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LINEARITY NEVER WAS AN OPTION

Founders' insights on business opportunity recognition in Circular Economy

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Abstract

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Abstract

As today's linear take-make-waste production and consumption cultures drive the world towards dearth of raw materials and pollution of air, water and soil, circular business models provide us a more sustainable alternative. To accelerate Circular Economy, the purpose of this study is to gain more understanding of which factors influence business opportunity recognition in CE context and how do they influence it. This knowledge could enhance circular business both in already existing organizations and in new establishments if only we would know what kind of factors, characteristics and actions accelerate circular business thinking. Therefore, the research question is formed to the following: *Which factors influence business opportunity recognition in Circular Economy context and how do they influence it?*

This research was done as a qualitative multiple-case study with interviewing five (5) company founders, whose organizations operate according to the principles of CE. The research data was analysed to be able to find the possible factors influencing business opportunity recognition, how do they influence it and in what measure. A framework of possible factors as conceptualized in literature was used to provide deductive structure to the analysis.

The results show that the most influencing factors when recognizing the initial business opportunity are cognition/personal traits and entrepreneurial alertness. Especially the individual values guide the entrepreneurs to choose circular options over linear ones. Even though the importance of social capital was highlighted, social capital and prior knowledge it provides, are needed only after the initial opportunity is recognized and the idea must be refined further to analysis and exploitation. Environmental conditions act as social and cultural context influencing opportunity recognition throughout the recognition process. These findings suggest that to accelerate CE, creation of both sustainable values and social co-operation must be enhanced.

Key words
Circular Economy, business opportunity, opportunity recognition, factors influencing opportunity recognition

Tiivistelmä

ITÄ-SUOMEN YLIOPISTO

Tiedekunta **Yhteiskuntatieteiden ja kauppatieteiden tiedekunta**		Yksikkö **Kauppatieteiden laitos**	
Tekijä **Hanna Turunen**		Ohjaaja **Ville-Veikko Piispanen**	
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Tiivistelmä

Nykypäivän raaka-aineita tuhlaavat sekä ilmaa, vettä ja maaperää saastuttavat tuotanto- ja kulutusmallit ajavat maailmaa entistä huolestuttavampaan tilanteeseen. Kiertotalouden liiketoimintamallit voivat kuitenkin tarjota kestävämmän kehityksen ratkaisuja suunnan muuttamiseksi. Kiihdyttääkseen kiertotalouteen siirtymistä tämän tutkimuksen tarkoituksena on lisätä tietoa siitä, mitkä tekijät vaikuttavat kiertotalouden liiketoimintamahdollisuuksien tunnistamiseen ja kuinka ne vaikuttavat siihen. Saadun tiedon avulla voitaisiin lisätä kiertotaloutta niin olemassa olevissa kuin uusissakin organisaatioissa, jos vain ymmärtäisimme mitkä tekijät, ominaisuudet ja teot edistävät kestävää kehitystä. Tämän vuoksi tutkimuskysymykseksi muotoutui: *Mitkä tekijät vaikuttavat liiketoimintamahdollisuuksien tunnistamiseen kiertotaloudessa ja kuinka ne vaikuttavat siihen?*

Tutkimus tehtiin kvalitatiivisena monitapaustutkimuksena haastatellen viittä (5) yrittäjää, joiden yritykset toimivat kiertotalouden periaatteiden mukaisesti. Tutkimusdata analysoitiin tavoitteena löytää tietoa siitä, millaiset tekijät vaikuttavat liiketoimintamahdollisuuksien tunnistamiseen, kuinka ne siihen vaikuttavat ja missä mittakaavassa tekijät vaikuttavat toisiinsa nähden. Analysoinnin tukena käytettiin aiempaan tutkimukseen perustuvaa viitekehystä mahdollisista tekijöistä.

Tulosten perusteella eniten liiketoimintamahdollisuuksien tunnistamiseen vaikuttavat henkilön kognitio/persoonan ominaisuudet sekä liiketoiminnallinen valppaus. Erityisesti henkilön arvomaailma ohjasi henkilöä valitsemaan kiertotalouden vaihtoehdon lineaarisen tilalta. Vaikka sosiaalisen pääoman tärkeys korostui, sitä ja sen mukanaan tuomaa pohjatietoa tarvittiin vasta, kun alkuperäinen liikeidea oli tunnistettu ja sitä kehitettiin edelleen analysoitavaksi ja hyödynnettäväksi. Ympäristötekijät toimivat sosiaalisena ja kulttuurisena kontekstina koko liiketoimintamahdollisuuden kehitysprosessin ajan. Tulosten perusteella voidaan olettaa, että kiertotalouden kiihdyttämiseksi yksilöiden arvomaailmaa ja sosiaalista yhteistyötä tulee kehittää.

Avainsanat
Circular Economy, business opportunity, opportunity recognition, factors influencing opportunity recognition

TABLE OF CONTENTS

1 INTRODUCTION 6

1.1 Business opportunity recognition in Circular Economy context 6

1.2 The purpose of the study 8

1.3 Key concepts of the study 9

2 THEORETICAL BACKGROUND 12

2.1 Circular Economy 12

2.1.1 The definition of circular economy 15

2.1.2 Circular Economy business models 17

2.2 Business opportunity recognition 19

2.2.1 Where business opportunities do come from? 20

2.3 The factors influencing business opportunity recognition 23

2.3.1 Prior knowledge 24

2.3.2 Social capital 26

2.3.3 Environmental conditions 28

2.3.4 Cognition/personal traits 31

2.3.5 Entrepreneurial alertness 34

2.3.6 Systematic search 36

2.4 Theoretical framework in this study 38

3 METHODOLOGY 42

3.1 Methodological approach 42

3.2 Data collection 43

3.2.1 The case companies 45

3.3 Analysis of the data 47

4 RESULTS OF THE STUDY 51

4.1 Prior knowledge 51

4.2 Social capital 53

4.3 Environmental conditions 55

4.4 Cognition/personal traits 58

4.5 Entrepreneurial alertness 61

4.6 Systematic search 64

4.7 Summary of the research results 64

5 CONCLUSION AND DISCUSSION 67

5.1 Summary of the results 67

5.2 Key results 68

5.3 Evaluation of the study, future study and managerial implications 72

REFERENCES 75

Appendix 82

1 INTRODUCTION

1.1 Business opportunity recognition in Circular Economy context

It has become inevitable that our planet is not able to bear the consequences of today's linear "take- make- waste" consumption of goods and services, which causes diminishing of natural resources and pollution of air, water and soil (Ellen MacArthur, 2019). The challenge to change our beaten ways to more sustainable ones is huge and beyond to be solved just by one country let alone one individual (Adler, 2011). However, the inconvenient truth is that none of us can keep on ignoring the current state of the situation and we need to come up with new approaches and solutions as the prior ones are proven to be insufficient (Adler, 2011). The Circular Economy (later CE) provides us one way of looking at the much needed solutions as it emphasizes on renewable resources, extending product life-cycles and using production ways that rebuild the nature instead of just abusing it (Ellen MacArthur Foundation, 2019).

Accelerating CE requires new business ideas and organizations that operate according to its principles. Even though business opportunity recognition has not yet received much academic attention in the CE context in particular, the concept of opportunity recognition has been widely examined to get insight on how, when and why some individuals recognize opportunities and others do not (Mary George, Parida, Lahti & Wincent, 2016). The definitions of business opportunities are few in number, but usually they are described as a set of objective external conditions, individual cognitions or social constructions that enable pre-existing or created future action paths (Davidsson, 2015). Thus, business opportunity recognition does not take place in a vacuum but is influenced by various factors, which based on previous research Mary George et al. (2016) summarized to be prior knowledge, cognition/personal traits, social capital, environmental conditions, entrepreneurial alertness and systematic search. As their opportunity recognition framework as conceptualized in literature was a result of widescale literature review, the authors encouraged it to be empirically explored in real-life settings and in various contexts.

As business opportunity recognition in CE context has not yet been empirically researched, I aim to fill this gap in academia by exploring which factors influence business opportunity recognition in CE, how do they influence it and in what measure. Not only adding our academic knowledge, this study might get us an insight on how CE and sustainable business thinking can be accelerated in practice. This knowledge might therefore benefit policy makers, existing organizations or individuals interested in entrepreneurship in CE by creating more understanding of the individuals and organizations who build economic, natural and social capital out of renewable resources. Therefore, the empirical context of this study are five case companies and their founders operating in Finland according to the principles of CE. I explore their insights and experiences on how they recognized their business opportunity, and what helped in recognition process or pushed things forward.

We still have lots to do with sustainability as at the moment our world is only 9% circular with resource extraction and greenhouse gas emissions continuing to increase (Circle Economy, 2019). It has become inevitable that our world is facing the biggest challenge yet in the history of humankind and we all should care about sustainable business solutions as the possible eco catastrophe touches us all (Ellen MacArthur Foundation, 2019). According to my experiences in business life it is far easier to fall in making things less ugly (Adler, 2011), copy others, stick to the beaten track and stay in your comfort zone. It is far too common to adjust the organization to react to the changes in environment than to do something that would change it instead. However, regardless of the size of the company each organization has the choice of what products or services it produces, how they are produced and according to which values and principles they are designed, produced and sold. Therefore, this study aims to find out how circular business opportunities are recognized and which factors influence the recognition. Perhaps these findings can assist us to make circular choices to be the new business as usual.

1.2 The purpose of the study

The purpose of the study is to gain more understanding of which factors influence business opportunity recognition in CE context and how do they influence it. This is accomplished with exploring how the opportunity recognition framework as conceptualized in the literature (Mary George et al., 2016) functions in empirical research. If the results allow, the framework will be refined further to explain how business opportunities are recognized in CE context and thereby deepens our understanding of circular business initials. From practical view point, perhaps this knowledge could enhance circular business both in already existing organizations and in new establishments if only we would know what kind of factors, characteristics and actions accelerate circular business thinking. Bearing these goals in mind, my research question is formed to the following: Which factors influence business opportunity recognition in Circular Economy context and how do they influence it?

As academic research is made to broaden our knowledge it is important to understand how this study can contribute to it. The theoretical framework chosen for this study is created based on extensive literature review (Mary George et al., 2016) indicating that how it actualizes in empirical research and in different contexts remains uncertain. This study contributes to existing knowledge with adding our understanding of business opportunity recognition in CE context showing which factors influence the initial recognition, how do they influence it and, in comparison to other factors, in which measure. It is possible that some factors are more highlighted than others or some of the factors act differently than previous research indicates. Some factors might even be irrelevant in CE context.

To answer the research question, I will conduct a literature review focusing on the concept of CE and its business models, business opportunity recognition and its origins, and the factors known to influence business opportunity recognition. The theory will be built on both the knowledge regarding the research context and its theoretical concepts, and the framework, which provides me the corner stones of what to look for when analyzing the research data. This study will be done as a qualitative multiple-case study by interviewing five CE company founders to bring forward their experiences and

insights on circular business opportunity recognition. The research data will be analyzed foremost deductively to be able to explore how the chosen theoretical framework actualizes in real-life, but I will also stay open to possible factors or dimensions outside the framework and examine them abductively.

This study is a part of the joint project of Finnish Universities, Circular Economy Catalysts: From Innovation to Business Ecosystems (CICAT2025), that aims to facilitate the transition from linear to CE. The project supports Finland's strategic objective to become a world leader in CE by 2025. It will explore the factors that facilitate, support and accelerate CE, and therefore, aims to provide organizations and regulators solutions towards it. The studies within the project focus on CE ecosystems, catalysts and dynamics, change and sustainability, instruments and research-based guidance, and stakeholder interaction. CICAT2025 is a multidisciplinary consortium bringing together experts from technology, business, politics, arts, linguistics, legislation and stakeholder interactions (Strategic Research Council at the Academy of Finland, 2019).

1.3 Key concepts of the study

The first key concept of this study is CE, which generally rests on three principles: regenerating nature, using renewable resources, and increasing product usage and life-cycles (Ellen MacArthur Foundation, 2019; Murray, Skene, & Haynes, 2017) as contrary to linear economy, which is based on careless usage of raw materials and polluting production, consuming and disposing habits (Murray et al., 2017). The definition of CE used in this study acknowledges all three dimensions relevant to the concept as environmental, economic and social needs are covered (Korhonen, Honkasalo & Seppälä, 2018a). The concept of CE has mainly been studied with concrete tools and metrics to add understanding of how it works (Korhonen, Nuur, Feldmann & Seyoum, 2018b) whereas conceptual discussions are still merging (Murray et al., 2017; Korhonen et al., 2018b) even though CE can provide notable business opportunities, solutions to environmental problems and create jobs (Ellen MacArthur Foundation, 2019).

The business opportunity recognition is another key concept in this study as any business activities cannot emerge without an initial business idea. As previous research has focused mainly on where the opportunities come from, who recognizes them and why they are capable of doing so (Shane and Venkataraman, 2000; Mary George et al., 2016), definitions for business opportunities are scarce if even non-existed (Davidsson, 2015). Instead, the academia has debated quite thoroughly of whether opportunities can be discovered (i.e. Shane, 2000), created (i.e. Alvarez and Barney, 2010) or both (i.e. Vaghely and Julien, 2010). To be able to hold on to the scope of this study, it is built on the notion that business opportunities can be both discovered and/or created, and the focus of this research is on the factors that influence the recognition of them.

Therefore, the third key concept for this study is the theoretical framework by Mary George et al. (2016) which summarizes the academically most relevant factors influencing in business opportunity recognition. Previous research has found most influencing evidence of prior knowledge, social capital, environmental conditions, cognition/personal traits, entrepreneurial alertness and systematic search, which will be explored in CE context in this study. I chose this framework to guide my study as novice researcher because it is relatively original and simple but yet comprehensive covering the most evidential factors influencing business opportunity recognition. As the framework is based on extensive literature review, it has not yet been explored in empirical research, at least not in CE context, and therefore serves as suitable framework for this study.

This thesis follows the general guidelines of University of Eastern Finland Business School starting with an introduction to research topic in chapter 1. In chapter 2 the theoretical background of the study is covered starting with familiarizing the reader to the concept of CE and its business models. Next, the previous literature on business opportunity recognition is introduced to formulate an understanding of the basics of the thesis topic as for example the debate of whether business opportunities are discovered or created is pondered based on previous research. The factors possibly influencing business opportunity recognition are considered in more detail before the theoretical framework in this study is presented. The methodological approach of this study is introduced in

chapter 3 along with data collection and analysis methods to create validity for the findings of this research. In chapter 4 the research results are presented in detail indicating how each of the theoretical framework's factors were shown in this study. The results are also summarized to create an overall understanding of the study's findings. These findings are discussed in relation to previous literature in chapter 5 as a refined framework for business opportunity recognition in CE context is presented. In this chapter also possible bias, suggestions for further research topics and practical implications are considered.

2 THEORETICAL BACKGROUND

2.1 Circular Economy

After industrial production of goods became possible, our consumption of them has been normalized to a linear process of "take- make- waste", which typically is enabled with rather careless use of finite raw materials and fossil fuels (Ellen MacArthur Foundation, 2019). Linear economy leads not only to dearth of raw materials but also to pollution of water, air and soil when acquiring the raw materials and when producing, consuming and disposing the end products and services (Murray et al., 2017). The global material extraction has multiplied tenfold during the twentieth century from 7 billion tonnes per year in 1900 to 84,4 billion tonnes per year in 2015 resulting in incapability to produce such amount of virgin materials at all, let alone sustainably (VTT, 2018). The global natural ecosystem is vanishing in size, volume and quality as when measured by the land area that can support human habitation, the land area able to support it is truly shrinking at an accelerating pace. When the combination of rising population and increasing per capita consumption is added to expanding deserts, rising sea levels and diminishing biodiversity (Korhonen et al., 2018a), it is rather evident that something needs to be done differently. Despite this clear problem the re-usage of finite materials is still low. For example, in 2016 only 20% of the world's electronic waste was collected and recycled (Ellen MacArthur Foundation, 2019).

The transition from linear economy to more sustainable methods requires changes in our society, the ways we do business and how we behave and consume as individuals. The CE might provide us tools for this makeover. Its history goes back to the 1970's, when multiple, mainly European, authors draw attention on how our economy uses natural resources both as enablers for production and as a waste bin for litter. Later on, after the interest on the topic has risen, much of the academic research such as employing tools and methods for modelling processes has been done in China due to the massive

regulatory changes and policies implementation made in the country (Geissdoerfer, Savaget, Bocken & Hultink, 2017; Merli, Preziosi & Acampora, 2018). Growing from being studied in the connection with industrial ecology, CE has gained a role of its own related to environmental sustainability (Merli et al., 2018). However, the CE approach is still largely developed with concrete tools and metrics by practitioners such as policy makers or business foundations (Korhonen et al., 2018b) leaving the theoretical development such as conceptual discussions rather thin and yet emerging (Murray et al., 2017; Korhonen et al., 2018b). The existing CE studies have focused at micro level on supporting organizations to implement circular processes and product design, at macro level on changing the social and economic dynamics and at meso level on industrial symbiosis experiences (Merli et al., 2018).

As the academic development is still in its infancy, the term 'Circular Economy' includes a range of meanings and associations explored by different authors having in common the concept of cyclical closed-loop system (Murray et al., 2017) in which the value of materials is used many times and kept in circulation as long as possible (Korhonen et al., 2018b). Production, manufacturing and consumption form loops that enable circulating and cascading the materials, using sustainable energy and reducing waste and emissions (VTT, 2018). Widely stated, CE rests on three principles: regenerating natural systems with production methods that build nature instead of destroying it, using renewable raw materials with generating as little waste as possible, and increasing product usage and lifecycle (Ellen MacArthur Foundation, 2019; Murray et al., 2017). Urbinati (2017, p. 488) summarizes the loops or the principles of CE to *product-life extension* in which the products are designed to be durable and thereby reduce consumption; *redistribution/reuse* which provides all the added-value within that product; *remanufacturing* which allows the product to be returned to like-new condition; and *recycling*, the most common form of CE, which allows the materials to be reused. This way, Urbinati's argument contributes to the conclusion that the key unit of analysis in CE is the product itself. It has been estimated that CE in Europe alone can create a net benefit of 1.8 trillion Euros by 2030 while providing solutions to environmental challenges and creating jobs (Ellen MacArthur Foundation, 2019). This shows how successful CE could enhance holistic

development of all economic, environmental and social dimensions (Korhonen et al., 2018b) by keeping materials and products in circulation as long as possible and by keeping their value as high as possible (VTT, 2018).

As promising as CE sounds, applying it also involves challenges such as changing people's mindset on consuming habits when the most consuming middle class keeps expanding (VTT 2018). Also cyclical systems require resources and produce waste and emissions, which means that the problem can be shifted along the product life cycle to typically developing countries (Korhonen et al., 2018a). Many at first glance positive sustainability actions may have negative effect somewhere else such as harvesting rain forests to plant oil palm for green fuel drive (Murray et al., 2017). The limits of physical scale of the economic systems must be considered also in CE as when resource consuming and waste producing physical economy grows, also its impacts increase (Korhonen et al., 2018a). Even small changes for example in technologies can cause a number of positive and negative side effects when entrepreneurs recognize multiple ways to exploit the initial change (Shane, 2000). How can we then ensure that the first technologies have the smallest negative impact as the first technologies are typically the ones to retain their market position regardless of their later discovered in-efficiency (Korhonen et al., 2018a)? As CE is much emphasizing on resource and platform sharing, the physical flow of resources, materials and energy must be carefully managed to control who benefits of them, how and when (Korhonen et al., 2018a). This might require updating the legislation and taxation designed to liner economy which as such do not support emerging new technologies or business models to transit us to CE (VTT, 2018). However, many concepts involved in CE such as waste are culturally and socially constructed and therefore ever changing (Korhonen et al., 2018a). Is it even possible to control such a concept through legislation or mathematic modelling or is it holistic as nature itself where leaving one variable out can produce impacts we can only understand in years from now (Murray et al., 2017)?

2.1.1 The definition of circular economy

Even though CE is gaining increasing interest among scholars, the concept is still lacking a definition known by all, which perhaps leaves most of the authors reluctant to use any. Out of 40 papers focusing on CE only eight contained a definition of it (Korhonen et al., 2018b) and most articles refer to reduce, reuse, recycle, systems perspective and economic prosperity focusing on waste hierarchy and neglecting the possible social impact, business model or consumer considerations (Kirchherr, Reike & Hekkert, 2017; Merli et al., 2018). As an example, Geissdoerfer et al. (2017, p. 759) have defined the CE as "*a regenerative system in which resource input and waste, emission, and energy leakage are minimized by slowing, closing, and narrowing material and energy loops"*. This target can be achieved through designing durable goods that can be maintained, repaired, reused, remanufactured and recycled. Murray et al. (2017) argued that as the environmental dimension is highlighted over economic and especially social dimensions, their benefit is lost because environmental actions require both economic interest and ethical underpinning, and added a dimension of human well-being to the definition of CE.

Adding the social dimension to the CE definition was not yet successful in creating a comprehensive definition of the concept as the economic perspective was still left with only minor attention. Korhonen et al. (2018a) defined that CE is a construction of social production-consumption systems and maximation of material and energy flow. Successful CE contributes to all three dimensions - environmental, economic and social – of sustainable development on a level that nature and ecosystems tolerate. In the definition provided in Figure 1, the environmental objective of CE is to reduce the use of virgin materials, energy inputs and waste and emission outputs by accelerating material cycles and renewable energy sources. The economic objective is to reduce costs, add resource value, minimize scarce resource usage and control the legislation or image risks. Also, CE aims at economic prosperity in the form of new innovations, markets or financing. The social objective provides increased employment, sense of community and participation, as well as a new mean of product/service use in sharing economy. This type

of definition underpins the co-operation of producers, consumers and other societal actors (Korhonen et al., 2018b) without leaving them ethically neutral (Murray et al., 2017).

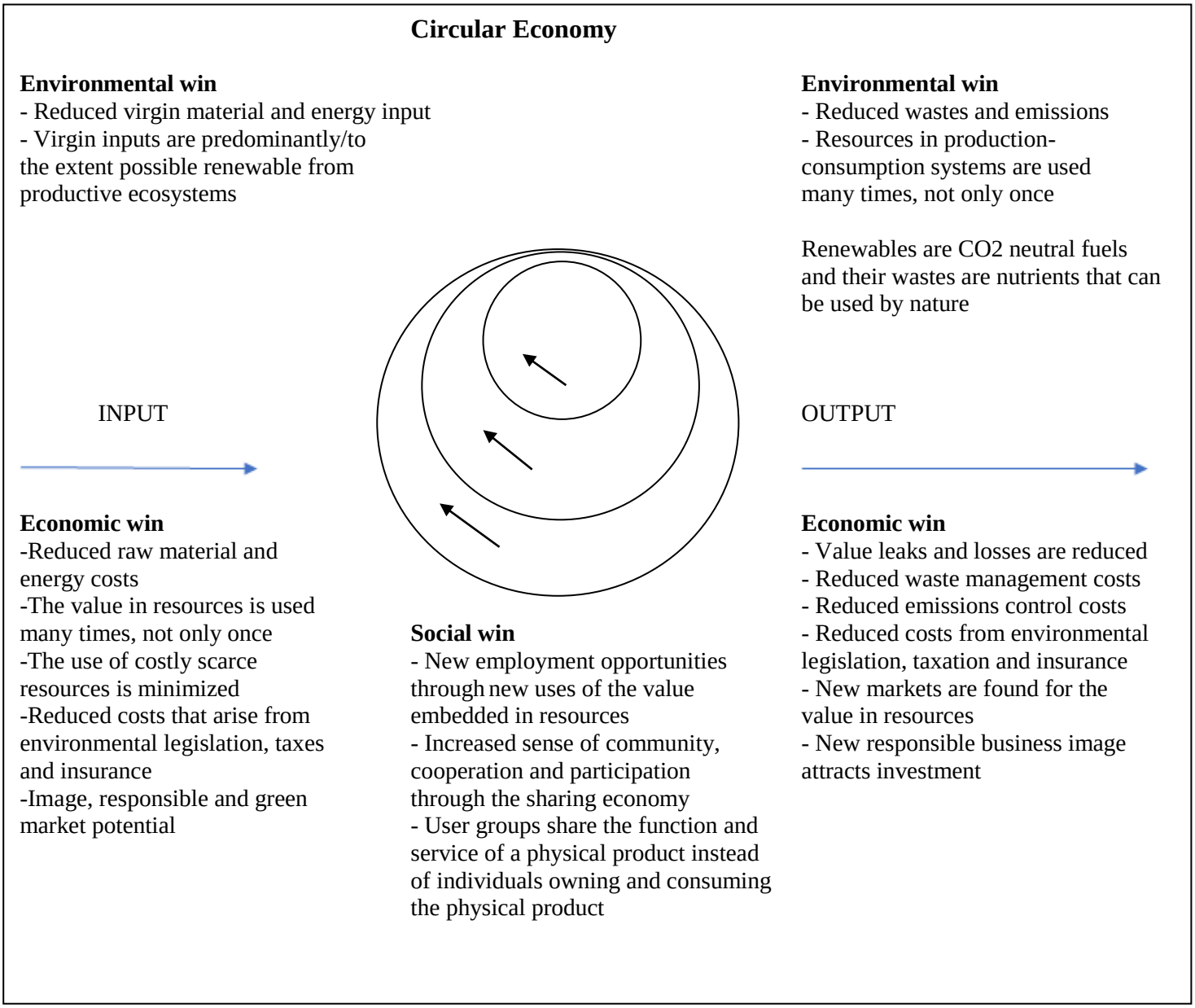

Figure 1. Circular Economy (after Korhonen et al., 2018a)

The concept of CE involves also many sub concepts, such as industrial ecology, industrial symbiosis, the cradle-to-cradle design and sharing economy (Korhonen et al., 2018b), waste management being the most relevant of them (Merli et al., 2018). To be able to hold on to the focus of this study, these sub concepts are beyond the scope of this

thesis. In academia, CE is often seen as a prerequisite to sustainability proposing means to implement it at the environmental and economic level, but it is rather a new school of thought in sustainable development (Geissdoerfer et al., 2017; Merli et al., 2018) and this thesis is built on this notion.

2.1.2 Circular Economy business models

In general, business models are architectural choices that outline the ways an organization does business, innovates or expands, and once chosen, they are difficult to change (Bocken, de Pauw, Bakker & van der Grinten, 2016). For the rather ossified linear business models to turn into circular ones, we need innovative organizational designs or business models that are able to source industry transformations or even new industries. As the linear economy has matured, it has created business templates that serve as wide-spread taken-for-granted business logics that are hard to break (Cliff, Jennings & Greenwood, 2006). Switching the gear towards more circular business models requires all academia, policy makers and business entities (Lewandowski, 2016). Circular business models emphasize on long-lasting materials and products, reuse, recycling, cascading, renewability and sharing of goods, which means that material and product design will have to change considerably compared to what we have used to. For a CE business to be successful, the value proposition of environmental improvement must be embedded in the whole value chain of circular business model (Manninen, 2018; Lewandowski, 2016). Yet today materials and products loose functionality and value during production and use resulting in continuous usage of extract materials from nature (VTT, 2018). Also, the academic studies of CE business model strategies have focused mainly on closing material loops rather than slowing the loops which would actually change consumption and production patterns more radically (Merli et al., 2018).

Lewandowski (2016) argued that most of the different circular business models can be categorized after the Ellen MacArthur Foundation framework. The ReSOLVE framework includes six factors of *Regenerate, Share, Optimize, Loop, Virtualize and Exchange*, that support the transition to a circular economy and business. Urbinati (2017, p. 492)

categorized CE business models to *the Downstream Circular*, which emphasizes on sharing marketplaces; *the Upstream Circular*, which operates on internal and network dimension invisible to the customer; and *the Full Circular*, which operate according to the CE principles throughout the whole value chain. This way, the taxonomy of CE business models is based on two dimensions: the customer value proposition and interface, i.e. how circularity proposes value to customers, and the value network, i.e. supplier chains and reorganizing internal activities. Bocken et al. (2016) depicted the CE business models to *the access and performance* such as car sharing; *extending product value* such as the deposit system of soda bottles; *classic long-life model* such as luxury watches; and *extending resource value* like in making carpets out of fishnets. Even though presented differently by different authors, it is common to all of the CE business model categorizations, that the idea of sharing as well as optimizing and extending the value of a resource or a product are highlighted. As the environmental and economic dimensions are present in these categorizations, the social dimension remains unexplored.

Despite these efforts and the risen interest towards CE by politicians and practitioners, scholars have not yet succeeded in creating a comprehensive framework defining how organizations can adapt circular business models or even create new ones (Urbinati, 2017). Based on an extensive literature review, most CE organizations focus on recycling, consumption use and materials sourcing (Kalmykova, Sadagopan & Rosado, 2018). To an organization to be circular, it requires a fundamental systemic change rather than just making minor adjustments for better appearance (Kirchherr et al., 2017). It can be tempting for an organization to just add the volume of responsibility and sustainability information and meanwhile operate as linearly as they used to, and this way make circular business appear easier than it actually is (Murray et al., 2017). This is possible as long as adoption of CE is based on free will and management commitment rather than regulatory or laws (Urbinati, 2017). According to Renswoude et al. (in Lewandowski, 2016), 100 % circular business models do not exist yet because not creating any waste is difficult. However, the implementation of CE practices such as extending the life spam of a product, using less resources or rethinking a product's consumption design can be seen

as a measurement items when evaluating an organization's circular business model in practice (Urbinati, 2017).

2.2 Business opportunity recognition

Before any business, whether it is linear or circular, can be established, operated and exploited, one must first recognize the initial business opportunity. The academic research on business or entrepreneurial opportunity recognition has focused mainly on where the opportunities arise from, how they can be recognized, how they can be utilized, who recognize and exploit them, and why some are capable of this while others are not (Shane and Venkataraman, 2000; Mary George et al., 2016). Especially the early studies were very individual-focused, but now more emphasis is placed on the stages of new economic activities (Davidsson, 2015).

Opportunities are fundamental prerequisites for entrepreneurial action because without opportunities no business can be established (Ramos-Rodríguez, Medina-Garrido, Lorenzo-Gómez & Ruiz-Navarro, 2010). Broadly stated, opportunity exists in situations in which new goods, services, raw materials and/or organizing models can be created and sold for greater price than their production costs (Shane and Venkataraman, 2000; Shook, Priem & McGee, 2003). Opportunities are highly bound to their value, which can be visible to some insightful actors and disregarded by others (Alvarez and Busenitz, 2001). Davidsson (2015) argued that there is still a little solid knowledge on the central characteristics of opportunities, how they affect the actions of the entrepreneur and are affected by him/her, as well as how opportunities can be empirically measured. This lack of knowledge results in a wide variety in how business or entrepreneurial opportunity is defined as especially the origins of the opportunities are not agreed on, and close to 80% of authors have abstained in making a definition of this particular concept.

The paradigm of business opportunity recognition seems rich in concepts the opportunity itself being just one of them. In comparison, the process of opportunity recognition seems to be more commonly agreed on as exploring new ways to organize product and market demands to create new profitable business is widely considered as opportunity

recognition (Ramos-Rodriquez et al., 2010; Mary George et al., 2016). Hsieh, Nickerson and Zenger (2007) compared business opportunity recognition to problem identification and solving by identifying valuable problems and organizing them for more effective value creation. The claim for profit is thus characteristic for opportunity recognition as combining resources in business setting ultimately aims for it (Nicolaou, Shane, Cherkas & Spector, 2009).

2.2.1 Where business opportunities do come from?

The question of where business opportunities then come from is inevitable when taking a closer look to business opportunity recognition. Opportunities arise from the changes taking place in the environment an individual operates in and from the unbalance caused by them (Mary George et al., 2016) creating competitive imperfections in markets for entrepreneurship to exploit (Alvarez and Barney, 2010). Entrepreneurship itself is a nexus of two phenomena: valuable opportunities and entrepreneurs willing to exploit them (Shane and Venkataraman, 2000). The opportunity must be lucrative and involve possible value for an enterprising individual before any profit can be gained from it. This evaluation process requires search and recognition (Shane, 2000) and can result in the opportunity being pursued by existing or newly established organizations or even independent actors (Shane and Venkataraman, 2000). As entrepreneurial opportunity recognition process is more variegated then just searching and recognizing, Shook et al. (2003) added entrepreneurial intent and decision making to the equation. Before any search for opportunities can begin, an individual must have an intent for entrepreneurial activities and, after a lucrative opportunity is found, he/she must decide whether to exploit the opportunity or not. Davidsson (2015) approaches the concept of opportunity recognition with three constructs that form opportunity recognition and exploitation. *External Enablers*, such as regulatory changes, create room for new entrepreneurial actions; *New Venture Ideas* bring imaginary combinations of products and service offerings to existence; and *Opportunity Confidence*, being supplementary to the previous two, allows the evaluation of the attractiveness of the opportunity. This shows how there

are still varying assumptions and explanations on how entrepreneurs find or generate opportunities (Chiasson and Saunders, 2005).

Whereas the definitions of business opportunity or opportunity recognition process may be somewhat ignored in the literature, the debate between are opportunities discovered or created has left hardly anyone cold. When defining the paradigm of business opportunities, the scholars have been debating this fundamental question of the epistemological and ontological nature of them. Do opportunities exist in the world waiting to be discovered or are they created by the entrepreneurs themselves (Suddaby, Bruton & Si, 2015)? The discovery theorists argue, that opportunities are objective phenomena existing independently and waiting to be discovered in our society regardless of the individual engaged in entrepreneurial activities (Shane and Venkataraman, 2000; Mary George et al., 2016). Therefore, the research according to the discovery view focuses on identifying the environmental conditions, that enhance business opportunities, and the characteristics of the individuals who are able to discover them (Suddaby et al., 2015). Discovery opportunities are formed by exogenous shocks such as political or social changes, are therefore based on market demand and enable alert entrepreneurs to utilize them with normative decision making in a situation where the possible risk can be rather accurately calculated (Alvarez and Barney, 2010; Mary George et al., 2016).

On the contrary, the creation theorists believe that opportunities are created by the entrepreneur and they do not exist independently without the actions of an individual (Alvarez and Barney, 2010; Suddaby et al., 2015; Mary George et al., 2016). Opportunity creation requires iterative learning processes (Alvarez and Barney, 2010), and they are formed in larger societal, industrial and social frame, which is constantly changing (Chiasson and Saunders, 2005) resulting in uncertainty regarding the venture's outcome (Mary George et al., 2016). While the entrepreneur must innovate the social acceptance for the product or service when simultaneously innovating the product or service itself (Suddaby et al., 2015), opportunity creation requires systematic investment in knowledge (Audretsch and Keillbach, 2007). As information and knowledge are gained alongside the process, the decision making becomes experimental (Alvarez and Barney, 2010). The research on opportunity creation has thereby focused on the iterative acts of the

entrepreneur and the social constructs of both the opportunity and the product or service (Suddaby et al., 2015).

Despite of the fundamental differences, these theories have also something in common. They both try to explain the opportunity recognition process that aims for value creation, adding and refining value (Mary George et al., 2016). The theories agree on that opportunities exist when there are competitive imperfections in the market (Alvarez and Barney, 2010) and that they are recognized by actors capable of organizing elements in a creative way drawing attention to the importance of socially shared cognition (Suddaby et al., 2015). Alvarez and Barney (2010) suggested a conceptualization of a possibility that business opportunities can be explained as discovering or creative process rather than just one or the other, which was followed by Vaghely and Julien (2010) stating that entrepreneurs both discover and enact opportunities. As other theories on the origins of business opportunities remain scarce, there are some alternative positions in literature, which allow these opposite theories to exist in a mutually supportive relationship (Suddaby et al., 2015). One way of looking at business opportunity recognition is structuration theory suggesting that opportunities are formed and created trough *scripts*. The scripts enable the entrepreneur to be legitimate, competent and powerful both in business and social structures (Chiasson and Saunders, 2005).

It can be said that the debate between the existing opportunity theories was formed mainly because of the observational position of the researcher in the field (Suddaby et al., 2015) recognition and formation being the two sides of the same coin both explaining the same process (Chiasson and Saunders, 2005). This shows of academic progress made since 2007 when Audretsch and Keillbach argued that basically nothing is known of the source of business opportunities, where they come from and how and why some exploit them to their advantage. As the dilemma of the business opportunity origins is beyond the scope of this study, it is built on the notion that opportunities can be discovered, created or both in the context of CE and there are some factors that influence in the process.

2.3 The factors influencing business opportunity recognition

Given that there are business opportunities waiting to be discovered or created, there also needs to be someone to recognize them before opportunities can be exploited (Ramos-Rodriquez et al., 2010). As business opportunities require creativity, innovation and market innovation (Vaghely and Julien, 2010), the question of who recognizes them and in which context arises. Entrepreneurs seem to have specific characteristics, skills, aptitudes and insights that facilitate opportunity recognition to new venture resourcing (Alvarez and Busenitz, 2001; Acs, Braunerhjelm, Audretsch & Carlsson, 2009), but these qualities are unevenly distributed in the population (Chiasson and Saunders, 2005; Acs et al., 2009). The assumption is that it is rather these fundamental attributes than opportunity information available, that determines who recognizes the opportunity (Pech and Cameron, 2006). Ability to recognize opportunities is also described to be a skill, that it is beneficial only, if the entrepreneur knows how to exploit the opportunity recognized (Nicolaou et al., 2009; Mejri and Umemoto, 2010). Even though most of the research on why some people recognize opportunities has focused on the differences between individuals and on the characteristics entrepreneurs have (Audretsch and Keillbach, 2007), the origin of those skills or attributes is not yet completely certain to scholars (Nicolaou et al., 2009).

The knowledge on individual characteristics of entrepreneurs may not be adequate enough to predict who recognize successful opportunities consistently, and therefore also the influence of setting and context must be considered (Chiasson and Saunders, 2005). Regardless of this notion, most of the research has focused on the individual-specific characteristics of entrepreneurs leaving the business opportunity and the context it can be recognized in rather exogenous and ubiquitous resulting in little knowledge on where the opportunities actually come from (Audretsch and Keillbach, 2007). The role of situational factors has risen interest only in the last ten years, when it has been started to emphasize in academia (Nicolaou and Shane, 2010).

This development can be seen in few examples on opportunity recognition research. In 2006 Pech and Cameron argued that opportunity recognition is mostly influenced by psychological mechanisms such as knowledge, skills and the ability to deploy logic and reason, but it is also flavored by needs for having fun and overcoming challenges. This example shows how the knowledge was still very much focused on the individual-specific characteristics. Few years later in 2010 Ramos-Rodriquez et al. added the individual's social capital, and thereby her/his access to knowledge through social network, to the equation acknowledging how the individual does not operate in a vacuum. After an extensive literature review Mary George et al. (2016) identified six factors that seem to influence most in business opportunity recognition resulting in notion that in addition to individual characteristics (prior knowledge, cognition/personal traits and entrepreneurial alertness) and social capital, also environmental conditions and systematic search for the opportunities impact on opportunity recognition. Their framework expands the concept of opportunity recognition further from the individual and her/his networks to consider the environment the individual operates in. This framework forms the background of this study and is introduced more thoroughly in chapter 2.4.

2.3.1 Prior knowledge

Many different perspectives and theories emphasize on the view that business opportunity recognition requires gathering, interpreting and applying information regarding factors such as industries, technologies and markets (Ozgen and Baron, 2007). Knowledge, a mixture of experience, interpretation, reflection and context, is a form of information that adds value to decision making and activity (Vaghely and Julien, 2010). Typically, knowledge is divided to explicit knowledge, which is relatively easy to share and obtain (i.e. technologies), and to tacit knowledge, which is more personal, context- and individual-dependent, and more difficult to communicate and imitate. Entrepreneurial knowledge enables combining these two in order to obtain undervalued resources and to create new business ventures (Alvarez and Busenitz, 2001). An entrepreneur's ability to recognize opportunities and evaluate their value is formed

through his/her education, work and social networks (Cooper and Park, 2008). In its most practical form, the knowledge needed for opportunity recognition consists of prior knowledge of the markets, of the ways to serve those markets, of the customer problems and of the technology needed (Shane, 2000; Marvel and Droege, 2010). Mejri and Umemoto (2010) found four factors to be influential in opportunity recognition. *Market knowledge* refers to explicit knowledge of the market such as information on the competitors or regulation. *Network knowledge* (social and business network), *cultural knowledge* (i.e. language, habits, norms) and *entrepreneurial knowledge* (how to identify opportunities and how to exploit them) in turn refer to tacit knowledge gained from practice through one's personal experiences.

As previous literature seems quite certain of the need for prior knowledge in opportunity recognition, where from the needed information can be obtained? By now, we already know the sources of prior knowledge are personal and can be gathered through different roles in education, work and personal life (Shane, 2000), and especially tacit knowledge developed through years of experiences and active seek for opportunity-ladden information allow creating and shaping opportunities (Chiasson and Saunders, 2005; Pech and Cameron, 2006). Many studies share rather similar findings on the importance of formal education and work experience (Kourilsky and Esfandiari, 1997; Cliff et al., 2006; Hsieh et al., 2007; Cooper and Park, 2008) acknowledging that education provides access to certain type of information (Ramos-Rodriquez et al., 2010). Work experience shapes not only an individual's technical and commercial knowledge of markets and technologies, but also his/her attitudes towards risk and personal achievement (Kourilsky and Esfandiari, 1997; Cooper and Park, 2008) and ability to combine the information available (Hsieh et al., 2007). An individual's possibilities to gain suitable information for opportunity recognition can be related to his/her location (Ramos-Rodriquez & al., 2010), but also to his/her ability to utilize spill over knowledge, which refers to business opportunities that are unattractive to some, such as incumbent firms or universities, but are more valuable to others agents (Acs et al., 2009). According to the spill over theory, any business context with more knowledge creates more opportunities resulting in knowledge creating new knowledge (Audretsch and Keillbach, 2007).

According to previous literature, what difference then does prior knowledge make in opportunity recognition? In his much-cited study, Shane (2000) found how knowledge already possessed rather than a search for new knowledge led to discovering business opportunities of a new technology. Perhaps following this legacy, many studies to come leaned heavily on the notion of prior knowledge and experience in opportunity recognition. Knowledge and ideas created internally in an organization seem to be a source of opportunities (Audretsch and Keillbach, 2007), and especially according to the opportunity discovery theory a leader of an opportunity seeking firm needs to know a lot on the issue whereas creating opportunities requires more abilities to inspire others and create trust (Alvarez and Barney, 2010). Experience, and the knowledge gained through it, provide tried-and-tested type of information in current technological and social environments (Chiasson and Saunders, 2005; Vaghely and Julien, 2010) and allows resourcing business formation and growth (Cooper and Park, 2008). Cliff et al. (2006) argued that innovative actors possess more experience from the industrial peripheries and even other industries than from the core organizational field and by this finding seemed to broaden the concept of prior knowledge in opportunity recognition. Regardless of the type or the source, prior knowledge is a part of opportunity meaning making (Marvel and Droege, 2010) and social construction when an individual interprets information, combines patterns of it and shapes logic to identify new opportunities (Vaghely and Julien, 2010).

2.3.2 Social capital

Business opportunity recognition typically requires so wide range of knowledge, that a single individual is most likely not capable of solving the problem alone (Hsieh et al., 2007), and co-operation of others is needed well before the business is actually running (Alvarez and Barney, 2010). As the understanding of social networks as a possible source of information has started to develop only over the past ten years (Ozgen and Baron, 2007), the research has shown how entrepreneurs broaden their knowledge through social interaction (Cooper and Park, 2008) in networks that are stronger than other people have

(Nicolaou et al., 2009). The concept of social capital however has already been defined in 2002, when Adler and Kwon stated social capital being the goodwill available in the structure and content of an individual's or a group's social relations providing information, influence and solidarity valuable to the actor. As the social dimension of social capital is constructed with the internal and external ties made within the network (Adler and Kwon, 2002) through embedding and relations (Chiasson and Saunders, 2005), the capital dimension refers to a long-lived asset, which requires investment and maintenance to be beneficial to the actor suggesting that social capital is like any other form of capital (Audretsch, Aldridge & Sanders, 2011).

It has been said that much of the business venture's formation, success and survival in general owe to social capital (Audretsch et al., 2011). What kind of a role it then has in business opportunity recognition? The role of social capital is highlighted in the form of social networks as entrepreneurial opportunities arise from the actions and relationships among the key network members, who share trust and cohesion together (Suddaby et al., 2015). Therefore, social capital is an enabler allowing entrepreneurial activity dependent of social structures to happen (Chiasson and Saunders, 2005). It is a mediator between human capital and business opportunity recognition (Bhagavatula, Elfring, van Tilburg & van de Bunt, 2010) providing resources such as work force, funding, information and advice (Alvarez and Barney, 2007; Shaw and Carter, 2007; Cooper and Park, 2008; Bhagavatula et al., 2010; Audretsch et al., 2011). Social capital is also a supporter providing the support of key partnerships throughout the value chain (Lewandowski, 2016) or by suitable recruitments, who either bring in their deep expertise or flexible general knowledge (Alvarez and Barney, 2010).

How about the role of an initiator? Are business opportunities recognized because of knowledge shared in networks or because the changes happening in them for example? Most of the literature red for this study argue that social capital is a source of business opportunities each of the authors having a bit different argument to support their view. Opportunities arise thanks to the network's knowledge sharing and information (Hsieh et al., 2007; Shaw and Carter, 2007), cognitive processes (Ozgen and Baron, 2007), exposure of more ideas (Ramos-Rodriquez et al., 2010) and interaction between the

network members (Suddaby et al., 2015). According to the study made by Farr-Wharton and Brunetto (2007) entrepreneurs join networks in order to search for opportunities suggesting that the view of networks as opportunity sources prevails in practice too. However, some see social capital not as a resource of opportunities but as a transformer. First, there needs to be an idea, insight or even an intuition before suitable knowledge and resources can be acquired through social capital (Audretsch et al., 2011). The transformation process of the initial business idea from innovation to business opportunity is therefore very dependent on the social interactions the entrepreneur is participating in (Vaghely and Julien, 2010).

If opportunities arise from or are transformed through social networks, does it matter then what the network should be like? Even though most authors seem to agree on that there are different types of relationships within social networks, it seems more arguable which of them are most effective in business opportunity recognition. Some argue, that business opportunities are best recognized thanks to weak ties that allow access to more versatile contacts and situations containing unusual but valuable information (Alvarez and Busenitz, 2001). According to this view, strong ties such as relatives or close friends only provide access to a similar cognitive map resulting in a lack of new ideas (Ramos-Rodriquez et al., 2010). However, some have found that strong social ties enable business opportunity recognition (Nicolaou et al., 2009). Perhaps both ties are needed weak ties and structural holes in networks providing new business opportunities and strong ties providing resources to utilize them (Bhagavatula et al., 2010). Nevertheless, a network is only as good as is its use (Bhagavatula et al., 2010). Trust is a prerequisite for a beneficial and objective-oriented co-operation in a network as it determines how information and resources are exchanged (Farr-Wharton and Brunetto, 2007) and how radical changes can be implemented (Zahra, Yavuz & Ucbasaran, 2006).

2.3.3 Environmental conditions

If entrepreneurial activity requires prior knowledge and social capital, one could think that business opportunity recognition would also be influenced by the surrounding

environment as no business can operate in a vacuum. Discovery theorists of business opportunity recognition regard the environment as more distinct and separate from the entrepreneur while creation theorists see the environment and the entrepreneur acting more equally together (Suddaby et al., 2015). Both of them do however share the view that external environmental changes do create opportunities for example through changes in regulatory, emerging of disruptive technologies or ever evolving customer needs (Webb, Ireland, Hitt, Kistruck & Tihanyi, 2011). As some of us try to protect ourselves from the threats caused by environmental changes, the ones with entrepreneurial cognition orientation seize the chance of new opportunities (Shane, 2000; Alvarez and Busenitz, 2001). Besides the ability to see the possibilities, after a study of 12 internationalizing firms, the temporal element of being at a right place at a right time shapes how environmental changes provide business opportunities (Crick and Spence, 2005). Optimal conditions moderate the relationship between the entrepreneur's personal characteristics and opportunity recognition, and the research made has found four dimensions to be critical in creating munificent environment. First, governmental policies encourage entrepreneurial activities and reduce unnecessary bureaucracy. Second, socio-economic conditions favor entrepreneurship, allow knowledge flow and the economy develops steadily. Third, financial support for new venture growth is provided, and fourth, support services such as modern transportation or data networks provide access to customers and suppliers (Tang, 2010).

Entrepreneurial activity has been found to be greater in the areas of high growth (Audretsch and Keillbach, 2007) indicating, that geographical locations and their social and historical context matter (Suddaby et al., 2015). As the culture of the region determines everything between the subjective support available and the level of risk entrepreneurs are willing to take, the location shapes the firms established in it. Eventually, the existing firms shape the reputation of location and its enterprise profile attracting profile-fitting new ventures to the area (Cooper and Park, 2008). Therefore, even tough two individuals would be similar according to their attributes, a variation in their geographical location can influence in how they recognize opportunities (Alvarez and Barney, 2010). In the context of CE, the regional financial support could enhance

responsible business ideas as economic barriers are the major factors preventing sustainable business development (Piispanen, Aromaa & Henttonen, 2019).

Also distribution of knowledge is dependent on the geographical location as for example knowledge spillovers are geographically bound to their source (Audretsch and Keillbach, 2007) and a region not investing in new knowledge results in fewer business opportunities based on spillovers (Acs et al., 2009). Thus, business opportunities are greater in areas which are characterized by more knowledge (Audretsch and Keillbach, 2007) and how the knowledge is distributed determines who recognizes the opportunities (Shane, 2000). An opportunity recognition enhancing environment should therefore focus on information and knowledge sharing as well as on communication and discussion promoting to allow quick opportunity recognition and evaluation based on the knowledge gained in social context with human capital (Tang, 2010). Combining knowledge collected from social and environmental contexts promotes creativity and innovations that are not only different to the ones of the competitors, but also create value to the customer (Webb et al., 2011).

As most of the academia seems to agree on that environmental conditions influence business opportunity recognition, Nicolau and Shane (2010) point out how some scholars suggest that environmental factors are overemphasized at the expense of individual differences. To support this notion, they argue that environmental factors alone do not explain why some people recognize opportunities and others do not. Rather, opportunity recognition is possible through interaction of environmental and genetic factors suggesting, that genetic factors may influence in who engage in entrepreneurial activity (Nicolau and Shane, 2010). Genetics or not, even practitioners seem to be sure that environmental factors have a say. For example, in the CE context, Artificial Intelligence as a technological change could provide the much needed opportunities to produce more sustainable products and services through either enabling totally new business ventures or enhancing development in existing organizations (Ellen MacArthur Foundation, 2019).

2.3.4 Cognition/personal traits

When exploring the literature available on factors influencing business opportunity recognition, it quickly became evident, that a fair share of it has been written about the individual engaging in entrepreneurial activity. It does make sense given that nothing really happens solely based on prior knowledge available in social networks of entrepreneurship supporting environment. Opportunity recognition requires always an individual or a group of them, because entrepreneurial activity is a play between the characteristics of the opportunity and the characteristics of the individuals exploiting it (Casson, 2015 after Shane) pointing out how individual characteristics alone do not explain why some recognize opportunities (Heinonen, Hytti & Stenholm, 2011). In general, the characteristics of an individual influencing opportunity recognition have argued to include economic or demographic (Casson, 2005 after Shane; Shook et al., 2003) and psychological differences related to personality and culture (Casson, 2005 after Shane) such as creativity, cognition and ability to accept uncertainty (Butler, Doktor & Lins, 2010). In practice, earlier research has shown how probability to engage in entrepreneurial activity is increased with unemployment, high education, marriage, having previous entrepreneurial experience or parental example, having a high social status (Casson, 2005 after Shane) or having suitable prior knowledge (Shane, 2000).

The role of individual cognition has gained wider academic attention and importance, but there still is room for more empirical research (Shook et al., 2003) even though cognitive science has already showed us how people vary in their ability to combine prior knowledge into new ideas (Shane and Venkataraman, 2000). For example, it yet remains to be shown are the differences of individual cognition existing already at opportunity recognition phase or do they emerge while the opportunity is exploited (Alvarez and Barney, 2010). Understanding the cognitive perspective is important as everything we think, say or do is influenced by cognitive processes, that acquire, store, transform and use information (Baron, 2004) – a process that for example assists in organizing resources for opportunity exploitation (Alvarez and Busenitz, 2001).

What are then the cognition qualities that support business opportunity recognition? Indeed, relevant cognition frameworks may enable other persons to recognize

opportunities by perceiving patterns between phenomena leading to new business (Baron and Ensley, 2006) through for example the cognitive processes of awareness, problem-solution identification and evaluation (Bonney and Williams, 2009). The entrepreneurial cognition has been explained by multiple theories such as reduced perception of risk, prospect theory, greater susceptibility to various cognitive biases, basic perceptual processes, signal detection theory and regulatory focus theory, which, if combined, would describe an entrepreneur as a person who is risk-taking (Alvarez and Busenitz, 2001), calculative, optimistic and able to recognize patterns and distinguish hits from misses (Baron, 2004). After analysing 18 verbal protocols of nine executives evaluating business opportunities of two technological innovations, Grégoire, Barr and Shepherd (2010) found, that structural alignment is a cognitive tool for comparing and evaluating things and is to be added to the cognitive tool kit of an entrepreneur. In their analysis it was shown how comparison and higher level of prior knowledge are used to make sense of new information and to align structural relationships rather than focusing on superficial features.

Pattern recognition is a cognitive process that enables an individual to identify how at a first glance independent events or trends could form patterns that lead to new business opportunities (Baron and Ensley, 2006). This ability of being able to "connect the dots" between changes i.e. in technology, markets or governmental policies (Baron, 2006) is developed over the years as the entrepreneur engages in multiple business ventures and is able to produce more clearly defined and content-rich knowledge on how to run a successful business (Baron and Ensley, 2006). By comparing relevant information, the entrepreneur is able to recognize possible patterns and draw relevant conclusions for opportunity recognition and exploitation (Grégoire et al., 2010). The pattern recognition perspective is therefore useful as it combines three factors related to business opportunity: active search for opportunities, alertness to them and prior knowledge needed (Baron, 2006).

If cognition is based on learning, is an individual a blank canvas to start with? Or do his/her psychological attributes form the basis for cognition frameworks and eventually opportunity recognition? According to Scott Shane, yes, as he listed three individual

characteristics to allow superior information processing: absorptive capacity, intelligence and cognitive abilities (Casson, 2005). Other psychological attributes possible to influence in business opportunity recognition are self-efficacy, risk propensity, motives such as status or continuous learning, attitudes (Shook et al., 2003) and reflexivity (Suddaby et al., 2015). According to rational action perspective, these attributes are all reflections of an individual's fundamental beliefs and values – the basic assumption of is the world friendly or hostile (Casson, 2005), which in turn reflects to the research made on individual attributes significant in business opportunity recognition as optimism and creativity are highlighted to be the leaders of the game (Ramos-Rodriquez et al., 2010). Creativity is often given the central role (Butler et al., 2010) not only in recognizing opportunities but also in resourcing them, and even practitioners believe it has importance (Nicolaou et al., 2009). However, Heinonen et al.'s (2011) study of 117 students suggests that individual creativity does not directly lead to viable business ideas and has to be supported by opportunity search activities.

The element of risk is always present with business opportunities and an individual not possessing an ability to absorb uncertainty does not even look for them (Butler et al., 2010). Risk-taking along with entrepreneurial attitudes increases the probability to start a new venture to 45% (Lunnan, Nybakk & Vennesland, 2006) and uncertainty is transformed to manageable risk through the cognitive process of entrepreneurial judgment (Mahnke, Venzin & Zahra, 2007). Perhaps it is the curiosity that drives an individual to recognize opportunities regardless of the risks they involve? The entrepreneurs continuously look for and attract opportunity-laden information (information cues) not obvious to everyone, which allows them to satisfy internal motivators such as problem solving (Pech and Cameron, 2006). Curiosity can also be translated to openness to experience, which provides an individual information that allows him/her to develop products and understand the markets better (Nicolaou et al., 2009), and therefore, enhances the cognitive process of opportunity recognition by facilitating the process with access to useful information (Shane, Nicolaou, Cherkas & Spector, 2010). The cognitive frameworks are also developed through learning (Baron and Ensley, 2006), and learning ability enhances acquiring, processing and applying knowledge resulting in notion that people with superior learning skills are better in

identifying needs in the operating environment and their possible solutions (Hsieh et al., 2007).

If business opportunity recognition were a movie and cognition and individual attributes would play the role of Sense, is there at all the role of Sensibility? Are emotions and feelings a leading or a supporting role or just statistics? We are used to seeing business as rational and logic, but people do make decisions also by relying on their heart and not just head. Decision makers might go through extensive evaluation criteria of causalities, comparisons, expectations and real outcomes, but ultimately, they will make a decision that they can feel good about (Li, 2011). According to the case study of Pech and Cameron (2006), an intuition based on experiences, knowledge and risk taking was enough to enact an opportunity. Baron and Tang (2011) refer to *affect*, which they define as a selection of subjective feelings and states, such as relatively long-lasting moods (happiness) and motions of shorter duration (anger). As affect influences in cognition and behaviour, it thereby can influence in the cognition framework of business opportunity recognition as well (Baron, 2008). A positive affect formed of self-confidence, optimism (Shook et al., 2003; Li, 2011) and trust (Gordon, 2007; Li, 2011), enhances business opportunity recognition by stimulating creativity, which results in innovations high in radicality but less in number (Baron and Tang, 2011).

2.3.5 Entrepreneurial alertness

Let's say that an individual has suitable prior knowledge, he has large social networks and he operates in an entrepreneurship supporting environment. Also, his personal attributes match to the general criteria of a person engaging in entrepreneurial activity. Does this alone explain why he recognizes an opportunity and, after evaluation, starts to exploit it? Existence of an opportunity, whether it is discovered or created, offers always a stimulus indicating there is something out there, something that possibly nobody else has observed, offering a chance to be the first at the markets to be later created (Baron, 2004). As entrepreneurial process begins with opportunity recognition, it requires first and foremost alertness to them (Webb et al., 2011). The term "entrepreneurial alertness"

was developed in the 1970's when Kirzner defined it as an ability to see and create value in resources, products and services in ways that others have not noticed (Alvarez and Busenitz, 2001). In general, entrepreneurial alertness stems from an individual's cognitive capabilities formed of personal attributes, prior experiences, social connections and environmental factors, and enhances perceiving and recognizing opportunities (Garcia-Cabrera and Garcia-Soto, 2009). These "flashes of superior insight" (Alvarez and Busenitz, 2001) or the motivation to create an image of the future result in an ability to connect complex information of how things have worked, how do they work now, how will they work and what is needed for them to work like that in the future. All these bits of information provide business opportunities for people alert to the cues available (Webb et al., 2011). As high awareness of even one single dimension such as technologies, business models or markets can facilitate opportunity recognition, more creative solutions will be formed of their combinations (Cooper and Park, 2008).

Entrepreneurial alertness seems to be often connected to prior knowledge as together with it alertness mediates how personal qualities influence opportunity recognition, managerial skills and thereby venture performance (Sambasivan, Abdul & Yusop, 2009). In their causal model, Miao and Liu (2010) argue how both entrepreneurial alertness and prior knowledge as individual psychological factors are the antecedents to opportunity recognition by having a direct impact on it. Alertness and knowledge are seen intertwined as person's alertness not only to the business opportunities but also to the knowledge he/she already has (Marvel and Droege, 2010) along with updating this knowledge allows him/her to detect patterns and bias within the knowledge possessed, and to step form third-person status of what value there is to someone to first-person status of I can create that value to them (Webb et al., 2011). This way, entrepreneurial alertness can be defined as behavioural propensity involving knowledge generation and developing of new means-ends frameworks by testing and experimenting possibilities even quite spontaneously (Endres and Woods, 2007).

Entrepreneurial alertness has also been described as a complex cognitive schema enabling business opportunity recognition – a view studied and strongly emphasized by Gaglio and Katz (2001). They describe entrepreneurial alertness as the engine of

opportunity recognition while the individual's perceptual and information-processing skills are the fuel for the engine. Individuals possessing the alertness schema are more sensitive to the changes in market disequilibria as well as more willing to respond to non-matching information and change their schema according to it. Non-alert individuals are less sensitive to this information and have a tendency to change the information to match their schemas. Alert individuals are also prone to seeking for objective accuracy of information on their industry or social environment in comparison to non-alert individuals, who are satisfied with information that will match their schema. As alert individuals are willing to adjust their schemas, but only with objectively accurate information, they are more capable of thinking outside the box.

Overall, entrepreneurial alertness seems to be a combination of multiple dimensions rather than just being a single easy-to-apply-on factor of business opportunity recognition. Along with prior knowledge, personal qualities and management skills have been coupled with it to enable opportunity recognition (Sambasivan et al., 2009), even though Tominc and Rebernik (2007), based on their study, suggest that business opportunity recognition is most enhanced with high degree of individual alertness and cultural support leaving variables like self-efficacy, knowledge and experience out of the picture. As the widely accepted definitions and frameworks for entrepreneurial alertness are still yet to be created, there is also only little knowledge of how entrepreneurial alertness can be developed. Ozgen and Baron (2007) have contributed this gap with their study and found how the entrepreneurs who had mentors, informal industry networks and who participated in professional forums, had higher alertness to new business opportunities.

2.3.6 Systematic search

How about systematic search? Does successful opportunity recognition require an individual to systemically search for business opportunities or can they pop in to his/her awareness just based on the factors mentioned previously? There are frameworks which suggest that opportunities result from an entrepreneur's continuous search for information

and questioning prevailing habits (Pech and Cameron, 2006). This notion is especially built on discovery theory of opportunities as discovery is seen as a result of systemically scanning the environment for new product or service production. The scanning search typically involves not only opportunity costs of time and money but also a possibility of loosing the opportunity to a competitor as the window of opportunity is closing (Shepherd and Lévesque, 2002). Creation theory in turn does not really acknowledge search as such, but opportunities arise from entrepreneurial experiments, actions, and from the responds of possible customers to them (Alvarez and Barney, 2010).

Active search for opportunities has been found to play an important role in opportunity recognition (Baron, 2006; Sambasivan et al., 2009) by for example enhancing new firm foundation. When studying American start-ups Patel and Fiet (2009) found how systematic search had direct effects on firm founding by increasing the usage of social capital and adaptive decision making style. Also, systematic search seemed to reduce environmental uncertainty, which encouraged the entrepreneurs to proceed with their actions. Shane (2000), on his part, argued that one can not search for something one does not know is existing because opportunity is unknown until it is discovered. Thus, opportunities are discovered through recognizing the value of received information. To continue with the opposing view, in 2003 Ardichvili, Cardozo and Ray excluded search as less determinant from the model they built for opportunity recognition and development (Sambasivan et al., 2009) along with Baron (2006) stating that active search may not be needed if other factors such as entrepreneurial alertness are high.

The concept of systematic search can also be coupled with information and knowledge gathering after the initial business idea is born. After identifying the problem to be solved, the entrepreneurs seek the solution for it with sheer luck or an organized search to complete the idea with design or commercialization choices (Hsieh et al., 2007). Information gathering is therefore used to be able to make the decision of accepting or rejecting the risk the opportunity provides alongside with its possibilities for profit (Shepherd and Lévesque, 2002). As opportunities can stem from an individual's creativity, interaction with others, prior knowledge and experiences, or entrepreneurial

alertness, he/she can also execute a directed search within constrained domain (Fiet, 2007) showing how opportunity recognition may not be explained by just one factor but rather by a combination of them.

2.4 Theoretical framework in this study

When examining the above introduced factors influencing business opportunity recognition, it seems evident, that none of them could do the trick by themselves. None of them can alone explain why and how some people identify business opportunities and others do not even though Shane (2000) seemingly simply argued that all people are just not equally likely to recognize same opportunities regarding for example technological changes. Can opportunity recognition be influenced by multiple factors or variables with various moderating effects (Miao and Liu, 2011)? And if there are multiple variables, should they be organized into a framework to be able to explain and predict the set of this empirical phenomena (Shane and Venkataraman, 2000)?

Some authors have contributed to this need and have organized the factors around opportunity recognition into different sets or frameworks. Ardichvili et al. (2003) used Dublin's theory for framework building and proposed a theory for opportunity recognition. They emphasized on entrepreneurial alertness, entrepreneur's personal traits, social networks and prior knowledge being its antecedents. The personal traits useful in opportunity recognition were argued to include optimism, self-efficacy and creativity. However, the most interesting notions of this theory are that as it considers also the type of the opportunity itself in the equation, it accepts that alertness is formed out of the mere coincidence of how other factors happen to take place. Later, in 2009 Garcia-Cabrera and Garcia-Soto published their version of a framework explaining opportunity recognition also leaning on entrepreneurial alertness. According to their notes, it was formed of an individual's cognitive capabilities including personality traits, previous experience, specific search strategy, social networks and the environment. This shows how knowledge of opportunity recognition had expanded in few years to understand how

cognition, search activities and surrounding environment influence perceiving and recognizing opportunities.

However, as these theorizations seem to describe some fractions of the phenomena, more comprehensive outlook was still needed. To produce more holistic view on why some individuals are better at recognizing (discovering or creating) opportunities, Mary George et al. (2016) developed a framework, which will serve as the theoretical framework of this study. Based on extensive literature review, they focused on six previously presented factors – prior knowledge, social capital, environmental conditions, cognition/personal traits, entrepreneurial alertness and systematic search – to provide more insight on opportunity recognition. These factors were chosen because they represent the key findings made in opportunity recognition domain. Also, research evidence has shown how these factors are interrelated and leaving even one of them out would provide us an incomplete understanding of the phenomena. For these same reasons also some interesting factors possibly influencing in opportunity recognition, such as emotions or genetics, are left out as their research is still sparse (Mary George et al., 2016).

Figure 2. presents how the factors considered influential operate in opportunity recognition process which develops to Analysis ja Exploitation phases as outcomes of other activities. The role of prior knowledge is one of the most traditional views in opportunity recognition suggesting it works as a moderator for entrepreneurial activities. It is commonly understood as a cognitive foundation for information synthesizing in opportunity recognition as many studies have theorized. Social capital in turn has been mostly understood through empirical research proving quickly to be one of the most influential factors in opportunity recognition. Both opportunities and information are argued to be attained through the strong and weak ties of the entrepreneur's social networks. Environmental conditions providing both positive and negative effects are fundamental in understanding how individuals engage in entrepreneurial activities as they are influenced by issues such as economic growth, geographic location, legislation and cultural values. As without an individual no innovations or opportunities could take place, research has focused highly on the operating individual. The cognition of an

individual seems to explain his/her behavior and choices, but also characteristics such as self-efficacy, creativity, risk appetite, ambition and need for autonomy have argued to facilitate entrepreneurial activity. Entrepreneurial alertness is a factor closely related to cognition and as a complex construct difficult to measure or sufficiently explain. Examining mental frameworks, schemas, has provided knowledge on how alert people are drawn to change and willing to alter their schemas accordingly in addition to being able to spot shifts in environment invisible to others. High alertness has proven to reduce the need for actively searching for opportunities. Even though some scholar argue that opportunities are not identified through search but rather identifying the value of information, others are convinced that systematic search helps in recognizing opportunities (Mary George et al., 2016).

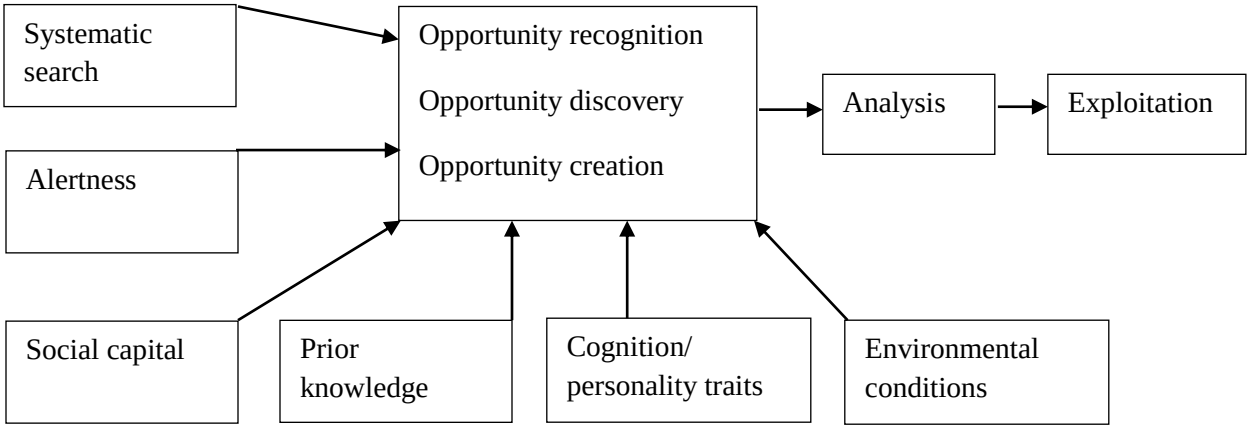

Figure 2. The opportunity recognition framework as conceptualized in the literature (after Mary George et al., 2016)

As this construction presented in a process view serves as a starting point for future discussion and research, Mary George et al. (2016) encourage future empirical research to be done either with quantitative or qualitative methods in different contextual settings. This framework is, like the authors emphasize, a result of literature review and therefore needs empirical exploring in real-life settings. To help with filling this gap in academia, I am interested in are the factors presented in the framework shown in business opportunity

recognition in CE context. More importantly, if they are shown, how do they show? The methodology of my study will be explained in detail in the following chapter.

3 METHODOLOGY

3.1 Methodological approach

The methodological approach of this study is a qualitative multiple-case study. Qualitative approach seemed suitable for my study, because as a form of social science it focuses on understanding people and their subjective world, the real-life context, how they experience it and make sense out of it (Awasthy and Gupta, 2015, p. 13). This way, choosing a qualitative research method allows a researcher to generate new theory or insights, and modify order of a relatively undefined phenomena (Suddaby et al., 2015) as it answers broad, open-ended what, how and why questions providing deeper, multi-faceted understanding of even complex phenomena (Awasthy and Gupta, 2015, p. 16; Suddaby et al., 2015). Understanding social behavior rather than trying to strictly explain it and focusing on meaning making support interpretivist view of social construction of the world, and is well employed by qualitative research approach (Awasthy and Gupta, 2015, p. 7). As most of the research in CE context has been focusing on practical matters such as energy or raw material usage, this study may shed light on the paradigm level of the phenomena seeking more knowledge on how CE business opportunities are recognized (Korhonen et al., 2018b).

The research data was collected with in-depth semi-structured interviews of case company founders and the interview questions were themed to the six influencing factors of business opportunity recognition in order to obtain retrospective accounts of people who actually experienced the phenomenon I was interested in (Gioia, Corley & Hamilton, 2012). In-depth semi-structured interviews both provide information that would not be possible to collect with questionnaires or be presented on scales, and produce information the researcher was not even prepared to think about (Awasthy and Gupta, 2015, p. 75). As in qualitative research it is impossible for a researcher to be completely objective (Awasthy and Gupta, 2015, p. 14), I have produced the data of this study together with the interviewees and I am here to study their answers. Given the complexity of the phenomenon, this work is exploratory and does not seek strict explanations.

3.2 Data collection

The research data was collected through five in-depth semi-structured interviews of case company founders. In early August 2019 I contacted the founders of nine relatively newly-established companies engaging in CE first with an email introducing my research topic and asking whether they would be interested in participating in the study. I identified these companies through purposeful sampling (Eriksson and Kovalainen, 2008, p. 52) based on a list of *The most interesting companies in Circular Economy* compiled by Sitra (Sitra, 2019) presenting inspiring Finnish examples of CE activities. This list provided me organizations that would not only fill the criteria for a CE company, but also allowed me to choose organizations I had an interest to as a consumer. I chose to contact two of these companies not only because of their interesting CE activities, but also because they were located close to my home town. Rest of the companies were located mainly in Southern Finland. In addition to the companies provided by Sitra's listing, one of the case companies was identified based on my own experiences of their consumer marketing bringing forward their CE actions and one company was identified when I was visiting a start-up seminar.

The founders of the companies were identified based on the company web sites. Three of the contacts responded to the e-mail and agreed to be interviewed. However, one of them did not answer to my further e-mails when I tried to arrange the interview date. As I still needed at least three more participants for better research validity, I phoned two of the founders I sent earlier e-mail to, and also they agreed to be interviewed. The fifth interviewee was found via a start-up seminar and as I phoned him later on, he agreed to participate in the study. The case companies participating in the study and their CE business models are presented in more detail in chapter 3.2.1. The information regarding case companies was collected through interviews and companies' web sites.

The interviews were held in August and September in person as I was reluctant to arrange online interviews. They were recorded with a dictation machine and I also made written notes during the conversation. I was able to use an interview layout designed by University of Eastern Finland Business School researchers as the university is participating in CICAT2025 – project presented in chapter 1.2. I modified the layout to fit

better my purposes (Appendix 1) and, after a careful analysis, to provide me information that would help me to answer my research questions. As they are both what and how questions, I needed to use both positivist and emotionalist interview research approach (Eriksson and Kovalainen, 2008, p. 79) when designing open-ended interview questions that would provide more detailed information (Eriksson and Kovalainen, 2008, p. 84). All of the interviews lasted approximately an hour and, when transcribed to written text, they resulted between 10 to 14 pages of text (Table 1).

Table 1. The case companies, interviewees, interview dates and durations, and the number of transcribed pages

Case company	**Interviewee**	**Date**	**Duration**	**Number of pages**
Biocoil Oy	Interviewee 1	23.8.2019	1:07	11
KaiHemp	Interviewee 2	9.9.2019	1:09	14
Pure Waste Textiles Oy	Interviewee 3	24.9.2019	1:07	12
the other danish guy	Interviewee 4	29.8.2019	1:13	13
Valtavalo Oy	Interviewee 5	23.8.2019	1:06	10
Altogether	**5**	**4**	**5:42**	**60**

To support research ethics, the founders participated the study on voluntary basis and were able to withdraw from it at any time (Eriksson and Kovalainen, 2008, p. 70) as did one of the founders who first agreed to participate. In the interview situation I explained to the interviewees how this study would be published and how I would be using some interview quotations to show how I analyzed the data. I also explained how the research results would be shown as a whole rather than separately explaining the findings of each interviewed individual. With all interviewed founders we agreed on anonymity regarding the interviewees. As a respect to their wish, the case companies are presented, but the founders are left anonymous and neither will be shown which quotations refer to which company.

3.2.1 The case companies

Biocoil Oy

Founded in 2016 and located in Kuhmo, Finland Biocoil Oy specializes in redistributing and/or refining sawmill waste to be used as raw material or resource for example in energy industry (Biocoil, 2019). Their bio-coal product made of outer lines of tree trunks offers a more ecological alternative for hard coal, which is still used in many industries regardless of its environmental hazards (Interviewee 1, 2019). As at the moment 20% of saw mill raw material goes to waste unless redirected (Interviewee 1, 2019), Biocoil regenerates natural system with its production methods, uses renewable raw material and aims at creating as little waste as possible (Ellen MacArthur Foundation, 2019). The company's business idea emphasizes on material redistribution/reuse (Urbinati, 2017) and its business model on extending resource value (Bocken et al., 2016).

KaiHemp

KaiHemp has started to map out how hemp fiber could be refined to raw materials (KaiHemp, 2019) and used as an alternative for example for glass fiber or plastic (Interviewee 2, 2019). The business idea follows multiple circular principles as growing hemp burns carbon dioxide, the hemp is grown in Kainuu region where snowy winters wash up the hemp straws and no chemical washing or fresh water is needed, and the end material made of hemp is 100% biodegradable (Interviewee 2, 2019). This way KaiHemp's production methods rebuild nature and generate little unbiodegradable waste (Ellen MacArthur Foundation, 2019), but as the business is still in its infancy any conclusion of its future business model cannot yet be made. The company was founded in 2018 and is located in Kajaani, Finland.

Pure Waste Textiles Oy

Founded in 2013 and based in Helsinki, Finland Pure Waste Textiles produces clothing made of fashion industry's textile waste guaranteeing that 100% of the raw material is recycled (Pure Waste Textiles, 2019a). The co-operative factory is located in India, where it offers above industry standards working conditions to its personnel. 95% of the

energy the factory needs are produced with wind power, the factory fence is made of recycled plastic bottles and the waste from bio-toilets is produced to cooking gas (Pure Waste Textiles, 2019b). According to the Interviewee 3 (2019), Pure Waste Textiles has plans for return logistics of used clothing in Finland and in addition it is aiming to compensate its carbon footprint for example with tree planting. Pure Waste Textiles' business idea emphasizes on material redistribution, reuse, recycling and product life extension (Urbinati, 2017). Its business model underpins both extending resource and product value (Bocken et al., 2016).

the other danish guy

the other danish guy produces men's underwear made of plastic waste such as discarded fishing nets found in seas by voluntary divers all over the world (the other danish guy, 2019). The raw material is regenerated to thread in Europe and manufactured to garments in a co-operative factory in Portugal (Interviewee 4, 2019) with a guarantee that 100% of the material is regenerated from recycled materials (the other danish guy, 2019). Much like the previous case company, also the other danish guy's business idea emphasizes on material reuse, recycling and product life extension (Urbinati, 2017) and its business model builds on both extending resource and product value (Bocken et al., 2016) as the end product is designed to be long-lasting (Interviewee 4, 2019). The company was founded in 2014 and is located in Turku, Finland.

Valtavalo Oy

In 2008 founded Valtavalo produces LED lighting solutions, which use 70% less energy than incandescent or fluorescent lamps (Valtavalo, 2019) and are multiple times longer lasting (Interviewee 5, 2019). As the LED band itself is recyclable, also the production and packing lines of the company are using recycled materials (Valtavalo, 2019). The LED lights can be adjusted anywhere to avoid unnecessary production of new stands or racks and waste creation when the old racks are discarded (Interviewee 5, 2019). The head office of Valtavalo is located in Oulu, Finland, but the manufacturing is located in Kajaani which allows the social aspect of CE to be considered in a town with high unemployment rate (Interviewee 5, 2019). Valtavalo follows the principles of CE with

product life extension, recycling and reuse (Urbinati 2017). Its business model has attributes of both classic long-life model and extending product value (Bocken et al., 2016).

3.3 Analysis of the data

After the interviews I transcribed the interview data to written text to be able to analyze it further. Even though the opportunity recognition framework by Mary George et al. (2016) guided my analysis in relatively deductive manner, in which the research proceeds from theory, I was also prepared to obtain an inductive view in which theories are formed based on the findings of empirical research (Eriksson and Kovalainen, 2008, p. 22). This was because if the interviews and data analysis would have been based solely on existing theory, I would have missed the key aspects of the interviewees' sensemaking by applying our previous understanding on their real-life experiences (Gioia et al., 2012). Thus, I was looking for similarities between Mary George et al.'s framework (2016) and my findings, which would provide empirical justification for the framework, and in addition, I was curious in whether my research data could provide us new insights to the topic. Could there be factors influencing opportunity recognition that were unidentified in earlier research? Perhaps some of the factors in the framework do not have an influence at all or the influence is different than previously known? This way, when the findings were consulted with the existing literature, my research gained an abductive flavor, which allows the data and theory to be considered in tandem (Gioia et al., 2012).

In multiple case study research preplanned theory-driven coding is typically used when attempting to test or improve existing theory (Eriksson and Kovalainen, 2008, p. 128). To allow the reader to see the connections between the data and theory, the analysis will follow from raw data to categories and themes, and will preferably be presented in graphics to demonstrate rigor much needed in qualitative research (Gioia et al., 2012). When analyzing the data, I coded the text first to refer to the business opportunity influencing factors by Mary George et al. (2016). In Table 2. it is shown how the factor of cognition/personal traits (272) was the most referred to when measured by the number of codes the factor of social capital (204) following second. As prior knowledge (113),

environmental conditions (101) and entrepreneurial alertness (133) had almost the same amount of codes, systematic search only had six of them.

Table 2. The number of codes referring to influencing factors of Mary George et al.'s framework (2016)

Factor	Prior knowledge	Social capital	Environmental conditions	Cognition/ personal traits	Entrepreneurial alertness	Systematic search	Altogether
Number of codes	113	204	101	272	133	6	829

After the text was coded, I started to categorize the codes into a more structured form to proceed towards analysis (Gioia et al., 2012). As presented with examples in Table 3. I grouped the codes into categories and further to themes that allowed me to better analyse which factors influence business opportunity recognition in CE context and further, how do they influence it. For example, prior knowledge referring code *"I code, I do marketing, I take photos and I test"* describes participant's versatile work experience and when all previous experiences related categories are analysed together, they form a theme of "Wide but superficial experience". The themes that were formed helped me not only to evaluate how Mary George et al.'s framework actualizes in this context but also have I discovered some new concepts (Gioia et al., 2012).

Table 3. Examples of data analysis: factors, codes, category and theme

Factor	**Code**	**Category**	**Theme**
Prior knowledge	*I code, I do marketing, I take photos and I test*	Work experience	Wide but superficial experience
	We got some samples and started to test them	Independent information gathering	Doing things on their own
	whole industry was unfamiliar to us	No prior-knowledge	Jumping to unknown
	Can you help me and tell me how this	Social contacts	Must-have knowledge

	industry works?		from others
Social capital	*I went to VTT, I went to Aalto University, Tekes*	Variety of contacts	Acquisition of knowledge
	product development with University of Eastern Finland	Industry/material knowledge	Idea development
	you are here and we trust you 100%	Common interests	Co-operation
Environmental conditions	*listed companies and one must make profit*	Distasteful examples	Examples
	climate conversation	Media	Knowledge
	killing the innovative person	Environmental barriers	Enables and barriers
Cognition/personal traits	*I know how they connect to industrial world*	Seeing connections	Connecting the dots
	I can use all my energy on it	Diving in	Goal-orientation
	I become a trouble-maker	Not fitting in	Non-conformity
	I'm fine without the degree	Self-confidence	Positive affect
	all the useless Materia made me numb	Honesty	Values
Environmental alertness	*we could make this superior equipment in Finland*	Seeing the possibility	Alertness schema
	we are talking about billion euros business	Profit	Optimization
Systematic search	*what we could find out of it*	Search	Systematic search

Despite of my rather inductive intents when I searched for new common factors or causalities from the data, I was not able to recognize some totally new factor that might influence business opportunity recognition in CE context as shown later in chapter 4.

However, within some of the six factors presented in Mary George et al.'s (2016) framework I was inductively able to get some insights that have not much been present in academic literature. For example, the influence of founder's values on business opportunity recognition was clearly shown in this study even though it has not, at least to my knowledge, been much studied in previous research.

4 RESULTS OF THE STUDY

4.1 Prior knowledge

113 codes referring to prior knowledge were found out of 829 codes transcribed from founders' interview data. Based on these codes, the founders had a broad, but rather superficial knowledge from many fields of business gained mainly through work experience. Two out of the five interviewed had a formal higher education but the business they are now in does not match their initial studies. Overall, formal education doesn't seem very relevant to the interviewees and they seem to have studied only to gain knowledge and answers to their questions rather than to have a certain degree. *"I studied everything I was interested in: pedagogy, communications, social politics... but they don't really equal to a degree."* Too narrow higher education was even seen as preventive factor for opportunity recognition. *"Even though you are highly educated, but if it's a very narrow segment, it will close your perspectives."*

During their working career all of the interviewees had had various roles and responsibilities none of them having a very deep expertise of some narrow segment. On the contrary, versatility seems to be a factor they appreciate in working life, and changing tasks provide access to more knowledge and experiences. *"As an entrepreneur one learns miscellaneous things. I've also gained so many skills through entrepreneurship, that no workplace could have provided me so much teaching as entrepreneurship has."* The interviewees regard practice as the best teacher and are more than happy to try out, test, explore and experience things to shape their knowledge further. *"Practice beats theory 6-0."*

None of the interviewees had previous knowledge or experience of the particular business or CE activities they jumped into, but this lack seemed irrelevant or even uninteresting to them. Needed information was simply collected from any sources available, from other people, who were familiar with the business, or by trying and testing things in practice.

"…and then we started asking stupid questions, mainly I was asking them because I was interested in why this is like this." Knowing everything of the business was not a goal per se and it was equally acceptable to use others' knowledge. However, the interviewees seem to have altered the information to suit better their needs and goals, and questioning was used primarily to create understanding of the business and how it works now. *"Looking from inside the business one might not necessarily see it like that because they are looking at it the way it has always been."* Rather, the founders seemed to think that looking the industry from outside will provide them valuable insights on how business in it can be organized. *"I was told that it is not worth it to build the machinery by yourself because nobody in Finland knows how to make them, but I took it as a personal challenge: if nobody knows how to build them, let's learn it."*

In this study, any significant evidence of prior knowledge enabling business opportunity recognition is not shown. It seems that the initial business idea has been identified based on other factors than prior knowledge of the chosen industry, markets, customers or technologies (Shane, 2000). The explicit knowledge needed to be able to operate was collected from the networks after the initial business idea was recognized, and the tacit entrepreneurial knowledge shaped through work and life experiences influenced the decision if the opportunity will be exploited and how it will be done (Mejri and Umemoto, 2010). Knowledge of the ways to serve markets, of customer problems or of technologies needed (Shane, 2000) was formed through the interviewed founders independent meaning making and social construction of the business idea as they were not willing to accept the already existing constructions of the business their organization started to operate in. By creating understanding of the business through questioning and by doing things differently than others they constructed their reality of the business idea and its possibilities. To support this interpretation, one of the interviewees had some prior knowledge and experience of the industry his business idea is in. Out of the five interviewed he seems to have most difficulties in creating successful business suggesting that something needs to be done differently than before.

4.2 Social capital

The factor of social capital was very much highlighted in the interviews of the case company founders. Out of 829 factor-referring codes picked up from the transcribed interviews, 204 referred to social capital. However, an interesting finding was, that none of the initial business ideas were sourced from social networks, but rather the idea or intuition was already existing before the social capital came to use supporting the arguments by Vaghely and Julien (2010) and by Audretsch et al. (2011). Three themes were found from the interview data, which show how social capital was used throughout the business opportunity recognition process.

First, whatever prior knowledge was needed, but the entrepreneur was lacking when recognizing the initial business idea, was gathered from social networks defining social capital to be a source of information and knowledge. The contacts did not limit to existing networks but rather the network was expanded according to the need of information. *"I've been to Technical Research Center of Finland, Natural Resource Institute of Finland and all over in universities to discuss about this and there has been loads of research done."* There did not seem to be limitations of from who to ask for it, and the founders boldly used any possible contacts from universities and research centers to customers and competitors. The gained knowledge was then used to business opportunity construction through the founder's questioning and individual meaning making. *"N.N. came and said he will help us, he wasn't working for us yet and "yes, I will help you with this in this industry" ... he was the only pro working with us and he knew this business… Then he told and drew patiently and I asked stupid questions of why it works like that…"*

Second, after the adequate information and knowledge needed of the business opportunity was gathered, the case company founders continued to develop the business idea with chosen partners towards a business opportunity exploitation. *"We are now in a phase where we are investigating can this process be patented and there is also patent office involved."* The idea was developed further with people who had prior knowledge especially of the markets or the technologies needed as all of the interviewees entered

markets unfamiliar to them or needed technology they were not used to. *"In today's development process you need many experts from different industries."* According to the interviews, in three cases out of the five the people involved in the development project became also business partners sharing the possible risk or success in future. The interviewees seemed confident to share their business idea with beneficial people and acknowledged their own need of expertise. *"N.N. took our first samples to M.M. to be tested and then N.N. asked would it be ok if M.M. will join us in this… If we would not have had this industry competence, the company would not exist anymore, so M.M. has been invaluable."*

After the initial idea has become a business opportunity thanks to the expertise found through social contacts, the networks are really put to work when it is time for opportunity exploitation. *"Later, after the product development and production lines investments, we applied for public funding."* At this point the social capital's role as a resource provider is highlighted as the networks enable especially materials, partners and funding. *"Then I called them and asked that you are using this fabric, but where do you buy it from and they were like yeah, this fabric is from…"* There are multiple partners who join the networks via different routes and weak ties, but the core network of strong ties seems to have been formed before this stage. By now, it has also been identified what needs and expectations the founders have for the network they are in. *"I don't want any stupid money in my company. Someone comes with a big bag of money without understanding the process and starts to steer it anyway."*

What really stands out throughout the social capital is the founders' notion that basically nothing can be done alone after the initial business idea has been born. *"We've been participating in some work groups and projects… we are not alone with this, but we are in good company in good co-operation. I guess alone no one could have the resources or possibilities to but when we do together it's ok."* They are also more than willing to share their knowledge further specially to enhance CE showing how trust prevails not only between strong ties but also more extensively in the social network. *"The more companies use this, we don't think this is just our thing, I think everyone can start doing*

the same. The more companies would do it like this, the bigger would be its impact." Utilizing the social network was also seen as hard but necessary and rewarding work. (When looking for funding) *"Few dozens of people grabbed this chance. Let's say I contacted hundreds of people so about 20-30 of them took the chance."*

Based on these findings in this context, the social capital seems to be more of an enabler (Chiasson and Saunders, 2005) or mediator between the entrepreneur and resources (Bhagavatula et al., 2010) than an actual source of business opportunities. None of the interviewees recognized their initial business idea because of their social capital, but it was very much needed in order to develop the insight into business opportunity. However, the founders wanted to limit the influence of social networks and all the resources it provides to be able to preserve their own control on issues at hand. *"When you don't have all the resources, money, machinery, like all staff and infrastructure, that allows you to do basically anything, that* (situation) *will create you more inspiring and in a way an atmosphere that allows you to think all the possible ways to survive as an organization."*

4.3 Environmental conditions

The factor of environmental conditions was evident in the research data even though it was not among the most highlighted factors resulting 101 codes out of 829 factor-referring codes picked up from the transcribed interviews. When interpreting the interview data, at a first glance it seemed that none of the initial business ideas of the case companies were resulted for example from clear changes in operating environment such as new technologies or changes in regulation. The interviewees did not seem to recognize the role of the environment, and instead, it was even disregarded as being just something that is always there around us. With deeper analysis of the data, it became evident, that that is precisely what environment is: the context we are acting in and the business opportunities were very much recognized and shaped by it.

Before the recognition of their initial business opportunity, the founders had observed their environment - the context they were acting in - and found examples or even role models of what others had already done (Tang, 2010). *"The town had a waste incinerator. When you dumped a pile of waste there, you had to pay. They made district heating and thereby money out of it. I was like can there be any better business? Money is coming in from every direction."* With their observation they had formed an understanding of what there already is, what others are doing, what they don't want to do and most importantly, what is still lacking, what is not yet done - which is where the opportunities lie. *"They know how to utilize textile waste, they do it and they've done it probably for decades without telling any western companies about it."* The free flow of knowledge and information (Audretsch and Keilbach, 2007) allowed them to create an understanding of what is happening in the world today. *"I was very annoyed by the available materials and what kind of a dirty game it is when you order materials from abroad in large quantities for a product like that. It felt like in that business people don't really care about anything else than selling as many tons of plastic as possible."* The environment they were operating in seemed to provide the founders especially examples of linear business, which they regarded as distasteful. *"Fashion trends mean overproduction. If you make 14 collection per year it is by no means sustainable. The clothes are designed to last up to 10 washes and worst part is the consumers are used to it… 100% recycled* (material*) was not on the market."*

By observing their context and the information available of it, the founders became aware of the needs the environment they were operating in had, and on the other hand, what kind of opportunities it enhanced. *"People are starting to understand that recycling isn't necessarily that dodgy military stuff, that smells like fusty clothes, but it can be a valuable raw material… Luckily, this notion starts slowly to break, turn and vanish."* All of the case companies operate in a society where knowledge and information are freely available resulting in a greater number of business opportunities (Audretsch and Keillbach, 2007). Even though the initial business ideas were not recognized solely because of some technological changes, it was possible for all of the case companies to advance their business ideas thanks to technological strides made in the operating

environment. *"I had red that in Pacific Ocean there was a plastic raft size of Texas, and at some point, it was published, that there actually is five of those swirls… same year, I don't know how these things happen, but same year there was this Dutch guy who made a beam that collects plastic waste from seas. Perhaps it was this news somewhere in the background that showed we can do something about this."* This is the point where the element of being at a right place at a right time takes place (Crick and Spence, 2005). These founders were able to tap the customer and environmental needs as soon as it was technologically possible.

Whereas the environment formed the context the founders were operating in and showed what can be possible and done, it was also considered as a source of raw materials and markets. *"We chose led lights, which replace the fluorescent lamps, because about 70% of world's lighting is made with fluorescent lamps."* The geographical location was only considered at this point as rather than being an actual source of business opportunities, it was merely a place for raw material collection or manufacturing. Governmental policies were seen to be forming the culture for entrepreneurship and the light the legislation shed to it was not very encouraging referring only to two EU-directives that can enhance circular business activities. *"The government is supporting Circular Economy organizations. Why it doesn't support, why it doesn't support all entrepreneurship, kind of make entrepreneurship, failing, risk taking something worth doing. People will then find their ways to do it."* The most criticism was shown towards Finnish entrepreneurship culture in which for example bankruptcy is seen as a crucial failure. *"Risk taking is designed so that in the worst case you will be in dept for the rest of your life and your punishment of shame is enormous… We are a ruthless culture. When you scare people enough, no one wants to take any risk anymore."* The financing available was also seen to be very much in connection to the culture of entrepreneurship, but its role was more neutral. *"The biggest challenges are always money-related, because I don't have that much of it."*

Based on the interview data, it seems that the founders interviewed regard the environment rather as a context they are actively involving and shaping then as a distinct,

unattached phenomena operating somewhere out of their reach (Suddaby et al., 2015). Perhaps for this reason the environment and its impact on their business idea was difficult for them to describe. It seems clear that the environment, or the context the interviewees operate in, has influenced their business opportunity recognition, but it does not solely explain why and how these opportunities have been recognized (Nicolau and Shane, 2010). This becomes evident when comparing the critical dimensions of a munificent environment by Tang (2010) to my research data. The founders interviewed for this research were able to identify their business opportunities even though the interviewees didn't regard the governmental policies as very supportive. However, the information and knowledge flow in society in general and inside the founders' social network is a sign of environmental support for entrepreneurship. The environment also provided the founders examples of both attracting role models and distasteful business cases allowing them to shape their understanding of the context. The role of financial support available in the environment was, based on this study, rather neutral. Some of the interviewees pointed out financial problems, but they have been able to continue their entrepreneurial activity regardless. Anything relating to support services such easy transportation or data networks was not mentioned in the interviews.

4.4 Cognition/personal traits

The codes referring to the factor of cognition and personal traits turned out to be to most frequent with 272 codes out of 829 resulting this factor to be the most highlighted of the six factors in Mary George et al.'s (2016) business opportunity recognition framework. First, some evidence of pattern recognition, being able to "connect the dots" (Baron and Ensley, 2006; Baron, 2006), was found. The interviewees used the information and knowledge gained through their education, work experience, personal life experiences and social network to combine them into new possibilities. They were able to see causalities between actions and to think how for example technology of a given industry can be used in another. *"In my head there still is kind of causal thinking. If I now make a decision I can, somehow, close my eyes and I can imagine what happens next… It's easy*

to think where this leads to, if I do this now, then what happens in the end, what all things it has an effect to."

Goal orientation, even though not much mentioned in academic literature of business opportunity recognition, was another clear theme in the interview data. The interviewees described themselves as ambitious and relentless people, who were motivated by succeeding. *"I never want to give up. I go through big stones, over or around. It can be that something may have to wait for years until we see it has its time again."* Success here does not refer to status or money, but rather being able to solve problems, create something good and be best at something. *"One of the most important things has been, that whatever I start to do, I've had the idea that I have to be best at it even though it might be a narrow sector."* Indeed, determination of the founders seemed evident when listening to the stories interviewees told of the time phase when they were recognizing possible business ideas and pursuing them further. The founders were determinant to solve how they could make their business idea work and were able to dive deeply in to the matter. *"When I want something, I dive in it completely, I go as deep as I can ever do and I check all possible dimensions of it."*

Being able to see connections invisible to others may lead to the feeling of non-conformity. *"I didn't feel like home anywhere. I somehow compared myself to others, like I'm worse than the rest, but inside I thought why don't they see this? Why don't they think this or that? This* (answer or solution) *is obvious to me."* The interviewees were keen on creating new methods and combining existing resources in creative ways (Alvarez and Busenitz, 2001; Butler et al., 2010) which led to questioning the old ones. *"Creating new interests me the most. To invent and create new whether it is setting up a factory or developing a new product or whenever I get to do something new, to create and invent, that's probably the thing I get most inspired of."* Entrepreneurship was regarded as a way to be able to set one's own rules and goals as an opposite to be fitted into frames others have defined (Nicolaou et al., 2009) supporting the common belief of entrepreneurs being a misfit even though Shane argues social insiders to perform better in their entrepreneurial actions (Casson, 2005 after Shane). This non-conformity, restlessness,

was also shown in their previous study and work experiences as they did not pursue with things they regarded uninteresting. However, as entrepreneurship allows them to do things as they want, they are also willing to carry the responsibility of their actions. *"You can do your own things when you are an entrepreneur. That's the positive thing, that there is no pressure set by others regarding what I should do or what is expected of me. It all comes from me if some pressure is given."*

The positive affect (Baron and Tang, 2011) was shown in certain causalities in the interview data. The founders accepted uncertainty (Butler et al., 2010), were prepared to take risks (Alvarez and Busenitz, 2001) and to embrace failure as a possibility to learn something new rather than as something to be avoided. *"I've never wanted to lock myself to one thing, but I've thought from the beginning that I will have multiple companies and I've also wanted that I will not lock into one thing."* This acceptance led them to acknowledge challenges, be motivated by them (Shook et al., 2003), and open themselves to more experiences (Nicolaou et al., 2009; Shane et al., 2010). *"I'm impulsive so that I get excited of things quickly, I catch things and start doing, sort of taking them forward."* Seeing failure as a possibility and, regarding new things, as basically positive generated an overall optimistic perception of life (Baron, 2004; Ramos-Rodríguez et al., 2010), and gave the founders courage and ability to believe in themselves. *"It was a fascinating thought. Why shouldn't we try? What is stopping us doing this? Let's do this. We have this courage to take and do things so that we are not afraid. We have this humble attitude. Nothing is impossible, but rather we will find things out by testing."*

As these findings might explain why the interviewed founders have taken on entrepreneurial actions, they still don't explain why they chose to engage in CE. Simply, the answer seems to be in their values – a dimension not much researched in business opportunity recognition. As Cliff et al. (2006) suggest, innovation and entrepreneurial actions can be driven by the entrepreneur's ethical principles and disbelief of prevailing practices. It was clearly important to these founders to make decisions they could feel good about (Li, 2011), which led their creativeness stem rather radical ways of doing business (Baron and Tang, 2011). *"I have an urge to change the world. I could never*

think that as an entrepreneur I would do something that makes the world worse. I always have a positive, bigger thought in the background that at the same time we are doing good and that is inspiring." These founders had a strong perception of right and wrong, how they want to do things and which methods they regard as wrong. *"I think there is nothing but business and it has to be responsible. In the future, there is nothing but responsible business."* This rigorous perception followed them throughout the business opportunity recognition process and guided their actions so that they could stay honest to themselves. *"We are doing everything with 100 % (recycled material) and we could communicate it to others, but why? We ourselves we know that we are doing so and that I think has a bigger influence. Our business is circular even when no one is watching."* Sustainability is in their values and linearity never was an option. *"We have succeeded in being honest to ourselves and what we are doing. We are all rigorous, we have never started to cheat or straiten curves just to get something done faster or to gain more turnover… We've stayed out of it* (external financing) *because we want to keep things real."*

4.5 Entrepreneurial alertness

As shown in the theory section, entrepreneurial alertness is a complex factor and therefore difficult to identify. Perhaps for this reason only 133 codes out of 829 transcribed from the interview data refer to alertness even though one could think that being able to spot imperfections in the markets and understand how to utilize them would play a significant role in the opportunity recognition. The analysis of data produced two clear themes that show how entrepreneurial alertness appears in this study. First, the view of presenting entrepreneurial alertness as a cognitive schema (Gaglio and Katz, 2001) was highly supported and refers to basic attitudes towards changes and opportunities. Second, alertness was shown as an ability to optimize time, raw materials, resources, production or profit to create business out of an opportunity recognized supporting the notion that alert individuals are not only able recognize the needs others have but also able to understand how they can solve them (Webb et al., 2011). Let's see how these findings were shown in the data.

The founders interviewed seem generally open to the possibility that what we have and known right now is not all there is. They are willing to change their view according to the new information and, actually, are actively seeking for possibilities to change it. *"I read articles all the time and follow information on what one can find out of it and how it can be used* (raw material). *I read a lot how some researchers have for example found completely new substances."* Moreover, they are using various sources of information to ensure the objectiveness of the information to be able to calculate the opportunities available (Gaglio and Katz, 2001). They are interested in what the future will look like and, more importantly, how they can participate in shaping it supporting the notion of Webb et al. (2011). *"I have this ability to see possibilities even in negative things. I always pursue myself to think what could be the possibility in this."* Openness to possibilities is shown also in the extent of their future scenarios, which are if not wild, at least very optimistic. *"We totally agreed on that there's no point to make this just for ourselves anymore, but rather we will make this for the whole industry… To be Gore-Tex or Velcro of this industry."*

The view of alertness as a cognitive schema was also supported through the finding that the interviewees seemed to have been able to identify changes in markets through small cues probably invisible to most of us. *"We saw that this was going to be a big revolution in this industry and then after our own research it became more accurate why we chose this product."* However, the interviewees could not explain how they spotted the window for possibility, which indicates that it was a result of complex mental process influenced at least by cognition (experiences, personal attributes, social networks and so on) and available information. *"I had so many mind maps on my computer. OK, this and then this and that equals to that.. and then all of a sudden I had the whole picture clear in front of me. This is what needs to be done so that this can be carried out."* This ability to identify changes in markets or customer behavior seems to be connected to not being quite satisfied with what there already is and wanting to change the status quo as the interviewees presented ways to develop for example sustainable business forward. *"We could give our product a deposit as in Finland drinking bottles have. This product still*

has value if you one day want to give it away and we will pay it back with a price." All business opportunities do not seem to stem just from possibilities but also from inconvenient notions that something needs to be done differently to be able to carry on. *"We understood how our industry needs new materials, especially recycled materials, which we've seen everybody wants now. It is not just trendy, it's because also others have now later noticed, that there is no pure raw material anymore."*

Another theme shown in the interview data was optimization. If the alertness schema allowed the founders to be open to possibilities and therefore to be able to spot opportunities invisible to others, this different kind of entrepreneurial alertness enables the raw materials, resources, time or production to be organized in a profitable way. *"Here in the north it so much better, because it* (raw material) *comes so much cleaner and we don't have to use chemicals to segregate materials…. If you need this material, the northern climate is so much better for it and if you use the material again, it is even better than straight from the factory."* This indicates, that even though the founders had strong ethics guiding the ways they wanted to business, they were also keen on doing profitable, successful business in CE. *"It took only few months, I think, that it was like six months from the idea when we already had a company, we had been in China and ran the business from my brother's garage."* They explained how they made calculations and predictions of future business models and made choices accordingly. *"I calculated quickly that if this VTT research is true, we will make more money with the loss than with the actual raw material."* However, even though the founders had the initial idea of what are the possibilities for profit in this raw material, time frame or production method, the idea was refined further only with the assistance of prior knowledge available in social networks showing how the knot between entrepreneurial alertness and knowledge is not made in vain (Marvel and Droege, 2010; Miao and Li, 2011; Webb et al., 2011). *"It was a hint for us too, that we are onto something, if a person in a high position in fashion industry thinks this has future… yeah, it has to be the right direction."*

4.6 Systematic search

Out of the six factors possibly influencing in business opportunity recognition in CE context, the systematic search had least evidence in this study. Only six codes out of 829 codes transcribed from interview data refer to systematic search for business opportunities and they all are from one interview. This founder was the only one from the five interviewees to tell how he was and still is actively seeking for new business opportunities regarding a certain raw material. The case company he was presenting in this study seemed to be at least partly founded as a result of looking for possibilities this raw material might provide. *"Then the first tests to my company were made out of the raw material. What substances could be found out of it and how they could be worked forward."*. In comparison to other interviewees, who seemed to have recognized their business opportunity based on other factors than systematic search, this founder had a clear focus to look for opportunities only this certain material could provide. His choice of material seemed to be based on his previous work experiences, that had made this material familiar to him. However, there is yet no evidence that the investment in one material and its opportunities in this case would pay off as the founder has not yet found a successful business case based on this material.

The other interviewees seemed to be using systematic search only after initial business idea was born to be able to gather as much information and knowledge on the phenomena as possible. In this case, the systematic search refers to prior knowledge and not opportunity recognition. The initial business idea was something they recognized based on other factors rather than systematically searching for a business opportunity in CE.

4.7 Summary of the research results

Based on the findings, prior knowledge did not seem to influence recognizing the initial business opportunity. The founders interviewed had neither matching education nor previous experience of the field of business they started to operate in. The CE per se or technologies, markets or customers were not familiar to them, but this did not seem to bother the founders. Whatever information or knowledge was needed, it was gathered

from many sources either already existing in social networks or through new contacts. Through questioning the information received the founders created an understanding of the business, and used it for individual meaning making and social construction of the business opportunity.

The factor of social capital was very highlighted in the interview data, but it did not seem to have an initiating role in business opportunity recognition. Rather, the social networks were used as a source of knowledge and information after the initial business opportunity was recognized to develop the intuition from an idea to a proper business opportunity. The social network was boldly expanded according to the knowledge needed if the existing contacts were not able to provide adequate information. As the interviewed founders were willing to accept their own lack of knowledge, they were happy to share their meaning making and business opportunity construction with chosen partners, and to develop their business idea further in trusting atmosphere. In the opportunity exploitation phase, the social networks provided all sorts of resources showing how after the initial idea is identified, virtually nothing can be done alone if the entrepreneur wants to develop the idea further to an opportunity. As in this study there was no evidence of social capital being a source of opportunities, it surely operated as an enabler or mediator for them.

The role of environmental conditions turned out to be rather difficult to identify. None of the business opportunities in this study were recognized because of singular changes in their operating environment, but it was clear that the environment had an influence as the context the entrepreneurs were operating in. By offering the founders both attractive examples and distasteful scenarios, the context helped them to create an understanding of what there already is, what is needed and how it possibly could be done. Even though the context did not completely match the criteria of entrepreneurship supporting environment (Tang, 2010), it allowed free flow of required knowledge and information, and provided technological advancements, material and markets necessary to the business opportunities in question.

The factor of cognition or personal traits was the most highlighted phenomena in the interview data perhaps because it was easier for the interviewees to analyze their own actions and behavior rather than analyzing something as abstract as environmental

conditions. There were several clear themes to stem from the data. First, the founders seemed to have an ability to identify causalities and to connect the dots between seemingly unrelated subjects. Second, goal-orientation, ambition, adamancy and determination seemed to be characteristic to them. It might be that the combination of these two findings result in the founders feeling somewhat like a misfit in traditional business environment and yearning for being able to set one's own rules and goals. However, as the founders seemed to encourage risks, challenges and failure as possibilities to learn something new, they had an overall optimistic view on life and trust in their own capabilities. Their self-confidence was also shown in their values, which strongly supported sustainability, and how they wanted to stay honest to themselves even at the expense of being unsuccessful in business operations in a short run.

Entrepreneurial alertness as cognitive schema (Gaglio and Katz, 2001) was highly supported in the interview data and analysis. The founders' overall attitude towards challenges and opportunities was open and allowing, and they were willing to change their perspective if objective information suggested them to. This openness might enable them to identify small changes in environment or customer behavior because they are not completely content with what we have already. Entrepreneurial alertness was also shown in their ability to think logically and to optimize the raw materials, resources, time and production to generate profit that lies on strong ethical ground.

Based on these findings, business opportunity recognition in CE context is first and foremost influenced by cognition and personal traits, which are closely interrelated with entrepreneurial alertness. Social capital and prior knowledge provided by it have an important role only later when the initial business idea is developed further to be exploited. Both the initial opportunity recognition and its later development are strongly characterized by the context they are taking place – the environmental conditions. Based on this study, the factor of systematic search of business opportunities had only a minor role when exploring what possibilities one of the interviewees could find regarding a single raw material.

5 CONCLUSION AND DISCUSSION

5.1 Summary of the results

The purpose of this study was to gain more understanding of circular business opportunities by asking *Which factors influence in business opportunity recognition in Circular Economy context and how do they influence it?* I was interested in what kind of factors enable business opportunity recognition in CE, how and in what measure. Are some factors more dominant than others or are some even irrelevant in this context? In addition to being able to add something to our academic knowledge, I am hoping that this study might contribute to enhancing circular business both in existing and newly-established organizations, and thereby accelerate circular business thinking.

I attempted to achieve these goals by exploring how the opportunity recognition framework as conceptualized in the literature (Mary George et al., 2016) functions in empirical research. As it was made based on an extensive literature review, it was yet uncertain how it might actualize in real-life setting let alone in CE context. Therefore, if the results of this study allowed, I was prepared to refine the framework to suit better business opportunity recognition in CE context in particular. To gain an understanding of how circular business ideas are initially recognized, I conducted a qualitative multiple-case study by interviewing five CE company founders to bring forward their experiences and insights on circular business idea recognition. The research data was analyzed foremost deductively to be able to explore how the chosen theoretical framework actualizes in real-life setting, but I also tried to keep an eye on other possible factors or dimensions outside the framework and was prepared to examine them abductively. As the results presented in the next chapter show, based on this research not all factors influence business opportunity recognition as the theoretical framework by Mary George et al. (2016) suggested. Furthermore, the influence can be different and in different measure than earlier was argued.

5.2 Key results

The opportunity recognition framework developed by Mary George et al. (2016) presents the six factors of opportunity recognition as all being equally influential and all affecting the whole recognition process from the beginning. The findings of this study suggest, that in CE context not all of the factors influence opportunity recognition by same measure or at the same phase of the recognition process. As a result, a refined framework for business opportunity recognition in CE context will be presented in Figure 3.

As presented in the figure, environmental conditions serve as a frame, as a context, where the entrepreneurs are acting in throughout the whole business opportunity process. Even though external changes in environment such as changes in regulatory or technologies have argued to create opportunities (Webb et al., 2011), it was difficult for the interviewees to identify any particular events or changes in their operating environment that would have solely offered them an opportunity. Instead, environment offered them an understanding of what is going on around them and how this might influence their future entrepreneurial activities through for example enabling raw materials, technologies, resources and even good or distasteful business examples. As not all characteristics of a munificent environment for opportunity recognition were found (Tang, 2010), at least commodious socio-economic conditions that allowed free flow of knowledge and information could be identified. This supports the notion shared by many, that knowledge available in environment and how it is distributed enhances opportunity recognition (Shane, 2000; Audretsch and Keillbach, 2007; Acs et al., 2009; Tang, 2010). Overall, environmental conditions could best be described as cultural context in which the entrepreneurs are actively involved in (Suddaby et al., 2015). Therefore, it is also notable, that the influence of environmental conditions is present throughout the opportunity recognition process.

A starting point for entrepreneurial opportunity recognition, based on this study, are the entrepreneur's cognition/personal traits and his/her entrepreneurial alertness as they seemed to be the primary sources of opportunity recognition. These factors are closely

interrelated and, together, they follow the recognition process from the very beginning to the exploitation phase of the opportunity. Of the cognitive processes, which acquire, store, transform and use information (Baron, 2004), some evidence of pattern recognition was found as the entrepreneurs seemed to be able spot how independent events or trends could lead to new business (Baron and Ensley, 2006; Grégoire et al., 2010). The founders' ability to see connections invisible to others and goal-orientation might result in non-conformity which feeds in turn the need for being able to set one's own rules and goals. The results showed strong evidence of positive affect (Baron and Tang, 2011), which allowed the founders to see risks and challenges as possibilities (Alvarez and Busenitz, 2001; Shook et al., 2003) creating them an overall optimistic and open view of life (Baron, 2004; Nicolaou et al., 2009; Shane et al., 2010). Perhaps the most interesting finding of this study was how the founders' values influenced their business opportunity recognition supporting the notion of Cliff et al. (2006). The founders followed their intuition (Pech and Cameron, 2006), and made decisions they could feel good about (Li, 2011). This finding seems especially important given that linear options can be easier to identify and implement in comparison to circular ones.

As a concept, entrepreneurial alertness seems closely connected to cognition, which further justifies the tight connection of them in the framework presented below. The results had strong evidence of the alertness schema by Gaglio and Katz (2001) showing how the founders were sensitive to changes in their environment and, through questioning existing and incoming information, willing to change their schema accordingly given, that new information was accurate enough. This schema seems to have made them more open to new possibilities and opportunities. Entrepreneurial alertness is shown also further in the opportunity recognition process, as the founders are able to optimize their raw materials, resources and production methods in a way that not only generates turnover, but is also sustainable. At this point prior knowledge gained through social networks or own experiments and entrepreneurial alertness connect (Miao and Liu, 2011) in a way that can produce value to customers (Webb et al., 2011).

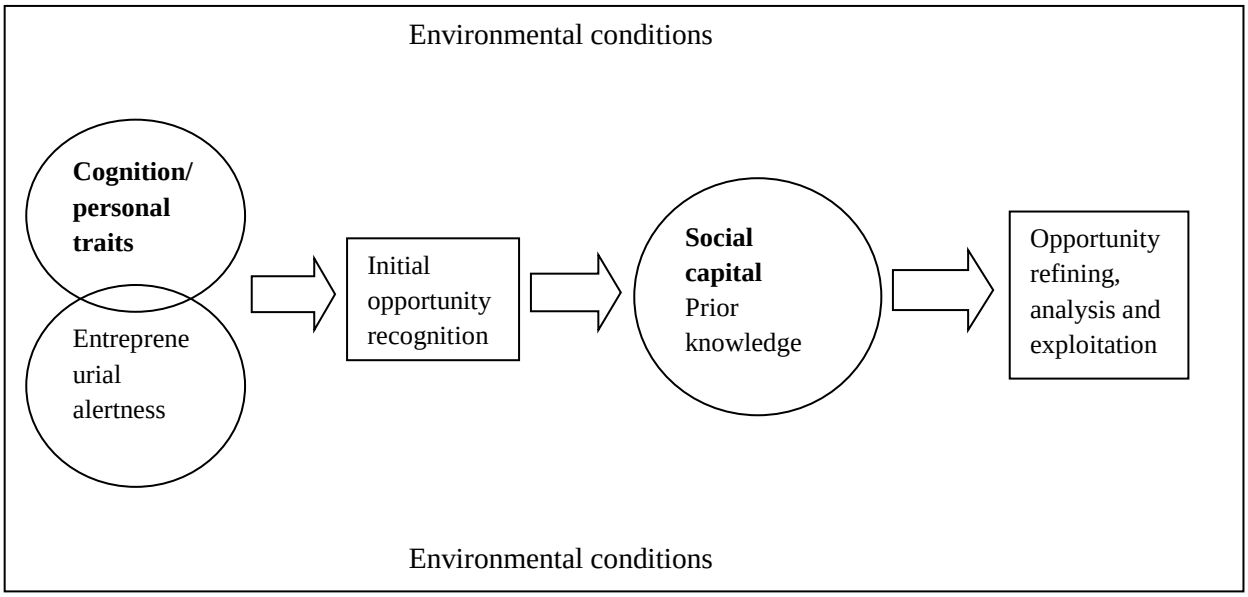

Figure 3: Opportunity recognition in Circular Economy context with the most influencing factors bolded.

Another high-lighted factor in the interview data was social capital even though none of the case business opportunities arose from it in opposite of Suddaby et al.'s (2015) argument of social networks providing opportunities through actions and relationships among networks members. All interviewed founders had their initial business idea formed before they turned to their social networks, which then functioned as a source of knowledge and information. Participating in the founder's questioning and individual meaning making, the social contacts shaped the initial idea towards an opportunity that can be analyzed and exploited. This pattern supports the argumentation of Vaghely and Julien (2010) and Audretsch et al. (2011) who described social capital as a transformer in opportunity recognition process from an intuition to an opportunity. After the idea has been refined to an opportunity, social networks become a resource provider for example for raw materials, funding and more advice (Alvarez and Barney, 2010; Shaw and Carter, 2007; Cooper and Park, 2008; Bhagavatula et al., 2010; Audretsch et al., 2011). These findings support the views of social capital having a role of an enabler of resources (Chiasson and Saunders, 2005), mediator of knowledge (Bhagavatula et al., 2010) and supporter of values (Lewandowski, 2016) between the entrepreneur and the opportunity.

Interestingly, based on the findings of this study, prior knowledge does not seem to influence initial business opportunity recognition in CE context as none of the founders interviewed had previous knowledge or experience of the business they stepped into. This provides an alternative view for much citated and followed work of Shane (2000) which emphasized on prior knowledge of the industry, markets, customers or technologies being a source of business opportunities. Neither had they any matching formal education or work experience which opposes the argument made by many of the importance of these in opportunity recognition (Kourilsky and Esfandiari, 1997; Cliff et al., 2006; Hsieh et al., 2007; Cooper and Park, 2008). This way, the founders were able to innovate new opportunities as they entered the industry from its peripheries or even outside supporting the argumentation of Cliff et al. (2006). However, prior knowledge was indeed needed when the initial opportunity was refined, analysed and exploited further. The knowledge needed for this phase of the process stemmed from the social networks and through the founders own trying and testing (Chiasson and Saunders, 2005). Knowledge was then used for the founders' individual meaning making of the opportunity (Marvel and Droege, 2010) and its social construction through combining information from multiple sources (Vaghely and Julien, 2010) supporting the view of prior knowledge being a cognitive foundation for information synthesizing (Mary George et al., 2016).

To summarize, in CE context the initial business opportunity is formed through cognition/personal traits and entrepreneurial alertness under the influence of environmental conditions – the social and cultural context. The idea is then refined further with the prior knowledge gained from social contacts and trial-error type of experiments. The social capital provides not only knowledge and information, but also resources for opportunity analysis and exploitation. Therefore, as cognition/personal traits and social capital were the most high-lighted factors in this study throughout the opportunity recognition process, they are boldened in the framework presentation (Figure 3.). It is also notable, that environmental conditions, the context, influence the process from beginning to the exploitation as do cognition/personal traits and entrepreneurial alertness also. The results of this study suggest that all of the influential factors described in the framework are at least somewhat interrelated and none of them could not solely act

as a source of business opportunities. Interestingly, these findings did not support the acknowledgment of systematic search supporting the view that high alertness has proven to reduce the need for actively searching for opportunities (Mary George et al., 2016).

5.3 Evaluation of the study, future study and managerial implications

The limitations of this study relate above all to the collection method of the research data as the CE in Finland is still in its infancy. As it was rather easy to identify possible research participants employing Sitra's list of the most interesting CE companies in Finland (Sitra, 2019), it was a different game to engage them into the research. For me it was more important to reach for rather newly-established organizations to be able to gain better quality data of more fresh memories than to strictly narrow my research to regard just a specific industry or branch of business. Therefore, it is possible that the research data formed through five case companies and their founders all operating in rather different business might not draw an adequately comprehensive picture of how opportunities are recognized in CE context and what influences the business opportunity recognition.

In addition to the possible limitations that the sample size and the extent of industries represented, all founders interviewed were members of a rather homogenous group of individuals all being native Finnish men aged between 30 to 55 years. This leaves out the possible variation in the research data that sex, nationality, geographical location, ethnic background and other such factors could have offered. Also, as a novice researcher it is possible that I was not able to design the interview questions in a way that would lead to interview answers that further help in interpreting research data to answer my research questions. However, I am satisfied with the amount and quality of data I was able obtain in the interviews as all of the interviewees seemed happy to share their insights and experiences in the interview situation. Thanks to my profession as a human resource manager and recruiter I am rather experienced interviewer and can obtain myself from asking leading questions or not allowing enough time and space for the interviewee.

The results of this study leave many interesting questions open. Even though business opportunity research has been individual oriented, in CE context it still remains more specifically unexplored what are these people like who engage in CE activities and what drives them to forward. If values are a driving factor as this study indirectly suggests, more precisely, how do individual's values influence business opportunity recognition? How are these values formed, what happens in the individual's life and up-brining in order for her to choose sustainable business models over linear, and much obvious, ones? These could be interesting questions to be asked through for example a qualitative multiple-case study to be able to add our academic knowledge and provide more precise suggestions for practical implications.

As a refined framework for business opportunity recognition in CE context was provided as a result of this study, this framework only sheds light on what happens in the early stages of business opportunity identification, analysis and exploitation. As a case study or an ethnography research it would interesting to explore in more detail what happens after the business idea is formed. How are the opportunities analyzed further? How are they exploited? What kind of factors influence the later stages of business opportunity recognition process and how do they influence it? In CE context, it also remains uncertain which factors influence business operations, the actual running of the business, on regular basis and how do they do it.

The results of this research suggest at least two directions for practical implications. First, as the underlying goal of this study was to accelerate CE as this study is a part of CICAT2025 project, it became evident that circular business needs to be more supported with regulatory, law-enforced changes and other governmental actions. As reshaping existing business models into completely new ones might be the fastest way to get a hold of CE, in addition, the authorities should reshape the current entrepreneurial culture at least in terms of financing to support sustainable entrepreneurship so that in the lack of a sustainable option individuals could have an easy access to establish one by themselves. This way, the threshold to responsible entrepreneurship could be lowered with the

background support that might enhance more innovative alternatives to knock out the old linear ones.

Second, based on the results it seems evident that sustainability must get into people's values in order them to act on it. As the results show, these entrepreneurs had responsibility in their values and they were not prepared to compromise it at any stages of the business activities. In order to truly work responsibility needs to be something that is not done by choice in a situation where the choice is relatively easy, rather it needs to be the only option also in difficulties. Educating and shaping people's values is a long process taking possibly generations when the values of parents are passed on to the children in their up-bringing. Even though we might not have time for this, it still would be the most effective way to shape our producing and consuming habits, and make us more conscious in our choices throughout the production and consuming lines. There is no quick fix for the current situation embracing linear "take- make- waste"- culture and any glued-on solutions will not work in a choice situation in which an individual can either decide to do things differently or keep on following the same track of over-consuming and hedonism. What we need as entrepreneurs is courage and creativity to take the sustainable path and create a competitive business models as an alternative to the linear ones. As consumers, we need courage to demand for sustainable choices even though they might be a bit harder to obtain, a bit more expensive or little less easy on the eye. We need to do this, simply because it is the right thing to do.

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Interviewee 3, Pure Waste Textiles Oy, interview held on 24 September 2019

Interviewee 4, the other danish guy, interview held on 29 August 2019

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Appendix

Interview questions:

The founder's background

1. Tell about yourself (education, work experience, interests and most dominative characteristics).
2. What made you to become an entrepreneur?
3. What made you to join CE activities?

Story behind CE

4. Tell about your current business activities.
5. What CE means in your business?
6. What have been biggest challenges in your CE activities?
7. How have you succeeded?
8. How do you think CE is going to develop within few years? What are new projects or businesses like?

Idea processing

9. How did you come up with the initial business idea? How was it formed?
10. Who started developing the idea? Why?
11. What kind of events influenced in opportunity identification?
12. Who participated in idea developed? How did they participate in it?
13. Who were asked to join in and why?
14. Were there any outsiders involved? What did they do? How did you find these people?
15. What kind of knowledge you had of the market, customers, services or technologies?
16. Which previously learned skill was most useful to you in idea development?
17. Which personal qualities helped you most to get forward?
18. What kind of obstacles/problems/failures there was? How did you overcome them?
19. What did you learn of idea development process?
20. What would you do now differently and why?
21. Who made the decisions during idea development? How were them made?
22. How fast did the initial idea develop to business activities?

Company information

23. Can company information and its CE model be published in short presentation in the final study? The findings are shown as compaction in which individuals or companies will not be identified. Possible quotations will be presented anonymously.