a person perceives it.

Value creation

Value creation is understood here in the sense it is understood in service-dominant logic. Thus, value creation forms a "*joint space of creation*"[4] where a two-way process occurs, leading to the exchange of value (De Koning, Crul and Wever 2016, 270).

When the value is created by the participants of the process, it is called value-in-use. This is in contrast with value-in-exchange, where the company creates the value and the customer consumes it (Edvardsson, Gustafsson and Roos, 2005, Vargo and Lusch 2004, Vargo, Maglio and Akaka 2008). Value-in-exchange is the "*negotiated evaluation*" between buyers and sellers (Kowalkowski (2010, 283). When value is co-created, value creation is shifted from inside the company to stakeholder interactions, meaning a decentralization of value creation (Ramaswamy and Gouillart (2010, 7).

Value co-creation can have its main focus on the customer, the company or the service offered (Alves, Fernandes and Raposo 2016). In this thesis, the main focus is on the perspective of the company.

Service-dominant logic

A company's dominant logic, or its business logic, is the view that it follows in creating patterns of problem-solving behavior, decision-making (Prahalad and Bettis 1986, 491) and economic exchange (Vargo and Akaka, 2009, 40). In service-dominant logic (SDL), value creation is always based on service-provision (Vargo and Akaka 2009, 32), instead of being embedded in products, their production and tangible outputs, as in goods-dominant logic ((Vargo and Lusch 2004, 2, 5-11) or being created solely by the customers in their own processes of use, as in customer-dominant logic (Heinonen and Strandvik 2015, 2). According to the service-centered view, companies do not create value, they create value propositions, and customers both determine the value and take part in its creation (Vargo and Lusch 2004, 5-7, 11). As Vargo and Lusch (2016,10) note, the focus in SDL has shifted in recent years even further away from the seller-buyer dichotomy and toward service ecosystems, where actors are connected by mutual service provision (Vargo and Lusch 2016,10). In the end, businesses, customers and other actors all have the common purpose of creating value, and they do this together (Vargo and Lusch 2011, 181).

In this thesis it is important to keep the focus on what happens inside a company and at its interfaces with its stakeholders. Hence SDL is selected as the dominant logic based on which

[4] For an illustration, see Figure 3

value creation is discussed. This helps zoom out on all the processes, structures and interdependencies of companies and how they affect the co-creation of value.

Business design

Business design is understood here as a service design approach to business, a fusion of the best practices of business, such as strategic planning, and design-derived methods and mentality, such as design thinking and innovation processes (Fraser 2012, 1-2). Service design, which has its origin in industrial design (Polaine, Løvlie and Reason 2013, 18), has many similarities to business management. Focusing on the customers, utilizing customer insight to refine services, studying service interactions to find new ways to improve business (Kimbell 2013, 156-157) and developing business concepts (Fraser 2012, 89) are only a few of the things that the fields share. Service design is inspired by many of the basic functions of organizations, such as marketing, human resources and change management (Kimbell 2013, 156-157). It is, however, an approach that supports the creative processes involved in these in a more effective way than the traditional analytical and deductive methods (Fraser 2012, 7, 89).

According to (Kimbell 2013, 156-157), service design has the following key characteristics: 1) focus on experience and interactions across time and locations, with users positioned at the centers of these, 2) use of journey maps, blueprints and other artifacts to help conceptualize challenges, and 3) constant zooming in and out between the granular details and the grand narrative to keep all aspects affecting the development process in sight. The implications of these for business design are that 1) attention should be given to the modes of engagement, 2) teams should be helped to understand each other's work and how their own work relates to the work of others, and 3) both the micro and macro levels of organizational structures and functions should be kept in mind.

When business is approached from the design perspective, a wide selection of creative methods become available (Azabagic and Karpen 2016, 8). Methods used in the development process can be used to create custom-fit practices for each organization and its culture and structure (Fraser 2012, 3, 24), so that they are a better fit in solving unique business challenges (Azabagic and Karpen 2016, 8).

Mind map of related concepts

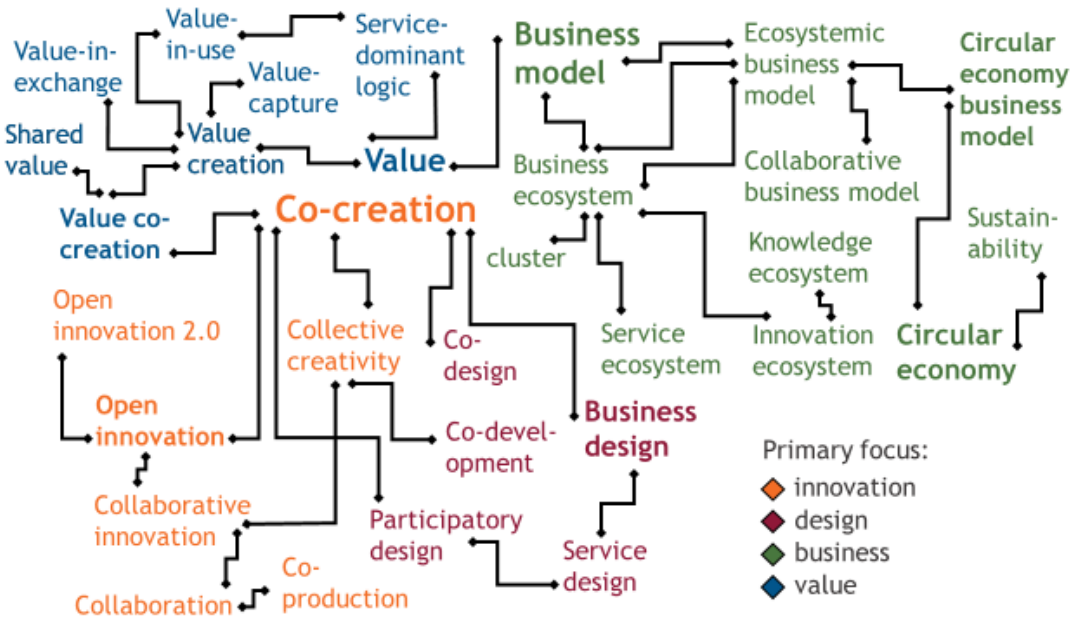

Figure 2: Mind map of the key concepts in the thesis and their related concepts

Above (Figure 2) is an attempt at illustrating the relations of the key concepts discussed in the previous chapter, as well as their related concepts, both those that have already been mentioned and those that have not but seem to help outline the boundaries of the key concepts. It should be noted that the mind map is by no means intended as a complete lest of related terms but rather as a way to visualize the scope and focus of this thesis from the perspective of the concepts discussed.

The mind map has been color-coded based on loose groups of concepts under four themes: value, design, business and innovation. Co-creation is the central theme and is mainly discussed from the innovation perspective. Open innovation and its evolution OI2 are discussed in the thesis in more detail. Collaboration and collective creativity have been included in the mind map to remind of the essence of co-creation, implied already in the name: creating together.

Co-creation is discussed in the thesis from a theoretical point of view, but it is also applied in the development work that forms part of the thesis. In the project, the development focus selected is that of business design, which is closely linked to service design. Related design concepts are included in the map to emphasize that they are different from co-creation as applied in business design. For example, co-design is a design-oriented way to use co-creation and not a synonym for co-creation nor necessarily always connected to business design.

As co-creation is discussed from the business perspective in the thesis, business-related concepts form the third theme in the mind map. The main focus is on business models and in developing these, but through CEBMs they are closely linked to circular economy, the underlying theme of which is sustainability. Due to the ecosystemic nature of circular economy, attention needs to be given to business ecosystems, which are, in a sense, a more dynamic form of clusters.

The fourth theme discussed is that of value, which is here seen in the context of business activities related to co-creation. Especially in the business context, co-creation is practically always value co-creation, as a business usually needs to aim at profitability in one way or another. Value creation is tied to the way business sees the processes in which value is formed. This is the main reason for including in the map the closely related concepts of shared value and value-in-use, as well as SDL as the chosen business logic and an underlying theme.

2.3 Co-creation and Open Innovation

In this chapter, co-creation is first discussed on a general level. focusing on its key idea. Focus is then zoomed to open innovation as a framework where co-creation is used. Lastly, the focus is shifted to the environments where co-creation takes place.

2.3.1 Aspects of Co-Creation

V. Bilgram (2013, 45) notes that in the early 21st Century there were some significant changes to the innovation sphere due to "*open and co-creative innovation approaches*". In these, consumers are more than buyers, they are "*partners in value creation*", affecting companies in a fundamental way. For many companies, co-creation is considered not only relevant but integral to innovation activities. Curley (2015, 15) is on the same lines when he talks about "*a new innovation paradigm*" that is the result of three mega trends: digitization, sustainability and mass collaboration. They create a fertile ground for creating new ways of working together, both in real life and virtually, leading to not only financial but also societal wealth.

The roots of co-creation are deep in the empowerment of citizens in the Scandinavia of the 70s (see participatory design[5] in Ind and Coates, 2013, 5, for example), but in this thesis the point of view is that of business. The earliest uses of the term co-creation go back as far as the 90s (see for example Kambil, Ginsberg and Bloch (1996)) but it was Prahalad and Ramaswamy (2000,80) who coined the term *co-creation* in their Harvard Business Review article titled Co-opting customer competence. In the article they write: "*Customers are stepping out of their traditional roles to become cocreators as well as consumers of value.*"

[5] Also called *cooperative design*, see, for example, Bødker, Grønbæk and Kyng (1995, 215).

However, co-creation is not just collaboration in any form. It is, as the name implies, about creating something together, not merely contributing to something (Ramaswamy and Ozcan, 2014, 288). It is also not just about creating something tangible together, it is also about creating meaning together (Ind and Coates, 2013, 4, 10). In a more traditional type of design interaction there is back-and-forth type of movement between the stages of design and feedback. In co-creative design it is continuous two-sided collaboration (Ramaswamy and Gouillart, 2010, 144). Instead of one-time collaborative encounters, such as single workshops, it is about utilizing the results of co-creative encounters to create something lasting.

Co-design and co-creation are terms that the design community often confuses. Whereas co-design usually happens in a design process and the ideas and solutions created in the process are related to a design aim, co-creation is a process of collective creativity where the aim of the co-creation activities can have many purposes. These are, for example, to inform, create, evaluate or consult. On the one hand co-creation can take place within co-design, forming a temporary creative space where knowledge and ideas are shared between co-creators. On the other hand, it is much more than part of a design process, it is about participation, collaboration and partnership (Mattelmäki, Sleeswijk and Visser, 2011, see also Sanders and Stappers, 2008). Co-creation is also not the same as co-production, where the firm is the source of innovation and creator of the value that customers can only take a fleeting part in (Chathoth et al. 2013, 11, 15; Payne, Storbacka and Frow 2008, 84).

In the end, co-creation is essentially a way of doing things and an approach to collaboration. This means co-creation is very flexible and scalable. In its simplest it can be the encounter of two stakeholders and a moment of facilitated activities resulting in the creation of something new, with almost no additional resources needed, for example. Or it can be an organization's mindset infused in all operations and integrated into budgets. Or a mixture of the two or anything in between. For the same reason, it can also be somewhat elusive. Organizations may be utilizing co-creative methods without calling them such. If they are not doing it in a consistent matter, however, they might not be able to unleash its full potential.

In this thesis, co-creation is discussed in connection with the framework of open innovation. This is because open innovation is the framework within which co-creation is used in the case project CIRC4Life. In the next chapter the central characteristics of open innovation are discussed. In the following chapters open innovation is discussed together with co-creation in context of various themes such as the co-creation space, process, value creation and business ecosystems.

2.3.2 Open Innovation as Knowledge Flows

As discussed earlier, co-creation is seen in this thesis as a process of collective creativity which can have many purposes (Mattelmäki, Sleeswijk and Visser, 2011, 1, 2, 11). Open

innovation, on the other hand, is seen as an innovation process within a system of "*purposefully managed knowledge flows*" (Chesbrough and Bogers, 2014, 12). In this thesis, open innovation provides a framework for co-creation. As Ind, Trevail and Fuller (2012, 74) note, "*While we argue for a willingness to adapt as co-creation processes evolve, we would argue that this is far better done within a framework. In other words, we need both freedom and order for effective creativity*" Ind, N., Trevail, C., and Fuller, C. (2012).

Traditionally, product development refers to an internal R&D process the outcome of which is an internally developed product. Open innovation is quite the opposite. Henry Chesbrough coined the term *open innovation* in his book *Open Innovation* published in 2003 (Chesbrough 2003; Chesbrough, 2006; West et al. 2014). Open innovation shifts the focus of the company's way of doing R&D "*from the internal discovery toward external engagement*" (West et al. 2014, 1). It is an innovation process, where knowledge flows penetrate organizational boundaries in a guided manner (Chesbrough and Bogers, 2014, 12, Chesbrough, 2006, 2). The knowledge flow flowing outside in enable the innovation process of an organization to gain something from an external source of knowledge in order to accelerate innovation, for example. The knowledge flow flowing inside out, where the organization's unused knowledge can be used by others outside the organization as part of their business models (Chesbrough, 2006, 2-3). A core assumption is that valuable ideas can originate inside the organization but can just as well be brought in from outside the company (Chesbrough 2003, 43).

The idea of the free flow of knowledge is central to open innovation. Some descriptions of open innovation describe, in fact only a part of it: crowdsourcing, stakeholder interaction or open sourcing. All these definitions ignore the view of open innovation as a system of knowledge flows (Chesbrough, 2017, 36). West et al. (2014, 1) go as far as to say that "*For some, indeed, open innovation has become a general catch-all term for any new model of innovation.*" On the other hand, sometimes open innovation is even likened to pure knowledge flows. For example, West and Bogers (2014) reviewed 291 publications related to open innovation and noticed that many of them seemed to confuse open innovation and knowledge exchange. They even added that "*in some cases, merely changing "innovation" to "knowledge" would solve the problem.*" (West and Bogers 2014, 29).

When it comes to the inbound knowledge flows, Cohen and Levinthal (1990, 128) argue that a company's ability to recognize, assimilate and in a profitable manner apply valuable new knowledge is crucial when it comes to innovative capabilities. They call this ability the company's *absorptive capacity*. Vanhaverbeke, Van de Vrande and Cloodt (2008, 2) are on the same lines when they call the company's efforts to improve its absorptive capacity, which they understand in the way it has been defined by Cohen and Levinthal, as being at the core of open innovation, something that defines the company's ability to create and capture value. They see absorptive capacity as the "*identification, assimilation and exploitation of*

external knowledge" (Vanhaverbeke, Van de Vrande and Cloodt 2008, 12). The concept of absorptive capacity emphasizes open innovation as a process and the central role of making use of knowledge flows[6].

Open innovation 2.0

Open innovation, with its systematic process of circulating ideas for reasons of value creation, has had a strong impact on the birth of networks and ecosystems build around the exploitation of innovations. This has led to the emergence of a new approach, Open innovation 2.0 (OI2). It cultivates innovation ecosystems through integrated multidisciplinary collaboration between various sectors (Pacheco, Araújo and Rocha 2020, 1). It is marked by making full use of networking and co-creation between the different sectors in society in order to generate shared value (Curley 2015, 9, Curley and Salmelin 2013, 2, 5). Some academics argue that the networked perspective of open innovation is nothing new in innovation management (see for example Trott and Hartmann 2009) and indeed, emphasis of networking in the transference of knowledge and its benefits on business success is certainly nothing new (See, for example, Rothwell, Rothwell and Zegveld (1985)). However, open innovation is not only about networks, it is also about a non-linear, ecosystemic, interdependent perspective that puts emphasis on the co-creation of value[7]. As Salmelin (2013, 9), notes, "*The new innovation drivers (Open Innovation 2.0) call for new type of mind setting where key is the involvement of all stakeholders into a collaborative, co-creative culture*".

One of the main differences in the phases of the innovation evolution is what Curley (2015, 10) calls "*increasing recognition that innovation can be a discipline practiced by many, rather than an art mastered by few*". Through the interdisciplinary, interdependent, ecosystemic approach OI2 leads to the multiplication of resources from the perspective of a single organization. Therefore, the *quadruple helix* can be seen to be at the core of OI2. It is formed by the sectors of government, business and academia, and the civil society that join in an effort to maximize innovation resources and impact (Curley 2016, 315; Curley and Salmelin 2013, 1), and drive more effective changes through co-creation and deep networking activities (Curley and Salmelin 2013, 1-9).

It can be argued, however, that it might not always be straightforward to divide the *quadruple helix* participants into their respective sectors. The same person can represent a company or act as an individual, a researcher can work as part of the academia and the public sector, the same person can both represent a service provider and be a user and so forth. Perhaps

[6] For further discussion on absorptive capacity, see chapters 2.3.2
[7] For more on value co-creation, see chapter 2.4.1

another way to divide the roles is needed, based on actions, knowledge or other relevant characteristics.

2.3.3 Environment for Creating Together

In literature the "*competence to co-create*" is sometimes discussed (See, for example, Alba and Hutchinson 1987; Vernette and Kidar 2013). In the light of what has been discussed above about co-creation as a form of collaboration, it could be argued that more than about competencies it is about creating an environment that supports co-creation activities. Or, it can be said that it is more about the right conditions for co-creation than a person fulfilling a preset criterion to be able to co-create. This is not to say that the conditions could not include characteristics tied to people, like a certain group of stakeholders, for example. It is to say, however, that it is hard to imagine what would be the special skillset specifically required for co-creation to take place, if it is truly seen as a form of collective creativity.

Alba and Hutchinson (1987, 411) talk about "*consumer expertise*" related to product-related tasks. This seems a very company-centric view, one that presupposes that a customer needs to fulfill set criteria in order to be "*good enough*" for co-creation. The authors (Alba and Hutchinson 1987, 421) also note that the expertise could also be tied to the consumer's motivation to co-create. This again, positions co-creation into the context of product offering rather than to the act of co-creation. One aspect of the expertise is knowledge of the product (Alba and Hutchinson 1987, 421), which can be seen as reducing the amount of misinterpretations. This is not, however, something only the already acquired knowledge can do, it is something also a good briefing before the start of the co-creation activities might accomplish. Preconceptions can also hinder truly innovative ideas.

This is not to say that attention should not be given to the composition of the group of co-creators. For example, Schuurman et al. (2015) conducted a study where they analyzed co-creation in three Living Labs. Through this analysis they found out that when a participant of a co-creation session had a high amount of knowledge concerning innovation and its technical and usage aspect, this had a positive effect on both the level of contribution and the attitude towards innovation (Schuurman et al. 2015, 24). However, it can be argued that attitudes can be influenced by the settings created for the co-creation activities. This includes, for example, selecting the right co-creation techniques that take into account situational constraints such as procedure, scope, applicability and involvement (Truong, Simmons and Palmer 2012).

As Ind and Coates point out (2013, 7), the key here is not how to cultivate creativity of an individual in a specific situation but how to ensure the best environment for the productivity of groups creating together. Instead of isolated innovations, the focus is on creative processes where ideas are detected, built upon and exploited to the full. Co-creation can be used to

innovate on all levels of operations from strategic decisions to management to product development (Ramaswamy and Gouillart, 2010, 30).

De Koning, Crul and Wever (2016) talk about the space of co-creation, which is formed by two spheres, those of each co-creator. The overlapping area between them creates the joint space where creation takes place (see figure 3 below).

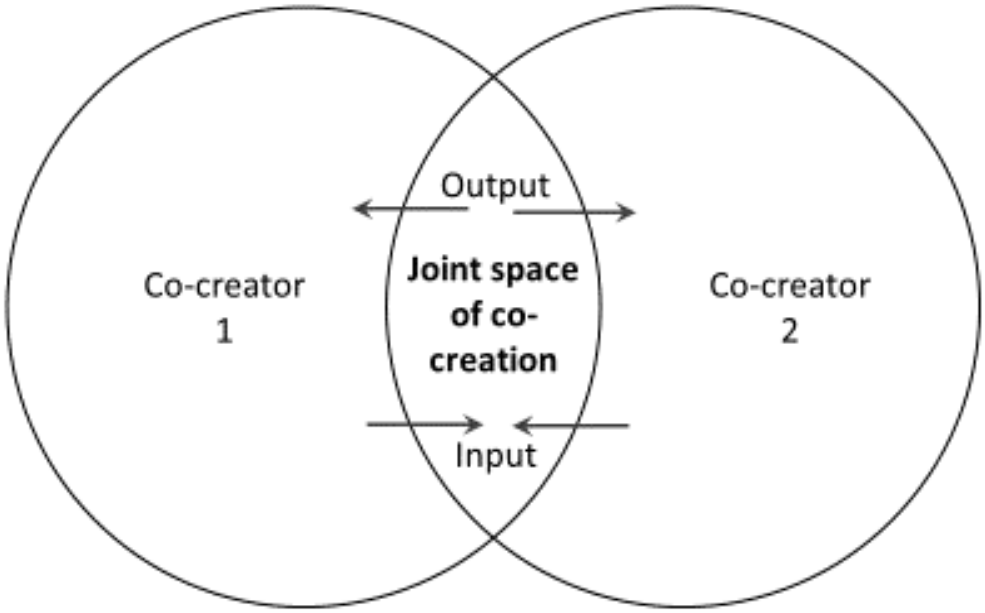

Figure 3: Joint space of co-creation

In the joins space, mutual value is created through the input of two parties. It can be argued that there could be an infinite number of parties with the joint space staying in between. It can also be argued that not all parties feel they have received value or given an input. Perhaps this meta model can be seen as depicting the ideal situation in its most straightforward and simplest form. As such, it does not seem to suit very well for discussions on co-creation as part of OI2 with its multi-dimensional structure of stakeholder co-creation. If the joint space is seen as representing bursts of creativity or fleeting creative moments, it can be seen to suit the co-creative action in open innovation as well. However, this means only looking at the micro-level and omitting the macro-level which can give a picture of the relations, network effects, tensions and other elements that might be present in interconnected activities.

The power of co-creation lies in the combination of ways to engage, experience and collaborate. Together they enable the efficient exploitation of knowledge and skills of everyone engaging in the co-creation activities, and value-creation in a mutually satisfactory manner

(Ramaswamy and Gouillart, 2010, 249). This requires an environment where co-creation is both understood and valued. There can, however, also be several challenges in utilizing knowledge and creative input. These have to do with the selection of ideas, creation of a systematic way to grasp data accumulated in the co-creation sessions, and full utilization of the outcomes, for example.

Living Labs as an environment for co-creation

In their article published in 1991, Bajgier et al. (1991, 709) describe a course where students undertook real-world projects in a local community in an effort to boost understanding of an "*interdisciplinary approach to problem solving*" The neighborhood was called a "*living laboratory*" by the authors. This can be seen as the birth of the concept of Living Labs.

LLs are open innovation ecosystems utilizing co-creation in collaborative innovation activities in real-life settings in order to create successful innovations. They are user-centered, and they combine the processes of innovation and users, experiment with these in real-life settings, explore new ideas and develop new solutions. They do this through various kinds of implementations but with a strong focus on engaging the private and public sectors, regions and citizens alike (European Network of Living Labs n.d.; Pallot 2012, 5). Hence, the three key characteristics of LLs are "*1) users as co-creators in innovation processes, 2) experimentation in a real-life context, and 3) multi-stakeholder involvement*" (Äyväri and Jyrämä 2017, 2). The term Living Lab can be seen to comprise both the methodology used and the instrument facilitating this use (Almirall and Wareham 2012).

Even though the LLs are user-centrered, Leminen, Westerlund and Nyström (2012, 8) propose four LL categories based on the actor who is driving the activities. They are not dominant, but their role is more active and contribute to the formation of the characteristics of the LLs. *Utilizer* uses LLs for business-development and strategic purposes. *Providers* are developer organizations and the main purpose of the innovation activities is to generate knowledge to be used by the network participants. *Enable-driven* Living labs typically aim at societal improvements and far-reaching results. For this reason, they are often initialized by public-sector actors. The LL activity itself can be a key outcome, if the aim is to enhance cooperation. When the LLs are *user-driven*, they focus on solving the problems of the users. They are informal, but the provider of the activities has an influence on the users. The actors driving the Living-Lab activities may change along the way. The end results can also be different from what was expected, so the categorization should not be seen as a fixed classification (Leminen, Westerlund and Nyström 2012, 8-10). The classification does, however, shed some light on the complexity of the motivations of stakeholders taking part in the co-creation activities. It also shows that if we only focus on the users, we might lose some of the wider perspective of the open innovation ecosystems and how their elements interact.

2.4 Co-Creative Enterprise

"*The future belongs to the co-creative enterprise*", Ramaswamy and Gouillart write in their book *Power of Co-creation* (2010, 7). According to them, a co-creative enterprise is a "*formidable productivity engine*" and a "*growth engine*" that "*reenergizes its people*" and can "*generate efficiencies*" (Ramaswamy and Gouillart 2010, 7, 16). Becoming a co-creative enterprise requires a transformation of the traditional way of doing business. This transformation is discussed in this chapter.

Within the organization, there needs to be an understanding of the aspects of co-creation for it to be successfully utilized. It should be decided, for example, who will co-ordinate the multi-party dialogue, how information is shared and how stakeholders are made to see the common value (Hatch and Schultz, 2010, 603). When the co-creative activities are used within the open innovation framework, there are further considerations. These include network structures (Vanhaverbeke 200, 206), competitive environments (Vanhaverbeke, Vermeersch and De Zutter 2012, 9) and value creation dynamics (Jacobides, Knudsen and Augier 2006, 1205; Gambardella and Panico 2014, 904).

Next the different aspects of co-creation as part of doing business will be discussed. The subchapter on value creation has its main focus on the financial side of doing business. The one on managing co-creation focuses on the operational side of doing business. The subchapter on business opportunities involved in co-creation focuses on the strategic and tactical sides of doing business.

2.4.1 Transformation of Value-Creation

To understand the context within which businesses co-create, it is important to discuss the way in which businesses create value. This has to do with both the business logic of the business and with the way value is formed within that framework.

Service-Dominant Logic

In this thesis, co-creation is seen in the context of service-dominant logic (SDL), which is one type of business logic that the company can select as the dominant logic (Prahalad and Bettis 1986, 491). According to SDL, service[8], or the exchange thereof, always forms the basis of value creation so that even goods are simply a type of a "*service-provision vehicle*" (Vargo and Akaka 2009, 32). Vargo and Lusch (2004, 10) go as far as to argue that services have always been the focus of economic activity and that it is only that the focus is now more on the

[8] Service is seen in this thesis as a process rather than the units of output created as a result of this process. See, for example, Vargo & Akaka (2009, 4) and Vargo & Lusch (2014, 5).

knowledge and skills of a company than the goods they may offer. This perspective differs from that of goods-dominant logic, which sees production, tangible outputs and transactions connected with these as central (Vargo and Lusch 2004, 2).

According to the goods-centered view, economic activity aims at producing and distributing goods which are embedded with value. This value is transferred to the customer when the good is sold. According to the service-centered view, the same economic activity aims at first identifying and developing knowledge and skills that might benefit potential customers. The unit of exchange here is "*the application of specialized skills and knowledge*" and companies do not create value, they create value propositions together with customers (or potential customers), who determine the value in the end (Vargo and Lusch 2004, 5-7, 11). Service is a "*perspective on value creation*" rather than a set of activities. This shifts the focus on value-in-use (Edvardsson, Gustafsson and Roos (2005, 1, 7, 11, 12).

It is important here to differentiate between value-in-exchange (the basis of value creation in goods-dominant logic) and value in use (the basis of value creation in SDL). In the former, value is something that is created through the actions performed by the company and destroyed (consumed) by the customer (Vargo, Maglio and Akaka 2008, 32, 38). Value-in-use, on the other hand, is created within the interactions between the two (Kowalkowski (2010, 280). It can even be said that the seller-buyer dichotomy disappears, and value is created by all stakeholders participating in the value creation process (Vargo, Maglio and Akaka 2008, 146). This, again, creates the need for a transparent, communicative and open approach to interaction in the value-creation process (Chathoth et al. 2013, 15).

One more type of business logic should be addressed here, namely customer-dominant logic, where the focus has shifted from companies providing services fully to the customer. According to the customer-dominant logic, value is created by the customers in their own processes, to which they have embedded the services provided by the companies (Heinonen and Strandvik 2015, 2). While this is an important focus, in order to zoom out on all the processes, structures and interdependencies of companies and their connection to co-creation, for example, it is important to keep the focus on what happens within a company and at its interfaces with its stakeholders. The relevance of the value creation process to the business in other aspects besides the experience of the customer or user may be overshadowed in the customer-centric view. As Heinonen and Strandvik (2015, 2) describe the customer-centric view, "*Adopting this view means shifting the focus from how (systems of) providers involve customers in their processes to how customers in their ecosystems engage different types of providers.*" As the focus in this study is in the co-creation of CEBMs, a company's processes remain relevant. This is enabled by SDL's more holistic view of value creation.

A further factor making SDL the most appropriate approach for this thesis is the "*service ecosystem perspective*" described by Vargo and Lusch (2016,10). As they note, the focus in SDL has shifted in recent years even further away from the seller-buyer dichotomy discussed above and toward systems or more particularly service ecosystems, where actors are connected by mutual service provision (Vargo and Lusch 2016,10). In the end, businesses, customers and other actors all have the common purpose of creating value, and they do this together (Vargo and Lusch 2011, 181). This is not the same, but nevertheless can be likened to an extent, to business ecosystems discussed in chapter 2.5.4.

When value creation is studied in connection with open innovation, the need for an ecosystemic perspective becomes even more marked. Jacobides, Knudsen and Augier (2006, 1205) go as far as to argue that stabilized industry architectures bound by the distribution of roles, interoperability and customer expectations, for example, follow two "*templates*". One of these defines "*who can do what*" through rules concerning value creation and how operations are divided within the industry architecture. The other one defines "*who gets what*" through the appropriation of value and how any surplus is divided within the industry architecture. An innovator can attempt to shape the architecture to influence the templates by manipulating competition or increasing the value of a shared asset, for example.
Cesaroni and Duque (2013, 21-31) compared the bases of the OI paradigm with the foundational premises of SDL and analyzed how the latter fits the former for high-tech firms[9]. Some of the main findings in terms of co-creation are compiled in Table 1 below.

[9] For a complete chart of all 15 foundational premises and their comparison along with comparison in context of high-tech firms, see Cesaroni and Duque (2013, 22)

SDL foundational premise	Main themes	Service-dominant logic	Open Innovation	Implications for co-creation
FP1,5	Value creation, service	Service is formed by doing something beneficial to someone using specialized skills.	Service is formed by the innovation outcome and its ability to solve problems in the user's context.	The essence of the exchange of services is knowledge. Co-creative methods support knowledge transfer.
FP2,3,4,9	Competitiveness, resources	Competitive advantage is formed through resources such as skills, capabilities and knowledge capital enhanced with interaction with strategic partners.	Integrating internal capabilities with the skillsets of external actors forms the core of competitive advantage.	Competitive advantage is created through collaboration which broadens capabilities. Co-creation ensures the outcome is a joint effort by the company and the stakeholders.
FP1,6,7, 8,10	Customer-centricity	A company can only offer value propositions and it is ultimately the customer who creates the value.	Value is generated by users adopting the innovation outcome.	Co-creation is a way to ensure the adoption is effective.

Table 1: Comparison of the foundational premises of service-dominant logic with open innovation characteristics. Adapted from Cesaroni and Duque (2013, 22)

From the table above it can be seen that the different aspects of value-creation are similar in SDL and open innovation and that co-creation can boost the application of both paradigms in practical contexts.

Value co-creation

According to Gummesson et al. (2014, 644), "*Co-creation is the joint, collaborative, concurrent, peer-like process of producing new value, both materially and symbolically.*" Seen in this sense, any act of co-creation is value co-creation (VCC) in some way. In fact, it can be argued that for co-creation to be useful, it needs to create value for someone. This perspective is highlighted in the business context, where profitability is a key consideration.

The much-used phrase "*shared value*" seems to be more of a management buzzword than a theoretical concept (Dembek, Singh and Bhakoo 2016, 245). There is an important underlying assumption, however: that value is owned by someone. In the context of business ecosystems, discussion on who owns the value created can be especially relevant. It is connected not only to the value-creation logic but to the setting enabling this action. As Ma et al. (2017, 3038)

note, in addition to creating value, co-creation also entails coordination costs (both internal and external). Because of this, managers should have a good understanding of the capabilities of the organization as well as the external business environment in order to decide whether co-creation is something that should be invested in. The main thought here seems to be, that the customers should not be involved blindly, only for the sake of it, because this would not be cost-efficient. This is true, but no mention is given here of the extent to which co-creation may or may not be used. Maybe instead of an either-or choice the question is of scale, with no costs at the lowest end of the scale. In any case, all the aspects of co-creators should be considered.

Looking from the stakeholder perspective, if co-creation, with its focus on individual experiences, is placed at the center of value creation, resources of participants in the co-creation process can be utilized, and new ways to create value are engendered through ecosystems of capabilities (Ramaswamy and Ozcan 2014, xvii). What is underlined here is the importance of not just creating joint activities but taking into account whole networks and ecosystems of resources and other possibilities that are in constant motion and work together for the benefit of common goals.

VCC can have its main focus on the customer, the company or the service offered, based on the selected perspective (in SDL, customer theories and service science, respectively, for example) (Alves, Fernandes and Raposo 2016). In this thesis, the focus is on the perspective of the company.

In their article titled *Value co-creation: theoretical approaches and practical implications,* Saarijärvi, Kannan and Kuusela (2013, 1) aim at creating "*a business-oriented analytical framework for assessing the opportunities presented by value co-creation*". They note that the relevance of the term in theory is quite another than that in practice. In other words, the academic view and the business view can be far apart. In their opinion, the several approaches to VCC are due to the many ways the term itself can be interpreted. Before VCC can have relevance, all its elements need to be defined: what is the value co-created and through what mechanisms and with what resources co-creation occurs (Saarijärvi, Kannan and Kuusela 2013, 7, 10). The mechanisms and resources are discussed further below in this chapter, and the value linked to co-creation is discussed in the next chapter.

From the perspective of multi-stakeholder collaboration in an open innovation ecosystem, it is important to consider the effect the allocation of decision rights or power within the ecosystem has on the amount of returns yielded, and how to manage the ecosystem and the relationships with actors that have different motives and incentives (Gambardella and Panico 2014, 2, 4-5). For the latter, the "*Multi-stakeholder collaborations as a value space*" by Reypens, Lievens and Blazevic (2016, 46-47) (see Figure 4 below) seems useful.

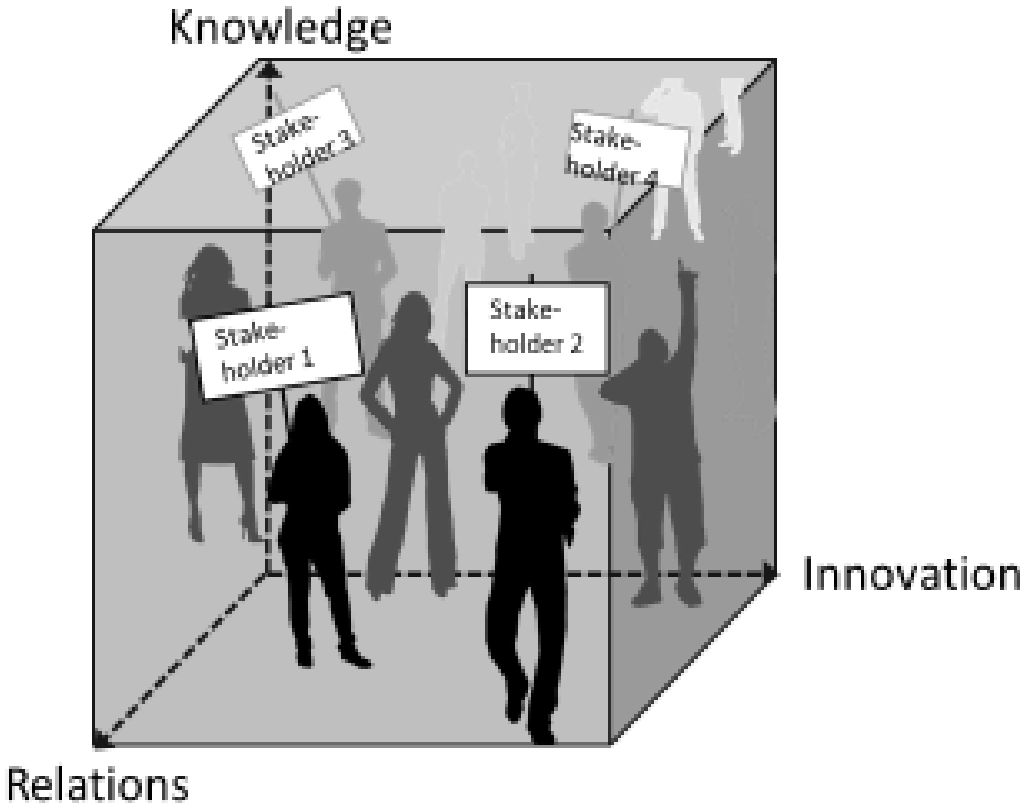

Figure 4: Value space for stakeholder collaboration (Adapted from Reypens, Lievens and Blazevic 2016, 47, stakeholder image Pixabay Licence)

Stakeholders are positioned along the axes of the value space. The axes represent the co-created value outcomes of relations, knowledge and innovation. They combine to form the potential value, but the stakeholders choose to which extent they wish to leverage this potential. This defines their position along the value space axis (Reypens, Lievens and Blazevic 2016, 46-47). When stakeholder collaboration is seen as a value space, the various types of value that are co-created can be better accounted for, the roles of the stakeholders become more apparent, and light is sheds on the interdependencies[10]. This value space offers a broader view into VCC than a single-firm perspective, as it makes visible the interdependencies among stakeholders that mark open innovation (Reypens, Lievens and Blazevic 2016, 43).

Besides spaces, also the duration it takes for the value to be realized when using collaborative strategies in value-creation is an important consideration (Faems et al. 2010, 20). It is not tied to the outcomes of the company's own actions but to the dynamics of whole

[10] For further discussion on this value space, see chapter 2.4.1

ecosystems, which seem to make any dichotomies of VCC useless and shows the very complex nature of value-creation.

A third consideration is the participants taking part in value co-creation. From the point of view of innovation, value co-creation has a diversity problem which leads to shallow innovations, "*superficial innovation thinking*" and a situation where "*privilege keeps reaffirming itself*." (Rehn 2019, 30, 139). Innovation thrives on diversity, it can be said, yet there is a diversity problem. It is often said that small organizations are able to *out-innovate* big ones, which are traditional and bureaucratic and are consequently not seen as nimble innovators. Yet big companies have resources of which small ones can only dream. They have "*access to a talent pool that makes most small companies seem like shallow puddles*" (Rehn 2019, 125-126). Their institutional networks are long and wide. Funding of startups can favor young men. The disabled, poor, ethnic minorities, the elderly and many other groups are missing from the innovation teams. All this means that the markets at which the innovations can be directed can be very limited because of the lack of perspectives and relatability. The array of ideas can be small due to heterogeneity. The diversity problem even has a direct effect on the bottom line (Rehn 2019, 125-126). As a result, innovation can become a shrouded in a "*never-ending torrent of hype around it*" (Rehn 2019, 18).

If we are to make the best possible environment for value co-creation, more attention should be paid to whose value it is, in the end. Is it truly the value aimed at, or assumptions made within a narrow view of what is possible and attractive.

2.4.2 Managing Co-Creation

Preikschas et al. (2017) have studied VCC in the industrial markets and note (2017,12) four implications of co-creation for management: Firstly, customers should be included in the process, as they bring knowledge that can be used to enhance value in-use and enrich value proposals. Secondly, there should be mutual feedback systems in place to ensure that expectations are met. Thirdly, there should be systems that *"identify contributions, relevant facts and performance of the project (including solutions and costs) defined collaboratively."* Fourth, there is need for a change in the business mindset to allow for cooperation between many agents. In this chapter, the first three notions will be discussed from the perspective of co-creators, co-creative interactions and how to combine these. The fourth notion will be discussed in the next chapter.

Active co-creators

The traditional waterfall development method is based on structured, bureaucratic and rigid organizational practices. Development proceeds in a fixed and predefined sequence and there is very little room for flexibility or sudden changes (McCormick 2012, 3). Counterparts for this

are agile methods, in which the focus is on adaptability, iterative cycles, open design processes, easy evolution and customer expectations (McCormick 2012, 4). This seems to be akin to what Ramaswamy and Chopra (2014, 17) call the ‘‘*cascade and align’’* and ‘‘*engage and co-create’’* views of management. A similar focus on engagement is emphasized by Ind, Trevail and Fuller (2012, 142), when they write that for co-creation to be truly effective, “*a commitment from managers and a sturdy process that involves stakeholders early on and encourages high levels of intra-consumer participation is required.”* (Ind, Trevail and Fuller 2012, 142). Both highlight the role of management. As Ramaswamy and Gouillart (2010, 42) note, even with the plethora of ways to communicate online, companies have not yet fully tapped into this potential. Hence, they leave their customers to talk among themselves instead of engaging them in ways that benefit the companies. The co-creation activities need to be managed effectively for co-creation to produce results.

Instead of seeing customers as passive recipients, they need to be seen as active co-creators who engage in the value-creation process and instead of simply stating needs, start designing their own experience. Similarly, seeing an investor only as the provider of money does not take into account the complexity of roles in co-creation (Frigo and Ramaswamy, 2009, 7). But it is more than just two-way interaction between the organization and the customer). Ramaswamy and Gouillart (2010, 251) talk about “*organizational linkages*” that the management needs to enable between “*employee/internal co-creation, customer/community co-creation, and partner/network co-creation*”. Yet, there is one thing that connects all these perspectives. Namely one change leaders need to adapt to goes above everything else: they need to recognize the importance of individuals and see the human experience as forming the core of value creation (Ramaswamy and Gouillart, 2010, 246).

Co-creative interaction

The different aspects of co-creative interaction are highlighted in the *Infosys model for co-creation*, which will be discussed next.

In their book *The Power of Co-Creation*, Ramaswamy and Gouillart (2010, 87-91) describe how the vice president and head of SETLabs, the then R&D arm of the IT service giant Infosys of India, boosted what he calls an “*innovation co-creation capacity*”. He set up an internal Innovation Lab to concentrate on co-creation, and after a while the Lab created a model for innovation co-creation which shifts the focus of co-creative tasks from the company’s networks to a wider community.

Ramaswamy and Guillart (2010, 88-89) talk about the five key pillars that make the Infosys model successful in utilizing co-creation:

1. "*Access to contextual knowledge and information*" – With the help of this access the innovators have a chance to create fast insights into emerging business models, for example, rather than having to rely on their own field of specialty alone.
2. "*[A] collaborative network of experts and partners*" – Bringing together stakeholders with different information basis, skillsets and interests helps identify new points of view, breakthroughs and practices.
3. "*Integrated methodologies and tools*" – Easy access and understanding of tools to facilitate collaboration boosts ideation as well as evaluation of innovations.
4. "*Engaging events and experiences*" – With well-designed exercises it is possible to effectively enhance creativity and divergent thinking and improve the experience of innovating.
5. "*[A]n integrated and co-creative technology platform*" – A platform for collaboration enables effective co-creation with stakeholders.

The five pillars all represent some aspect of co-creative interaction, be it shared knowledge, networks, tools, action or a platform. What seems most crucial is the aspect of *enabling* this interaction. Without the right tools etc., the efforts may not take speed. For example, as V. Ramaswamy notes in an interview by Leavy (2013, 17), "*Managing innovation by everybody is a big organizational and social challenge. The technologies enabling the innovation co-creation process, and for realizing the innovations, must be agile and capable of enabling co-creative interactions on a large scale*". Also, as Frigo and Ramaswamy (2009, 7) note, "*One of the main challenges in co-creation is the growing complexity of supply chain and logistical networks.*" It is not enough to want to interact in a new way. A whole new skillset related to networked interactions is needed. There is a need for the ability to support structures of participation from dyadic interactions to networked business ecosystems (Wulf and Butel 2017, 1). There is also a need to help the co-creative activities to strike a balance between the unique and personal (experience) and the coherent and consistent (organization) (Prahalad and Ramaswamy 2004, 167).

Challenges faced by managers wishing to apply the co-creative methodologies within the framework of open innovation following the service dominant logic include: how to get other actors to efficiently participate in co-creation processes, how to efficiently select collaborators, how to best communicate value propositions and how to get a good understanding of the roles of each actor in the resource pool. (Cesaroni and Duque 2013, 31).

Possible challenges involved in setting up co-creative activities need to be solved as well. For example, there is need to decide, what is the level of transparency the organization is ready to adopt, how to prevent information overload in all the knowledge flow and what are the intellectual property rights considerations that need to be taken into account. Decisions might need to be made on what path to follow, especially if there are several overlapping co-

creation processes underway simultaneously. After all, most companies have strategies they need to follow and hence need to consider not only innovation but how to integrate it efficiently into strategic goals.

2.4.3 The Business of Opportunities

Knowing how to co-create is not enough. As West and Bogers (2014, 15) note, "*Organizational culture plays an important role in the willingness and ability of an organization to successfully profit from external sources of innovation.*" The main challenge in the transformation into a co-creative enterprise is in what Ramaswamy and Gouillart (2010, 21) call "*institutionalizing the power of co-creation enterprise-wide*". Let's take strategy, for example. For co-creation to be truly effective, a transformation is needed on the level of mind-sets, managerial processes and the technology operations alike (Ramaswamy and Gouillart, 2010, 111, 149). Systems, practices and most importantly, the organizational culture needs to change to be more receptive of co-creation.

When the co-creative processes are in place, they can strengthen collaboration and trust among stakeholders (Calabretta and Gardien 2016, 51). N. Chopra, The Head of Plant Quality at Mahindra, an India-based multinational vehicle-manufacturing corporation, and his team created a list of six steps to promote a co-creation mindset and support its adaptation. The steps include

1. Identify key stakeholders and motivate them to co-create
2. Set up platforms that support co-creation activities
3. Identify co-creation enthusiasts who can spread the word
4. Broaden the pool of stakeholders and the opportunities for value co-creation
5. Let the impact of co-creation spark others within the enterprise ecosystem to follow suit
6. Engage stakeholders from all sectors in the co-creation of wealth.
   (Ramaswamy and Chopra 2014, 12-18).

Steps to support adaptation of a co-creation mindset within organizations are needed, as the main challenge in transforming a business into a co-creative one, specifically in an open innovation setting, is changing the organizational culture so as to support the new mindset, and to ensure facilities suitable for the new level of openness. The open innovation model of development cannot be handled the same way as traditional innovation activities that are based on internal projects (Westerlund and Leminen 2011, 25). Some of the main differences are listed in Table 2 below.

Traditional innovation projects	Open innovation
Pre-defined goals	Undefined objectives that can change based on interaction
Outcomes realized based on project plans	Several different, non-targeted outcomes
Preset control points where amendments can be made	Changes can be made any time during the co-creation activities
Plans describe the tasks	Self-organizing and can change based on activities and interaction
Project manager is in charge and follows project plans	Managers need to motivate participants as they cannot be managed the traditional way
Users are objects of study	Users are equal to other partners
The company's and their partners' resources are spent in activities based on project plan	Living Lab participants' knowledge is the main resource used and the need for resources may change when goals change
Conventional management tools are used	There is need for a diverse collection of facilitative methods and tools for working in groups

Table 2: between traditional and open innovation from the perspective of Living Lab innovation projects. Based on Westerlund and Leminen (2011, 24)

In their book *Brand Together*, Ind, Trevail and Fuller (2012) identify three approaches to co-creativity on the organizational level. These are the *rejectors*, the *experimenters* and the *enthusiasts*. The *rejectors* support the idea that people within an organization have superior knowledge of how to create products and services than those outside the company. This creates an inward-looking culture that positions the customer at the periphery. The experimenters use co-creation to generate user insight through different ways to connect with users. The *enthusiasts* have created the understanding that what is needed is not "*occasional bursts of creativity*" with external stakeholder groups but innovation that is continuous and "*ingrained into the fabric of the organization*". (Ind, Trevail and Fuller (2012, 35-47). For a business to truly benefit from co-creation, it needs to learn not just to collaborate in a new way but to identify opportunities. Without the right attitude, this might be hard to achieve. Another challenge lies in that the effects of co-creation can come from so many directions that it might be hard to show the value. Increased returns might be tied to an innovative business model, a process or an experience, for example (Curley 2016, 315).

After all the transformation, it is not quite clear what it is in the end the organizations have to gain, the deciding factors that make them want to make the effort. Ramaswamy and Chopra (2014, 17) do sum it up in the following manner: "*The payoffs of building co-creative enterprises include greater creativity and productivity, lower costs, lower employee turnover, new business models and new sources of stakeholder and enterprise value*." In the next chapter, a closer look is taken at what literature has to say about the business benefits of co-creation.

2.5 Business Benefits of Co-Creation – a Literature Review

The Cambridge English Dictionary (n.d.) defines the word benefit as "*a helpful or good effect, or something intended to help*". There is no entry for business benefits, but the first two definitions for business read: "*the activity of buying and selling goods and services*" and "*a particular company that buys and sells goods and services*". These two form, in the simplest, the act and purpose of business as understood in this thesis. A business benefit is thus something that helps a business or in running a business. However, it does not simply help to do something, but also to succeed or in the attempt to succeed. Also, behind the act of buying and selling is a broad web of activities that support the core business and should also be considered.

In their pathbreaking book Ramaswamy and Gouillart (2010, 15-16) describe the four key powers of co-creation that together form the *Four Powers Model*. As can be seen in Figure 5 below, the four powers are "*Increased Strategic Capital and Returns to Enterprises*", "*Lower Risks and Costs for Enterprises*", "*New Experiences of Value to Individuals*" and "*Lower Risks & Costs for Individuals*". I.e. risk- and cost-reduction are common between enterprises and individuals, and both gain value in their own terms, enterprises in the form of strategic capital and returns and individuals in the form of valuable experiences.

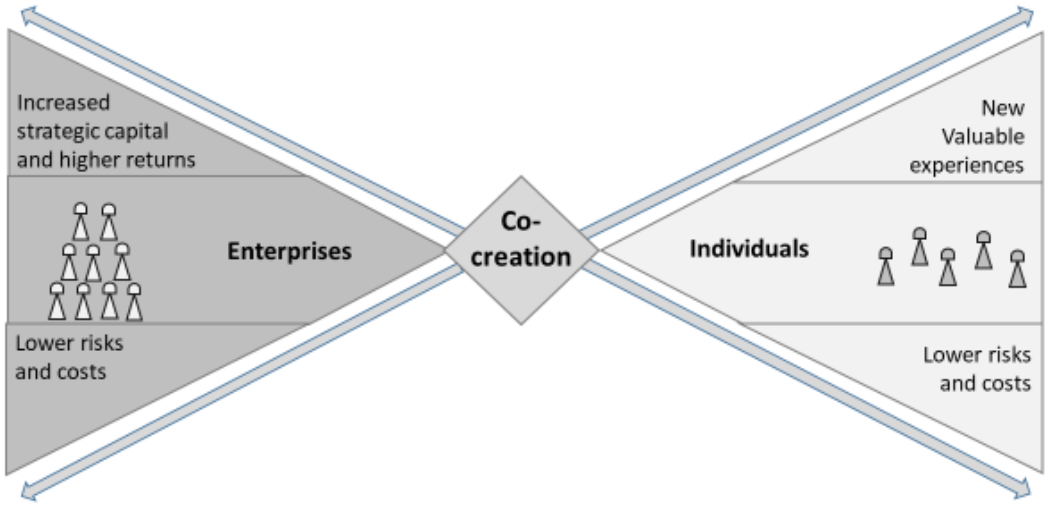

Figure 5: The Four Powers Model (Adapted from Ramaswamy and Gouillart, 2010, 16)

While the model comes handy in explaining the core idea of co-creation, it catches only a glimpse of what is thought to be valuable in co-creation. Moreover, to induce businesses to give up closed internal processes in favor of the ecosystemic approach of co-creation, there is need to communicate the benefits of co-creation in an efficient way, in order to show it is all

worth it from the business perspective. Ramaswamy and Gouillart (2010) do a great job mentioning benefits, but after a decade we should have an even broader view into how businesses co-create, what are the benefits that can be gained in doing so and how these have been discussed in literature.

In the selection of academic articles concerning co-creation used in this literature review, none focused specifically on the business benefits of co-creation[11]. Hoyer et al. (2010, 292) discuss the consumer perspective in their work, citing dozens of benefits, but even they note, that "*more research is warranted on the effects of cocreation on firm's outcomes such as short-term and long-term revenues and profitability*." Ma, Gu, Wang and Hampson, (2017) discuss some favorable outcomes of co-creation in their work *Opportunities and challenges of value co-creation. International Journal of Contemporary Hospitality Management*[12]. The perspective is that of a service provider, but the scope is limited, concentrating on the hotel business and customer participation. Steen, Manschot, and De Koning (2011) focus in their work *Benefits of co-design in service design* projects on the benefits of co-design, but do not broaden the subject to include co-creation[13]. To get a broader perspective on the business benefits of co-creation and to get a general view of how these are discussed in existing literature, a literature review was performed.

2.5.1 Method

The type of literature review performed was thematic (The University of North Carolina at Chapel Hill, n.d.), as opposed to chronological. The mentions were extracted from existing literature concerning co-creation. Google Scholar was systematically searched using the key phrases "*benefits of co-creation*" and "*benefits of cocreation*" and limiting the results to works cited at least five times. This turned 89 unique works.

Initially the plan was to use the terms co-creation, co-creative and co-create as the search words, but this turned thousands of results even after the publication year was set to 2019. Even after limiting the search phrase to just "*benefits*[14] *of co-creation*" and "*benefits of cocreation*", there were still hundreds of search results. Due to the limited scope and resources of the thesis work it was not possible to go through all of these. After careful

[11] For a more detailed discussion on what is meant with co-creation here, please refer to chapter 2.2
[12] See for example Table 1 on page 3026-3027 summarizing value co-creation literature
[13] As co-creation and co-design are often used synonymously, it should be noted here that the authors specifically define co-design in the same way that it is defined in chapter 2.2 of this thesis, in other words, as relating to design processes, while co-creation is used as a broader term to refer to processes of collective creativity with many purposes.
[14] For the reason why the word "value" was not included in the discussion when narrowing the scope, see further below.

weighing of the options for further limiting the results (title, year and so on), citations were selected as the limiting factor. As the required number of citations was relatively low (5 or more), the results were still diverse (as concerns the publication year, topic etc.).

Another approach would have been to use popular, interesting, distinguished or otherwise noteworthy articles in the field regardless of the search phrase. This would, however, have been a somewhat arbitrary way to handle the selection of the articles, as what is valued at any given time by any given person changes based on factors such as knowledge, attitudes, trends and conventions. When the selection is based on a more technical criteria, it is also easier for future research to continue from where this study ended.

It is also worth pointing out here that within the works selected in the end, all mentions of co-creation were researched and not only the instances matching the search phrase. This was done to get a more multifaceted view of what the author(s) perceive(s) as the benefits of co-creation.

From the 89 articles and books selected for the literature review, 39 did not specifically mention a benefit, even though they discussed the need to show the benefits in other ways. To 6 of the articles or books there was no access at the moment of the review, and 6 were discarded, because they did not discuss the business benefits, but other benefits of co-creation instead (citizen empowerment in the public sector, for example). 38 articles and books remained in the end.

The complete path from records identified to the records included in the literature review, or the final selection of sources is described in Figure 6 below.

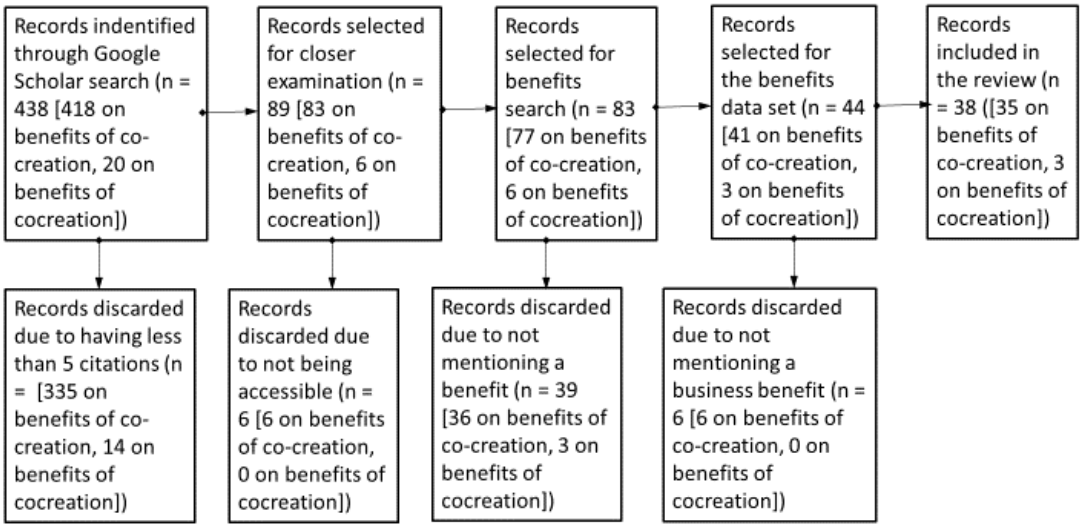

Figure 6: Flow-diagram of the search strategy (Adapted from Voorberg et. al. 2013, September, 6)

The database entries included the complete quote containing the mention of co-creation, the benefits, source information and information on any business case the benefit was linked to so as to get a better idea of the business context. It is worth mentioning here that "*business case*" was not understood to mean only a specific company but also a specific line of business.

It can be argued that often when co-creation is meant, co-design, co-development or even collaboration is used in its place[15]. To make the results more reliable, the three latter were left outside the scope, as it is often difficult to evaluate what the word used refers to, if not to the intended meaning. It can also be argued, that the benefits of co-creation can also be discussed in the form of the value[16] they create. It can, however, be difficult to separate between what the value actually refers to, what is the underlying benefit and who the benefit concerns. In order not to mix up concepts, value was not used as a synonym for benefit.

Only mentions of the benefits directly referring to co-creation were included. In other words, if co-creation was discussed in the text, but the possible benefit was mentioned with no direct link to co-creation, the benefit was not included, because it could as well be interpreted as referring only to the context at hand. For example, Ramaswamy and Gouillart (2010, 8-17) talk at length about the multinational footwear corporation Nike's co-creative engagement platform Nike+. The influence of co-creation is evident, but it is not always easy to discern between the discussion on the benefits of co-creation and on the success of the platform itself. A same type of difficulty arose, when a group of preferable actions (including those involving co-creation) and their joint benefits were discussed. In these instances, the mention was left out. As was any benefits that were only implicitly implied. The intent was also to reduce the chance of overinterpretation. Any reference to benefits that were too vague were excluded as well, such as "*economic benefit*" without any explanation of what type of benefit is in question.

As the focus is on the business benefits of co-creation, benefits to individuals were also left outside the scope, unless they had a direct link to benefits for a business. For the same reason, benefits concerning the public sector were left out.

At times it was difficult to discern, whether something was an original thought or a reference to another work. In these cases, the mention was left out only, if the reference to another work was clear. This was to not mix up the sources.

In the end, the database included 208 quotes. After creating the database, qualitative content analysis was performed, using the method of inductive category formation introduced by

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[15] See discussion on these terms in chapter 2.3.1
[16] For further discussion on how value is defined in this thesis, see chapters 2.2 and 2.4.1

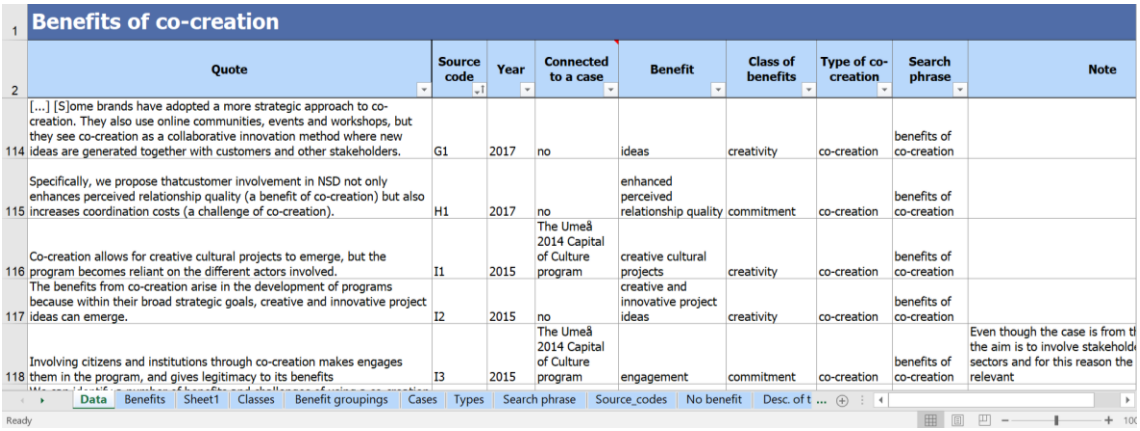
Philipp Mayring (2010a). The method attempts to "*preserve the advantages of quantitative content analysis for a more qualitative text interpretation*" (Mayring 2010a, 3). Mayring emphasizes four aspects of quantitative content analysis affecting the inductive category formation: 1) determining the aspect of communication based on which inferences are made (in this case the text itself and the intended effect rather than the communicator or any socio-cultural context, for example), 2) rules of analysis (in this case inductive category formation), 3) categories revised during the process, and 4) reliability and validity and criteria defined for these.

In inductive category formation the category system as well as the rules defining how the content is analyzed are usually designed to be used with the specific material and with specific research question[17] in mind (Mayring 2015, 371). In this case the focus is on the benefits of co-creation. A further perspective is the goal to create a tool for communicating the business benefits of co-creation that is another the topics of this thesis.

In inductive category formation the categories are developed based on the material itself (Mayring 2015, 374), not based on any theoretical framework, for example. As the basis for the inductive category formation, Mayring's (2014) model for the process of inductive category formation was used. In this case the category definition or the criterion of selection is any instance where the word co-creation, co-create or co-creative appeared in connection with a perceived benefit. The level of abstraction for the categories derived is a keyword indicating some type of business benefit. These categories were formed as the material was processed, using open coding (see for example Elo and Kyngäs, 2008, 109-110), and revised along the way, based on both how they fit the categorization and how they can be used to improve the categorization.

The thematic analysis or coding of the content was done as suggested by Al Debei and Avison (2010, 361). First 'keywords' were assigned to the extracted text (Benefit column in the below sample), based on what was perceived as the benefit. Next, and also during the assignment of the keywords, the keywords were classified into larger groups, i.e. classes. The grouping was done according to the following rules (adapted from Al Debei and Avison (2010, 361): 1) the keywords in the same class communicate a similar aspect of the concept, 2) their contextual relationships complement each other, and 3) the keywords in a class together communicate a larger compositional aspect of the concept at hand.

[17] The research questions for this thesis are defined in chapter 1.2. The focus here is especially on research questions 1., 2. and 5. whereas the other two research questions are the focus elsewhere in the thesis.



1	Benefits of co-creation								
2	Quote	Source code	Year	Connected to a case	Benefit	Class of benefits	Type of co-creation	Search phrase	Note
114	[...] [S]ome brands have adopted a more strategic approach to co-creation. They also use online communities, events and workshops, but they see co-creation as a collaborative innovation method where new ideas are generated together with customers and other stakeholders.	G1	2017	no	ideas	creativity	co-creation	benefits of co-creation	
115	Specifically, we propose thatcustomer involvement in NSD not only enhances perceived relationship quality (a benefit of co-creation) but also increases coordination costs (a challenge of co-creation).	H1	2017	no	enhanced perceived relationship quality	commitment	co-creation	benefits of co-creation	
116	Co-creation allows for creative cultural projects to emerge, but the program becomes reliant on the different actors involved.	I1	2015	The Umeå 2014 Capital of Culture program	creative cultural projects	creativity	co-creation	benefits of co-creation	
117	The benefits from co-creation arise in the development of programs because within their broad strategic goals, creative and innovative project ideas can emerge.	I2	2015	no	creative and innovative project ideas	creativity	co-creation	benefits of co-creation	
118	Involving citizens and institutions through co-creation makes engages them in the program, and gives legitimacy to its benefits	I3	2015	The Umeå 2014 Capital of Culture program	engagement	commitment	co-creation	benefits of co-creation	Even though the case is from t the aim is to involve stakehold sectors and for this reason the relevant

Data | Benefits | Sheet1 | Classes | Benefit groupings | Cases | Types | Search phrase | Source_codes | No benefit | Desc. of t ...

Ready

Figure 7: Sample of the data collected for the literature review

The review resulted in 145 keywords, i.e. business-related benefits of co-creation, and these formed 19 classes of benefits. Above (Figure 7) is a sample of the quotes data file with its classifications.

At times, the benefits were difficult to assign to classes. For example, many of the benefits indicated a competitive advantage, but it was challenging to decide which benefits result in a competitive advantage and which do not. In the end, the term *competitiveness*[18] was selected as a keyword, denoting an ability or a feature rather than a more arbitrary advantage which may or may not be realized. Noteworthy here is also that *innovation* was not included in competitiveness, as it is here understood to refer more to creating new solutions than to the organization's ability to take advantage of these. *Breakthrough*, on the other hand, could be said to be an indication of both innovativeness and competitiveness. It was finally decided in favor of the latter, as a breakthrough may not need more creativity than the organization already possesses, especially in science where the procedures are often strongly predefined, but it does most likely give the organization some form of competitive advantage. Another example of a keyword that could fit several classes is *differentiation*. Is could be seen as part of both competitiveness and brand advantage. In the end it was included in the latter class, as one could argue that you need a stronger brand for differentiation but not necessarily extra skills in competitiveness.

At other times it was difficult to decide how to name a class. Especially challenging was trying to find the most comprehensive term for a set of benefits. For example, when contemplating on what would cover the different aspects of risk management, *resilience* was at fist considered as the name of the class. However, as it is more focused on the organizational side

[18] I.e. the organization's capacity to compete in the market of their choice (Cetindamar & Kilitcioglu 2013, 9)

and less on the customer side, for example, the much broader term *security* was at last opted for. Similarly, it is not clear what would be the most suitable term for describing everything involved in making customers happy, such as improving customer satisfaction, meeting the needs and requirements of customers, personification, the ability to fulfill the expectations of customers and take into account their personal preferences, and creating a feeling of a real understanding of the customer. On the one hand it is a question of engagement, on the other it is a question of living up to expectations. The attempt was made to keep the definition as simple as possible. The final step, interpretation of the results, is described in the chapter below.

2.5.2 Benefits of Co-Creation According to Literature

As mentioned before, the material yielded 208 mentions of the benefits of co-creation. By far the greatest part of the benefits were mentioned only once, as can be seen in Figure 8 below. Only one benefit, *innovation*, was mentioned eight times. All the rest were mentioned six times or less. This shows both how varied the benefits are and how inconsistently the literature selected for this review treats the benefits as a whole. There seems to be plenty of benefits, but the benefits are quite unique for each case. For this reason, it may be difficult to see the general advantages that can be applied in a broader context of business.

It should be mentioned here that 43 of the mentions, in other words 20 % of all mentions, came from a single book, Ramaswamy, and Gouillart's (2010) *The Power of Co-Creation*. However, even out of these, *increased social legitimacy* was mentioned four times, *cost cuts* and *insights* were mentioned three times and all the rest only once or twice.

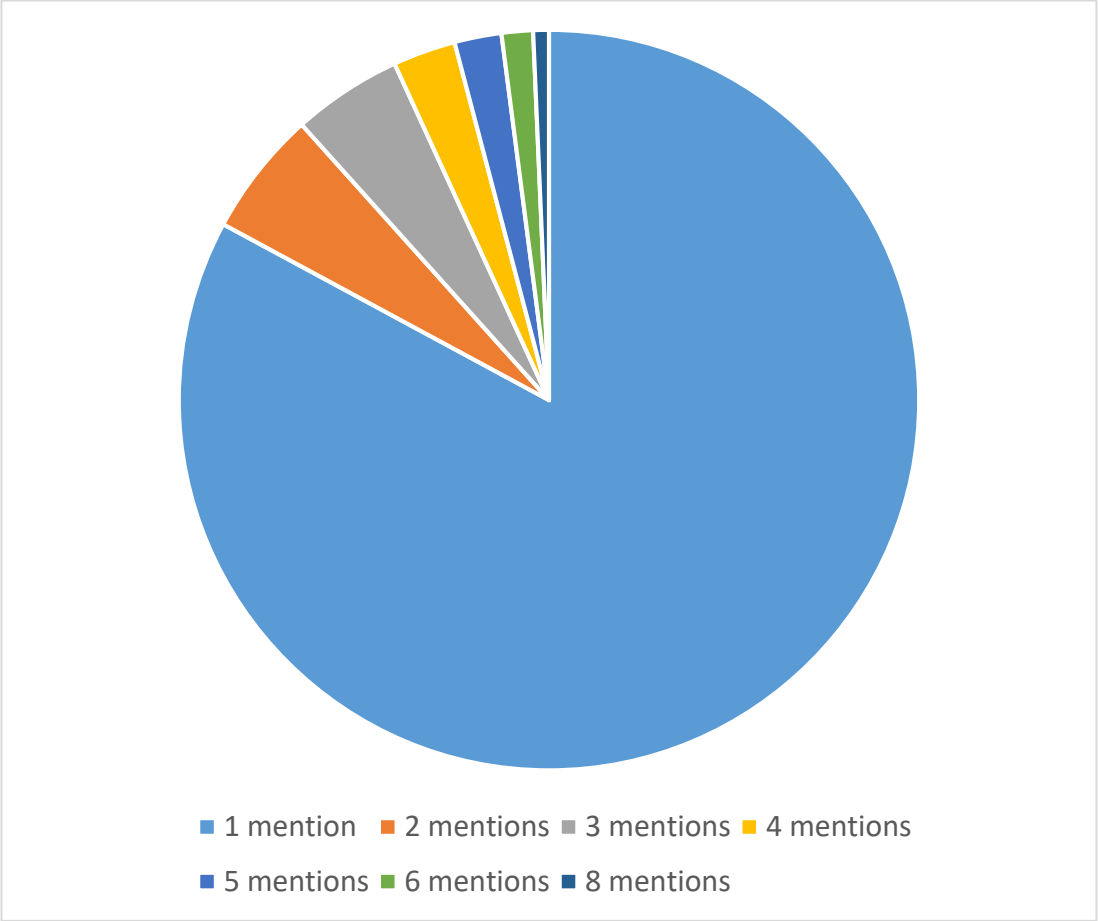


Figure 8: The number of times each benefit was mentioned in the review material

A total of 145 benefits were mentioned in the review literature. As described above, these were formed into larger classes of similar benefits, a total of 19 classes. Each benefit was linked to a deeper goal that it can be seen as helping to reach[19], and these deeper goals formed the classes. For example, lower costs, reduced capital needs and increased returns all lead to financial gain, whereas insights, the free flow of information and the efficient use of intellectual potential can be seen as leading to a higher knowledge capital.

The classes (see the first column of Table 3 below) by no means have clear lines. It can be argued that depending on, for example, the strategic goals of a company, the classes might look different. It can be said, for example, that growth and opportunities are the results of having more knowledge and creativity. Or th*at financial gain* is a type of *added value*. *Brand advantage* and *competitiveness* might, in a marketing context, mean the same thing. Below

[19] The evaluation on what these deeper goals are was made primarily based on the context of use, but also based on the thesis writer's text analysis and understanding of the subject matter.

(Table 3) is a glossary of the classes created with descriptions formed based on the benefits in each class.

Benefit Cluster / Class	Description of the co-creation benefits in the cluster/class
Brand advantage	Better differentiation in the market and greater brand appeal and brand awareness.
Commitment	Deeper and higher quality engagement with the customer, customer loyalty and enhanced sense of belonging.
Competitiveness	Competitive advantage and better position to outperform competitors.
Creativity	Creative and innovative ideas, projects and solutions, more effective ideation and innovation success.
Credibility	Increased legitimacy and trust, authenticity and feeling of a fair process.
Customer satisfaction	Customer needs and requirements are better met, and user experience is improved.
Dynamic capabilities	Deeper and improved business capabilities.
Effective collaboration	Participation, pooling of resources and richer stakeholder interactions.
Financial gain	Increased returns, lower costs and reduced capital needs.
Growth	Expanded market, reinforced market performance and new customers driver.
High quality	Continuous product/service improvements, strengthening of areas of weaknesses and higher perceived quality.
Knowledge capital	Insight, direct input, free flow of information and efficient use of intellectual potential.
Nimbleness	Early warnings of potential issues, more efficient development process and faster operations.
Opportunities	Detection of new needs and opportunities.
Perspective	Decreased political bias and a richer and better view of reality.
Productivity	Efficiency and effectiveness.
Relevance	Added value to stakeholders, established customer relationship and personalized consumer experience.
Security	Reduced/shared business and societal risk and risk mitigation.
Strategic capital	More efficient and higher quality strategy formulation and implementation, better managed triple bottom line and enhanced business intelligence.

Table 3: Glossary of classes based on the data of the literature review

The glossary represents one way to group and define the benefits. It should be noted that the glossary is based solely on the data collected for this review. In other words, in the benefits mentioned and the classes created based on these. For example, the definition of competitiveness may not reflect all the different aspects of the same. A broader definition might

include a mention of the ability to expand fast into new market segments, to be one step ahead of the competitors, to find new markets and differentiate at them, to find innovative solutions with which to win over new markets etc. The definitions in Figure 8 above stay within the scope of the benefits mentioned in the data to prevent overinterpretation.

Class of benefits	**Amount**
Creativity	29
Commitment	23
Knowledge capital	22
Customer satisfaction	17
Security	15
Credibility	14
Financial gain	14
Relevance	10
Brand advantage	9
Strategic capital	9
Productivity	7
Competitiveness	6
Growth	6
Effective collaboration	5
High quality	5
Nimbleness	5
Perspective	5
Opportunities	4
Dynamic capabilities	3
Total	**208**

Table 4: Class of benefits and the amount of benefits in each class

As can be seen in Table 4 above, the classes that include the most benefits are creativity, knowledge capital and commitment. These can be seen as reflecting three sides to a successful organization: A creative organization never lacks solutions to challenges, an organization with high amount of knowledge capital has the ability to make processes more efficient, quality better and so forth, and an organization that can increase commitment, has a more stable customer base. Another description could be possible as well, of course.

What is interesting is that the benefits are very varied, reaching all levels of the strategic and operative functions of an organization. The viewpoint in a large amount of the articles scanned during the Google Scholar search was that of customers, but in the research data customer satisfaction is only one of the many aspects and not even the largest. All companies need to keep the customers happy to make profit. If we cannot assure the business decision-makers that engaging with stakeholders using co-creative methods is worth the effort and

something new, and not just another customer satisfaction survey, it might be hard to get them to listen to the benefits. This is not to say these benefits would be unique to co-creation. It is to say that it might be hard to find anything that would yield all these benefits the way co-creation does.

As discussed above, there are other ways to arrange the benefits into classes. Consequently, there are also other ways to group the benefits into classes and to form even greater classes or different groupings of benefits, depending on the desired focus. For example, *growth* could be combined with *financial gain* or *commitment* with *relevance*. *Opportunities* might be omitted altogether, and the benefits moved to *knowledge capital*. The same could be done for *perspective*. This would, however, take something away from the versatility of co-creation. The ability to create opportunities is not the same as having an understanding of where the opportunities may come from. Having a pool of knowledge at one's disposal does not ensure the ability to see things from different perspectives. Some alternative ways to group the benefits are discussed next.

The Four Factor Solution table

One way to group benefits is offered by Gregor et al. (2006, 259) in their "*Four factor solution for IT benefits*". The authors studied the nature of IT-generated business benefits and the four factors the authors identified were "*informational business benefit, transactional business benefit, strategic business benefit, and transformational benefit*".

The framework is based on one created by Mirani and Lederer (1998) using a comprehensive literature review combined with a theoretical basis by J. Turner and H. Lucas (1985). The first three factors in the framework by Gregor et al. (2006, 254) are from a classification of IT investments based on organizational objectives created by Turner and Lucas (1985). Informational IT investments refer to ones that increase the information available for decision-making purposes. Transactional IT investments refer to ones that support the operational level of business activities, and strategic IT investments refer to those that effect competitiveness and product selection. To these three Gregor et al. (2006, 254) added a fourth category. Transformational benefit refers to the transformational outcomes that the use of IT solutions can create by themselves.

If we were to group the benefits in the data of this literature review in a similar manner, it might look something like Table 5 below.

Benefit type	Class of benefits
Informational	Knowledge capital Perspective Creativity
Transactional	Effective collaboration Financial gain Productivity Growth
Strategic	Brand advantage Competitiveness Nimbleness Strategic capital Relevance Commitment Credibility High quality Customer satisfaction Security
Transformational	Opportunities Dynamic capabilities

Table 5: Four dimensions of the benefits of co-creation based on the Four Factor Solution for IT benefits by Gregor et al. (2006, 259)

What is especially interesting when comparing the above table to that of Gregor et al. is that while there are plenty of benefits falling under the strategic dimension, only two fall under the transformational dimension. What is more, whereas the benefits under the transformational dimension in the table by Gregor et al. in includes mentions of business models, there are not many mentions of business models in the data gathered for this literature review. Leavy (2013, 16) talk about the benefits of co-creation in connection with new business models and Ind, Trevail, and Fuller (2012, 44) talk about the ability of co-creation to revitalize business models. As the strategic benefits seem to be abundant, there should be much more discussion on how co-creation benefits business models in general.

The high amount of mentions concerning creativity and knowledge might indicate a designer perspective rather than a business management perspective. Also worth mentioning is that in the mentions of benefits collected for this literature review, the word leadership is mentioned only once, in the below quote derived from Heath et al.'s (2013) work *Building thought leadership through business-to-business social media engagement at infosys*.

> [Value co-creation benefits to organisation] Enhanced business intelligence and support for thought leadership. Create and enhance thought leadership position through positive network effects and improve organizational capabilities.

Even though a managerial perspective is a common theme in the academic literature concerning co-creation, there seems to be a need for more research on the business benefits of co-creation from the leadership point-of-view. Not only as concerns how the benefits can help improve leadership but also what benefits the leadership of organizations sees a crucial and what is the correlation of the benefits of co-creation to these. For example, financial gain is

only the fourth largest group in Table 5 above that show the proportions of the classes of benefits, and strategic capital only a tiny sliver.

Co-creation radar

The mentions of benefits collected for this study form a set of linguistic information, which can be visualized by mapping it into an abstract space. This mapping can help get a better grip of the meanings and structures in this space (Widdows, Cederberg and Dorow 2002, 107). In the benefits-related literature reviewed there were some charts and tables depicting the benefits, but they all seemed more of different arrangements of texts rather than attempts at visualizing ideas[20].

Ramaswamy and Gouillart's (2010, 16) The Four Powers Model (See Figure 5 in chapter 2.5.2) can be seen as an attempt to take the visualization a little further. However, even though it is a simplification, it can be argued that it speaks more the language of the academic world than the language of business. This is, for example, because of the way it positions co-creation between enterprises and individuals and talks about risks and costs for each instead of the multitude of financial aspects and the vast number of sub-categories that risks can be said to include.

Below (Figure 9) is an attempt at a more visual grouping of the benefits of co-creation. It is adapted from a digital radar created by Bouee and Schaible (2015, 1740014-9)[21]. The radar was originally created to visualize the enablers of digital transformation of business models and the related applications. In the adaptation below, the same structure has been used to visualize the benefits of co-creation moving from the more abstract and general at the center to the more specific and practical at the outer edges.

[20] See, for example, Table 7 in Pergelova A. (2010, 112), Figure 1 in Qiao & Zhang (2011, May, 399), Table 2 and 3 in Tackx & Verdin (2014, 18-19) or Table 15 in Tijmes, A. H. (2010, 22).
[21] For an English version, see Schallmo, Williams & Boardman (2017, 1740014-9).

Figure 9: Co-creation radar (adapted from digital radar created by Bouee and Schaible (2015, 1740014-9)

The innermost section around co-creation contains four classes derived from the data on the benefits of co-creation. The terms inside the circle are very abstract. Financial gain, for example, can be the results of any of a vast amount of different actions. Mentioning it as the benefit of co-creation, without any indication of how it is achieved, in no way differentiates it from other operations of a business. The middle section in the radar has benefits derived from the data and grouped under the above-mentioned classes, but these are still quite vague. If one says, for example, that something creates an *innovation boost*, there is no indication yet of how this might be done and what leads one to think so. In the outer section we have benefits from the same class (in this case Creativity), but they are more concrete examples of how the benefit might show in the operations of the company. If you compare innovation boost with *rapid ideation* and *new solutions*, the two latter seem to give a better indication of how instead of what.

What is also interesting in Figure 9 above is that it shows how concretely the benefits have been described. For example, financial gain is generally described in very vague terms. Economic benefits can refer to a great deal of things in everyday business. There is plenty of vague terminology like this for financial gains, but not so many concrete examples such as "*savings on marketing expenses*", something a company can relate to. By contrast, *knowledge* has plenty of mentions positioned inside the outermost section.

The radar could also be used to show relations of different benefits. Using a quote[22] from the data collected in this study that specifically mentions that a benefits X leads to the result Y, we could have co-creation at the center, continuous *engagement with socially responsible stakeholders* on the next sphere, social ecosystems on the third sphere and more efficient discovery and development of sustainable growth opportunities on a yet another sphere. In other words, co-creation is the starting point and stakeholder engagement grows into ecosystems leading to efficiency.

A challenge is that it can be difficult to pinpoint exactly what result follows what action. For example, it can be said that co-creation is followed by an innovation boost, which can make the corporate culture more innovative. However, it can as well be that an innovative culture has led to the use of co-creation, which has given a further innovation boost. To take another quote from the data: "*The research also finds that co-creation benefits innovation success through the development of new markets, products and new customers*." (Tijme 2010, V). It might be difficult to position innovation success in relation to the development of new markets, products and customer relations, if this was to be visualized.

Generally, it can be said that business benefits help achieve business objectives. But on a closer look, it seems the benefits of co-creation are an intricate web of attributes that can be attached to co-creative endeavors in various ways and that vary based on the way they are used in an organization. This goes to show that the groupings can also be arbitrary, and change based on focus, as discussed earlier. In addition, the benefits may not always be the same for all stakeholders, the perspectives are not always the same and someone's benefit may be someone else's loss.

As seems to be evident, there is ample material on the benefits of co-creation and different ways to focus on it, but there is need to look deeper into how one can decide what is the best way to communicate these benefits from the business point-of-view. This is what will be discussed next.

2.6 Communicating the Business Benefits of Co-Creation Effectively

Communication is the act whereby information is conveyed and where the intention is to create shared understanding (Velentzas and Broni 2014, 117). Communication can be said to be effective, when it results in the desired effect or fulfills its intended purpose and the effect lasts. The purpose could be, e. g., to incite action or to inform (Velentzas and Broni 2014, 122). A lasting effect should here be emphasized. If the communication is understood

[22] The quote used here: "By building social ecosystems through continuous engagement with multiple socially responsible stakeholders, co-creation enables the more efficient discovery and development of sustainable growth opportunities." (Ramaswamy & Gouillart 2010, 250).

(passive) but does not lead to the intended purpose (active) it can be argued that there is no effect. The purpose of communicating the business benefits of co-creation effectively is to help businesses see how they can benefit from co-creation (passive) but also to help them adopt co-creation practices and a co-creative mindset (active).

There can be several barriers hindering the creation of shared understanding and effective communication. Not only can the barriers cause the communication to be ineffective, it can also cause the wrong effect. If the message contains terminology the receiver is not familiar with or language the understanding of which requires experience in a certain field, the receiver might not understand the message, no matter how much care has been put into formulating it. The communication channel may also not be working properly or there might be something in the attitude of the receiver that prevents them from participating in the act of creating shared understanding (Velentzas and Broni 2014, 118, 124).

From the above it can be derived that the receiver's motivation can be one aspect connected to the effectiveness of communication. For example, what motivates people to co-create is an intricate web of triggers. There is plenty of research material concerning the motivations of stakeholders to co-create with companies. However, what motivates businesses to take up co-creation in the first place is a whole other consideration and seems greatly less researched. In their study, Kennedy and Guzmán (2016, 315-316), interviewed 42 key decision makers form the marketing departments of companies and identified two types of goals that motivate the decision makers to co-create. The first type is organizational goals, which "*link the company's overall marketing orientation and strategy to efficiency and productivity metrics.*" The second type is brand goals, which "*link the company's brand orientation and strategy to growth and engagement metrics*." Under these goals, the motivations can be divided into five subgroups, which for organizational goals are "*return on investment, research, resources, mission statement and service*", and for brand goals they are "*brand building, brand loyalty, brand awareness, differentiation and brand experience*" (Kennedy and Guzmán 2016, 317). Efficiency, productivity, growth and engagement are all terms that came up in the literature review on the benefits of co-creation conducted for this thesis. Metrics or measuring success did not.

Another factor contributing to the effectiveness of communication is the way the message is presented. When planning the way in which to present information, it is crucial to take the target audience into consideration in order to avoid the barriers described above (Velentzas and Broni 2014, 125). Consequently, when discussing how to communicate the benefits of co-creation, it is not enough to have a list of the benefits. These should be communicated in a way that makes organizations see the value so as to avoid all the barriers that lie in the way of effective communication.

In the next three subchapters, the message of the benefits of co-creation as success-creators is discussed within three different frameworks: how storytelling can be used to create relevance (shared understanding and impact), how success can be measured in order to show the effects (metrics and validity), and how effective communication could be created with tailored, interactive content (presentation and practicality).

2.6.1 The Business Case

Storytelling as a method of communication can help establish common ground, if we see all humans as inherently storytellers (Barker and Gower 2010, 302). Like Monarth (2014, 4) so eloquently puts it: "*Data can persuade people, but it doesn't inspire them to act; to do that, you need to wrap your vision in a story that fires the imagination and stirs the soul*." One basis for a story familiar in the business world is a business case, which describes how certain business decisions lead the business or a part of it being improved in different ways (Cambridge English Dictionary n.d.).

According to Azabagic and Karpen (2016, 172), a business case is key in managing the viability of a design venture. They refer here to justifying a design initiative, but perhaps this could also be used retrospectively. Namely co-creative activities, which are also part of design, could perhaps be justified by referring to successful business cases, in other words, using case stories as a form of storytelling.

In their article Managing your co-creation mix, Roser, DeFillippi and Samson (2013, 29-30) use co-creation case profiles and the evidence from these case studies to illustrate how co-creation can be organized and managed. Using other sources, they describe, for example, how Xerox and Proctor and Gamble co-created a new printing environment for the latter and how Volvo created a customer involvement project to boost its business. They go on to describe the elements of co-creation based on these cases, comparing different approaches to who will be involved to what extent and for how long, why co-creation is used, where is its place in the innovation process and what can be used to motivate co-creators. The article gives great examples of the different aspects of implementing co-creation. It gives co-creation context, something more tangible than a mere list of benefits. It does not, however, give an answer to the question why to select co-creation in the first place. Assuming the benefits alone can persuade to do so results in circular thinking. In order to get results you would first need to get the results.

In the data of this literature review there are 14 cases mentioned in connection of 67 benefits, which is approximately 30% of all the benefits. Most of the cases are very general, i.e. not related to any specific company. Most quotes are related to libraries, but also, for example, hotels, tourism and universities. 6 companies are mentioned: Nike, Olivia, Apple, Infosys, Starbucks and Lego, with 9 benefits related to the Nike and Olivia cases each, one benefit

related to the Apple and Lego cases each and 2 and 3 benefits related to Infosys and Starbucks respectively. Apple, Infosys, Starbucks and Lego each get only a short reference in the study data so these will be omitted here and the two remaining, more detailed descriptions will be discussed below.

Nike is mentioned by Ramaswamy and Gouillart (2010, 7-20) in their work *The Power of Co-Creation*. The authors use the company to illustrate co-creation activities and how co-creation can be used to create value for the customer. They describe in detail, how Nike+, a collaboration with Apple, was used to engage the running community. Nike+ is a sensor in a running shoe that can communicate with a receiver installed in an iPhone, for example, as well as a website and a social platform. The benefits of co-creation connected to this venture include, according to the authors, the possibility to learn from the behavior of the customers, rapid generation of ideas, quick experiments, direct input, deeper relationships, increased returns and lower risks for the company and for individuals, among others.

The story is very appealing. You get to experience the excitement of running with Youtou, a Londoner who is training for a half-marathon. You get to be happy along with Youtou that she has all these functionalities at her disposal that make running even a better experience than before. You also get to see all the ways in which Nike can use everything that is offered by the system for their benefit. In the end, you might be convinced that co-creation has been very useful, but it might be difficult to understand, just by reading the story, how it can be useful for your specific business, especially if you are a small company, not concerned with offering customer experiences in the digital world or have only a vague idea of what constitutes co-creation. More importantly, it might be difficult to see how this knowledge can be applied in your specific business context with your possibly much more limited resources.

In her article *Balancing between open and closed: Co-creation in magazine journalism* Aitamurto (2013) describes her case study examining what impact co-creation can have on magazine journalism, using the Finnish women's magazine Olivia as the case profile. Aitamurto describes how Olivia's co-creation platform MyOwnOlivia has increased the "*sense of closeness*" the readers feel towards the magazine (pp. 240, 243), which in turn makes the magazine more identifiable to the readers (p. 240), how co-creation "*builds a connection between the journalist and the reader*" (p. 241) and makes the connection, as well as that between the readers more dynamic (p. 243), and how co-creation helps the magazine better meet the readers' needs (p. 243). Once again, a nice story and a nice example of the benefits of co-creation in practice. Similarly to the Nike story, the article sheds light on the collaboration dynamics between the company and the clients through a co-creative platform. The limitations are the same as well: it might be hard for those not well versed in co-creation to see how the benefits relate to their business.

All this is not to say that the articles would not discuss co-creation in much greater detail than as mere examples or that it would not be possible to get a good idea of co-creation and its potential through these articles. It is to say that regardless of this, the viewpoint is greatly that of the academia, the theoretical frameworks and the benefits of co-creation in general, not that of businesses trying to figure how to use co-creation to their advantage. Arguably businesses would not necessarily use academic articles as their source of information on co-creation. Regardless, the research on co-creation should address the gap between a story and the practical implications.

To take an example from the data for this literature review, it may be challenging to decide what, in the end, the benefit "*reduced risk*" constitutes. A mere reference to risk does not help a manager of a company see, how something can be avoided through co-creation. Risk as a word was included in several of the benefits mentioned in the data for the literature review. Co-creation was said to reduce business risk, societal risk (Ramaswamy and Gouillart 2010, 7, 249), risk of products' or services' failure (Steen, Manschot and De Koning 2011, 55), reputation risk, R&D risk, sustainability risk, information risk, employee engagement risk, innovation risk, brand risk (Frigo and Ramaswamy 2009, 4, 6) or just risk in general (Frigo and Ramaswamy 2009, 10-11, Steen, Manschot and De Koning 2011, 55). The article the most mentions are from, that of Frigo and Ramaswamy (2009), actually focuses on how organizations can manage risks with co-creation, or, as they describe it, "*co-creation opportunities that can generate superior returns while simultaneously reducing risks for companies and their stakeholders.*" (Frigo and Ramaswamy (2009, 4). The authors define different types of risks and give examples of how these are reduced by co-creation. The challenge is that these examples only offer a glimpse that may only makes sense if you have a good idea of the dynamics of co-creation. Take for example the entry for partnering risk:

> **Partnering risk** arises from the activities of a multitude of partners, from vendors to joint ventures and other alliances. The problem for managers is that there are simply too many moving parts with no set patterns of relationships around which they can easily organize structurally. Co-creation of value cuts across a larger number of global suppliers, partners, customers, and communities than ever before. (Frigo and Ramaswamy (2009, 6).

It can be induced from this, that co-creation allows one to create "*set patterns of relationships*" on a large scale and so manage the moving parts better. There is no hint, however, how this is done. It can be argued that an academic article is not supposed to be a practical guide. It can, however, also be argued that a more practical level of discussion would help make sense of co-creation outside a small circle of those in the know. It would also contribute to a greater consistency in academic discussion on the theme. This is also important from another aspect: As Ind, Trevail and Fuller (2010, 142) note, whether co-creation lives up to its full potential depends greatly on how the co-creation process is designed and managed. The responsibility of this lies with the business.

2.6.2 Measuring Success

For co-creation to be used in organizations, we need decision-makers such as managers on our side. Viability[23] is a key consideration in deciding what is a successful strategic design solution. It is not enough to consider what is desirable from the customer's perspective or what is feasible in terms of technology etc. It is also important to consider what is viable from the business perspective (Azabagic and Karpen 2016, 169). The same could be said to apply to co-creation. Paying attention to viability means considering the return on investment (ROI), the commercial value, the financial metrics, showing a way to the financial gain and quantifying the opportunities. Viability can be a powerful indicator of value in business context and not only that. As Azabagic and Karpen point out (2016, 190), "*Viability extends beyond its own commercial context, and can help frame and quantify how "valuable" solutions might be, not only for customers, but indeed for the broader organization, community and society*".

There are considerable investments in the EU area into R&D (Eurostat 2019b). Organizations are seeking ways to boost innovation and are not shy to spend money on it. The focus of business is already in R&D. What is left to do is show how co-creation fits into all this.

"*Show me the numbers*" is a clichéd business catchphrase. Data- and analytics-driven and finance-dependent business leadership might find numbers and measured results appealing. There is, however, very little talk about measuring the business success involved in co-creation in the data of the literature review. There is discussion on, for example, measuring customer performance and customer value related to co-creation activities (see, for example, Ranjan and Read 2016; Jaakkola et al. 2015) and organizational capabilities (see, for example, Skaržauskaitė 2013), but not so many works came up with a specifically business performance point of view.

One of the few exceptions is Lambert and Enz's (2012) *Managing and measuring value co-creation in business-to-business relationships*. In their work they studied cross-functional involvement in a B2B setting and "*measured the financial outcomes achieved by the companies one year after the cross-functional teams were implemented*" Lambert and Enz's (2012, 1588). According to their calculations, the value of the co-creation activities at the end of one year totaled over 4 million dollars (Lambert and Enz (2012).

On the one hand, many of the drivers identified in the article correspond to benefits mentioned in the study literature. For example, sharing resources and simplifying processes reduce costs. On the other hand, many of the drivers are very specific, such as "*Waffle maker*

[23] "ability to work as intended or to succeed" (Cambridge English Dictionary n.d.)

return" or "*chemical program*". Talking in terms of ROI and other financial indicators in more general terms might show in a concrete way how co-creation can benefit a company.

In their book, Service design: From Insight to Implementation, Polaine, Løvlie and Reason (2013, 151-169) dedicate a whole chapter, titled *Measuring Services*, to success metrics. Co-creation is only a part of service design and, at the same time, a much broader concept than service design when it comes to ways of interacting. However, as co-creation is at the very core of service design, there are some interesting parallels.

Polaine, Løvlie and Reason (2013, 152) start the chapter by noting that both service designers and service providers need a way to prove that what they are doing brings a return on investment. They go on to discuss the importance of measuring the successes and failures experienced by users when using a service, which, in their opinion, can help improve the customer experience. They later emphasize (Polaine, Løvlie and Reason (2013, 158) that "*The key to making the business case for service design is to focus on how you want the work to change your customer behavior, and then estimate the potential impact on the business numbers*." For example, increased use of a service translates to increase in revenue, and an increase in self-service means reduced costs in providing services.

The authors also call out for "*a simple and useful model*" with which to show design decisions affect revenue flows (Kimbell 2013, 159). The authors use a service blueprint, which is a grid depicting, on separate rows, the user journey, touchpoints[24] and also all backstage processes that support the providing of the service (Polaine, Løvlie and Reason (2013, 81, 93). As the authors note, "*Blueprints help to capture the big picture and interconnections*". However, as it is designed for another purpose, to show all the elements of an existing service, one could argue that it is not the most effective tool for showing the value of something that has not been provided yet. It can, of course, be used to design an ideal service, but this does not remove the fact that the focus is on the service, not on the revenue flows and their triggers. The authors also list (Polaine, Løvlie and Reason (2013, 163-169) some measurement frameworks such as the Net Promoter Score, but these are focused on comparing the ideal state with the current state with not much attention on how to remove the gap between the two.

There seems, in any case, to be a need for a deeper discussion on what the metrics are, what they are supposed to show and, most importantly, how to factor in the best ways to change the numbers for the better.

[24] Moments of interaction through a channel of contact, for example, e-mail or phone.

2.6.3 Value Proposition as a Means to Show the Value of Co-creation

Communicating the benefits of co-creation in a business context has to do with communicating the value of something, not only because a benefit implies a value of some kind but also because what is beneficial for a business is tied to the value creation process and business logic of the business. It is in place to remind here how the terms benefit and value as understood in this thesis. As noted earlier, benefit refers to "*a helpful or good effect, or something intended to help*" (Cambridge English Dictionary n.d.). Value (not in the sense of money or numbers but in the sense of importance), on the other hand, refers to "*the importance or worth of something for someone.*" (Cambridge English Dictionary n.d.) In other words, value is a much broader concept. It should also be noted that value creation is understood here in the sense it is understood in SDL, where service forms the basis of value creation. In SDL focus is in value-in-use, where value is created by those participating in a value creation process, instead of value-in-exchange, where the company creates the value and the customer consumes it (Edvardsson, Gustafsson and Roos, 2005; Vargo and Lusch 2004; Vargo, Maglio and Akaka 2008, 38). In fact, in SDL the company can only offer value propositions, as the customer is the one that determines the value (Vargo and Lusch 2004, 5-7, 11)[25].

In literature, the notion of communicating something effectively is discussed from many different perspectives, and indeed, the effectiveness seems to vary greatly based on the content and the context of communication. For the purposes of this study, there is need for a focus. In this case it is "*communicating the benefits of co-creation from a business point-of-view*." Furthermore, a mere list of the benefits does not seem to suffice, also the ways the benefits are in reality valuable to businesses need to be discussed.

As noted in chapter 2.4.1, it can be argued that any act of co-creation is value co-creation, as co-creation has to do with creating value for someone. As noted above, according to SDL, value is always created in collaboration and not alone by a company. Saarijärvi, Kannan and Kuusela (2013, 11) argue, that due to the multidimensional nature of VCC,

> instead of only stating that value is co-created, in order to enhance our understanding of value co-creation, it is essential to clarify for whom what value is co-created (what value there is for the customer and the firm), and furthermore, what kind of value is co-created (what kind of value)

When reference material concerning communicating value is searched in Google Scholar, several works come up mentioning a value proposition. It is used in the context of showing customers the value of something, i.e. customer value proposition. A value proposition is also part of a business model[26], which is a basic business tool. As Zott, Amit and Massa (2011, 12)

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[25] For further discussion on value in connection with SDL, see chapter 2.4.1.
[26] See for example Osterwalder (2012)

note based on their literature review concerning the concept of business model, "*[…] in this literature stream the business model is not a value proposition, a revenue model, or a network of relationships by itself; it is all of these elements together*."[27]

In her article, *Mastering the Art of Selling Service Design: Talking Points to Help Land Your Next Client*, Kendall Griffin (2020) lists "*Six Tips to Help You Sell Service Design*". Tip number 2 is titled "*Learn to Speak Your Client's Language*." Griffin Advices, among other things, to

> Analyse the market, understand their goals and objectives and take stock of their challenges and opportunities. Delivering a high-impact plan with a laser-focus on the business advantage of your efforts and how that ultimately translates into consumer conversion, acquisition and retention is the goal.

Perhaps the most effective way to show the value of co-creation is to show the connection of co-creation to the value creation of the business. In the words of Grönroos and Ravald (2011, 14), value propositions are "*suggestions and projections of what impact on their practices customers can expect*" and when actively offered to customers, also "*promise about potential future value creation*". Perhaps this could be turned around and used to show the value of co-creation, or value created when the benefits are achieved, to companies instead of by companies to customers.

It can be argued that the conventional view of value propositions as value promises that the seller gives the buyer in a hope that the buyer accepts it are better suited for the goods-dominant logic and its view of value in exchange[28]. In SDL however, more attention needs to be given to the interactive nature of all business transactions and the various stakeholders involved in value creation. The value propositions are also mutually adjusted and not merely delivered, which is more likely to lead to value-in-use. (Ballantyne et al. 2011, 203-204, 207).

Ballantyne et al. (2011, 206) worked with twelve executives to create a process for the crafting of a value proposition co-creatively. The process consisted of the following components:

1. Learning component: briefing
2. Action component: drafting of the propositions
3. Coordination component: testing and reconciling with others involved
4. Feedback component: reporting results and sharing experiences

Adapted to communicating the value of co-creation to businesses, the actors in the process would be the persons attempting to communicate the benefits and the business learning

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[27] For further discussion on business models, see next chapter
[28] For further discussion on the differences between the goods-dominant logic and the service-dominant logic, see, for example, Vargo & Lusch (2004) and Vargo & Akaka (2009), as well as chapter 2.4.1 in this thesis

about co-creation. The briefing would entail visualizations of the benefits of co-creation, the content of the proposition would be created with the help of previously grouped benefits and the success of the final proposition would later be measured with set indicators.

In their study Ballantyne et al. noted that the value proposition process forced the executives to "*confront hidden constraints and interdependencies between their firm and other firms and institutions*", they gained insight from stakeholder relations, and they also got to see the benefits of co-creation first-hand. One agency made changes that saved them over US$1 million annually. Most importantly, the executives were able to break free from a transactions-focused mindset and change it into a more co-creative one (Ballantyne et al. 2011, 206).

As Ballantyne et al. (2011, 209) note, "*a G-D logic orientation on marketing communication leads to unidirectional message making in which persuasive messages are crafted by sellers for mass broadcasting of what is of 'value' to a largely anonymous marketplace*". When communication is seen as a process, the knowledge generating power that a more interactive approach can have is put to good use. The new interactive mindset adopted by the executives in the study by Ballantyne et al. (2011) is better, according to the authors of the study, for creating innovative value propositions. This unidirectional-interactive dichotomy is akin to what Mayer (2005, 12) calls a division between information-acquisition and knowledge-construction views of learning. In the former, the learner simply adds the information to their memory like it was an empty vessel the teacher pours information into. In the latter they actively integrate the information with the knowledge they have and actively participate in sense-making. The latter Is more effective in promoting understanding.

Value proposition canvas

Value proposition canvas was created as an addition to the business model canvas (Osterwalder 2012), which is a visualization of a business model (Strategyzer n.d.)[29]. The purpose of the value proposition canvas is to match the needs of the customers with what a business has to offer. In the light of what has been discussed above, perhaps it could be used to match the needs of businesses with what co-creation has to offer.

The value proposition canvas focuses on the customer segment and the value proposition to help analyze how they match. These two parts are also integrated in the business model canvas (Osterwalder 2012). This integration takes the value proposition straight to the core of the purpose of the business. More than that, the value proposition canvas helps design great value and show customers how this value can help solve their problems. This communicative

[29] For further discussions on business models, see next chapter.

function, already discussed in the previous section on value propositions, could make it a powerful tool for demonstrating the benefits of co-creation.

A challenge, however, is that the value proposition canvas does not take into account the networked or ecosystemic nature of business and value creation (Äyväri and Jyrämä 2017, 11). To show its full potential in demonstrating the benefits of co-creation, it would need a complete reworking. This would be needed so that it would take into account not only the B2B or A2B (academia to business) aspect (instead of B2C) of demonstrating the benefits of co-creation, but also the multitude of ways the benefits or the value ensuing can be demonstrated (metrics etc.) and the multitude of factors affecting the way the benefits are realized (various groups of stakeholders etc.). It is, in any case, worth considering as the starting point for creating an effective way to communicate the benefits of co-creation.

Whether it be a canvas of some type or something else, there clearly seems to be a need for a tool for communicating the business benefits of co-creation. There is also a need to show the effect of the benefits and the value they lead to from a business performance point of view and metrics with which to track this performance. Attention should also be paid to the ecosystems created through co-creation practices and how value is created in these.

2.7 Co-Creating Circular Economy

In this chapter, circular economy is first discussed from a general perspective, then the focus is on the business opportunities it brings, after which circular economy business models and finally business ecosystems are discussed. When circular economy and its business opportunities are discussed from the perspective of co-creation, innovation and ecosystems enabling them, some of the themes discussed earlier are weaved in this chapter into one.

The intertwining of co-creation, innovation and ecosystems forming the content of this chapter is perhaps best illustrated by this quote from Reypens, Lievens and Blazevic (2016,1): "*To develop innovative solutions for complex societal and scientific challenges, organizations need to move beyond the boundaries of single firms and engage in collaborative networks*". It is all there, innovative solutions, complex challenges, collaborative networks. The future of business needs innovation, circular economy and business ecosystems. All of these benefit from co-creative development of new business models.

2.7.1 Defining Circular Economy

Kirchherr, Reike and Hekkert (2017) searched for definitions of circular economy in 148 articles and found 114 definitions. 83 of these were from 2013 and onwards. The most used definition appeared 11 times and was that of the Ellen MacArthur Foundation (2012, 7) which reads:

> A circular economy is an industrial system that is restorative or regenerative by intention and design […]. It replaces the 'end-of-life' concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse, and aims for the elimination of waste through the superior design of materials, products, systems, and, within this, business models.

They further noted that none of the three most frequent CE dimensions they detected, namely 'reduce, reuse, recycle', 'systems perspective', 'economic prosperity' and 'environmental quality', appeared in even the majority of the 114 definitions. Nevertheless, the authors form a definition of circular economy based on their analysis of the 114 definitions. They conclude that circular economy is

> an economic system that replaces the 'end-of-life' concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes. It operates at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and beyond), with the aim to accomplish sustainable development, thus simultaneously creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations. It is enabled by novel business models and responsible consumers. (Kirchherr, Reike and Hekkert 2017, 224)

The definition can be seen as a kind of a reworking of the Ellen MacArthur Foundation version cited above. It offers a broader view of circular economy with emphasis on processes, multi-level operation and a societal view. Both see business models as central, but whereas the Ellen MacArthur Foundation version mentions superior design, the Kirchherr, Reike, D. and Hekkert version does not mention design at all, only referring to operation and its aim.

Prieto-Sandoval, Jaca and Ormazabal (2018, 607) analyzed the content of 175 academic papers from between 1990 and July 2017 discussing the concept of circular economy. Based on their findings they argue that the definition of circular economy should include the following four components: "*1) the recirculation of resources and energy, the minimization of resources demand, and the recovery of value from waste, 2) a multi-level approach, 3) its importance as a path to achieve sustainable development, and 4) its close relationship with the way society innovates.*" Based on this they define circular economy as

> an economic system that represents a change of paradigm in the way that human society is interrelated with nature and aims to prevent the depletion of resources, close energy and materials loops, and facilitate sustainable development through its implementation at the micro (enterprises and consumers), meso (economic agents integrated in symbiosis) and macro (city, region sand governments) levels. Attaining this circular model requires cyclical and regenerative environmental innovations in the way society legislates, produces and consumes. (ibid., 613.)

Like Kirchherr, Reike and Hekkert, also Prieto-Sandoval, Jaca and Ormazabal see the division of circular economy into the micro, meso and macro levels important. In this study the main

focus is on the micro level and in the way organizations, especially SMEs can benefit from circular economy.

2.7.2 Opportunities and Challenges of Circular Economy

Whatever the definition may be, there is still a long way to a truly circular economy. Arriving one day at the destination requires a systemic change which requires participation from the whole society (Pantsar et al. 2016, 11, Tikkanen et al. 2018, 48). The circularity at the end of the transformation has several types of elements. These elements can be described and emphasized in different ways based on the perspective into circularity. The model described here is that of Sitra and it was selected, because it emphasizes the different types of actors and because it synthesizes with it the actions required and different kinds of loops.

Besides the participants there are different types of loops, one concentrating on the technical prerequisites, another on transportation and logistics, and so on. All of them have a different angle on making the use of resources circular, reducing emissions and other considerations (Pantsar et al. 2016, 13-14).

There are also the phases in the loops, which can be divided into the primary sector with raw materials, material processing, the manufacturing industry, distribution, retail, commercial actions between companies, the role of the consumers making consumption decision, and finally use of products and services (Pantsar et al. 2016, 11). All these are illustrated in Figure 10 below. Within these phases there are various kinds of circular processes, such as remanufacture, reuse and repair (UN Environmental Programme Circularity Platform n.d.).

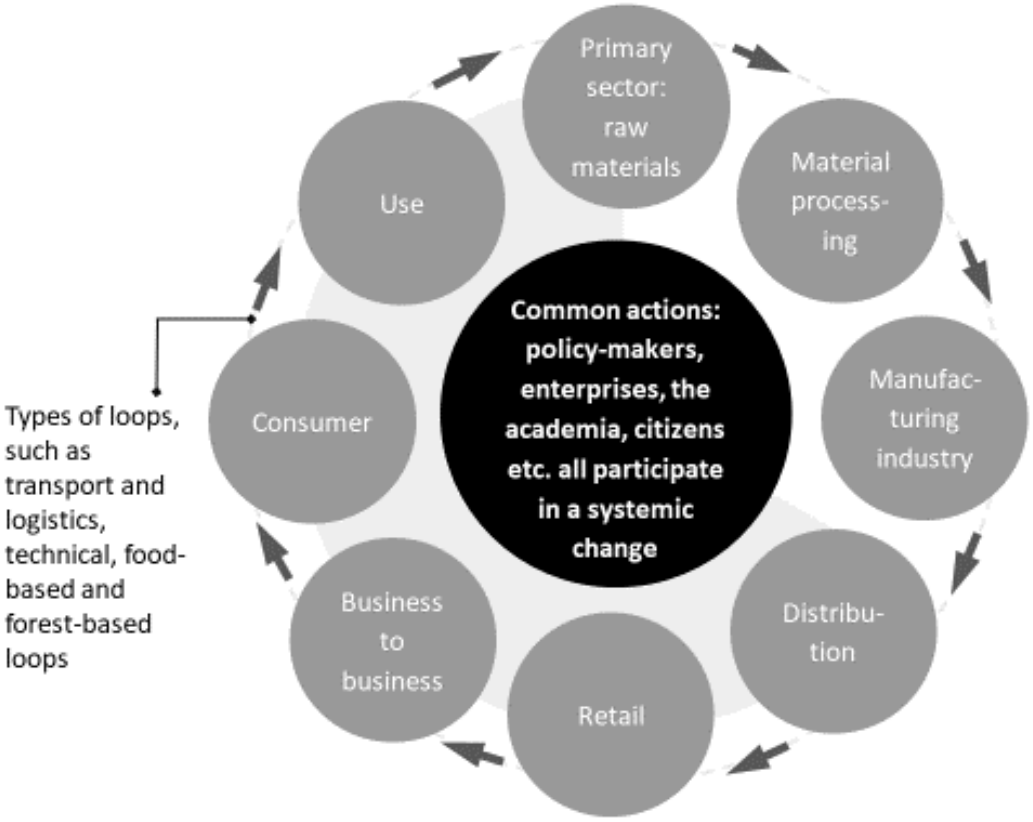

Figure 10: The circular system of circular economy (adapted from Pantsar et al. 2016, 12. Chart modified from a template designed by Slides Carnival, license CC BY 4.0)

Circular economy as a system aims at replacing unsustainable production methods and consumption and keeping material value in circulation as long as possible. This requires framework conditions that enable it. For example, economic instruments that support linear economy can slow the transformation considerably (Tikkanen et al. 2018, 1). Even economic instruments aimed at supporting transformation into circular economy can have negative effects as well, such as challenged related to political acceptability ((Tikkanen et al. 2018, 45).

Another challenge with circular economy is that it seems to be skewed towards the industrial perspective and leave the human perspective in the shadow. Even though the definition by Kirchherr, Reike and Hekkert (2017) does mention social equity, and many of the mentions they gathered mention terms like *social responsibility* (Kirchherr, Reike and Hekkert 2017, 222), in general, discussion on the social aspects of circular economy are trampled underfoot by all the discussion on resource-efficiency and business transformation. As Murray, Skene and Haynes (2017, 21-22) note, the social dimension remains at the periphery and the focus is on how manufacturing and service systems can be redesigned to make business sustainable. If not enough focus is given to the social aspects of circular economy, it may affect social equality in unforeseen drastic ways.

In the midst of the great transformation from linear to circular we should also take full advantage of the opportunity of "*integrating the end of inequality, unemployment and financial exclusion as part of this next collaborative capitalism model*" and ensure that people are at the very core and not outliers of the transformation. (Lemille 2017.)

Sustainability and circularity are not synonymous, even though they are often used interchangeably. Sustainable development refers to development that does not remove the chances for future generations to meet their need while it aims at meeting ours (European Commission (EC) 2019). It can include notions such as environmental standards, climate policies, sustainable growth and even circular economy, but it is not inherently circular. In fact, none of the sustainable development goals of the United Nations (2015) mention circularity, even when sustainable economic growth is discussed. Perhaps there is need to bring the economic side (circularity) and the people side (sustainability) closer together. The future is shaped by megatrends that reflect these requirements and the changes we are seeing. As Curley and Salmelin (2013, 5) note, "*OI2 is enabled by the collision of three mega trends digitization, mass collaboration, and sustainability.*" Circular economy and its business opportunities are part of all of these, one way or another.

Whatever the outcomes may be, the stakes are high. The European Union's (EU) Europe 2020 Strategy (2010, 5) sets three growth priorities, smart growth through knowledge and innovation, sustainable growth through efficient use of resources, green thinking and competitiveness, and inclusive growth through high employment. One of the headline targets is the investment of 3% of the EU's GDP in R&D. EU's current GDP is almost 19 trillion dollars (The World Bank 2019), which means the 3% is no small contribution to research and development. Already in 2017 the gross domestic expenditure on R&D (GERD) of the EU was EUR 317.1 billion, which was a 40% increase from 2007 (Eurostat 2019b). In the EU's current budgetary period, there is heavy focus on, among others, research and innovation and low-carbon economy (Eurostat 2019a, 118). At the same time, a study by the International Resource Panel (2017, 29), which is part of the United Nations Environment Program, shows that smarter use of natural resources could bring global economic benefits worth over US$2 trillion.

Circular economy can offer both positive environmental impact and new opportunities for employment (Nasr et al. 2018, 9). These opportunities could arise, for example, from new types of services based on sharing instead of buying to own (Burgon and Wentworth 2019, 73). It can also have the financial benefit for businesses of reducing the costs of waste disposal and material use (Burgon and Wentworth 2019, 77). On the other hand, it is important to keep in mind that the actual opportunities are tied to characteristics of the company attempting to seize them, such as customer base, business models and value-creation approach (Ministry of Economic Affairs and Employment of Finland (MEAEF) 2019, 113). Policy decisions can have a

strong role in supporting the change through, for example, facilitating co-operation. On the other hand, bad policy decisions can hinder the adoption of CEBMs (OECD 2019, 99).

Table 6 below lists some of the opportunities for growth that circular economy can bring globally.

Growth area[30]	**Growth opportunities**
Sustainable food production	New concepts of food production, food waste reduction and related service models, plant-based food products.
Intelligent transportation and new ways of moving	Service solutions and technologies for new ways of moving, new logistics solutions, solutions for reducing fuel consumption.
Built environment	Systems designed to optimize energy efficiency, concepts for repair construction, recycling.
Material cycles	Solutions for combining material flows, solutions for improving resource efficiency, solutions for more efficient use of by-products.
Nutrient cycles	Nutrient recovery and recycle, technologies related to water purification, optimization of nutrient use.
Technologies and services enabling circular economy	Recycling technologies, use of digitalization in analytics, optimization and so on, new services related to, for example, maintenance and repair, intelligent product design, lifecycle planning.

Table 6: Circular economy growth opportunities (adapted from MEAEF 2019, 46-48)

In the end, whatever the opportunities and challenges in circular economy may be, there is urgent need for new sustainable business models. For example, in 2019 EUs Overshoot Day, the day on which EU had used as much of the planet's resources as the planet can renew within a year, fell on 10 May. By the end of the year, EU had spent 2,8 planets' worth of resources (World Wildlife Fund 2019, 5-6). Circular economy is key in reducing the environmental impact of the use of natural resources (OECD 2019, 3). So whatever the opportunities are, they need to be seized. Whatever the challenges are, they need to be overcome.

2.7.3 Developing Circular Economy Business Models in SMEs

Based on their comprehensive literature review related to the concept of business model, Zott, Amit and Massa (2011, 3) concluded that there is no consensus among scholars on what a

[30] The names of the growth areas are translations of those in the original source.

business model refers to. The best we can do is to try to synthesize the different views to create a whole. Next, I will discuss two such attempts.

Shafer, Smith and Linder (2005, 200) analyzed 12 definitions of business model created between 1998 and 2002 and noted that none of them had been fully accepted. Together the definitions included 42 different components, building blocks as they call them. Based on the grouping of these components into four categories they conclude that a business model is a "*representation of a firm's underlying core logic and strategic choices for creating and capturing value within a value network*." The definition contains the four categories: strategic choices, creating value, capturing value and value network. Core logic refers to the "*internal consistency of strategic choices*" (ibid., 202-203).

The above categorization of the elements of a business model is similar to that of Al-Debei and Avison (2010, 360 and 364), who identify four primary business model dimensions, synthesizing 22 scholarly definitions of the concept derived from literature within the field of information systems. These four value dimensions are value proposition, value architecture, value network and value finance. These reflect, among other things, product or service offering, infrastructure, stakeholder collaboration, and revenue and pricing, respectively (ibid., 367-368).

Both mention value networks, emphasizing the importance of partnerships in creating value. Value proposition in the categorization by Shafer, Smith and Linder can be likened on a certain level to the strategic choices in the categorization by Al-Debei and Avison. And finally, value creating and value capturing in the Shafer, Smith and Linder is similar to the value finance dimension in the Al-Debei and Avison categorization. When taken to a more general level, these can be seen as forming the strategic, network and financial aspects of a business model. Only value architecture in the Al-Debei and Avison categorization is something that does not seem to have a counterpart in the Shafer, Smith and Linder model.

Interestingly, also Zott, Amit and Massa (2011, 12) seem to come to a very similar conclusion, stating that "[…] *in this literature stream the business model is not a value proposition, a revenue model, or a network of relationships by itself; it is all of these elements together*."

The implications of a need to adapt business models to enable transformation from linear to circular economy are clear and this will be discussed in this chapter. It is important, however, to also note the need for adapting business models to better fit the service-dominant business logic discussed in an earlier chapter of this thesis. From the SDL point-of-view a business model can be seen as a kind of template for value co-creation (Clauß, Laudien and Daxböck 2014, 272). This means, for example, that value propositions have to be designed with a strong focus on the customer's context and that the profit formula needs to take into account the value creation networks instead of internal value creation (Clauß, Laudien and Daxböck

2014, 275, 278). If the prerequisites are not met in an existing business model and a completely new business model does not come into question, the existing business model can either be extended (by adding new activities or expanding core processes) or revised (by removing an element from the existing business model and replacing it with a new one) to meet the needs (Cavalcante, Kesting and Ulhoi (2011, 1330-1333). This should be done taking into consideration the service-dominant logic, if this is selected as the business logic.

A company's transformation into a co-creative enterprise was discussed in an earlier chapter of this thesis. A business model is at the core of this transformation. Because a business model is what defines how value is created and in what type of organizational structures (Teece 2010, 192), it is important to develop it so that it supports innovation (Teece 2010, 172). As Cavalcante, Kesting and Ulhoi (2011, 1328) note, a business model needs to "*provide some stability for the development of a company's activities and, at the same time, to be flexible enough to allow for change*". In the context of open innovation, this is linked to the need for a company to balance the benefits openness can bring with the role of value capture in providing sustainability for the business (Chesbrough and Appleyard 2007, 71). There is also the need to align the interests of the network with that of the company. This can be achieved through a well-developed collaborative business model (de Man, Ard-Pieter and Dave Luvison 2019, 473). A collaborative business model can be based on, for example the sharing of networks, utilizing complementary capabilities of more than one company in value creation or dividing risks between a company and its contractor (de Man, Ard-Pieter and Dave Luvison 2019, 475-477).

The radical changes in business required by circular economy affect most aspects of doing business. Business model innovation is a way to facilitate this change. It helps re-conceptualize how value is perceived and created (Bocken et al. 2014, 43). This is especially important, because in circular economy value is strongly tied to sustainability and not only the profit-making endeavors of a company. Closing material loops and decreasing use of resources are just two of the several aspects that need to be taken into account (Antikainen et al. 2017, 1). Another aspect making business model innovation vital is competition. Businesses often face commoditization and need to think of new ways to lure more customers and keep their position amidst the competition (Vanhaverbeke, Vermeersch and De Zutter 2012, 14). Customers also need to be made a central part of the sustainable value chain.

Bocken et al. (2014, 42) analyzed 26 CEBMs for their dimensions and the characteristics of these. Based on this analysis, they identified six CEBM patters that have the potential to support "*the closing of resource flows*" circular economy aims at. These are: "*repair and maintenance; reuse and redistribution; refurbishment and remanufacturing; recycling; cascading and repurposing*". Another sustainability focus based on which a CEBM can be created is offered by the *ReSOLVE framework* created by Ellen MacArthur Foundation and McKinsey

Center for Business and Environment (2015). It is based on the three principles of circular economy of preserving and enhancing resources provided by natural capital, optimizing the use of these and fostering the effectiveness of systems connected to these. These are turned in the framework into six business activities, which are regenerate (the health of ecosystems), share (to maximize utilization), optimize (to increase efficiency), loop (to keep resources in the circle), exchange (replace). Together these activities form the ReSOLVE framework which can help in creating circular business strategies.

Even with similar basic principles and activities, CEBMs can vary greatly in, for example, scalability, the environmental benefits they bring, the efficiency of technologies they incorporate and cost-competitiveness (OECD 2019, 98, 100). It should also be noted that even if a business model might have benefits related to circular economy, it does not necessarily mean it addresses circularity in a systemic way, integrating it in its operations. In this case it is not a CEBM but a BM operating in linear economy and only implementing aspects of circularity, such as more sustainable product lines or processes (Charter and McLanaghan 2019, 90).

Not only in circular economy, but in general as well, companies increasingly need to move away from "*single-company performance models toward ecosystem-based performance-management systems*" (Ramaswamy and Gouillart, 2010, 251). It is more and more difficult in this day and age to be a monolith not dependent on collaboration within a larger cluster of some kind. This means taking into consideration different kinds of strategic processes and dynamics. More flexible and adaptable business models also bring possibilities, however, such as greater value capture through utilizing a key asset in not just the context of one company but in the context of a larger business ecosystem (Chesbrough 2007, 22). Open innovation 2.0, discussed in chapter 2.3.2, brings one possibility of developing ecosystemic business models[31], as it does not focus only on one company's value-creation method but also to the way any part of the ecosystem creates value for the ecosystem (Nevmerzhitskaya 2019).

Other considerations are, of course, how value is connected both to the value proposition and the value-creation mechanisms of the company and what resources and processes are essential for capturing this value (Vanhaverbeke, Vermeersch and De Zutter 2012, 14). Also, open innovation is not only a way to develop ways to create and capture value, it is also a way to do both of these (Vanhaverbeke, Vermeersch and De Zutter 2012, 54). In other words, when the concept of open innovation is integrated into the culture of an enterprise, it can be utilized in continuous value-creation evolution.

[31] Ecosystemic business models are here seen as "collaborative business models of companies and other organizations." (Nevmerzhitskaya 2019, 462).

In addition to what has been discussed above, there is also the size of the business to consider in developing CEBMs. In this thesis the focus is on small and medium-sized enterprises (SMEs), which best correlate to the size of the companies in the CIRC4Life project, and also have some other benefits linked to the transformation into circular economy, as will be discussed later. For this reason, large enterprises are ruled out. SME is here defined the way it is defined in the way it is defined by the EC (2010, 39):

1. The category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million.
2. Within the SME category, a small enterprise is defined as an enterprise which employs fewer than 50 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 10 million.
3. Within the SME category, a microenterprise is defined as an enterprise which employs fewer than 10 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 2 million.

In their in-depth interviews of SME managers who had developed successful open innovation strategies Vanhaverbeke, Vermeersch and De Zutter (2012, 10-12) found that while larger companies utilize open innovation as such, searching for ways to benefit from it and creating separate strategies for it, SMEs use open innovation to help them identify and take advantage of new business opportunities and increase returns. it is thus strongly linked to their overall strategic goals. Their collaboration differs from that of large companies for example in that personal relationships have a more central role and that their rules for collaboration are more informal. To the list of Vanhaverbeke et al. can be added all the basic characteristics of a business, such as customer base, operations, brand and so forth. All of these affect the development of business models and the scale of everything, for example innovation activities through co-creation.

For these reasons, the perspective into business model development and implementation in ecosystemic settings for example using open innovation needs to consider the size of the business. In this thesis, as mentioned earlier, the focus is on SMEs.

SMEs have both their unique opportunities and challenges when it comes to business model innovation. They do not have the same possibilities of scalability as large companies. Their resources and capabilities are limited, and they are more reliant on partnerships (Vanhaverbeke, Vermeersch and De Zutter 2012, 10), which means they are more vulnerable to changes in other organizations that are out of their hands. At the same time, the technologies are ever more complex and product life-cycles shorter. They don’t have the same kind of knowledge pool as larger companies (Rizos et al. 2016, 11). In this business environment innovations are also more important than ever, yet SMEs don’t have the same possibilities to innovate internally as large companies (Vanhaverbeke, Vermeersch and De Zutter 2012, 54).

All of these challenges effect SMEs transitioning into circular economy. As they do not have the resources and the technological know-how of the larger companies, they cannot adopt new technologies as efficiently and comprehensively as larger companies (Rizos et al. 2016, 12-13). Also, they need to follow circular economy trends more closely than larger companies, who can more easily adopt concepts as they see fit (Rizos 2016, 2).

As for opportunities, SMEs are more agile in how they can react to changes in markets, they can take better advantage of small markets created around new inventions and they are best placed to offer highly specialized services to create tailored customer experiences for smaller customer bases (Vanhaverbeke, Vermeersch and De Zutter 2012, 32-34). Besides reacting to markets, SMEs are also more agile in developing business models with improved value propositions and in making use of new business opportunities (Vanhaverbeke, Vermeersch and De Zutter 2012, 51). Large companies may not change their successful business models so easily but are more prone to just tweak existing business models to take circularity better into account. For this reason, SMEs can be more apt at driving radical change (Charter 2019, 29). When it comes to innovations in a circular economy setting, SMEs are often eager for growth through radical innovation, are specialized and create focused solutions (Salmelin 2013, 8). Perhaps for this reason the EC sees SMEs position as central in economic growth through innovation (Papadopoulos 2018).

There is much discussion on business model innovation and business models in the context of innovation above but let us take a closer look on co-creating business models. In this co-creation SMEs dependence on open innovation together with other partners is combined with their openness to collaborate with the same.

When we look at the development process of CEBMs, what is central is closing the loop, which requires participation from various companies forming an ecosystem. They need to have an understanding of the whole system, not only of their business. They also need to be effective in creating insight to tackle the new circular way of thinking about the economy. Finally, they also need to think about value creation and value capture in the networked context, where there are several instances needing motivation to put in the effort, meaning that it is crucial to identify value in each of their context (Antikainen et al. 3-4). All these benefits from a co-creative approach to doing business, where open innovation would be a dynamic tool for example for utilizing insight, producing innovative solutions, doing quick experiments and using collective creativity to think of new, more effective ways to collaborate within various multiple-stakeholder groups.

There are several different kinds of business model innovation processes for the development of CEBMs. A search in Google Scholar with the search phrase "*business model innovation process*" turned out 1010 results. The process can also have several rounds with multiple steps

and the tools, methods, participant selections, perspectives and focus can vary (Antikainen et al. 2017, 3). And this is even before we get into the specifics of industry, line of business, business goals and value-creation mechanisms, for example. There are also several types of methods and tools based on co-creation, or that can be used co-creatively, that can help in developing CEBMS, such as the Innovatrix Framework Schuurman et al. (2019), an innovation management process and a framework for workshops, business model sprints (see, for example Buck et al. (2017), the Business Model Kit designed by the Board of Innovation (n.d.) that helps, for example, in ideating different business models and getting a better picture of the stakeholders' role in value exchange, the COCO Toolkit designed by the Laurea University of Applied Sciences (n.d.) that helps in communication between stakeholders and in ideating service environments, several methods in the Circular Design Guide (Ellen MacArthur Foundation 2017) created jointly by the Ellen MacArthur Foundation and the design and innovation company IDEO, not to mention the basic tool of business model creation, the business model canvas first proposed by Alex Osterwalder (Osterwalder and Pigneur 2010).

As co-creation is at its most effective a central part of the operations of the company, a co-creative enterprise discussed in an earlier chapter of this thesis, it can have a crucial effect in the business model of the company. For example, developing a business strategy is traditionally thought to be in the hands of the executive level of an organization. Not so in a co-creative enterprise. The complex networked interaction in the business world today call for a co-creative process (Ramaswamy and Gouillart 2010, 207). This can, however, also introduce a fear of losing control, as governance is no longer in the hands of traditional boards but relies more heavily on stakeholder interaction (Hatch and Schultz, 2010, 596). This highlights the importance of communicating the benefits of co-creation so the risk of losing control seems worthwhile.

On the other hand, because of its scalability, co-creation can be used in smaller parts of business processes as well. This make it more attractive to SMEs, who do not necessarily have the resources to transform their whole business using co-creation at a go, but might feel it easier to use aspects of co-creation in some parts of the operation, focusing, for example, to stakeholder interactions, integration of processes or efficient use of resources.

It seems more focus needs to be given to the way co-creation benefits business model development and not innovation activities alone. In the words of West and Bogers (2014, 26), "*Many researchers focus on sourcing innovations while ignoring profiting from those innovations.*" At the same time, revitalizing and adapting business models and searching for new ways to create value are things that motivate businesses to co-create (Ind, Trevail and Fuller 2012, 44). Nevertheless, how innovations are integrated into the business operations and by what route they travel from ideation to commercialization is an important consideration (West and Bogers 2014, 32).

The benefits of co-creation are connected to developing business models not only in that they can help in doing so, but also that it can be integrated in the business model so that it helps co-create and gain the benefits of co-creation also in the future. In the transformation from linear to circular this seems all the more crucial, as effective collaboration in different forms seems a prerequisite in reaching circularity.

When the business benefits of co-creation identified in chapter 2.5 are considered in connection with what has been discussed in this chapter, improved collaboration, improved user satisfaction, improvements to the strategy creation process, information on customer needs, innovation success, insight, more efficient development process, more efficient formulation of strategy, opportunities, pooling resources, quicker implementation of strategy, reduced sustainability risk, richer view of reality and strengthening of areas of weaknesses are just some of the benefits of co-creation that might be beneficial in CEBM development.

2.7.4 Business Ecosystems Driving Innovation

Cambridge English Dictionary (n.d.) defines an ecosystem in the sense of business commerce as "*a group of businesses or business activities that affect each other and work well together*." Vargo and Lusch (2016, 10) use the term ecosystem to denote marketing systems creating a service ecosystem which is based on mutual service provision. Based on the SDL view that "*all humans exchange services*", they see all humans as service providers and beneficiaries and services everywhere, meaning that services permeate all ecosystems. According to them, all economies are service economies and can be presented in terms of service ecosystems creating and shaping markets (Lusch, Vargo and Gustafsson 2016, 2960). This is quite a broad view of the ecosystem, even though service ecosystem is not synonymous to business ecosystems.

Tsujimoto et al. (2018, 49) take a more management point of view and, based on 90 academic studies that use the concept of ecosystem in the field of management, differentiate between four research streams. These are industrial ecosystems, business ecosystems based on organizational boundaries, platform management and the multi-actor network perspective.

Another useful classification is provided by Katri Valkokari (2015, 18), who differentiates between a business, innovation and knowledge ecosystem. In business ecosystems the focus is relationships and economic outcomes. In innovation ecosystems the focus is on "*mechanism and policies fostering the creation of innovative startups around so-called regional hubs or clusters.*" In knowledge ecosystems the focus is on knowledge creation and retention through research and collaboration. Innovation ecosystems can be seen as a mechanism integrating

the knowledge co-creation of the knowledge ecosystem to the value-co-creation of the business ecosystem (Valkokari (2015, 22).

In this thesis the focus is on business ecosystems, but also different network aspects, such as the role of innovation ecosystems feeding into the business ecosystems, are a consideration form the point of view of co-creation. Even networks, however, are discussed from the business perspective and not from the perspective of collaboration between individuals or the wider community.

Some aspects of ecosystems that differentiate them from innovation systems, supply chains and strategic alliance networks are, that they are organic networks affected not only but positive aspects but also negative ones such as predation and parasitism, that they have actors with each their own purposes guiding them and allowing for possible unintended results on the ecosystem level and that they are defined by the limits of the system itself, not the limits of countries, clusters or relations of any other kind (Tsujimoto et al. 2018, 49-50).

The concept of ecosystem also includes all the actors within the boundaries of the ecosystem (Tsujimoto 2018, 55). It is important to consider, who are the participants in the ecosystem and what is their role. Different actors have different attributions, their different ways of decision making have various effects on the ecosystem, as does their behavior affect the ecosystem in different ways. Differences in actions affect the performance of the ecosystem as well. Not to mention the effect of different roles, such as value-chain partners, research partners and so on. It can be said that everything starts with one person doing something, then connecting to networks of personnel, suppliers, business partners, policy makers and so forth. The role of the participants in ecosystems is considerable.

Besides the participants and their roles, there are other elements such as the structure, processes, interactions, platforms used, value-creation mechanisms, rules, decision-making processes and size. These, again, can have different levels. For example, the level of knowledge sharing within business ecosystems can be listed based on weak/strong ties, formal/informal relations, central actor /no central actor (Wulf and Butel 2016), level of openness, knowledge exploitation and learning mechanisms (Wulf and Butel 2017). The topology can also be viewed in the other direction, not deeper but wider. For example, the relations between companies can be viewed as part of a broader networked structure and institutional settings that can affect the possibilities to innovate, for example (Vanhaverbeke 200, 206-207).

From a system perspective, the concept of value creation becomes even more elusive than it is in SDL in general. When value is co-created between customers and firms in the context of their complex networks, value is experienced in a dynamic value-creation space that gives the value its context and it cannot be a fixed entity existing outside of it. (Vargo 2010, 26). When value is created within the ecosystem, also value capture becomes more complex than

in a single-business setting. It should be noted here that value capture is note the same as value creation discussed in chapter 2.4.1. As Lepak, Smith and Taylor (2007, 181) argue, "*the source that creates a value increment may or may not be able to capture or retain the value in the long run.*" The value can, in fact, be captured by another actor, a phenomenon the authors call "*value slippage*". This value slippage can also benefit the society as a whole (Lepak, Smith and Taylor 2007, 181). Perhaps this slippage could be seen as beneficial and something businesses are partly intentionally aiming at in a circular economy setting, driven by the motivation to make the world more sustainable. What is important is to align expectations within the ecosystem and make motives and incentives clear. Then VCC can better lead to value capture for all.

Co-destruction of value can take place in the ecosystem as well, when value-creation fails. Järvi, Kähkönen and Torvinen (2018, 68) identify eight reasons for a failure of VCC or decline in well-being: "*absence of information, an insufficient level of trust, mistakes, an inability to serve, an inability to change, the absence of clear expectations, customer misbehavior and blaming.*" For example, the customer being dissatisfied due to not getting more sustainable solutions because of the company's inability to change could be a form of value co-destruction. It should be noted, however, that what means value destruction for one can mean value in-use for another.

In circular economy, the role of business ecosystems is perhaps more crucial than in many traditional industries in the linear economy, because it involves systemic change that is a joint effort. Also, as Aarikka-Stenroos and Ritala note (2017, 1), there is a shift underway, a shift from networks to ecosystems, which "*reflects the increased connectivity, interdependence, and co-evolution of actors, technologies, and institutions*". The ecosystemic perspective involves understanding of the networks partners are connected to, coordination of activities, processes and complex value-creation mechanisms within the system, as well as the ability to adapt in a less stable business environment (Aarikka-Stenroos and Ritala 2017, 8-9). The wicked problems of the society, to which circular economy can be one major solution, require broad collaboration to be solved. The more efficient this collaboration is the better. Co-creation is a tool to facilitate this collaboration. In circular economy, ecosystems created around material loops solve problems in a way that would not be possible for single organizations. Co-creative methods could be used to improve collaboration among the stakeholders of these ecosystems (Nevmerzhitskaya, Purola and Haapaniemi 2019).

Another challenge concerning business ecosystems in circular economy is the fact that such a great deal of the concepts are so new, there is as yet no clear understanding how their value and also the risks related to them are shared in the end (MEAE 2017, 13). There is also the wider context of different considerations for value creation. According to the (Nasr et al. 2018), the circularity objectives are linked to three system requirements: "*(1) The ability to*

create value; (2) The ability to protect and preserve value; and (3) The ability to easily and cost-effectively recover value." This has implications for product and system design, whether it be designing for a long product life cycle, keeping products in the system as long as possible, slowing material flows or something else.

As in the case of business model development, also in the activities in business ecosystems, co-creation could be used to enhance transformation from the traditional ways of doing business to the more evolved ones. For example, as Ritala et al. (2013, 264) note, the evolution from subcontracting to more complex innovation settings with cross-enterprise collaboration. The challenge is here, that there is not enough experience of facilitating collaborative innovation in such complex settings. Ritala et al. refer here to innovation ecosystems, but the same could be said for business ecosystems needing to manage their innovation activities. Understanding of co-creation and co-creative tools such as resource and ecosystem maps could help facilitate this type of activities.

3 Development Project Principles and Process

Service design and, more specifically, business design is used as a framework for the development work in this thesis. In this chapter, service design and business design are first introduced, after which the design process model and the methods and tools used are described.

3.1 Service Design

Service design, which has its origin in industrial design (Polaine, Løvlie and Reason 2013, 18), is "*the practice of designing services.*" (Service Design Network n.d.). The Service Design Network describes service design as "*Service Design is a collaborative process of researching, envisaging, and then orchestrating experiences that happen over time and multiple touchpoints.*" Through co-creative methods, it aims at generating value both for the customer and/or user and the service provider. From its human-centered stance it combines the different perspectives related to offering services and improve these to create a better customer or user experience (Service Design Network n.d.).

According to (Kimbell 2013, 156-157), service design has the following key characteristics: 1) focus on experience and interactions across time and locations, with users positioned at the centers of these, 2) use of journey maps, blueprints and other artifacts to help conceptualize challenges, and 3) constant zooming in and out between the granular details and the grand narrative to keep all aspects affecting the development process in sight. The implications of these for business design are that 1) attention should be given to the modes of engagement, 2) teams should be helped to understand each other's work and how their own work relates

to the work of others, and 3) both the micro and macro levels of organizational structures and functions should be kept in mind.

The above characteristics can all be seen as manifestations of what Marc Stickdorn and Jakob Schneider describe Int their book, *This is Service Design Thinking* (2011), as the five principles of service design:

1. User centered – it aims at understanding the user and/or customer and their experience.
2. Co-creative – it involved stakeholders in the process and makes use of collective creativity.
3. Sequencing – It sees services as part of sequences of processes and events.
4. Evidencing – It aims at visualizing the service experiences and making tangible what is abstract.
5. Holistic – Considers service environments, organizational structures and interrelations.

In a design process, the focus on the users manifests itself in the form of empathy, eagerness to find out more about the unique situation and experience of the user and readiness to keep the perspective of the user in mind at all stages of the process. The co-creative stance means that different stakeholders take part in the design process, and their ideas are utilized as much as possible in the development work. Sequencing means that the solution is seen as an element linked to a context, where it forms only a part of the sequence forming the user journey. Evidencing means creating visual artefacts throughout the process to make the insights visible. Lastly, holistic means the solution is seen in the context of the commissioner, customers, users and other stakeholders.

3.2 Business Design

In this thesis, business design is understood as a service design approach to business. It is a fusion of the best practices of business, such as strategic planning, and design-derived methods and mentality, such as design thinking and innovation processes (Fraser 2012, 1-2). As the thesis has a strong business focus and the design process is related to business models instead of particular services or other more limited targets of design, business design seems the best approach.

Service design has many similarities with business management. These include focusing on the customers, utilizing customer insight to refine services and studying service interactions to find new ways to improve (Polaine, Løvlie and Reason 2013, 156-157) and developing business concepts (Fraser 2012, 89). Service design is also inspired by many of the basic functions of organizations, such as marketing, human resources and change management (Polaine, Løvlie and Reason 2013, 156-157). However, in service design the creative processes involved in

these activities are led more effectively than what can be accomplished through the traditional analytical and deductive methods (Fraser 2012, 7, 89).

When business is approached from the design perspective, a wide selection of creative methods become available (Azabagic and Karpen 2016, 8). Methods used in the development process can be used to create custom-fit practices for each organization and its culture and structure (Fraser 2012, 3, 24) to solve its unique business challenges (Azabagic and Karpen 2016, 8). Service design supports the development process through a more tangible take on insights, concepts and scenarios (Reason, Løvlie and Flu 2015,89).

The key characteristic of service design described in the previous chapter might sound familiar to anyone developing business. What is unique to service design, however, is the systemic and hands-on perspective. As L. Kimbell (2013, 156-157) put it: "*Service design is about people, technology and stuff, processes, and the intersection of all these in the day-to-day operations of any organization in the service of value creation, as defined by its employees, stakeholders, customers, users, regulators, partners and competitors.*"

In business design, design thinking[32] is taken to the level of strategic planning and made part of the company's innovation processes. This way it has an effect on how the company handles its strategic decisions and work as teams. It is something with which to boost traditional business planning and development (Fraser 2012, 2-3). With business design it is possible to capture value propositions, value capture models, resource configurations and allocation of responsibilities in value systems, for example (Schaffers et al. 2007, June). However, the thinking, methods and tools of business design can be integrated into any design process and used any time during the process as they are or as tailored based on specific need, whenever there is a desire to focus on the business-side of design (Fraser 2012, 24). Hence, it is mainly a matter of focus and also a matter of scale.

For a design solution to be successful, it needs to take into account not only the wishes of the customers, users and other stakeholders but also the business realities. It needs to be considered, what is viable for the business in terms of, for example, cost and resources needed, and also what is feasible in that the solution can also be implemented with the abilities at hand. Through a design process, this is all managed in an effective way (Azabagic and Karpen 2016, 169).

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[32] In the words of Tim Brown (2008, 86), who coined the term *design thinking*: "Put simply, it is a discipline that uses the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity."

3.3 Double Diamond Design Process Model and Its Application in the Study

The Design Council's (n.d.) Double Diamond design process is used as the framework in the development work included in this thesis. The process, developed by the UK-based Design Council (2015,6) is made of four phases: "*Discover Define, Develop and Deliver*". In the process, phases where thinking is broadened alternate with phases where options are narrowed down. This structure ties the process to the broader context of design thinking, where ideation is "*movement from the divergent phase that is the source of our inspiration to the convergent phase that is the roadmap to our solutions*" (Brown 2009). The four phases and the broadening-narrowing movement are illustrated in Figure 11 below.

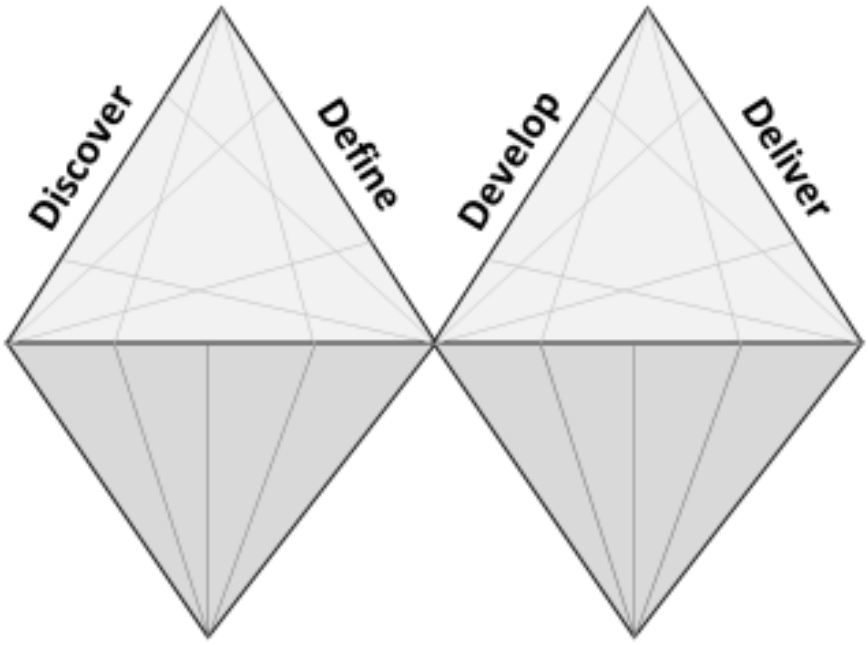

Figure 11: Double Diamond design process model (adapted from the Design Council 2015, 4)

The key elements of each phase could be summarized as follows:

1. Discover: gathering insight, getting inspired, identifying needs, outlining ideas.
2. Define: making sense, prioritizing, summarizing, framing the challenge.
3. Develop: creating, drafting, testing, revising, improving, refining.
4. Deliver: evaluating, finalizing, approving, launching.

(Design Council 2015, 7).

In the exploratory Discover phase both qualitative and quantitative methods can be used in researching the landscape within which the start of the design path can be found. The exploration can involve both more direct ways of discovery, such as engaging with stakeholder

groups, and gathering information in more indirect ways such as analyzing broader phenomena like trends or going through previous discoveries. In the Define phase the insight gathered in the previous phase is used to plan the actions and focus of the design endeavors and to align these with business objectives. The planned actions are carried out in the Develop phase, where the solution is created and tested within the framework or the guiding elements created in the previous phases, such as the insight, the plans and the focus. In the last phase, the Deliver phase, the solution is launched. (Design Council 2015, 8-9).

In 2019 the Design Council launched a revised version of the DD model. During the 15 years of the existence of the model the challenges the solving of which it guides have become trickier and more complex. The process itself is not as linear as the model assumes. Also, in addition to the process, the conditions, including the attitudes of the leadership, need to be such that they enable the free flow of the design process. (Drew 2019).

The new version of the DD model is illustrated in Figure 12 below. The four phases at the core are the same, but the above-mentioned challenges, for example, have been addressed. The non-linearity is emphasized with attention drawn to iterations. The enabling conditions are illustrated by the grey area around the Double Diamond and the complexity of the challenges are addressed with the design principles that guide the design process when the way is dark. The additional circles of challenge and outcome emphasize the problem-solving aim of the design process. The process is not detached from the realities outside, lonely steps of ideation, but an answer to a call.

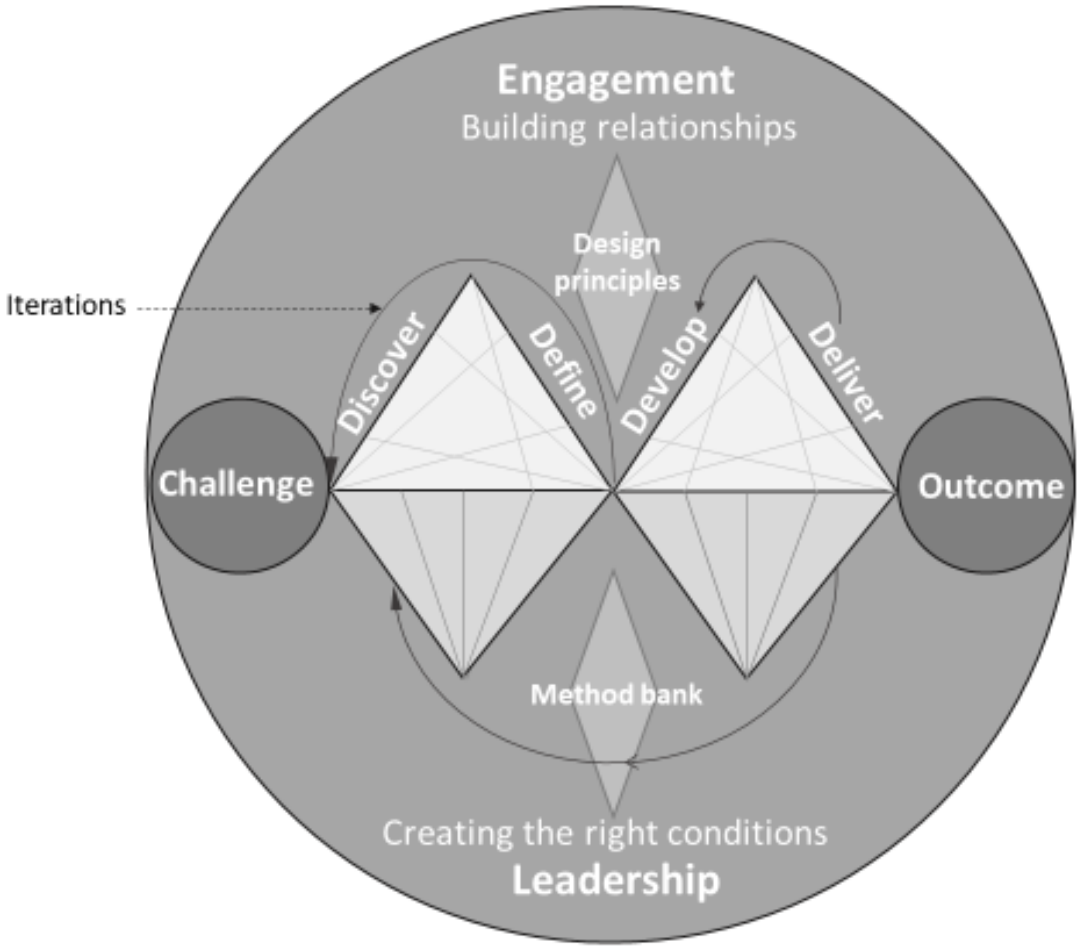

Figure 12: Design Council's new framework for innovation (adapted from Design Council, 2019)

The new framework for innovation seems to emphasize the systemic aspect of design. Instead of a line from A to B it is "*a system of spaces*" within which related design activities take place and form not a path of steps but a "*continuum of innovation*". The architecture of this space may seem chaotic for someone used to business activities where processes are marked by milestones on a linear path (Brown 2008, 88). A thriving innovation culture requires stepping away from managing project and ideas to a more holistic view of creating a culture that nurtures the breeding of new ideas (Rehn 2019, 94). This notion is emphasized in the new model linking the design process to the right environment and leadership.

In business design the context of the design process is the business case, as illustrated by Figure 13 below. Also, the assumptions are emphasized, as an important question for the business designer to answer is: "*what assumptions can we identify as critical to the success of our business case*"? These assumptions should be addressed throughout the process (Azabagic and Karpen 2016, 179). For example, in the development work of this thesis the key

assumptions could be stated as: co-creation is beneficial to business operations, there is not enough understanding of the business benefits of co-creation, businesses are interested in increasing their understanding of the benefits of co-creation, a design solution could help increase this understanding, and increased understanding of the business benefits of co-creation can help increase business success.

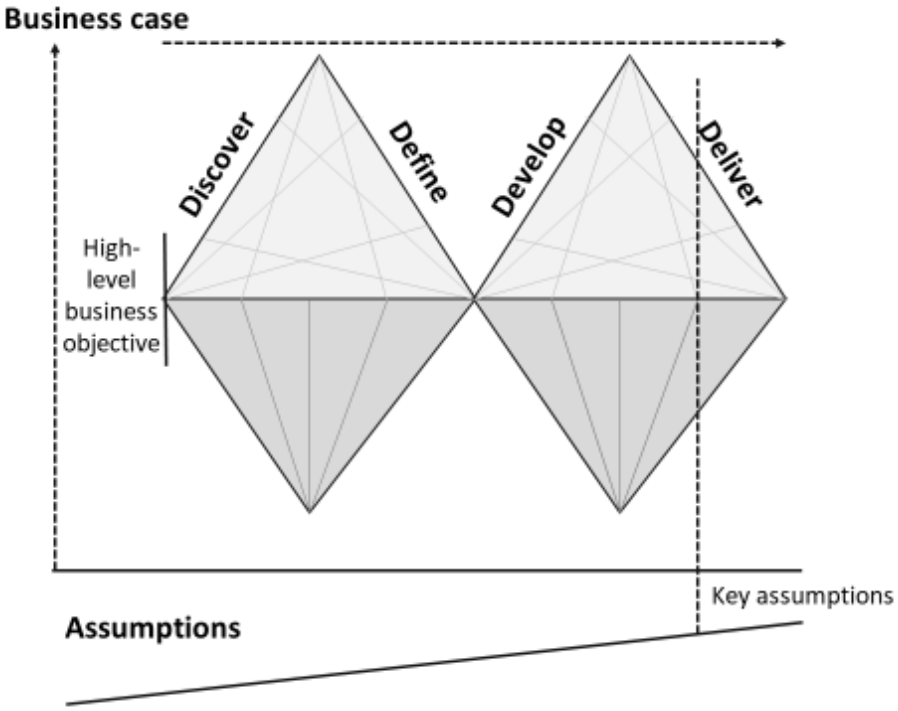

Figure 13: The Double Diamond design process from a business perspective (adapted from Azabagic and Karpen 2016, 179)

With the principles of the basic DD model and the new framework, the business model focus and the development framework of the CIRC4Life project as the basis, using the DD model also as the framework of the development project of this thesis seems an obvious choice. It must, of course, fit the purpose of the development work itself, for which reason the activities for its use in the work are outlined below. Only the process itself is described, not what turned out to be the actual activities and methods. These are discussed in later chapters.

1. Discover: Basic observations will be recorded based on the research questions. Relevant information might include ideas, concepts and behavior connected to attitudes toward co-creation. Stakeholders will be interviewed.
2. Define: Interviews conducted in the previous phase as well as reference material concerning work already done within the project is analyzed. Service design tools will be

used to visualize findings. The main data analysis method used will be content analysis. The analysis phase will form a basis for the development phase carried out later.

3. Develop: Based on material gathered in previous phases, solutions will be ideated in a workshop engaging stakeholders and experts from different sectors. The wider aim is to develop a solution for effectively demonstrating the business benefits of co-creation. The methods used will be selected based on the finding of the previous phases.
4. Deliver: A concept of the ideated solution will be created and tested on the focus group. Finally, it is evaluated how the solution helps change attitudes toward the benefits and usefulness of co-creation.

3.4 Chosen Design Methods and Tools

To make the description of the design process in the next chapter more fluent and easier to follow, all the design tools used are described in this chapter and any descriptions of the tools and methods, other than short mentions, are omitted from the next chapter.

It is important to differentiate here between a service design tool and a service design method, as it seems these are often used interchangeably in the field of service design. The way the terms are understood in this thesis follows the below description by Alves and Nunes (2013, 218).

> A methodology is a set or system of methods, principles, and rules for regulating a given discipline. A Method is an established, habitual, logical, or prescribed practice or systematic process of achieving certain ends with accuracy and efficiency, usually in an ordered sequence of fixed steps. A tool is anything used as a means of accomplishing a task or purpose whereas a technique is a systematic procedure, formula, or routine by which a task is accomplished.

In other words, what is described in this chapter are the tools and methods used to accomplish the tasks during the development project. Everything else is described in the next chapter.

Questionnaire

Questionnaire is a list of questions that is sent to the target group in order to get their responses concerning a certain subject. The information gathered can be qualitative or quantitative, and the questions can be anything from those requiring fixed yes/no answers to those that require an elaborate open-ended reply. (i-design n.d.).

Empathy map

Empathy map is a tool created by a company called XPLANE as part of a design toolkit. There are various versions of the empathy map available, but the core idea is to develop empathy for the customers/users (Gave 2017). This helps create better understanding of

customers'/users' behavior, thinking and other more individual characteristics that go beyond general attributes such as demographics. The empathy map charts what the customers/users experience in their environment and how it makes them act (Osterwalder and Pigneur, 2013, 131). There are several types of empathy maps with different emphasis. The one used in this thesis is a based on that by the Nielsen Norman Group (Gibbons, 2018) and is illustrated in Figure 14 below.

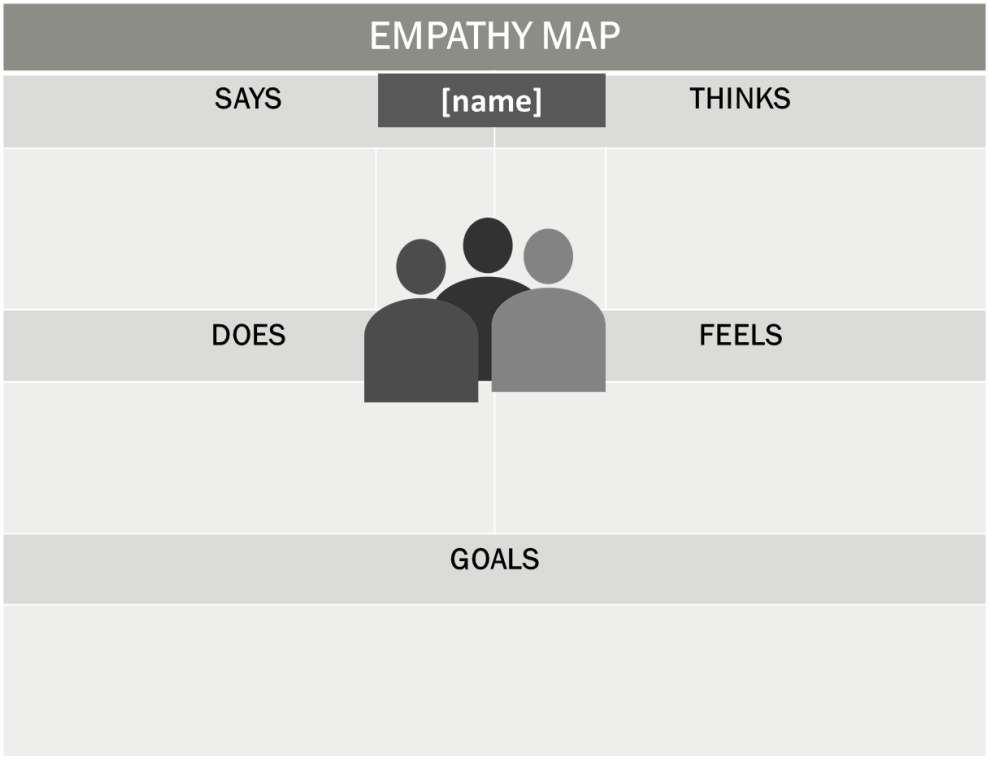

Figure 14: Empathy map used in the development work. Adapted from Gibbons (2018)

In this version of the empathy map, the following sections are used:

- Says: What does the stakeholder tell others, what might be in conflict with what he/she thinks (Osterwalder and Pigneur 2010, 131)
- Thinks: What is important but left unsaid, what keeps him/her awake (Osterwalder and Pigneur 2010, 131)
- Does: What is the stakeholder's attitude, how does he/she behave in public (Osterwalder and Pigneur 2010, 131)
- Feels: What moves the stakeholder Osterwalder and Pigneur 2010, 131), what bothers him/her, "*How does he/she feel about life*" (Ferreira et al. 2015)
- Goals: What are the stakeholder's dreams and aspirations, what does he/she want to achieve Osterwalder and Pigneur 2010, 131)

A planning model for content strategy

"*A planning model for aligning content to information needs and emotions*" is a tool that has been created by Pickle Jar Communications and that is used in creating a content strategy. It helps align content to a particular group of content users so that the content both matches their information needs and builds connections with the company creating the content. It is a way to "*sense-check whether your content really is serving your audience*". (Playle 2017).

Role play and bodystorming

Role-playing is a way to act out a scene where a user interacts with a service or the service environment. It is a way to get more intuitive responses that help refine the service (Design Council 2015). It is a way to demonstrate the value in a particular idea (Service Design Tools n.d.) test it by acting it out (IDEO Design Kit n.d.). Body storming is a form of role playing. It is a "*physical exploration and discovery method*" where participants take roles and act out a scene related to a service, for example a customer service event or the interactions of an electronic application (Stickdorn et al. 2018, 121-122).

Brainwriting

Brainwriting is an idea generation method. The participants write down as many ideas as they can think of related to a predefined challenge or question. The ideas are then discussed together (Urban Nature Labs n.d.)

Wild affinity map

Affinity map, or affinity diagram as it is also called, help gather meaning from all the ideas generated in an ideation session. It helps detect patterns of thinking by creating clusters out of information. The aim is to give a structured format to the ideas. The ideas can be sorted in different ways into visual groupings based on affinities. (Session Lab n.d.).

Forced connections

Forced connections is a method that combines two seemingly unrelated notions and forces a connection between them, thereby creating new ideas, perspectives and approaches (Kanji and Asher 1996, 142-143).

Yes but, yes and…

In this method, which is done in pairs, something is discussed first with the replies always starting with "yes, but…" and then, after a while, always starting with "yes, and…". The method is used, for example, as a way to ideate (Stickdorn et al. 2018).

Elements table

Elements table is a simple matrix with subcategories of a theme or subject. On each row variations, alternatives or possibilities are ideated. This method can be used both for creating new ideas and for aggregating results from other methods. It can also be used to combine ideas and prioritizing them. (Kantojärvi 2012, 142-143).

4 Results

This chapter describes the results of the design process, starting with customer insight and advancing to a description of how the design process went in practice.

4.1 The Case Project

In this chapter the CIRC4Life project is first introduced and then its different aspects are discussed in light of the knowledge basis of the thesis. The discussion on the project is based on qualitative content analysis of all the material that has been gathered by and that has been at the disposal of the thesis author. Following the methodology of qualitative content analysis, the content has been divided into content analytical units (Mayring 2015), which are the themes of co-creation, circular economy and business models, for example. The research questions stated in chapter 1.2 guide the text interpretations. Deductive category formation has been used, where data has been reviewed for content and coded based on how it corresponds to the predefined categories (Polit and Beck 2012, 14, 80). Thematic analysis has been used in interpreting the material, integrating detected themes into a unified whole simultaneously with the deductive categorization (Polit and Beck 2012, 591).

It should be noted that the material used as the basis of this chapter and the findings presented in this chapter are subject to subjective interpretations of the author. Other researchers might interpret the data in other ways.

4.1.1 Circ4Life and the H2020 Framework

The commissioner for this thesis is Laurea University of Applied Sciences and more specifically the EU-funded project CIRC4Life.

CIRC4Life or *A circular economy approach for lifecycles of products and services* is one of the over 28 thousand projects funded under the EC's Horizon 2020 Framework Programme (H2020). H2020 is a EUR 77 billion funding program that concentrates on research and innovation (CIRC4Life 2018; Horizon 2020; EC 2014). Its three pillars concentrate on science, industrial leadership and research that helps deal with societal challenges (Salmelin 2013, 4). The goal of the program is, among other things, to ensure that Europe "*removes barriers to innovation*" and creates ways in which innovation activities between public and private sectors become easier (Horizon 2020). Even a larger portion of the funding comes from industrial partners (CIRC4Life n.d.-d).

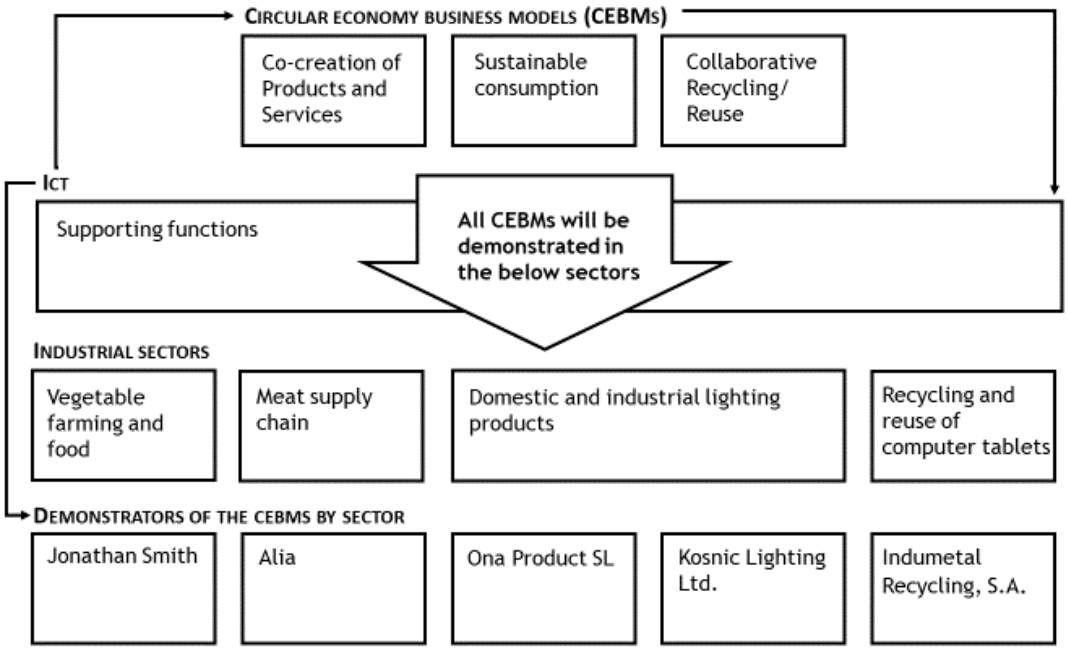

Figure 15: Business models, sectors and companies in the CIRC4Life project (illustration created by the author of the thesis based on CIRC4Llife, n.d.-e)

CIRC4Life has a consortium of 17 partners across 8 European countries (CIRC4Life n.d.-d). The aim of the project is to develop three business models in four industrial sectors based on circular economy. The three CEBMs will be demonstrated in the four sectors by five companies (CIRC4Life, n.d.-a). To support the CEBMs, Information technology and traceability solutions as well as an eco-point method will be developed. They will support data processing, capture of product information and monitoring of ecological impact, respectively (Su, Wu and Chai 2019). The three CEBMs that will be created within the CIRC4Life project, the four industrial sectors they will be demonstrated in and the five companies that will demonstrate them, as well as key supportive functions are presented in Figure 15 below[33].

The project, which started in May 2018 and will end, according to current information, in April 2021 (CIRC4Life n.d.-a), consists of so-called work packages (WP), the objectives of which vary from aspects of the business models such as recycling and eco-shopping to more technical subjects such as traceability and ICT solutions to support the business models (CIRC4Life 2019b). Laurea, the commissioner of this thesis, leads WP7 which concentrates on stakeholder interaction and end-user involvement. Co-creative methods are used to engage

[33] For an alternative visualization, see CIRC4Life n.d.-d

stakeholders and create new concepts and approaches (Nevmerzhitskaya, Santonen and Purola 2019).

The tasks within WP7 include developing a Living Lab concept to be used in the project, leading co-creative ideation, conceptualization, testing and feedback activities and involving end-users in the co-creation and demonstration of the CEBMs. Co-creation activities are also performed in Innovation Camps, which are a venue to engage quadruple helix stakeholders to involve them in the development process. During the camp, the stakeholders ideate solutions and develop concepts for use in the business models. The innovation camp is also used for validation of the solutions and evaluation of their profitability (CIRC4Life 2018a, 10, J. Nevmerzhitskaya, personal communication 4.6.2020). As can be seen from Figure 16 below, WP7 is an integral part of all activities concerning the development of the three business models. The cycles at the bottom of the figure represent the development rounds through which the solutions evolve in the project. They are part of the iterative development approach that underlies the co-creation activities in CIRC4Life (CIRC4Life 2019a, 7). The four phases of the development rounds are: explore (research context), co-create (development of solutions with stakeholders), implement (prototyping and testing) and evaluate (feedback for further development) (Purola et al. 2019, 17).

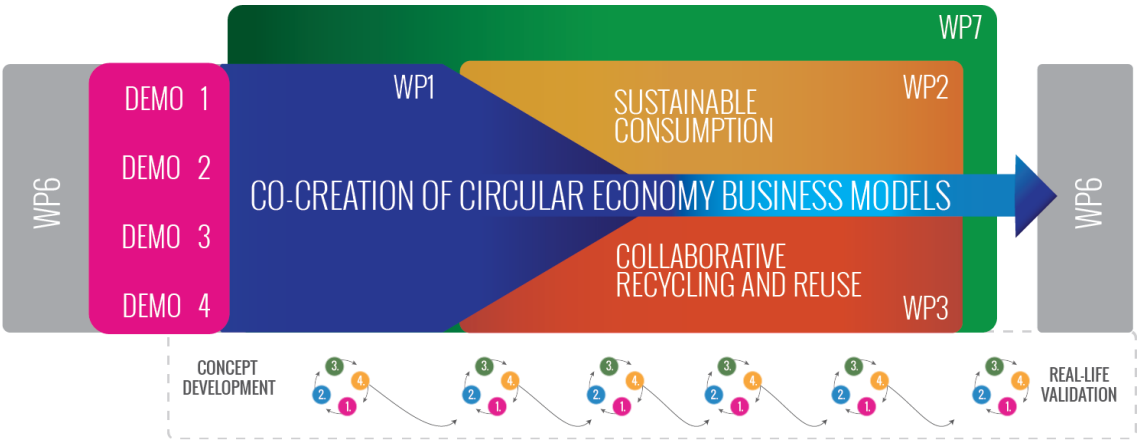

Figure 16: approach to co-creation. Image courtesy of Aletta Purola for CIRC4Life

A key activity in the CIRC4Life project is the development of ecosystemic business models (CIRC4Life n.d.-a, Nevmerzhitskaya, Purola and Santonen 2019). The development is linked to, for example, value creation and sustainable revenue streams, improving business performance, reducing environmental impact of business activities and identifying business opportunities and potential partners (CIRC4Life 2020).

This thesis is linked especially to these activities in that it studies the ecosystems created by circular economy business ventures and how co-creation can boost their success, and in that it sheds light on how co-creation is integrated into these ecosystems and what are the value creation processes involved.

In discussions with the thesis commissioner's representatives (personal communication, several occasion during 2019) it became clear that due to challenges in communicating the scope, role and impact of co-creation, there is need for demonstrating the benefits of co-creation in order to enhance the success of the co-creation activities among the stakeholders.

In addition to studying the benefits of co-creation and effective ways to communicate these, the thesis also attempts to create a multifaceted view of co-creation in order to address the misconceptions concerning co-creation and the barriers these create. If co-creation is seen only as workshops, endless iterations or seemingly aimless co-creation processes, this might diminish the motivation to co-create. In the development work the stakeholders, more specifically the leaders of WPs where the three CEBMs are created are the target group.

4.1.2 Co-Creation in CIRC4Life

Next, the way the concept of co-creation is understood in the case project CIRC4Life. This will be discussed based on selected communication material.

The concept of co-creation as used in CIRC4Life

In the CIRC4Life project material, co-creation is discussed in several documents and it is seen as having many benefits. There are several definitions, but in the material that was available for use in this thesis work it was rarely properly defined. The underlying assumption seems to be that everyone is familiar with the terminology used. As the concept of co-creation is by no means unambiguous, lack of a comprehensive definition is a barrier for common language. If there are great discrepancies between how each of the CIRC4Life partners understands the concept, there is a strong likelihood of misunderstandings.

The most comprehensive definition of co-creation within the CIRC4Life documentation seems to be the one included in the document *Innovation Camp 2018 Participant Guidelines* (CIRC4Life 2018a, 7):

> **Co-creation** has become a central framework used within many organizations to innovate novel products and services. It is about planning, developing and innovating new solutions through a specific iterative development process while utilizing various methods, techniques and tools. The purpose of co-creation is to create a customer-centric solutions [sic] that meets the needs and demands of the customers and fulfils the solution provider's business objectives. Through a co-creation approach, diverse teams together with end-users can collaboratively identify needs, ideas, experiences and opportunities and

> generate fast prototypes to be tested and validated by the real users and other relevant stakeholder.

The definition is very comprehensive. It contains a process, methods, techniques, tools, solutions, a customer-centric view, a business perspective, teamwork, end-users and other stakeholders as well as validation. It contains much more than the idea of creating something together with someone. It seems to contain a complete design process and the engagement of all relevant stakeholders. It also has many purposes: planning, developing, innovating, creating solutions that meet needs, demand and business objectives, identifying "*needs, ideas, experiences and opportunities*" and generating fast prototypes.

The description should be seen from the perspective of the CIRC4Life project and especially from that of the Innovation Camp the guidelines (CIRC4Life 2018a) of which the quote above has been taken. The Innovation Camp, held in November of 2018 in Krakow, Poland, was the first time the stakeholders of the project gathered together to perform, among others, co-creation activities. The guidelines introduced them to the practicalities, underlying concepts, approaches, agenda, participants, context and purpose of the camp (CIRC4Life 2018a). The definition of co-creation is included in chapter 3 of the guideline, which describes the underlying concepts, and has been placed under the title "*3.2 Iterative co-creation process*", which starts with a description of "*an iterative development approach*", followed by the definition of co-creation. In other words, the purpose of the definition is very practical. It helps the participants get a quick idea of what is meant by co-creation and how and why it will be used.

Another definition is included in the document *Living Labs Concepts and Implementation Plan for CIRC4Life-project* (Purola et al. 2019, 13, Deliverable 7.1 in the project):

> Co-creation: Co-creation is identified as the central process of the Living Lab approach. It can be defined as a cooperation between different actors or stakeholders who share the same overall objective or goal. It is about planning, developing and innovating new solutions through a specific iterative development process while utilizing various methods, techniques and tools. Through a co-creation approach, diverse teams together with end-users can collaboratively identify needs, ideas, experiences and opportunities and generate fast prototypes to be tested and validated by the real users and other relevant stakeholder. The original co-creation definitions were mainly focusing on the co-creation of value by a firm's customers, but lately co-creation is more often also described as a collaboration between various Quadruple Helix actors (Arnkil et al. 2010)[34]. Therefore, the co-creation in context of CIRC4Life Living Labs is including [sic] all Quadruple Helix actors.

Several things can be deducted from the definitions.

1) Co-creation is used within a predefined process,

[34] The source referred to here is Arnkil, R., Järvensivu, A., Koski, P., & Piirainen, T. (2010). Exploring quadruple helix outlining user-oriented innovation models.

2) The cooperation entailed in co-creation is performed between various stakeholders,
3) The goals of the co-creation activities are diverse and
4) It is not only about co-creation of value in a business context, it is also about efficient collaboration of various sectors of the society.

The core is the same as has been discussed above, creating meaning together. The co-creative activity is tied to a process within open innovation and more precisely within a LL context, and extensive stakeholder interaction is given strong emphasis. The content is very similar to that in the previous definition discussed. In fact, a great deal of it is identical. The central role of the stakeholders and the connection to LLs are included in this revised version.

Co-creation is also defined in the document *Living Labs Concepts and Implementation Plan for CIRC4Life-project* (Purola et al. 2019, 17), which describes the second phase in the LL approach[35] used in the project as follows:

> Phase 2: Co-Create: The second phase can be labelled as Co-creation. This phase is about co-developing and co-designing concepts and novel solutions based upon the knowledge gained in the previous rounds as well as Phase 1.

Co-creation can here be seen as a broader framework within which the actions of co-development and co-design take place, a mindset that is followed.

The most comprehensive discussion on co-creation, however, is in a document called *Interaction in supply chain concerning consumers* (CIRC4Life 2020, Deliverable 7.4 in the project). It starts with the below quote and continues with general discussion on co-creation, the roles involved, best practices and challenges.

> The current definition of collaboration is a transfer of knowledge from one party to another in an open and safe environment, where all actors are giving and receiving. This can also be referred as co-creation, which in the CIRC4Life context is defined as solving and defining shared problems with a systematic approach, in close cooperation with multiple actors with diverse backgrounds.

On a general note, it can be said that the elements of collective creativity (mindset), continuity of co-creative activities (processes) and stakeholder interaction (collaboration) are all present in the various descriptions. The impact of all these activities on the businesses seems, however, absent, even though the second definition does mention business objectives.

In CIRC4Life, there are several roles and responsibilities. The project consortium consists of 17 organizations (CIRC4Life n.d.-c). There are several types of managers (technical, quality and innovation managers, for example) (CIRC4Life 2018c) and work package leaders (See, for

[35] see chapter 2.3 for more discussion on the process

example, CIRC4Life 2019c). Alongside the internal roles are the roles in the quadruple helix of the co-creative open innovation activities discussed in chapter 2.3.2, representing the business and industry and public sectors, policy makers, research and education, consumers and citizens ((Circ4Life 2018c). This management and coordination structure is separate from the co-creation activities but has a strong impact on how the outcomes are used. In a setting like this, the contribution of each is part of an intricate web of VCC that a simple model of a co-creative space might not reach.

Living Lab activities in CIRC4Life

Various types of methodologies can be used to conduct the co-creative LL activities[36]. They are RD&I methodologies that allow "*experiment, trial, scale-up and daring to fail small, but not big.*" (Salmelin 2013, 8). In CIRC4Life, an iterative development approach is used where "*solutions evolve through multiple iterative collaboration rounds between cross-functional teams and final end-users.*" (CIRC4Life 2018a, 7). These rounds go through the phases of open innovation visualized in Figure 17 below.

In CIRC4Life, the LL approach is used in developing CEBMs and provides a common space where the various stakeholders from different sectors and from around Europe can meet and innovate solutions. It is both a development methodology and a process of co-creation. It is the role of Laurea in the project to develop an implementation plan for its use and to coordinate stakeholder participation in the activities related to the approach (Nevmerzhitskaya, Santonen and Purola 2019).

Co-creation as a concept alone might not be robust enough to create this common ground for the various actors and their motivations. Open innovation provides the framework and Living Labs the methodology which guides the development work within the CIRC4Life project along with the DD design process. Together, the LL approach and the open innovation framework facilitate the co-creation of solutions with an ecosystemic perspective.

The LL activities in the CIRC4Life could be seen as provider-driven according to the classification by Leminen, Westerlund and Nyström (2012, 8) described in chapter. Here "the "*Owners" of the LL are businesses that want to change their business models yet keeping their core operations.*" (J. Nevmerzhitskaya, personal communication 15.4.2020). Knowledge accumulated in the LL activities are used to improve operations. They are shared among the consortium members to be used for advantage in the joint development project.

[36] See for example Almirall, Lee and Wareham, J. (2012).

LL is said to promote "*adaptive planning, evolutionary development, early delivery, continuous improvement, and encourages rapid and flexible response to change*" (CIRC4Life 2018a, 7). The key elements forming the basis of the LL approach as understood in the CIRC4Life project are listed as real-world context, multi-stakeholder participation, co-creation, user-engagement and multi-method approach (CIRC4Life 2019b, 12). The elements are very much the same as what has been described earlier for the LL approach in general.

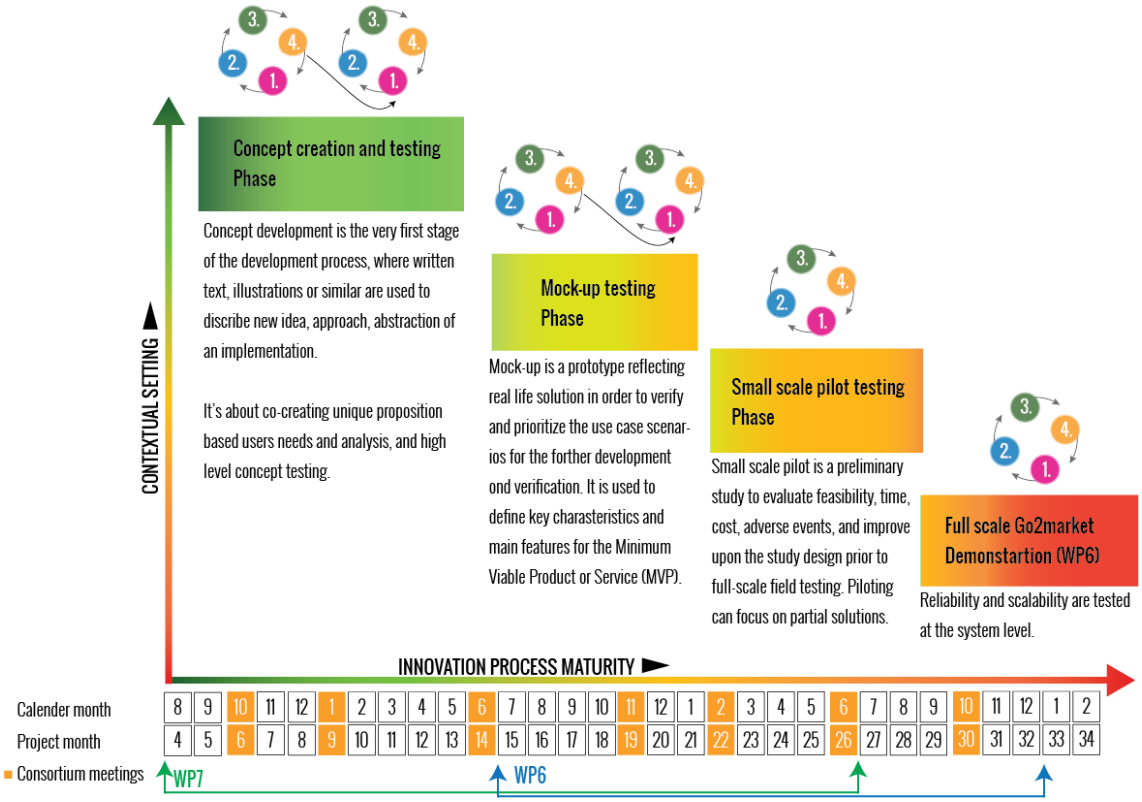

Figure 17: The phases of open innovation, through which the Living Lab iterations go in the CIRC4Life project (CIRC4Life 2019b, 7, image courtesy of Aletta Purola for CIRC4Life)

The four numbered iterations above the open innovation phases represent the four phases of development rounds. These rounds last approximately four months each and there is a consortium meeting at the end of each to evaluate results (Nevmerzhitskaya, Santonen and Purola 2019). The phases are aligned with the Double Diamond design process model (Design Council 2015). A LL plan was created for each CEBM DEMO owner, including a customer journey visualization, a LL blueprint and a LL timeline (Nevmerzhitskaya, Santonen and Purola 2019).

Double Diamond in CIRC4Life

The DD design process model is used within the CIRC4Life project, where it guides both the broader development work and especially the LL activities. This framework is illustrated in Figure 18 below.

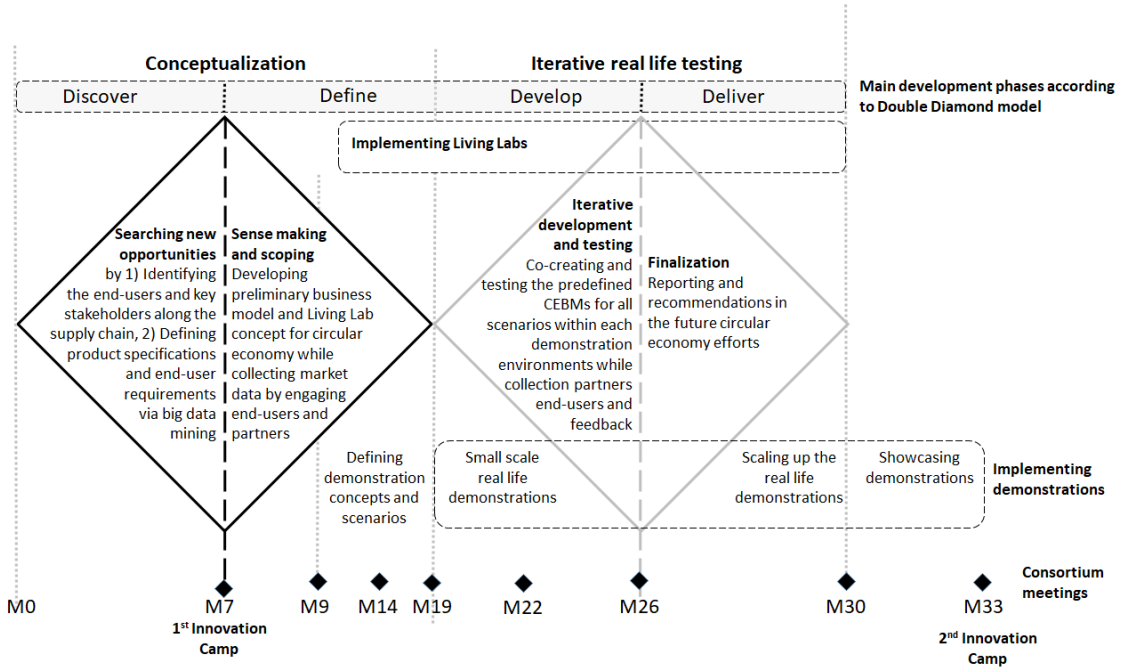

Figure 18: The Double Diamond design process model in the context of CIRC4Life (CIRC4Life 2019b, 16, image courtesy of Teemu Santonen for Circ4Life)

The LL activities are positioned within the last three phases of development with the main part of the work done in the Develop phase. Real-life testing is conducted in the Develop and Deliver phases and continue after the development phase, when the business model demonstrations are showcased. In the wider context of the CIRC4Life project the development started with insight gathering activities, based on which preliminary business models were defined. At the time of writing this, the project is starting to move from developing solutions to the final Deliver phase.

There are some aspects in the framework that make it deviate somewhat from the basic design model. First of all, it has been clear from the outset that what will be developed are business models. This has a strong effect on the Discover phase, as the focus is already set. Consequently, the Define phase is also different. What is defined is not so much what will be developed as what form the business models being created will take. The greatest emphasis is on the Development phase, where several concurrent actions advance the work, for example separate LL activities for each DEMO owner (CIRC4Life 2019b, 18). The Deliver phase is a milestone where the best practices and recommendations are drafter for future use and as one result of the larger framework of H2020 and the last phase of the CIRC4Life project

comes after that, when the business models developed are demonstrated. Even though this is not part of the basic DD model, it is in the Design Council's (2019) new framework for innovation, the *outcome* of the process (see figure 18 above).

The Innovation Camp 2018 mentioned earlier could be seen as a space for value creation where stakeholders from different sectors meet to co-create. It was a facilitated innovation sprint, where 80 participants from around the world shared knowledge and co-created solutions that could be used in developing CEBMs (Circ4Life 2018a, 32; Circ4Life 2018c). Together, the participant represented all the players in the quadruple helix, as there were participants from the business and industry and public sectors as well as policy makers, representatives of research and education, and consumers and citizens (Circ4Life 2018c, 31). After the Innovation Camp, feedback was collected from the participants via an online survey. According to the results, a vast majority found new contacts, "*all respondents gained new insights and knowledge*", and 36,2 % of the respondents said they "*could apply the new knowledge to great or to very great extent to their work*" (Circ4Life 2018c, 20). However, the motivations to co-create and the desired value outcomes do not come apparent in the results. It is interesting, for example, how less than 40 % of the respondents felt they could apply the new knowledge in their work.

As for how the innovation activities have gone in practice during the CIRC4Life project, a personal communication with J. Nevmerzhitskaya sheds light on it. Below are listed three extracts from the communication:

1)

> I think one of the main issues with co-creation is that people do not see the value of it. some of our partners believe that co-creation is a set of workshops, in which you basically validate your previous ideas.
> (J. Nevmerzhitskaya, personal communication 15.7.2019)

2)

> Finally, when partners realize that co-creation is a process, which requires a lot of work, including motivational work to engage stakeholders, create a common understanding of benefits, create a process etc, they feel that it is too time and money consuming
> (J. Nevmerzhitskaya, personal communication 15.7.2019)

3)

> Engaging the right partners is the biggest challenge. […]. People don't yet understand what is the value for them, especially when co-creation is communicated as: hey, we are arranging a workshop, come and join.
> (J. Nevmerzhitskaya, personal communication 15.7.2019)

4)

> Another challenging aspect is the systemic approach in co-creation, being able to move from co-creation events to co-creation processes.

(J. Nevmerzhitskaya, personal communication 15.7.2019)

They seem to reflect the challenges within the project linked to co-creation. All of these emphasize the need for a stronger focus on the business benefits of co-creation and the need to increase understanding on how co-creation can be used. One challenge is strongly linked to the purpose of the thesis, showing the benefits of co-creation. Another one is linked to the need to remove barriers out of the way of co-creation. A third challenge is related to motivating the right people to co-create. Yet a fourth challenge is related to integrating co-creation into the processes of the project: This last aspect is something that seems to be a big challenge also in the broader context of open innovation, as will be seen in the next chapter.

4.1.3 Open Innovation in CIRC4Life

In the CIRC4Life approach to open innovation the quadruple helix plays a central role (CIRC4Life 2019b). The role of partners in an innovation ecosystem providing resources and enhancing capabilities is emphasized in the project (CIRC4Life 2019b, 11). The way OI2 is seen relies heavily on the work of Curley and Salmelin (2013) and the idea of the quadruple helix is visualized in the way understood by the two aforementioned authors (see Figure 19 below). This is linked to the parent framework of the CIRC4Life project discussed earlier, Horizon 2020, where the Quadruple Helix approach is used widely within the framework (Curley 2015, 10). The rightmost illustration in Figure 19 below visualizes the OI2 approach in CIRC4Life.

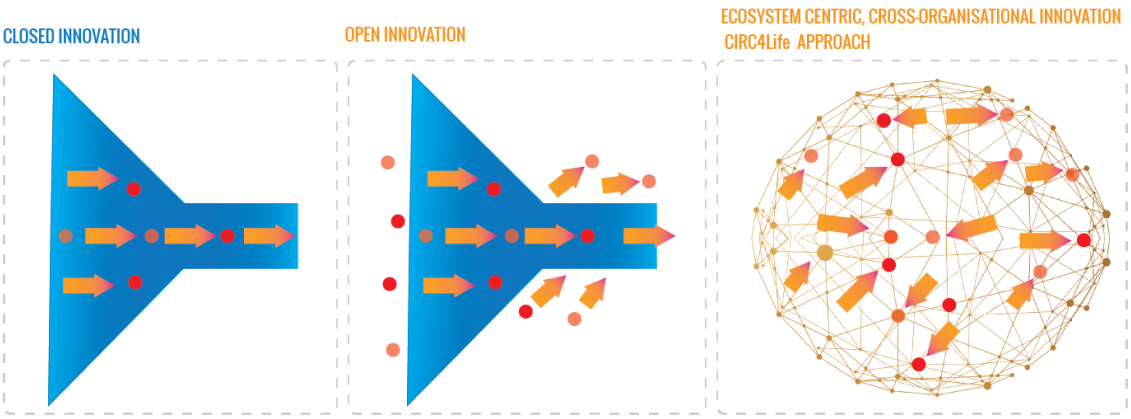

Figure 19: The three innovation models as visualized in CIRC4Life (CIRC4Life 2019b, 11) (above), a modification of the Curley and Salmelin (2013, 3) visualization. Image courtesy of Aletta Purola for CIRC4Life

To get a broader idea how innovation is seen in the context of CIRC4Life, some mentions of it in the project material are next discussed. The project has an innovation manager (CIRC4Life 2018c), but there is no clear description of the innovation management procedures in the publicly available material nor in the unpublished material provided for use in the research.

Perhaps the best idea of how open innovation is seen within the CIRC4Life activities is given by a description in the document *Innovation Camp Participant Guidelines* (CIRC4Life 2018a, 7), which refers to the inflows and outflows of innovation in the vein of Chesbrough. Open innovation is called a "*framework for involving actual customers and other key stakeholder in the collaborative innovation process*". This process is co-creational and emphasizes the utilization of external knowledge to improve internal capabilities. Hence it seems to fit the understanding of open innovation as knowledge flows that are being purposefully managed[37].

The challenges of the project related to co-creation repeat themselves in a larger perspective, when they are examined in the context of innovation. To get an even deeper understanding of innovation in the context of CIRC4Life, the innovation manager of the project was interviewed via e-mail. According to him,

> Fairly early in the project it became obvious that a number of actors had locked in both approaches for development / management and preferred solutions which were not taking into account a coherent strategies and process flows. The proposal where describing end-user involvement as a vital part of the development efforts within the project but the approach used by especially the coordinator were very much based on a waterfall approach - which did hurt the overall development efforts in the project.
>
> (S-E Björlingin, personal communication 23.5.2020).

The quote reminds of an earlier part of the thesis, where aspects of circularity used in a linear economic system was discussed. As noted by Charter and McLanaghan (2019, 90), even if a business model has benefits related to circular economy, it does not necessarily make a business model circular. Instead it can be a question of a business model operating in linear economy but implementing some aspects of circularity, such as sustainable product lines. Based on the description and on the other material that was available for analysis, it is not clear if the CEBMs created within CIRC4Life truly are circular or if it more a matter of aspects of circular economy are being used in the context of linear economy.

When the above is seen in the light of the challenges described earlier for co-creation, the situation comes even more complicated:

> During these processes efforts were made to influence the work to both fulfilling the original plans and to make the development processes to be more end-user interactive and influenced by real-world users early on in the process - but it was quite difficult. Comments and suggestions where regarded more as a nuisance to neglect than input helpful to create a better solution.
>
> (S-E Björlingin, personal communication 23.5.2020).

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[37] Open innovation is also discussed in the document Living Labs Concepts and Implementation Plan for CIRC4Life-project (CIRC4Life 2019b), but as it discusses mainly Open Innovation 2.0 and the LL approach, it will be mentioned in later sections.

When the waterfall approach to development is in use and there is no motivation to use co-creative approaches instead, the results are much less effective. Or at least they could be much better with the right environment, where there was more room for changes along the way. Within the CIRC4Life setting this task has an added challenge In that instead of one organizational culture, there are several, and the interaction of the representatives of these create the culture within the project. The right environment of co-creation is a much more complex matter and even then, another level of complexity is added, when the ecosystems created by the businesses are factored in. More efforts should be put to create the right environment and ensure effective leadership from the start. One might even ask if a EU funded project with all of its requirements and bureaucratic procedures (see, for example, European Commission June 2019) are even able to create the right environment for co-creation. In the words of A. Rehn (2019): "*To craft an innovation culture is to move away from a mindset that emphasizes the management of ideas and projects, towards a mindset that looks more holistically at whether the culture is supporting and nurturing towards new ideas*."

4.1.4 Communicating the Business Benefits of Co-creation within CIRC4Life

In the CIRC4Life material there are a few scattered mentions of the benefits of co-creation. According to the material, co-creation helps, for example,

- to develop novel ideas that can then be further developed
- to empower users
- in gathering insight
- to facilitate stakeholder engagement
- to create solutions that fulfill customer needs while meeting the business objectives of the solution provider

It is a way to "*collaboratively identify needs, ideas, experiences and opportunities*" (Circ4Life 2018a, CIRC4Life 2019b, 9).

Even though some common themes such as stakeholder interaction, user perspective and ideation can be detected in the above list of mentions, there is no consistent the benefits of co-creation are not addressed in a consistent matter in the material. If there is no common language on the benefits that can be gained through co-creation, this can affect motivation, for example, and make co-creative activities less effective.

As discussed in chapter 2.6.1, storytelling can be one way to establish common ground (Barker and Gower 2010, 302) and business cases in the form of stories of successful business ventures concerning co-creation can be seen as one type of storytelling. However, there are limitation. For example, the running experience of Youyou described in the context Nike's co-creative platform (Ramaswamy and Gouillart 2010, 7-20) in chapter 2.6.1 might be inspiring, but it is a long way from the realities of the stakeholders in the CIRC4Life project, Jonathan

Smith, the owner of Scilly Organics, which is focused on vegetable farming on a small Scilly island, Kosnic Lighting Ltd., which provides industrial lightning solutions, Ona Product SL which is a lightning company, Indumetal Recycling, S.A., which is specialized in the recycling of WEEE (Waste Electrical and Electronic Equipment), and Alia, which is an agricultural society (CIRC4Life n.d.-c). To be more than mere success stories and examples with no broader relevance and lists of benefits with no link to how to manage co-creation in order to achieve the benefits, the discussion has to focus more on the processes and concrete examples linked to these.

Another method of communication was given in chapter 2.6.2, namely measured results of business success involved in co-creation. As also noted in the chapter, there does not seem to be much discussion of co-creation from the business performance point of view and there seems to be a need for a deeper discussion on the metrics as well. In the context of CIRC4Life, one way the challenge of "showing the numbers" could have been approached would have been to create a plan for measuring the overall success of the co-creation of CE-BMs. There seems to be no mention of this in the project material available, nor was any evidence found of discussions on how the business success of the business models created in the project, or their impact on the business of the organizations demonstrating the business models, can be measured beyond fulfilling set criteria mainly to do with quality and the effectiveness of the demonstrations of the business models. In a way, the business model demonstrators in the project are lost between the lines.

The success of co-creation activities is, in fact, measured. They are measured as the number of ideas, concepts and prototypes created, the users involved, and development rounds completed (J. Nevmerzhitskaya, personal communication 4.6.2020). However, while the metrics may be very useful from the perspective of implementing co-creative activities, they do not translate directly into business performance. There is a need for linking these two.

It can, of course, be said that the benefits will only be materialized when the new business models have been demonstrated and validated at the end of the project. However, a clear plan including the expectations, specific metrics and a final evaluation of how and to what extent the expectations were met could make clearer what the intended benefits are. As Azabagic and Karpen (2016, 187) note, "*A key instrument to design and monitor a successful implementation and subsequent value realization is a design measurement plan*", which should contain, for example, critical assumptions, key milestones, roles and responsibilities and an assessment on how the business case will be managed.

4.1.5 Circular Economy as It Is Understood in CIRC4Life

Circular economy is at the very core of CIRC4Life project, but from the activities of the DEMO owners it seems apparent that they all have their own approach to circular economy.

Recycling seems to be considered one of the main activities, as it is present in many of the models developed. Indumetal develops a solution for recycling tablets and phones, Alia and JS think of ways to recycles food waste, Kosnic helps recycle lamps. They have other activities as well, but to take recycling as an example, it can just as well be an aspect of circularity implemented in linear business. It does not seem clear what in the end is truly circular in the business models under development. Perhaps due to the challenges described for co-creation and innovation above, the co-created solutions have more to do with traditional considerations like consumption and recycle than new and innovative circular ideas.

4.1.6 Co-creating Circular Economy Business Models in CIRC4Life

To understand better the business context of co-creation in CIRC4Life, let us now turn to the business models developed in the project.

As mentioned earlier, three business models will be created in the project, which will be demonstrated in four industrial sectors. The three CEBMs will be demonstrated in the four sectors by five partners (CIRC4Life, n.d.-a)[38]. These partners are Jonathan Smith, the owner of Scilly Organics, which is focused on vegetable farming on a small Scilly island, Kosnic Lighting Ltd., which provides industrial lightning solutions, Ona Product SL which is a lightning company, Indumetal Recycling, S.A., which is specialized in the recycling of WEEE (Waste Electrical and Electronic Equipment), and Alia, which is an agricultural society (CIRC4Life n.d.-c).

As can be seen in the description above, the partners are involved in very different types of businesses. To visualize this even further, let us take a closer look at two of them. First, Jonathan Smith. His company, Scilly Organics, is a small-scale vegetable farm that operates on St. Martin, which is an island that is part of the Isles of Scilly in Cornwall, England. As a DEMO owner, Jonathan Smith will demonstrate more sustainable vegetable production on the farm (CIRC4Life 2018c, 11). The business model development plans during the project have included, for example, impact analysis tool based on life-cycle assessment (LCA) data, eco-point solution and a concept for food waste composting (CIRC4Life 2019b). The business environment is quite narrow, situated in a small geographic area and limited to a very small area of business and customer base. The customers consist of the public (locals and tourists) and restaurants and cafes, which are all SMEs (CIRC4Life 2020, 11). There are only 150 locals on the island and the tourists only come during the tourist season. The SMEs are a handful in number (CIRC4Life 2020, 24).

[38] See Figure 16 for a visualization

Then there is Kosnic Lighting Ltd. (Kosnic), a UK-based provider of industrial lightning solutions. Kosnic, which specializes in industrial lightning, designs, manufactures and distributes LED technology such as bespoke lightning solutions, and has a wide range of lamps and other lightning products in their product selection (CIRC4Life n.d.-c). The environment in which they operate involved various partners which are part of the same business ecosystem. An illustration of the ecosystem from the point of view of an industrial lamp leasing service that is being developed in the CIRC4Life project can be seen below in Figure 21.

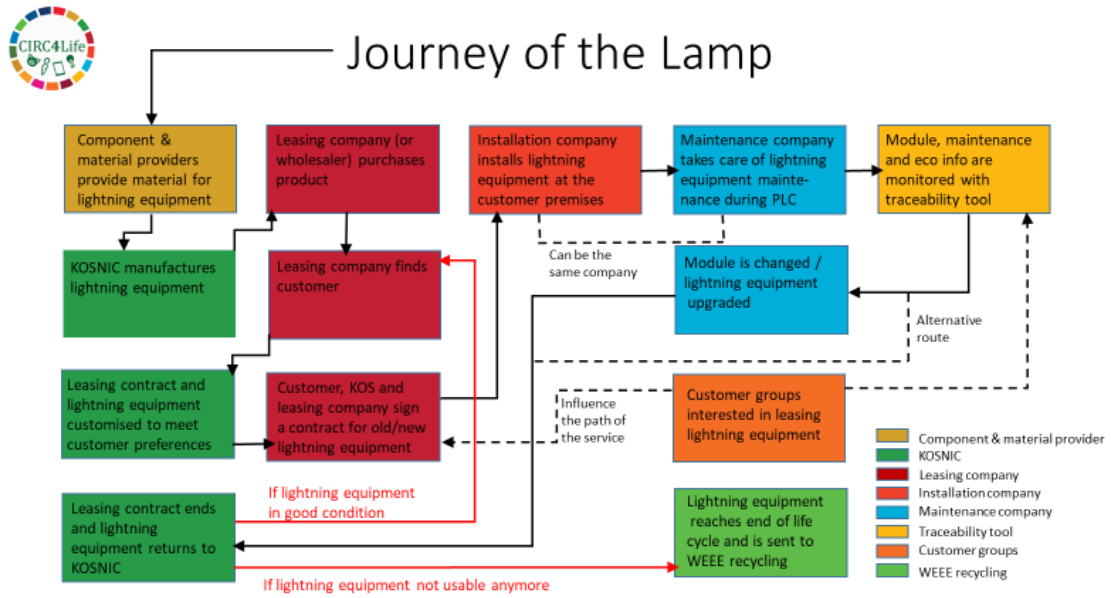

Figure 20: Illustration of Kosnic's business ecosystem from the point of view of an industrial lamp leasing service, development stage from December 2020 (illustration created by Suvi Seikkula for CIRC4Life)

The collaborative aspect in the business is very strong. For example, in the "Collaborative Recycling/Reuse model", a leasing service is developed for an "industrial LED lighting products". The service requires the collaboration of maintenance companies, installation companies, contractors and other partners, as can be seen in Figure 21 above. Kosnic will be responsible for look after the LED lightning throughout the product life cycle and take care of the "recycling, reuse and refurbish" of the product (CIRC4Life 2020, 13).

The circumstances and thus needs for developing business models are very different for these two DEMO owners, even if both are concerned with circular economy. For example, if there is need for improved innovation processes or use of resources, these mean very different things for the two companies. Talking about the business benefits on a general level or even generally related to business models does not grasp the unique situations of the companies. When business model development is discussed, it is not enough to consider the different aspects of the business models, it is important to discuss the different abilities, settings, circumstances,

aspirations, goals and other factors which are the elements forming the unique situation of each company.

4.2 Design Process Phases in Practice

The DD model described in chapter 3.3 was used as the development framework in the design process. As emphasized in the new version of the DD model, the process is often non-linear and iterative in nature. So it was in this case as well. Towards the end of the Develop phase it became apparent that more information is needed before the Deliver phase can be reached. The process thus returned back to the Discover phase, after which the Define and Develop phases were repeated. Only then the process advanced to the Deliver phase.

In the below sub chapters the tools, methods, insights, process and results of each phase is described in detail. For descriptions of the design tools used in the process, please refer to previous chapter. The meetings held with the commissioner are not described, but they gave valuable guidance in the process as to what direction the development project should go from the commissioner's point of view. Presentations were also given regularly to the commissioner on the results of each phase.

4.2.1 Discover

As mentioned above, the key tasks in the Discover phase include gathering insight, getting inspired, identifying needs, outlining ideas.

The first task was to get a thorough idea of the premises in the CIRC4Life project and get acquainted with everything that had been done so far in the project, which itself contains several development projects and related tasks, as described above. This background info is largely described in chapter 4.1.

In a meeting with the commissioner's representative, Julia Nevmerzhitskaya, the key challenges and needs for the development were discussed. One major challenge in the project had been the varying levels of understanding of co-creation and its business benefits among the CIRC4Life partners and the resulting difficulties in communicating the benefits of co-creative activities such as LLs, which are an integral part of the project. The commissioner, Laurea University of Applied Sciences, as the Living Lab Manager in the project, has a strong interest in increasing the understanding of the business benefits of co-creation to make the activities more effective.

Effective communication of the business benefits of co-creation in developing circular economy business models in SMEs was thus selected as the focus of the development project. The aim was to answer the research questions set out in chapter 1.2:

1. What are the business benefits of co-creation?
2. How can the benefits of co-creation be efficiently communicated from the business perspective?
3. What are the implications of the benefits of co-creation in developing and implementing SME business models within circular economy?
4. How can the benefits of co-creation be efficiently communicated to the stakeholders within the CIRC4Life project?
5. What would be an efficient tool for communicating the business benefits of co-creation in developing and implementing SME business models within circular economy?

As can be seen from the questions above, the aim was not to develop a tool for the sole use of the CIRC4Life project but one that would be useful for a more general audience.

To get a better understanding of the current understanding of co-creation among the CIRC4Life partners, a one-hour remote interview was planned with the CIRC4Life partners, which were located around Europe. However, it turned out to be a busy time for the DEMO owners, and only one representative would have had the chance to participate in the interview. The plan was hence changed, and an online survey was prepared instead. The idea came, in fact, to one of the partners unable to take part in an interview. The survey was prepared accordingly and a request to participate in the survey was sent to a total of 14 recipients. The questions of the survey are listed in Appendix 2. The idea was to find out, how the respondents define the terminology related to co-creation in the context of business model development, how they see the usefulness of co-creation and what are their general attitudes towards co-creation.

There were a total of six responses. Their analysis is included in the next chapter, which describes the first Define phase in the development project.

4.2.2 Define

The survey results were analyzed based on content analysis, which can be used to analyze any communication material (Mayring, 2015, 367). In this case, quality content analysis was used. The process included the steps of “open coding, grouping, creating categories and abstraction” (Elo 2008,

109 110). During open coding the material was given codes based on subjects arising from the content. The subject matters were then grouped according to broader themes, based on which categories were created. Inductive category formation was followed, in which the categories are developed based on the material itself and not based on predefined criteria (Mayring 2015, 374). Inductive content analysis was selected as the analysis method due to

the relatively small amount of survey answer, so as to get as much info as possible from the small amount of material.

A total of 46 subject matters related to aspects of co-creation were identified in the open coding phase. These were grouped to form 9 themes, which were further combined to form 4 categories. The subject matters, themes and categories are listed in Table 7 below.

Subject matters	**Themes**	**Categories**
Working together, interacting with stakeholders, interaction and cooperation with people across value chain, collaboration between parties, involving consumers, can help improve the process of supply chain actors discussing together their part in enhancing sustainability, working with key actors, need for all businesses to apply the methods, sitting down together to discuss how to improve things	collaboration	**Collaboration**
Helps establish a common language and use the same terms	common language	Collaboration
Conveying stakeholder opinions into practices and solutions, taking into account the actors who are influenced by product or service, "knowing the real needs from different stakeholders", help product/service fit end user needs	Stakeholder insights	**Perspective**
Point of view of the final user in the design process, different points of view, getting points of view from different sectors	points of view	Perspective
Helps improve processes, helps improve task ratios, helps improve materials, insight into the product design process, helps co define materials for a better end of life, can help the need for even better processes, for creating new services), not certain what the benefits are for business	Need to help improve business	**Business advantage**
Helps succeed in planning and developing business, more success chances for the product/service "as it better fits the needs of the end user", crucial part of development work	helps succeed	Business advantage
Getting useful items into a solution that you did not take into account, different ways to develop the same thing, applying ideas for business based on consumer perspective, helps define suitable processes for the processing of materials, need for easy and efficient solutions with which to gather insight of market needs, needs to create solutions that are easy, quick and have clear benefits	solutions	Business advantage
Not always possible to apply it because of lack of resources and time, need for tools that help do co creation in indirect ways when lack of time and resources prevent use, not always possible to include it in development work effectively, not always time for co creation, no time to follow nice ideas for the sake of it	Lack of time and resources gets in the way of [co-creation]	**Resources**
Participating in it helps understand its mechanisms, appealing way to learn about it by workshops, appealing way to learn about it is by applying the methods to own business, appealing way to learn about it is practicing with simple things, appealing way to learn about it is by participating with stakeholders	learning from practice	Resources

Table 7: Subjects, themes and categories formed during inductive category formation

Based on the categorization, four insights were formed concerning what needs to communicate about co-creation to attract interest:

1. How to effectively collaborate

2. How to make use of insight

3. How to use it to improve business

4. How to gather resources

The need for a business perspective was strengthened based on the analysis and a further need to be as practical as possible emerged. Co-creation was not considered so much on a theoretical level by the respondents or as part of the general strategic or operational objectives of business, but on a more practical level: as part of collaboration, building resources and so on. It should be emphasized here, however, that with only six replies too far-reaching conclusion are not possible.

Next, focus was turned to the form in which the message on the business benefits of co-creation could be communicated. A combination of an empathy map and a planning model for content strategy was used for this purpose.

First, an empathy map was created to better understand the stakeholders' ”*environment, behavior, concerns and aspirations*” (Osterwalder and Pigneur 2010, 131), to focus on the people and to create empathy for the stakeholders (Gray and Brown, 2010, 66). It was a way to process some of the common denominators between the respondents with various kinds of backgrounds. The idea for the empathy map emerged, however, already in discussions with the commissioner at the start of the development work.

The empathy map was also used because it is recommended as a step prior to the content strategy model of the next step, so as to get a better understanding of the target of the message (Playle 2017).

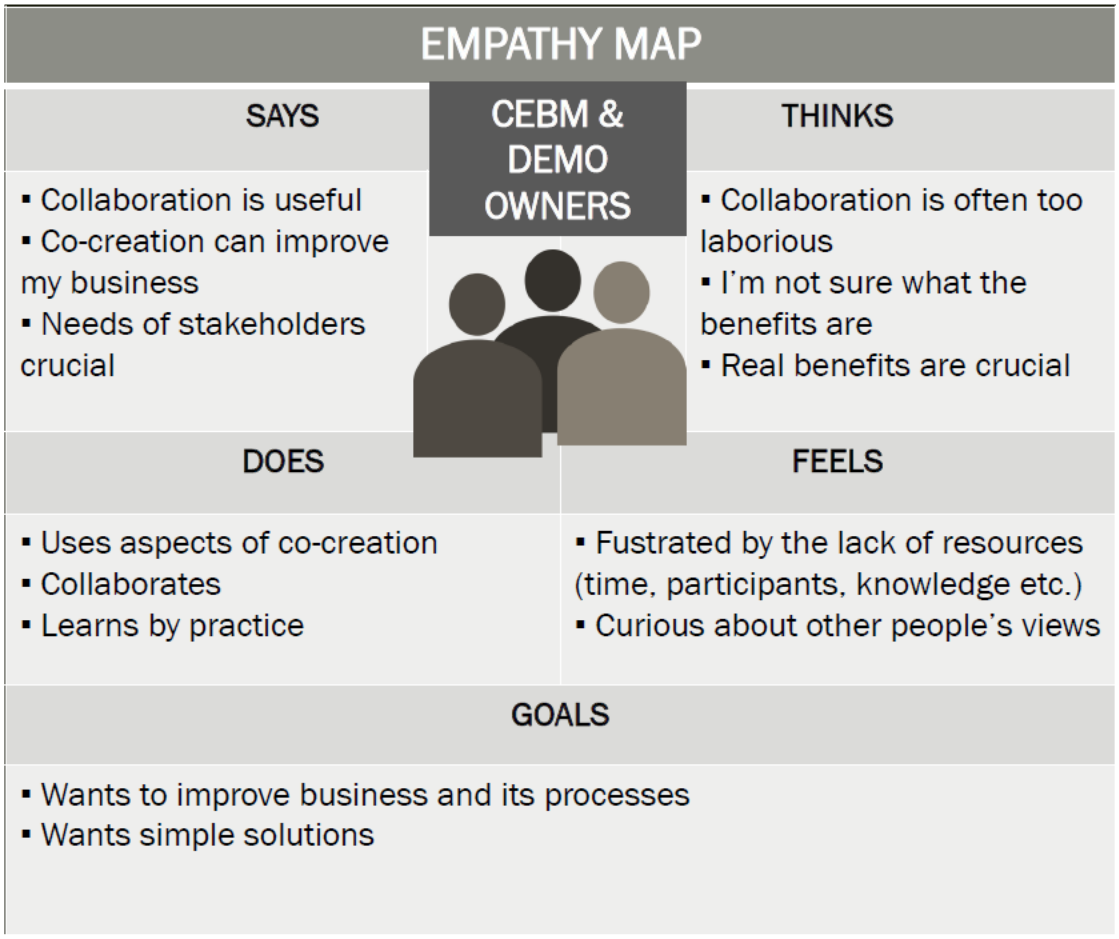

Figure 21: Empathy map based on online survey replies and thematic analysis based on the answers. (Template adapted from Gibbons 2018)

Based on the empathy map there are some contradictions between what the respondents might say and think on one hand and does and feels on the other. First, the stakeholders seem to have a positive attitude towards co-creation in that they see it as a way to improve their business and stress the usefulness of collaboration and the importance of taking into account the needs of the stakeholders. At the same time, the responses to the online survey give the impression there is no clear understanding what the benefits are in the end. Also, collaboration might be useful, but also laborious, and while the needs of the stakeholders are important and co-creation may help in finding more about them, what is the most important thing is that co-creation yields real benefits. Collaboration and better understanding might help, but they might not be a strong enough incentive for co-creation. What is needed, perhaps, is a better understanding of the beneficial outcomes, how the benefits show in practice.

As concerns what the stakeholders do and feel, here again some interesting insight emerges. The stakeholders use aspects of co-creation in their business, even though they might not use it in such an integral part as in a "co-creative enterprise". They stress collaboration and want

to learn through practice. At the same time, they are frustrated by what they feel is a lack for resources for co-creation. Further, the perspective of other creates curiosity.

The insight gathered from the empathy map can be summarized as the need to show real beneficial outcomes of co-creation and show how they are reached in practice. It seems also important to show, how co-creation can help in making use of resources more effective, so that it is possible to use co-creation itself more effectively.

In the third step of the Define phase a planning model for content strategy was filled based on what was viewed as most suitable methods based on the survey answers (see Table 8 below). The model helps align content to information needs and emotions (Playle 2017).

	INFORMATION NEEDS AND EMOTIONS	
	USEFUL	**USABLE**
RELATABLE	▪ Insights that show the meaning to them ▪ Case studies to learn from ▪ Success stories that inspire **About me**	▪ Advice on how to apply the knowledge in practice ▪ Content that can be used to attract collaborators ▪ Platform to support collaboration **For me**
RELEVANT	▪ Seminars ▪ Sources of support ▪ Information in a simple format **Helps understand**	▪ A way to ask questions when they arrive at a dead end ▪ Co-creation checklist ▪ Online course on co-creation with plenty of exercises **Helps do things**

Table 8: Planning model for content strategy (template adapted from Playle 2017)

The model helped in getting more focused on the type of content that it might be useful to aim at when thinking of an effective way to communicate the business benefits of co-creation. The two upper quadrants seem to best correspond to the information needs communicated in the survey answers, even though the lower too also contain methods of communication that would seem to suit those needs.

The results of the Discover and Define phases were presented to the commissioner of the development work and the next steps were discussed, after which the development work proceeded to the next phase, the Develop phase of the design process.

4.2.3 Develop

The Develop phase consisted of two workshops. The first one was to ideate possibilities for the communication method and the second one was to process these further.

The first workshop was advertised in Finnish co-creation related Facebook groups and anyone interested in co-creation was encouraged to participate. A total of seven participants took part in the first workshop. Their roles were as follows: representative of the commissioner, communication specialist, service design student, potential co-creation buyer. Some roles were represented by more than one participant. There were no CIRC4Life partners, because the workshop was held face to face in Helsinki and the partners would not have had a possibility to travel to Helsinki for the workshop. The material gathered in the previous phases concerning their thoughts played a strong role in the planning of the workshop, however. The participants were also shown the empathy map created in the Define phase of the process.

The workshop consisted of an ice-breaker exercise, a role play in pairs, brainwriting and a wild affinity map. Between each exercise there was a reflection phased during which the results were discussed as a group.

During the ice-breaker exercise the participants had to describe their understanding of co-creation in one word. It was conducted to get a better idea of what the term meant to the participants. The words the participants came up with included (translated from Finnish): useful, listening, creation process, belonging, synergies, value, smart.

The role play consisted of an exercise where each participant was given a piece of paper with a negative statement concerning on co-creation. The statements used in the exercise are listed in Table 9 below.

Negative statements concerning co-creation
I don't know what co-creation is, but I have managed without it so far anyhow.
Co-creation is chaotic, I need order.
I don't have time for co-creation.
Co-creation has no business benefits.
Co-creation is mere ideation, I can do it alone.
The results of co-creation are too uncertain, I want to go from point A to point B along a direct line.
Co-creation is just another passing trend.
Co-creation is just one workshop after another.

Table 9: Negative statements used in the role-play exercise of the first workshop

One of the pair assumed a Yes but… attitude, amplifying the negative statement. The other of the pair assumed a Yes and… attitude, trying to think of ways convincing their partner of the benefits of co-creation, without knowing the underlying negative assumption.

The exercise was done to get a broader view of how the benefits of co-creation could be communicated, in other words, what messages could be used to do so. As soon as the participant with the Yes but… attitude seemed convinced of a positive argument, the participant with the Yes and… attitude wrote it on a post it note. After the exercise all of the post-it notes where put on a wall and all of the participants voted, using dot stickers of which they each got several to be given to any post-it notes they wished or several to one, the arguments they felt were most convincing. The results are listed in Appendix 3.

The next task given to the workshop participants was to ideate, using the brainwriting method, as methods of communication based on a word list. The words in the list were as follows: crazy, unique, exciting, traditional, easy, experimental, fun, fascinating, convincing, timeless, community, multi-faceted, fast, surprising, learning, practical, visual, interactive, addictive, insightful, beautiful and simple. For example, *addictive* could be used to ideate a game, *visual* could be used to ideate a mood board. The most popular words used were interactive, experimental, traditional and convincing, which seems a combination of plainer and more inventive methods.

The participants used one post-it note for each idea and these were next put on a wall. The post-it notes were then organized, in pairs, into groups forming a new method of communication. The group could contain as many or as little ideas as the participants wanted. These ideas were then discussed as a group. Some of the ideas created during this exercise are described in Table 10 below.

New methods of communication ideated
Infographics video based on questionnaire answers
Screensaver riddles that, when solved, open meeting information
Interactive video turns into a dramatized demo leading to a Q&A meeting
A mural reflecting a poem game and shooting flyers
A checklist is disseminated as a message in a bottle
Giant dresses showing messages that others can write
Argument service combined with data mining
Newsletter in the form of a Lego structure based on a lecture
Electronic postcards containing a release form a game when put together
Top consult informing about co-creation
Chatbot interview

Community art combined with a shouting contest, disseminated with video clips

Table 10: New methods of communication ideated during the affinity-map exercise of the first workshop

The idea of the brainwriting task was to get as many ideas as possible on methods of communication, to get as broad a view as possible on the possibilities contained in them. The affinity-map task was used to help broaden the limits of what is possible and also to get an idea of what was felt by different persons that might have an interest in communicating the benefits of co-creation as possible methods, if the imagination was stretched a little.

The results of the ideation workshop were later further analysed and thematized by the author. Thematic groups were created out of the arguments receiving at least one vote in the voting phase of the workshop. The themes that arose were as follows: resources, communication, process and collaboration. For example, the argument "*You can't come up with all possible ideas alone*" was assigned both the theme collaboration and the theme resources, "*The most important step in co-creation is selecting and engaging partners*" was assigned both the theme collaboration and process, "*There's a need for a benefits list to be communicated*" was assigned the theme communication and so forth. These themes are very similar to what was discovered in the online survey conducted in the Discover phase. Resources, practice and collaboration were some of the things that came up, as well as the need for more information. This guided the development project forward.

As for the affinity-map task, the main insights included the following:

- Surprising elements make the message more interesting
- An interactive element can make even boring content interesting
- Including a challenge creates a competitive aspect that can make the content more appealing
- Something straightforward can be made more fun with a new element
- Traditional elements can create a new whole
- Could the best way be learning on the learner's own terms?

These insights were used in planning the next workshop.

A while after the ideation workshop another workshop was held. The idea was to develop the method of communication yet further. This time the participants consisted of 5 service design students, and the workshop was once again held face to face in Helsinki.

In the second workshop the first task was to ideate combinations of traditional and experimental elements based on a list of elements derived from the previous workshop and create a way to communicate the business benefits of co-creation with the combination. This was done as a brainwriting session to get as many ideas possible and avoid groupthink.

Some of the new ways to communicate ideated were as follows:

- escape-room type design game + participatory workshop method = escape room where each task is built in a way that the challenge can't be solved without the effort of all of the participants
- reporting + video clip = interview clips where stakeholders tell about the benefits of co-creation
- chatbot + quiz = interactive chatbot presenting quiz questions
- community art + scientific report = data in the form of art

In the group discussion after this task two key insights emerged:

1. there is need to decide on which level the business benefits of co-creation are discussed: general (theory and concepts, for example), practical (advice, for example) or personal (relatable stories, "what's in it for me", for example).
2. There is need to communicate data such as success metrics and results. This could focus on, for example:
    a. Combining numbers with artistic elements
    b. showing the impact on business results
    c. showing real benefits in practice

In the next task, the participants of the workshop used bodystorming to walk through a possible solution for communicating the business benefits of co-creation. One of the participants was assigned the role of a learner, another one the role of a guide and the three others played the role of props, representing the three stages of the tool, which were the general, practical and personal discussed during the previous task.

Some of the findings gathered during this task include:

- The learner was offered a case right at the start
- The learner preferred to interact with the system instead of the guide
- Video-clips were most appealing and flexible at the personal level
- There was need for data to show the benefits in practice
- Industry was taken into consideration right at the start – in this case it was the recycling of tablets

Based on the material gathered so far a rough draft of a prototype concept was created by the author. It included the following elements:

- An application or interactive web page

- Different levels: general, practical, personal
- A route through the content, assisted in some way
- Can be tailored based on the needs of the learner, with the selection of a challenge, for example
- Aspects of co-creation
- Includes video clips and interactive elements
- Content based on the most appealing elements and themes
- Benefits described from different points of view

The results of the workshops and the concept draft were presented to the commissioner. However, at this point it became evident that more info is needed on what should be the content of the message. In other ways, the most effective *way* of communicating the business benefits of co-creation cannot be separated from the *content* to be communicated, even though it had become evident the message cannot be the same for everyone for it to be effective, or at least that there should be various levels of communicating. It seemed, in other words, that it is not possible to proceed to prototyping, testing and delivery of the solution before more development work is done. For this reason, the process returned to the beginning and another iteration of the Discover phase was commenced.

4.2.4 Second Iteration: Discover

As the main challenge at this point of the development work was that there was not enough understanding of what the business benefits to be communicated actually were, a literature view was conducted to study this aspect. The review is described in chapter 2.5. Some of the key findings with implication to the development work are as follows:

- Benefits vary based on business goals
- One benefit can lead to other benefits
- The abilities to use co-creation affect co-creation outcomes

The findings further highlight the need for a adaptable tool, as one size does not fit all.

The next step in the development process was to conduct interviews with the CIRC4Life DEMO owners. Out of the five DEMO owner representatives reached, three were available for an interview. Two of them were interviewed by phone and one in a remote meeting conducted via Microsoft Teams. The interviews were semi-structured so that there were only two question and then a set of help-questions to use in case the main questions did not give a wide enough answer for the purposes of the development work. The full set of interview questions can be seen in Appendix 4.

The two questions which were asked from all participants were as follows: "*How have you used and are using co-creation in your business activities? Please describe in your own*

words." and "*In what way has co-creation benefited you? What is the main benefit*?" All the interviewees gave only a short answer to this question, for which reason the help questions were used to guide the interview further. They were only used as basis for getting further info and not systematically. In other words, the interviewee could explain everything in his own words, and he was asked questions to get further info when needed.

The interviews were conducted so as to get a better understanding of how the interviewees see the benefits of co-creation, what has helped them broaden their understanding of co-creation during the CIRC4Life project and how they have used this understanding in their business activities.

4.2.5 Second Iteration: Define

A thematic analysis was conducted on the interview answers. This method was selected, because it is useful in examining, what meanings people attach to co-creation, its significance for them, the social constructions built of it, how these constructions reflect their social contexts and how they make meaning out of their experiences. In thematic analysis, patterns and themes are identified in the interview data, while keeping in mind the "overarching research questions" to help decide what aspects of the data should be assigned a theme. (Evans and Lewis 2018, 3).

The main themes concerning co-creation thus discovered were:

- Preconceptions concerning co-creation
- Frustration over not getting stakeholders to participate
- Need to see, how everything works in practice
- Need for adaptability of co-creation
- A structured way to gain insight
- Guidance for decision making
- Customer feedback

Further insight was also gathered about the best method of learning about co-creation and the content that should be used along it. For example, one interviewee, who considered a good example the best way to learn about co-creation, was asked if a business whose story of using co-creation is described should be similar to their own. The answer was that similar industry would be ideal, but there is no need for similar product, for example. The same interviewee did, however, stress that the story should be accompanied by instructions for a small business similar to theirs on how to do everything in practice. (CIRC4Life partner, interview 1.5.2020).

Much of the information only highlighted further what had been discovered already earlier during the development process, such as the need to see what co-creation is in practice and the need for adaptability. There were also some interesting new findings, however. For example, the interviewees' views on co-creation could be very different, even contradicting, as in the below quotes from the interviewees.

"*"It is perhaps better for large businesses, who are further away from end-users, we in the small businesses are closer to customers and don't benefit as much."* vs.

(CIRC4Life partner, interview 1.5.2020)

"For small companies it may be interesting, but big companies might not think a process that is not 100% in their control is good."

(CIRC4Life partner, interview 28.4.2020)

Conflicting ideas like this can work as a barrier in the use of co-creation, for which reason a deeper understanding of co-creation can in itself help remove barriers from the way of effective co-creation and the ensuing business benefits.

Based on the interview data, the empathy map created in the first iteration of the Define phase was updated with the following information: uncertainty-related feeling, business-related goal, adaptation-related goal. The updated empathy map is in Figure 23 below.

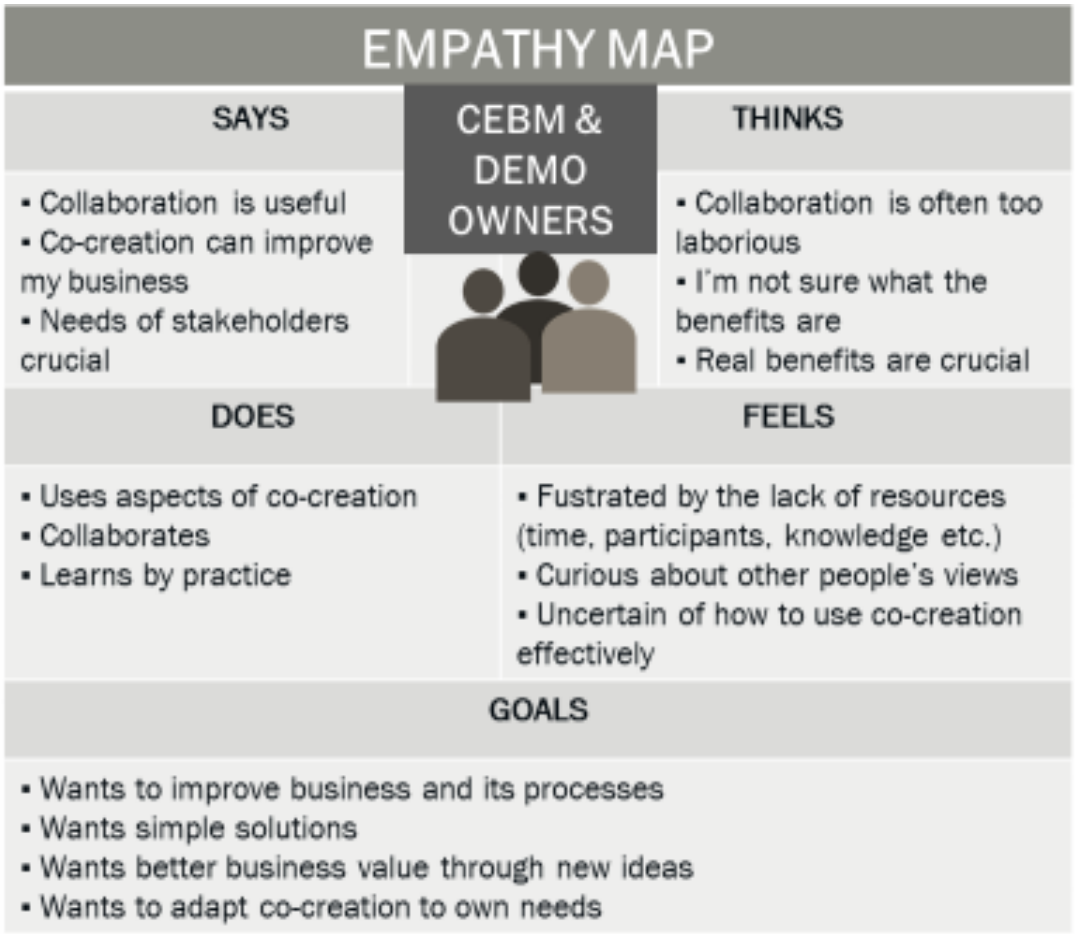

Figure 22: Updated empathy map (based on empathy map in Figure 22) (Template adapted from Gibbons 2018)

Two personas were created based on the interviews as well. This was not originally the intention, but the material gathered by then gave rise to these two personas, one of which is a small-business owner who is only learning about co-creation and is not quite sure yet what the benefits are and how to use co-creation outside of gathering customer insight. The second persona is a medium-sized-business owner has basic understanding of co-creation but wants to learn to use it more effectively. The personas are in Appendix 5. These personas help see the different needs concerning co-creation that businesses may have an think of possible user journeys, challenges and other aspect that can make the development work more user-centered.

After the analysis of the interview data, a synthesis was conducted of all the material gathered in the development process thus far. Once again, thematic analysis was used as the basis. The results were filled into an elements table which can be seen in Appendix 6. It was created to get a macro perspective to all of the results of the design process and to help transfer this knowledge to the next phase in the design process, the second iteration of the Develop phase.

4.2.6 Second Iteration: Develop

In the second iteration of the Develop stage of the design process a workshop was held as a Zoom meeting. The aim was to have a broad selection of experts from various fields related to the design challenge. In the end, no business owners were available for the workshop, but the other participants included experts in the field of innovation, service design, communication and adult education.

The workshop consisted of an introduction to the challenge and the insight gathered so far, then a group discussion based on the prefilled elements table and an ideation session done individually. After the ideation session the different ideas were discussed. The intention was to vote from the ideas in the last phase of the workshop, but due to elaborate general discussion during the workshop and time running out, this phase had to be left out. However, the general discussion gave the participants a broader view on each other's perspectives. Also, during the final discussion on each of the participants' ideas the participants built, without a prompt from the facilitator, on each other's ideas, which can be considered even better than a mere prioritization of separate ideas.

The aim of the workshop was to get the participants to ideate solutions based on the insight gathered earlier during the design process. Perhaps due to the complex nature of the subject matter, rather general workshop exercises and it being a matter of ideating a concept rather than a prototype, the participants' ideas were rather aspects of the solutions instead. These aspects included:

- The solution should take into account the ways the company creates value and shares activities and resources, and take these into account in the message
- The minimum viable result of co-creation activities should be taken into account and the solution should be on an online platform to facilitate easy access, as well as editable to make it customized
- Customers are not so much interested in tools or methods as they are of being convinced that you are offering what they need
- It is important to consider how to create the right environment for co-creation, in which some kind of self-assessment tool could help, to assess what can help the company solve their challenges
- It should be assessed right at the start, what is the level on which the company wants to innovate and how they want to do it
- The attitude of the company needs to be measured somehow and then the levels and options concerning co-creation need to be highlighted somehow, for example with a visual storyboard with different storylines based on the level of co-creation, ones that change based on selections

- At the start the mood for companies to engage should be set by making them think how future proof their business is, for example with a test, and then discussing the possibilities.

Based on the ideas generated, as well as the insight gathered throughout the project, a concept was created of a tool and a process for communicating the business benefits of co-creation, especially to SMEs developing circular economy business models. A summary of the concept draft was then sent for comments to several CIRC4Life partners and participants of all the workshops held during the development work, a total of 23 persons. This draft version of the concept can be seen in Figure 23 below.

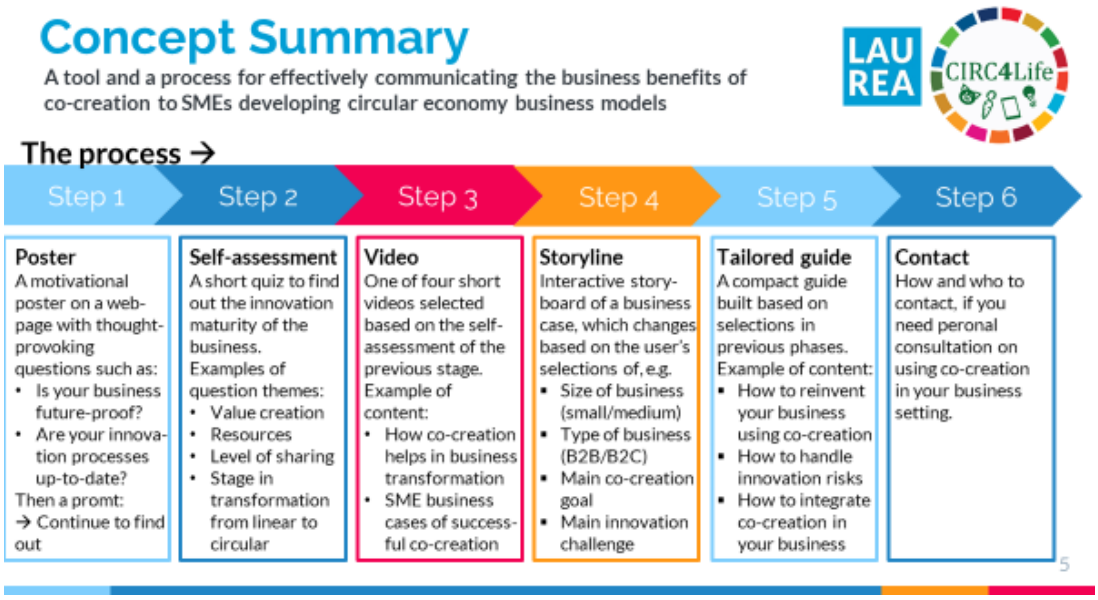

Figure 23: Draft version of the concept

4.2.7 Deliver

The concept was next sent for comments. Also a short online survey was conducted among the DEMO owners of the CIRC4Life project. The survey was conducted to get a better understanding of what business benefits the business owners felt were most important to them, so as to get a better idea of what to emphasize in the content of the tool and the process of which a concept was made.

The questions of the survey concerned the prioritization of the business benefits of co-creation and their themes were as follows:

1. The ten most useful business benefits of co-creation out of a predefined list
2. Usefulness on a scale from 1 to 5 of the 19 benefits classes
3. Organizing 10 concrete business benefits based on usefulness

out of the 6 targeted respondents five filled out the survey. The results indicated that:

1. Customer satisfaction and improvements to products and services are valued over structural considerations like learning culture, efficient interactions and innovation abilities.
2. Interactions, creativity and opportunities are considered more useful results than strategic considerations like fast adaptability, risk reduction and growth
3. Practical is more valued than general. For example, ”*Facilitation of continuous product or service improvements*” received high scores and “*Efficient use of intellectual potential*” low scores.

The survey results further emphasized the need for practical information on how to use co-creation in business activities are valued higher than general strategic-level goals.

Out of the 23 persons reached for comments, 11 replies were received. Out of these, 3 were workshop participants (service designer, communication specialist, potential buyer of co-creation), 2 were Laurea representatives, 2 were Risk and Mitigation Planning Manager representatives and 4 were representatives of DEMO owners. The feedback was summarized, and the summary can be seen in Figure 24 below.

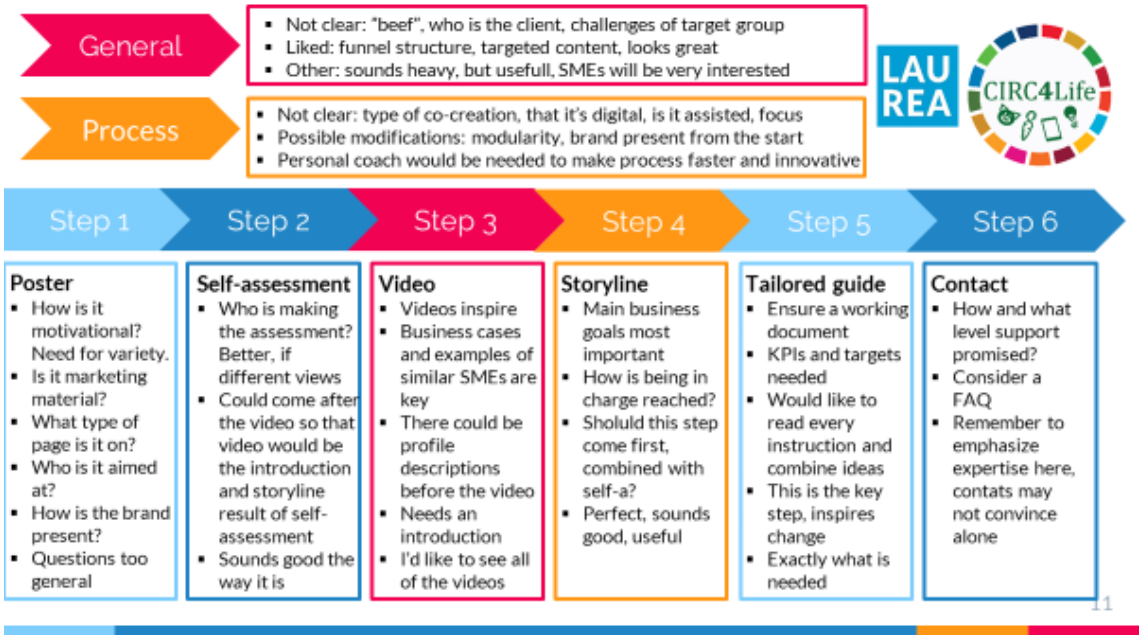

Figure 24: Summary of the feedback collected based on the concept draft

While going through the feedback, it was important to keep in mind not just the draft at hand, but all of the insight gathered during the design process. The persons giving the feedback had participated at various stages of the process and none of them could have had a

clear picture of the considerations involved. They were giving feedback mostly based on the concept draft.

For example, one feedback was, that the process is “quite traditional”. The concept could not easily have been revised to be more innovative, however. There are three main reasons to this.

1. Workshop results indicate that there needs to be traditional mixed with interesting elements such as game-like features, to make the solution both relatable and attractive.
2. Interviews indicate that DEMO owners do not want anything too much out of the ordinary
3. In an attempt to get also the traditional businesses to co-create, a solution too innovative might not be advantageous.

Another example is a feedback, where it was recommended that a personal coach would be included in the process to make it more effective and innovative. This would not have met the need for a fast, simple, easy and cost-effective solution the insight indicated as generally preferred. The solutions would not also have had as far reach and accessibility in that case.

The feedback did, however, greatly help improve the concept. For example, the first and last step in the process were too vague and unrelatable. The process was not clear, and modularity was emphasized as a benefit instead. Profiles and other info was added to the concept to make it clearer and more focused. Adaptability of the tool was further enhanced.

The feedback was further discussed with the thesis commissioner, after which the concept was revised. Feedback was once again requested for the revised version, but this time only from the thesis commissioner’s representative.

The final concept and the content of the concept document delivered is described in the next chapter.

A total of 29 people participated in the co-creation of the final concept besides the author. 10 % of them were the commissioner's representatives, 38 % CIRC4Life partners, 21 % service design students, 14 % communications specialists, 7 % teachers of subjects related to co-creation and 10 % potential co-creation buyers. They participated in the form of feedback, survey answers, interviews and/or workshops. Much of the definition work, drafting and planning of activities between these was done alone by the author.

5 Conclusion

This chapter first discusses what answers were provided by the thesis work to the research questions set out in chapter 1.2. Next, the concept created during the development work is described. Lastly, conclusions are made on the applicability of the knowledge base to the results.

5.1 Concept description

The result of the design process is a concept of a modular tool for effectively communicating the business benefits of co-creation to SMEs which are developing circular economy business models.

The concept document delivered to the thesis commissioner had the following content:

- The challenge
- Summary of the Insight guiding the development
- General description of the concept, including concept summary, purpose of the modular tool, core message, target customer and users
- Detailed description of the modular tool, including descriptions of each module and suggestions for content, examples of module combinations and their usefulness and possible structure of the tool elements
- Description of the use of the modular tool, including two user personas, possible use scenarios, example of a user journey
- suggestions for further development

The user personas are the ones created earlier and that are described in Appendix 5. The core message, target customer and target user, examples of module combinations and the example of a user journey are in Appendices 7, 8 and 9, respectively. The rest of the content is discussed after the illustration of the final concept, which is in Figure 25 below.

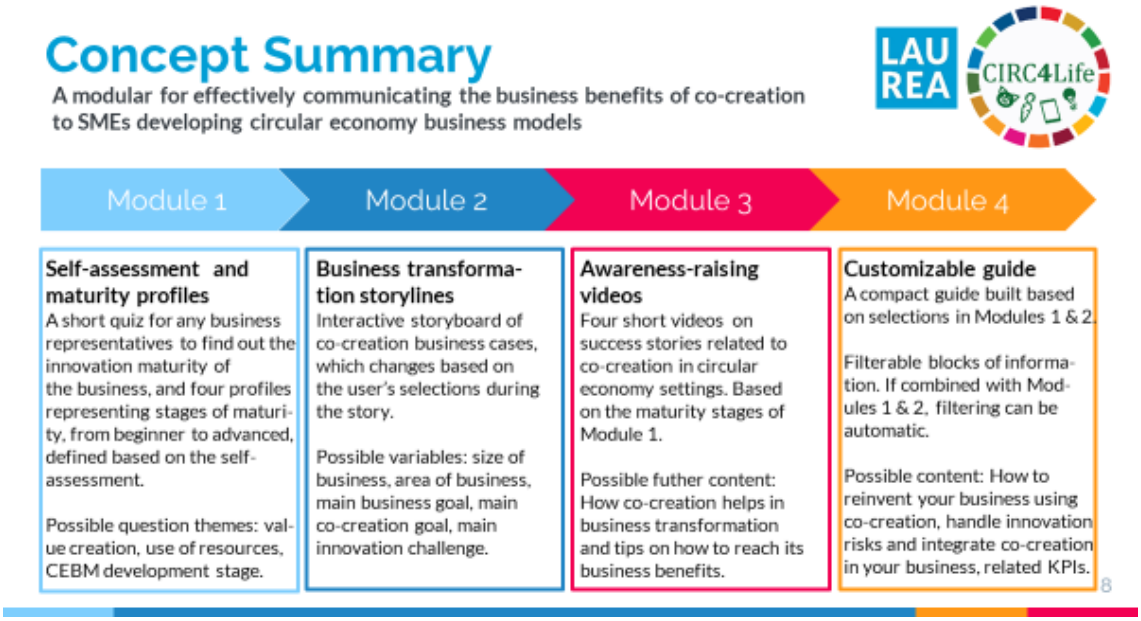

Figure 25: A concept for modular tool for effectively communicating he business benefits of co-creation to SMEs which are developing circular economy business models

The purpose of the tool is described below for each module.

Module 1: Self-assessment and maturity profiles

Helps the businesses assess their readiness for the transformation from linear to circular economy and consider the different aspects related to their business models, such as value creation and use of resources, related to this transformation.

Module 2: Business transformation storylines

Allows the businesses to experiment, in an interactive way, how co-creation can be used in their business contexts. Makes co-creation more relatable to the business representatives due to content tailored based on their needs and challenges. Gives practical information through business cases.

Module 3: Awareness-raising videos

Inspires the businesses and gives them perspectives on how co-creation can be used successfully in business settings similar to theirs.

Module 4: Customizable guide

Gives the businesses tools to take co-creation further in their business settings. Practical advice, information and tips that can be filtered based on specific needs, challenges and goals gives a way to connect co-creation even better to different business environments.

Some of the possible use scenarios for the modular tool include:

- Company personnel are going to a workshop related to co-creation. The workshop facilitator has asked them to use the tool as a pre-workshop task. In the workshop, the personnel discuss about their perspectives on the company's innovation capabilities.
- An innovation manager wants to talk to company decision-makers about the innovation culture of the company and uses the tool to orientate them to the subject.
- A business owner is interested in making use of co-creation but wants to learn more about what co-creation is other than a buzzword.
- A service designer ask his/her client to use the tool to facilitate a deeper discussion on the client's goals concerning service design.

The challenge set out at the beginning of the development work was to find out what are the business benefits of co-creation and how can these be effectively communicated to SMEs which are developing CEBMs. The aim was also to create a solution that would be usable to wider audience as well.

The answer to what are the business benefits of co-creation is in the knowledge basis of the thesis. A "what" question is something that is more an information-based than a design-based challenge in that there is the will to find out something that exists, rather than to develop something to existence. The challenge concerning effective communication was at least in part answered by the insight gathered during the development process and in the concept, developed based on insight.

The development project did not reach the prototyping phase intended due to time restrictions, but a concept was nevertheless created which helps take the development work forward.

As the next step, a further prototyping phase with the following steps is proposed: 1) Summary content drafts are created for each module based on the suggestions in the concept document and the insight gathered during the project, 2) A mock-ups of the modules are created, e.g. using online survey applications, storyboards, videos on co-creation and online instructions on co-creation, 3) A protype of a full set of modules is created using the mock-ups 4) Feedback is gathered from the DEMO owners based on the prototype, based on which the concept can be revised. An alternative is to create a prototype of only part of the modules at first.

Further development would need to be looked at in the light of the results of the prototyping phase. If the starting point was similar to the current concept, the next steps could include, for example, the following: 1) Module structures should be developed, along with the interactions of these structures of each module with other modules, 2) Criteria is needed based on which the elements are selected at each interactive stage, including business-related specifications, selection of challenges and goals and co-creation benefits that will be treated in the

content, 3) Content should be created, including, for example, manuscripts for the videos, the content blocks of the guide and the questions of the self-assessment, and 4) graphical elements should be created.

Some of the insight gathered during the development work that was used as basis for the concept and that might be useful in further development include:

- One size does not fit all – needs to allow for adaptability
- Business cases are considered a good tool for learning about benefits
- The information needs to be practical, not too theoretical
- There is need to show real beneficial outcomes of co-creation (metrics and data)
- The solutions cannot be too wild, because is not relatable, but new elements, such as competitive or visual elements, combined with more traditional ones make the solution more attractive
- The solution needs to take into account the general business environment, goals and challenges of businesses
- The solution cannot be too laborious, such as a full course, but needs to be something that does not require a huge effort either from the service provider or the user instead.
- Videos and practical advice are some of the preferred ways to receive information on co-creation

To tailor the solution into a form specifically suitable for the CIRC4Life partners, further research is needed of their specific information needs and barriers. However, as has been discussed earlier, the business benefits of co-creation can vary greatly based on business-specific factors. For this reason, the most effective way to communicate the business benefits of co-creation to the CIRC4Life partners as well could be an adaptable solution that they can interact with, the concept of which has been described above. Another solution might be, however, to pre-tailor the more general solution for them in advance, which requires a good understanding of their information needs and barriers. The material gathered during the development work of this thesis can offer a starting point.

5.2 Answers to research questions

Below, each research question defined at the start of the thesis work are listed and below each is discussion on what kind of answers the thesis process gave to these.

1. What are the business benefits of co-creation?

There is a vast amount of benefits that can be categorized in different ways. The benefits each business considers useful depends on the business goals and other focus areas of the business, availability of other benefits, understanding of the concept of co-creation and also

the ability to take advantage of the benefits. According to literature, the main themes are creativity, knowledge and commitment. Based on surveys and interviews conducted during the research process, the main benefits seemed to have to do with making processes more efficient, facilitating improvements to products and services, collaboration and customer insight.

2. How can the benefits of co-creation be efficiently communicated from the business perspective?

There is need to do it in a practical way, showing real results and how these are reached. The message needs to be tied to the context of the business somehow to make it more relatable. The method cannot be too innovative, because this would make it less relatable, but it needs to have some interactive, competitive or visual aspect that makes it more attractive. It needs to be adaptable and business cases of successful use of co-creation are considered useful in showing what co-creation means in practice. There is need to give advice on how the business benefits can be reached so as to convince the business that it is co-creation is worthwhile.

3. What are the implications of the benefits of co-creation in developing and implementing SME business models within circular economy?

The overall understanding of the impact of co-creation and open innovation on business should be broadened and a co-creative mindset incorporated into the business structure to make co-creation more effective. The benefits alone as a list do not tell much in a context where value creation is the joint effort of an ecosystem of actors. Thus, ecosystems should be given more attention when co-creation is discussed. Co-creation can greatly smooth the way in the transformation from linear to circular economy, where the very notion of circularity requires a joint effort. This effort is important in reaching sustainability goals.

4. How can the benefits of co-creation be efficiently communicated to the stakeholders within the CIRC4Life project?

As the stakeholders of the CIRC4Life project were used as the focus group in the development work, the same holds for the partners as is true for the general communication of the benefits addressed in question 2. However, a further consideration is their more particular level of understanding of co-creation. What one partner, who is only just learning about the benefits of co-creation, needs to hear in order to get more out of co-creation is not the same as what a partner with already a basic understanding of co-creation and eagerness to use it more effectively needs to hear. Some preferences that came specifically out of the interview and survey answers from the partners are videos, business cases and practical advice. It is also vital to remove barriers from the way of co-creation, such as by finding a common language, before the benefits can be communicated effectively.

5. What would be an efficient tool for communicating the business benefits of co-creation in developing and implementing SME business models within circular economy?

An interactive, adaptable, easy and simple solution that does not take a great effort but attracts attention and gives practical information in a context the user can relate to. Advice on the steps along which to reach concrete benefits and information on benefits related to customers and improvements should be emphasized. The concept document described in chapter 4.3 hopefully gives an example of one efficient tool.

5.3 Conclusions Based on the Thesis Work

Co-creation takes into account ecosystems of resources to reach common goals (Ramaswamy and Ozcan (2014, xvii). It is not a about isolated activities but creative processes, where ideas are built upon to form new value (Ind and Coates, 2013, 7). Based on the results of this thesis it seems there has not been full integration of these processes. Due to the different motivations of the actors involved, the resources have not been used to the full and the process from ideas to solutions has been fragmented. Even though co-creative activities can be successful, if co-creation is not considered a way of doing things, these activities can become isolated instances. Also, the knowledge flows of open innovation (Chesbrough 2003, 43) could be seen to require structures which ensure the flow and that the new knowledge is recognized, assimilated an applied in a way that enables value capture Cohen and Levinthal 1990, 128).

Another perspective to the wider framework supporting co-creation is a co-creative environment. An environment is needed that supports the co-creation activities. Instead of creativity in individual settings the key is ensuring the best environment for groups creating together (2013, 7). In CIRC4Life, these environments are created with the help of Living Labs and Innovations Camps. They give structure to the co-creation activities and ensure a process is followed in the co-creation. From the business perspective, they can be seen somewhat at the border of what might be called an environment for co-creation, because they can be viewed as isolated cases of co-creation activities instead of a larger framework of co-creation, especially if co-creation is understood by the business owner as mainly workshops and interviews. What happens within an organization is, of course, out of the reach of a third party the organization does not wish to include in decision making, seeing co-creation as a way of doing things instead of separate activities, which was discussed above seems key in creating the proper environment for co-creating together. Another factor is understanding of the common value (Hatch and Schultz, 2010, 603).

As is discussed in chapter 2.4, becoming a co-creative enterprise requires a transformation of the traditional way of doing business. This requires “institutionalizing the power of co-creation enterprise-wide” (Ramaswamy and Gouillart 2010, 21) and creating co-creative processes

for business interactions (Ramaswamy and Gouillart 2010, 207). This transformation needs to be supported, because it can involve a fear of losing control (Hatch and Schultz, 2010, 596). A clear understanding of the business benefits of co-creation can balance the view of unnecessary risk-taking. If Table 2 in chapter 2.4.3 is compared to all the material gathered during the CIRC4Life project, much of it seems to fit traditional innovation instead of open innovation, such as such as pre-defined overall goals, task descriptions and outcomes based on project plans. Open innovation and its outcomes are set against this background.

In CIRC4Life the DEMO owners participate in co-creating new business models. According to the results of the development work in this thesis their understanding of co-creation varies greatly. Not enough data has been gathered to evaluate if the level of understanding corresponds with the extent to which co-creation is used, but none of the created business models seem to unleash the full potential of co-creative activities, for example in co-operation within circular economy. Also, none of the material available for this thesis work discusses joint business models between the business owners, for example. According to survey and interview results gathered during the development work, all of the DEMO owners use some aspects of co-creation in their business operations. However, perhaps a good understanding of co-creation as a whole needs to become first, before business models can be co-created effectively.

What the DEMO owners of CIRC4Life see as the most useful business benefits of co-creation differs somewhat from what seems to be emphasized in the literature on the business benefits of co-creation. Whereas themes such as creativity and knowledge capital were mentioned more often in literature than more tangible ones such as financial gain and high quality, among the DEMO owners of CIRC4Life more practical benefits such as improvements to products and services was valued higher. However, in both cases customer-related benefits were also popular. No generalizations can, however, be made based on either data, as the scope is relatively small, with 38 sources and five business owners.

As for the ways to communicate the business benefits, some differences and similarities can be seen between what is discussed in chapter 2.6. and what insight was gathered during the development work. For example, there was a lack of applicability to the contexts of the businesses taking part in the CIRC4Life project in the business stories described in the literature concerning co-creation. However, business cases was offered as a good way of communicating the business benefits of co-creation on more than one occasion by the businesses during the development work. As described in chapter 4.2.5, one interviewee described his preferences further, indicating that the industry and size of the business should be similar to his business in the best way to learn about co-creation. Due to the small amount of data generalizations should be avoided, however. The other themes, metrics and value propositions, did not come up as strong themes in the development work. It is difficult to say, based on the insight

gathered during the development work, if this is caused by not perceiving the link between measuring business results and the results of co-creation or something else.

The size of the business is also relevant, when the development of business models are considered in general. SMEs have smaller possibilities for pooling knowledge, gathering resources and accumulating technological know-how (Rizos et al. 2016), scaling and internal innovation (Vanhaverbeke, Vermeersch and De Zutter 2012) than larger companies. On the other hand, they can be more in entering new markets and making use of new business opportunities (Vanhaverbeke, Vermeersch and De Zutter 2012). In the interviews conducted with CIRC4Life partners, there was one that considered co-creation as more suitable for bigger companies and another that considered it more suitable for smaller companies (CIRC4Life partner, interview, 28.4.2020 and 1.5.2020), as described in chapter 4.2.5, indicating that it might not always be clear for the businesses themselves, what innovation abilities they have.

The business models that are being developed in CIRC4Life are not yet completed, but the themes of leasing, recycling and composting, for example, may be also seen as benefits related to circular economy rather than as attempts to address circularity in a systemic way in line with what Charter and McLanaghan (2019, 90) have discussed. However, only at the end of the project can it be evaluated, how well the business models take into account the different aspects of circularity.

6 Discussion

In this chapter, I will discuss the delimitations and credibility of this thesis work and my learning process both as a thesis writer and as a service designer conducting a design process. I will also evaluate the impact of this thesis work and the transferability of the results gained during it. At the end of the chapter, I will list some opportunities for further research and summarize the work, its findings and applicability.

6.1 Delimitations and Credibility

The objective of the thesis work sets boundaries to the research, and within its limits, also he selected perspective, focus and scope. The objective is defined by the research question and the focus mainly by the needs of the client. The perspective is that of a service design student with knowledge of co-creation and to some extent of open innovation, but also that of a project manager with some understanding of business models and their use in the business world. As for circular economy, I had only marginal knowledge of it prior to commencing this study. The level of knowledge I had prior to the study affects my perspectives, views and understanding, even when I aim at objectivity. For this reason, any conclusions made based on theory and the qualitative research data gathered are subject to subjective interpretations. It

should be also noted, that for a brief time of three months, I was a paid employee in the CIRC4Life project. Consequently, my knowledge of the project is likely deeper than what can be assumed of a thesis student.

Another boundary set to the study is the limited amount of time and resources allocated to the thesis work. This has its main effect on the scope of the research data. For example, only 38 sources are discussed in the literature review, and only 5 businesses represent the business perspective in the development work. For this reason, no generalizations can be made based on the work, even if new perspectives are gained.

The boundaries of this study were most affected by the concept selection selected into the knowledge base and the objectives of the thesis commissioner, which has the strongest influence in the development work.

The anonymity of the informants used in this thesis work is ensured through anonymizing any relevant material. During the development work, the material was anonymized before any presentations or other material was handled publicly. The insight gathered during the process was synthesized and any identity information was left out. Interview transcripts and survey answers were anonymized by substituting identity information with higher category information (Hyvärinen, Nikander and Ruusuvuori 2017,419), for example using *company* in place of the name of a company. In this thesis, all direct quotes are used with the permission of the person quoted. Unpublished sources, which are material from the CIRC4Life project, used in the thesis are used by permission of a CIRC4ife representative.

Other ethical research practices include ensuring the participants understand what they are participating in and how the results of their participation will be used, and also that they are free to end their participation at any point (Hyvärinen, Nikander and Ruusuvuori 2017,419). This I have done my best to ensure throughout the process. On the one occasion an interview was recorded, the interviewee was informed the exact start and end time of the recording. The need for participations was assessed and the activities involved planned carefully beforehand, so as to minimize the burden of the participants (Hyvärinen, Nikander and Ruusuvuori 2017,32).

The guidelines set out for responsible conduct of research by the Finnish Advisory Board on Research Integrity (2012) were followed throughout the thesis work. This means, for example, “integrity, meticulousness, and accuracy in conducting research, and in recording, presenting, and evaluating the research results” (Finnish Advisory Board on Research Integrity 2012, 30), the methods applied to the research are ethically sustainable, the work of others is cited appropriately and the research is in conducted amicably in every way.

6.2 Development Work as a Learning Process

I did not only learn a great deal about co-creation, innovation, business models and circular economy and how co-creation is used in the latter three contexts. I did not also only gain an experience of a design process. I also learned a great deal about all kinds of considerations that should be taken into account better during the design process and how practice often overrules theory when it comes to all the principles of service design, business design and co-creation. These aspects I will discuss next.

I learned that it is sometimes difficult to put oneself in the role of an expert, the service designer, and take the process forward with resolution amid all the various and often contradicting expectations, assumptions, preferences and perspectives. Trying to take all of these into consideration made the scope too wide. The guiding light, of course, was the thesis commissioner's most stressed points and goals, as well as the insight gathered along the way. I still feel I have much learning to do with narrowing the scope in a design process. Also the dual role of a researcher set its challenges when it comes to defining the limits of my role in each setting. Even as the commissioner of the thesis had the strongest influence on outcomes, in the end it was the researcher who had to do the final decisions in conflicting situations.

It was challenging to take the focus group, the representatives of the DEMO owners, into account, when they were scattered around Europe and were often very hard to reach. In hindsight I can say that I should have put more effort into this to make the design process more focused. Instead, I resorted to ideating with other relevant stakeholders within and outside the project and shifted the focus more to a solution with a more general applicability. The challenge of not being to effectively co-create with the busy DEMO owners was considerable. Perhaps it would not have even been possible to reach the best outcome due this. On the other hand, the approach might have been wrong in the first place. Perhaps the co-creation attempts also hit the barrier of the lacking overall environment discussed in chapter 4.1 in relation to the co-creation and innovation challenges in the project.

If time had allowed it, it would have been beneficial for me to first acquaint myself better to circular economy, open innovation, SME realities an business models, then acquaint myself thoroughly with the situations and starting points of the DEMO owners and only after that start the design process. Now I had to do everything at once and it made the process a bit chaotic. However, when I look at the implications of the key characteristic of service design discussed by Kimbell (2013, 156-157), which were discussed in chapter 3.1., I feel I was able to follow them throughout the process.

I feel I should have given more focus on the content and that I focused too much on how to communicate the business benefits of co-creation and did not give enough attention to what

to communicate, even though the literature review did shed much light on the matter. A more thorough handling of the matter with the focus group would have helped in the matter and made the design process more focused. A key point here is that content and communication method impact each other and should not be handled separately. I am still not sure what would have been the most effective methods and tools to design content along with the method of communication.

I learned that even though the Double Diamond design process model gives structure to the process, in the end, the process follows its own path where defining, ideation, development alternate until the Deliver stage is reached. Also, amid the development work there was also the thesis process and the knowledge gathered during it certainly had an impact on the design process as well, if in nothing else than at least in making the conversations deeper and the analysis more knowledgeable. Below, in Figure 26, I have modified the DD model shown in Figure 11 in chapter 3.3 according to how it actually went.

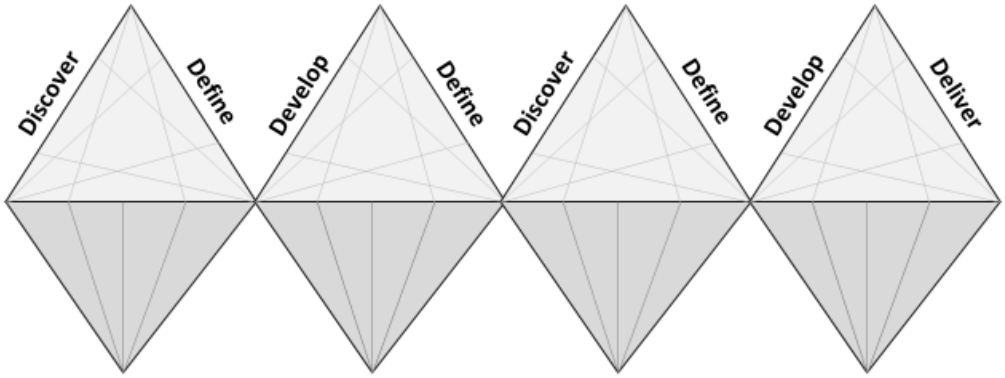

Figure 26: How the design process actually went (adapted from Design Council (n.d.))

In other words, I feel definitions needed to be done after every stage and not so that it would have been confounded to one phase in the project alone. The process was also, as is often the case, iterative and so some of the phases were repeated.

Overall, taking more time in narrowing the challenge at the beginning would have made the design process much more focused and the results much more usable. In this sense the Design Council's framework for innovation illustrated in Figure 12 has a very important addition: the challenge at the start of the process. It is crucial that the challenge is well formulated, whatever the discoveries in the Discover phase may be and whatever may be defined based on

these. The challenge is an important part of the understanding of what is viable for the business.

The assumptions to be tested during a business design process, the positioning of which are illustrated in Figure 13 in chapter 3.3 should perhaps also include the assumptions of the commissioner of the design process. Perhaps these should also be tested during the process to make sure they are aligned with the overall goal. I did get ample feedback, advice and support during the process, but I should have also made sure along the way that I am on the same page with the commissioner. A set of key assumptions or expectations for the outcomes might have helped align the perspectives of the service-provider and the user. Thus, the illustration in Figure 13 in chapter 3.3 could be modified as follows:

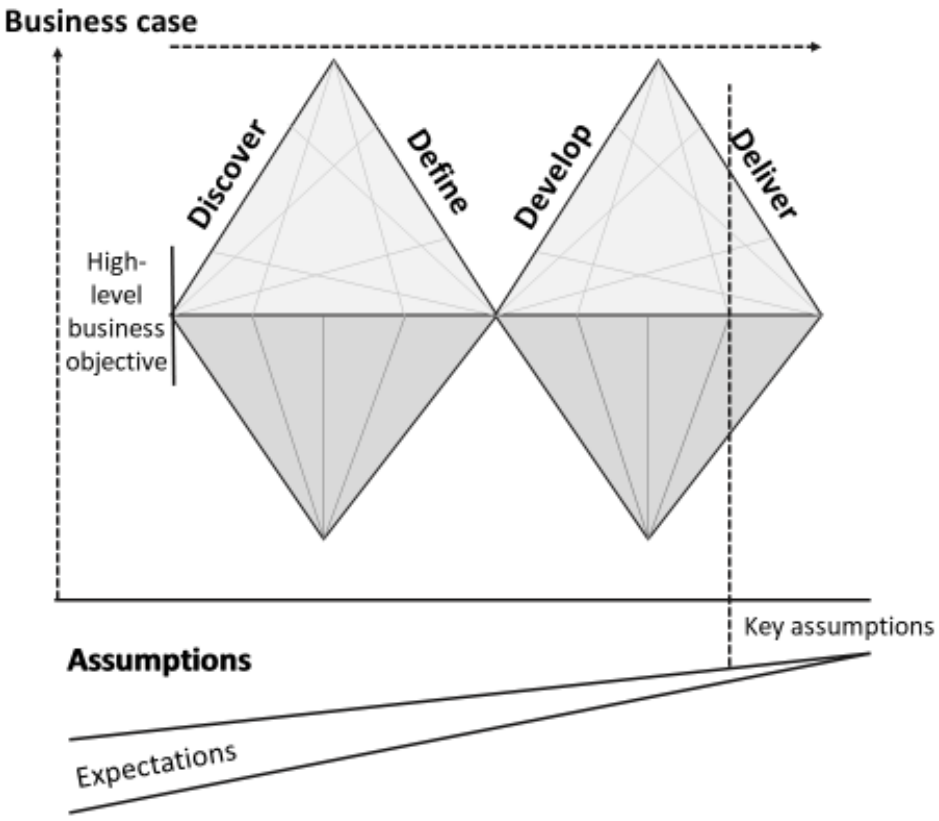

Figure 27: Modified version of The Double Diamond design process from a business perspective (adapted from Azabagic and Karpen 2016, 179)

It might even be, that service design was not the right approach for the challenge in the end, and what was needed was not a service solution. The project employed a full-time service designer, who cold tackle the more practical challenges. Perhaps a combination of communication studies and motivation research and anthropological approaches could have better

helped answer what make a message on co-creation effective and how people are motivated to act based on it. This further emphasize the need for the designer, in this case me, to set the challenge at the start in a way that it suits the design framework.

In the end, I wished I had limited the scope more drastically to make the result more usable to the thesis commissioner. I feel I should have asked for a stronger input from the thesis commissioner in setting the overall direction, however free the path in the design process might turn out to be. I did, however, learn a great deal about conducting a design process and in that sense the process has been extremely useful.

6.3 Thesis as a Learning Process

During the thesis process, my understanding of co-creation and its business benefits, business models and their development, circular economy, open innovation and design processes grew exponentially. I came to understand, how much the specific situation of an organization affect the outcomes of the business benefits of co-creation and how these benefits are understood. I learned about how co-creation is linked to the value-creation processes of organizations.

My writing process, abilities to analyze content and information retrieval abilities improved. I developed a more systemic perspective into subject matters. My skills at forming synthesis improved. I learned about long-span development.

I now see more clearly some of the shortcomings of my thesis work. More attention should have been given to the challenges, barrier and negative outcomes related to co-creation and not only the benefits. Much of reaching an effect is, in the end, in removing the barriers along the way of the message trying to reach its goal. Also value co-destruction could have been given more attention. Circular economy and business models should have been tied better to co-creation right from the start, instead of first learning about co-creation and open innovation in general and only then adding these to the mix.

At the beginning of the thesis work I planned using action research as the framework of my work. In the end I discarded this idea, because I felt I did not have good enough grounds for doing so. After all, I did not even have a strong contact with the focus group. I did have a possibility to work inside the CIRC4Life project but did not have a strong enough stand to be able to observe from the inside and attempt at effecting a change. Nevertheless, it can be said that similarly as in action research where the aim is, through action, to understand, evaluate and change (Costello 2003, 5), the aim of this thesis has been to understand the business benefits of co-creation, to evaluate their effect in developing CEBMs in SMEs, and to change the way these benefits are communicated. If the process had made a stronger impact on the

DEMO owners and changed their perspective of co-creation, perhaps the use of action research as the framework would have had better grounds.

My initial grounds on using action research were also related to learning about co-creation as a service design student. The action research's basic four-step model is planning, acting, observing and reflecting, with iterations of this cycle when necessary (Costello 2003, 7). Even though the case project, in other words the commissioner's perspective, guided this thesis work, it was also a learning experience of a service design student. This is relevant, because the subject under study, effective communication of the business benefits of co-creation, is also something a service designer would need to consider in their daily work. Consequently, the thesis may be called a dual process of learning and exploring.

This process of continuous change can only succeed when it is combined with continuous reflection. The reflection has as dual purpose. One is to critically review the action performed and the other is to evaluate what has been learned so this learning can be used to plan ahead (Dick 2001, 5-6). As I was continually learning about co-creation both through building the information basis and through the design process, a change was affected during the process and I came out in the end as a more knowledgeable communicator of the business benefits of co-creation.

In the end I think it is better that the framework is service design and not action research, as this way focus is shifted from social constructs and subject observed to the co-creation process and the ways co-creation can be used, one of which is service design. This way the thesis works better as a whole, where the information basis sheds light on the aspects of co-creation, service design gives one framework for using it and the development project is an example of a practical way of using it.

6.4 Impact Assessment

The final test of the success of the thesis work is the applicability of the results of the development work in future contexts and the extent to which the concept facilitates the development of the tool further.

After delivering the final concept I asked the representatives of the thesis commissioner to shortly describe how they thought the concept could be useful for them in the future and also what results were not reached that they would have hoped to reach. From the replies, it became apparent that the work did not fill all their expectations. The concept is very generic and plenty of development work remains. Perhaps a more practical solution could have been reached by narrowing the scope further. The concept was also not seen as innovative enough, as it contains much of the methods already in use in the project. In this respect, the impact on the way things are done might not be great, especially as the whole concept might be too

heavy to develop during the project. A more practical and a much simpler solution might have been much more useful.

Another thing that did not fulfill expectations was the treatment of the business benefits in the context of the SMEs developing CEBMs. The concept does not emphasize this part, that is true, and the business benefits were discussed form a much wider perspective than the context of CEBMs alone. In other words, it is not apparent in the concept that the tool is directed to SMEs developing CEBMs, but rather this is something that can only become apparent in the content created.

The development work did not fulfill the main expectation:

> The expected outcome of this would be to help us convince SMEs in the CIRC4Life project on the value of co-creation in developing new business models for CE.
> (J. Nevmerzhitskaya, personal communication 26.5.2020)

The concept does not help do this. The design process failed in the convergent phase of thinking, narrowing the scope and pinpointing the steps that would have led to the development work reaching the intended goal. If the expectations would have been discussed more thoroughly at the start and the design process would have been narrowed based on a very concrete expectation right at the start, the end results might have been very different.

However, the whole thesis work with all the accumulated material as a whole was seen as giving useful guidelines for future work and valuable information on co-creation.

6.5 Transferability of Results

The information basis of the thesis hopefully sheds at least a little more light on the usefulness of co-creation in a setting where CEBMs are created. The literature review does its part in giving a broader perspective of the business benefits of co-creation. The description of the design process hopefully does its part not only in yielding the result but also in showing in practice, how results can be reached through co-creation activities.

As for the concept created as a result of the development work concerns, it can be said that as stated in Appendix 7, the tool could be targeted at service designers, innovation managers, co-creation teachers and anyone else with an interest in getting businesses to co-create to do it more effectively, and the user of the tool could be any SME considering developing or already developing CEBMs and not yet making full advantage of co-creation. Because of the adaptability of the modular tool, the use scenarios are endless. It is true that it is still only a concept, so it is not useful as such, but it can inspire tailored solutions that can be used in any scenario where there is need for getting business representatives to co-create or to do it more effectively in a circular economy setting.

A better understanding of the business benefits and a way to make others see them as well is useful for anyone trying to sell co-creation to companies, managers or anyone else in the business world. It is especially useful for anyone working with or within SMEs developing CE-BMs.

6.6 Opportunities for Further Research

As thoroughly as I got to research and learn about co-creation during the thesis work, there is still much to learn about co-creation, things to which the research literature did not give a satisfying answer. Some of the things that could be further researched are:

- What are the metrics with which the success of co-creation activities and processes can be measured and how to show the results in a way that relates to SMEs
- How do the dynamics in individual, company, network and society level interactions combined affect co-creation outcomes
- What makes co-creation successful in different situations and what is the combination of elements make co-creation successful, from the selection of the participants to the needed resources and so forth
- In what ways is co-creation with different stakeholders beneficial outside the customer-service-provider interaction and how does the use of co-creation with different stakeholders vary
- What does co-creation look like from a techno-anthropological point of view and concerning related technological innovations
- What are the challenges related to co-creation and how can these be overcome
- What are the preconceptions related to co-creation and how do they affect motivation to co-create
- How to motivate to co-create and grouping of factors influencing motivation, taking into account not only how to motivate customers, but how to motivate different groups of stakeholders
- How are the benefits of co-creation linked together, for example if some benefits can actually only be achieved after some other benefits are first gained
- What are the competencies needed in an organization for the benefits of co-creation to be effectively materialized.
- How owners and managers of SMEs see the benefits of co-creation, a larger European study

6.7 Summary

A key insight received during this thesis work was that the business benefits of co-creation are strongly linked to the specific requirements of an organization. Instead of a list of

benefits, what is relevant from the business perspective is how the benefits fit unique needs concerning business and co-creation goals, innovation challenges and abilities, resources available and industry-specific considerations, for example. The benefits are not a fixed group of favorable outcomes but are continuously regrouping and forming linkages and inter-dependencies depending on the characteristics, assumptions and expectations of the actors evaluating them. When a better understanding is gained of the factors affecting this movement, communication on the business benefits of co-creation can hit its target more effectively. One way to start building common understanding can be the concept created as part of this development work.

The amount of business benefits of co-creation is substantial, if anything can be concluded from the amount of benefits that was derived from a relatively small data set in the literature review in chapter 2.5. When the more abstract concepts, such as creativity, can be translated into concrete examples and practical outcomes of business activities, as well as to metrics for measuring the success of co-creation from a business performance point-of-view, the gap between the academic and the business perspective could be narrowed for the benefit of both. It will help make co-creation more than a buzzword and innovation more than empty marketing talk. When the barriers of negative preconceptions are removed, co-creation can unleash its full potential as a powerful form of collective creativity leading to impactful results and profitable business.

There is also need for seeing co-creation as part of more complex context than in dichotomies of various kinds. This means considering its role in business ecosystems and quadruple helix settings and as enablers of complex problem-solving involving various kinds of actors and challenges with hard-to-define boundaries. Circular economy and sustainability as a whole is one such context. When co-creation is harnessed to transform business, making effective collaboration part of organizational culture, business interactions, innovation and facing challenges together, it has a potential to change the world.

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Note: For a list of articles of books used in the literature review in chapter 2.4, see Appendix 1.

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Tables

Appendices

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Appendix 1: Articles and books included in the literature review

Appendix 2: Questions in the online survey of the first Discover phase

CIRC4Life co-creation questionnaire

Study on the benefits of co-creation

Welcome to the questionnaire! There are no right or wrong answers, only your valuable views. Feel free to skip a question if you wish and make the answers as short or as long as you wish. Any contribution is highly appreciated!

1. Please enter your name and the name of the organisation you represent

2. Please enter your role in the CIRC4Life project

3. What does co-creation mean to you?

4. What does business model development mean to you?

5. Have you participated in co-creation in any way prior to the CIRC4Life project?

If yes, in what way? If no, why not?

6. What do you see as the main benefits of co-creation?

7. What would make co-creation (even) more useful to you?

8. Will you be participating in co-creation in any way after the CIRC4Life project?

If yes, in what way? If no, why not?

9. What would be the most appealing way for you to learn more about co-creation?

10. Any other comments you would like to make?

Appendix 3: Results the voting held in the first workshop: most convincing arguments*

Argument	Votes
Self-governance increases via common goals.	15
Frees your resources.	8
With co-creation you can share your know-how and others can share their know-how →everyone has better know-how.	7
The most important step in co-creation is selecting and engaging partners.	6
Good things and new perspective comes out of co-creation.	6
You need a good PM with experience and methodologies	5
When you listen at the very start, the way won't be as bumpy.	5
There's a need for a benefits list to be communicated.	4
An iterative process brings new insights.	4
You can include people in the whole process.	4
You can get big benefits with small effort.	4
It's wise to spend time in planning so there won't be mistakes.	3
Everyone has to adopt co-creation when it comes ubiguitous.	3
It spares your resources.	2
Collaborate with someone who benefits from groundwork (a thesis student, for example)	2
Defining the common goals and finding the right partners is the most important thing.	2
You can't come up with all possible ideas alone.	2

If the service doesn’t work, the clients won’t use it. That’s when it’s really expensive.	2
There are different ways to participate - co-creation is equal.	2
It depends on the skills of the facilitator and it’s about the general frame-work, not about dwelling on the details.	1
There can be benefits when it’s done well with the right people.	1

*Arguments translated from Finnish

Appendix 4: Full set of interview questions from the second iteration of the Define phase of the design process

BACKGROUND QUESTIONS:

- What is your name?
- What organization do you represent?
- What is your role in CIRC4Life?

INTERVIEW QUESTIONS:

- How have you used and are using co-creation in your business activities? Please describe in your own words.
- In what way has co-creation benefited you? What is the main benefit?

HELP QUESTIONS:

- What does co-creation mean to you?
- In what type of business activities are you using co-creation?
- In what way have you used co-creation in developing your business model?
- Are there any other business activities in which you would like to use them?
- Which one of the benefits do you see as the most important for your business?
- Have there been any disadvantages in co-creation for your business? What kind?
- What would make co-creation even more useful for your business?
- Has anything made your motivation to co-create increase or decrease during the project? What in particular?
- How familiar were you with co-creation prior to the project?
- Do you think your understanding of co-creation has improved during the CIRC4Life project? In what way?
- Have examples given by other companies on how to use co-creation helped you to use it in your business?
- Do you feel you want to learn more about co-creation? What way of learning would you like best?
- Do you plan to use co-creation after the project? In what way?/Why not?

Appendix 5: Two personas based on material gathered during the development work

Persona 1 — Gabriel

BUSINESS

Small business in small town

TECHNICAL SKILLS

Only uses technology as a necessary tool

PERSONALITY

Easy-going, curious thinker

CHALLENGES

Does not feel that has adequate resources for co-creation

GOALS

Easy, simple solution that helps gain customer insight, seeing how everything works in practice
Wants to help self and other be more sustainable.

QUOTE

"In a small business it isn't possible to follow every nice idea, but it's important to understand what the customers need"

IDEA OF CO-CREATION

Is not sure what co-creation means and how it can be applied to own business

INTERESTS

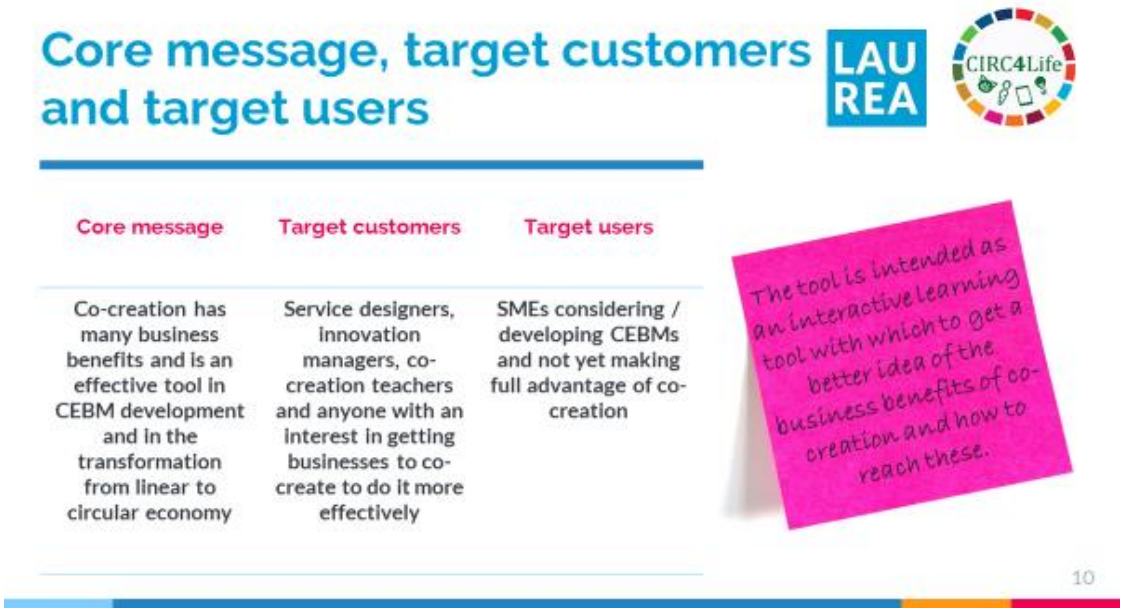
Most interested in gaining customer insight and more effective collaboration

Persona 2	Sofia	
BUSINESS		**TECHICAL SKILLS**
Medium-sized business in big city		Interested in using technology as a tool for more effective work
PERSONALITY		**CHALLENGES**
Efficient, polite and organized doer		Is eager to apply co-creation more efficiently, but does not know how
GOALS		**QUOTE**
Time- and resource effective tool that helps create processes for co-creation		"I need to know what to do to make the co-creation activities efficient, not to learn all the theory."
IDEA OF CO-CREATION		**INTERESTS**
Has basic undertanding of co-creation		Most interested in gaining stakeholder insight and new perspectives

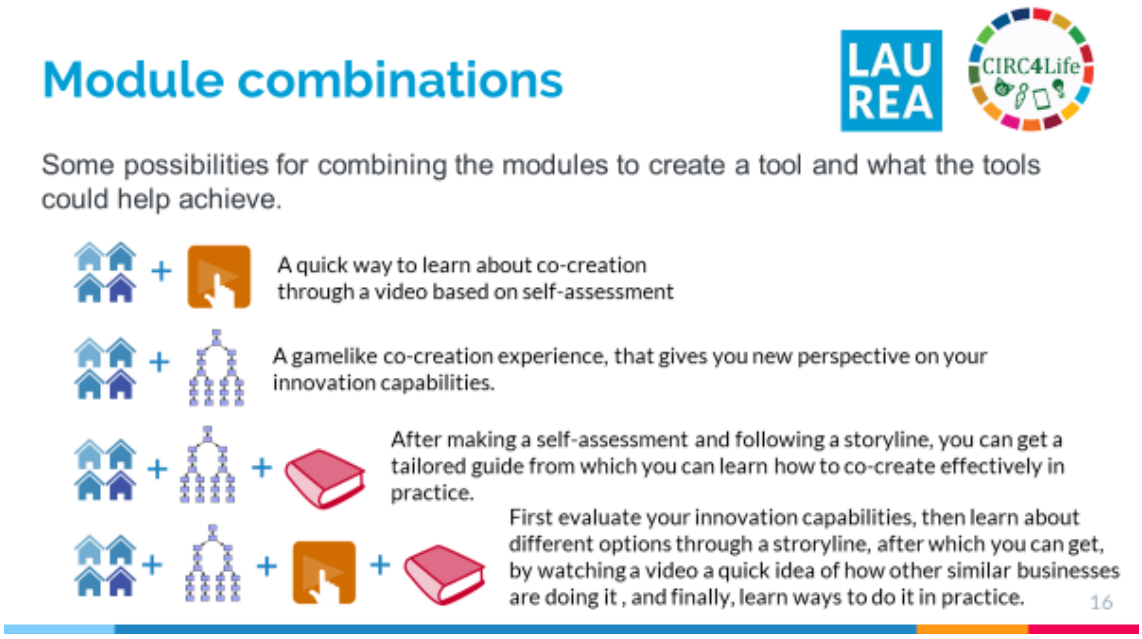
Appendix 6: Elements table created to aggregate all the results gathered in previous phases of the design process

CHALLENGE/BARRIER	GOAL / KEY BENEFIT	MEDIUM	CONTENT	EFFECT	QUOTE
Addressing the level on which co-creation is discussed: general, practical or personal	Better business performance through co-creation	Interactive data visualization	Principles to follow	Helps create common goals (same direction) that increases self-governance	"In a very small business like mine, time is very short and it simply isn't possible to follow 'nice ideas' for the sake of it, even if it appears to be a 'good thing'."
Difficult to include co-creation in development processes	Wrong decisions minimized	Application	Data to show the results of co-creation	Instructs how to effectively collaborate	"The most important step in co-creation is selecting and engaging partners."
Co-creation requires good coordination to be effective	Common language among stakeholders	Online course	Industry-specific examples	Helps show impact on business results	"When you listen at the very start, the way won't be as bumpy."
No clear understanding of how co-creation fits own business	Big results with small effort	Game	Co-creation value proposition	Helps co-creation become ubiquitous	"Co-creation is a good framework. It helps people better understand each other's needs."
How to use co-creation in SME context (small resources etc.)	Improved business processes	Video	Benefits of co-creation based on goals	Helps understand how to improve business with co-creation	"If you do a survey and a customer says they want strawberries in December, it's not possible. So, it's a two-way process, it's a communication process as well"
Lack of time for co-creation	Better know-how	Q&A	Success stories	Instructs how to gather insight	"I would need to see how it works in practice."
Effectiveness of co-creation depends on the skills of the	Connection with customer	Checklist	Methods to use in business	Shows how co-creation fits business structures	"Understanding how different businesses use it helps me see how it could work for me."
Lack of resources for co-creation	Effective collaboration	Canvas	Exercises	Instructs how to gather resources	"It is important to know what users think."
How to motivate stakeholders to co-create	Better informed decisions		Benefits list	Shows real benefits of co-creation	"The tools must be easy to understand, easy to use and straight to the problem."
Not sure if co-creation is worth it			Process description		"You change your mind when the results appear."
	Insight on market needs		Practical tips		"Seeing the results, seeing it in practice is important"
	New perspectives		Case studies		"For us the way to learn would be a good example."
			Interviews		"In the bigger picture we can understand it, but how to do it better, that is something we are learning."
			Process, change, impact		

Appendix 7: Core message, target customers and target users of the concept created during the design process



Appendix 8: Possible module combinations of the modular tool the concept of which is the result of the development work of this thesis



Appendix 9: Example of a user journey of a user of the modular tool the concept of which is the result of the development work of this thesis