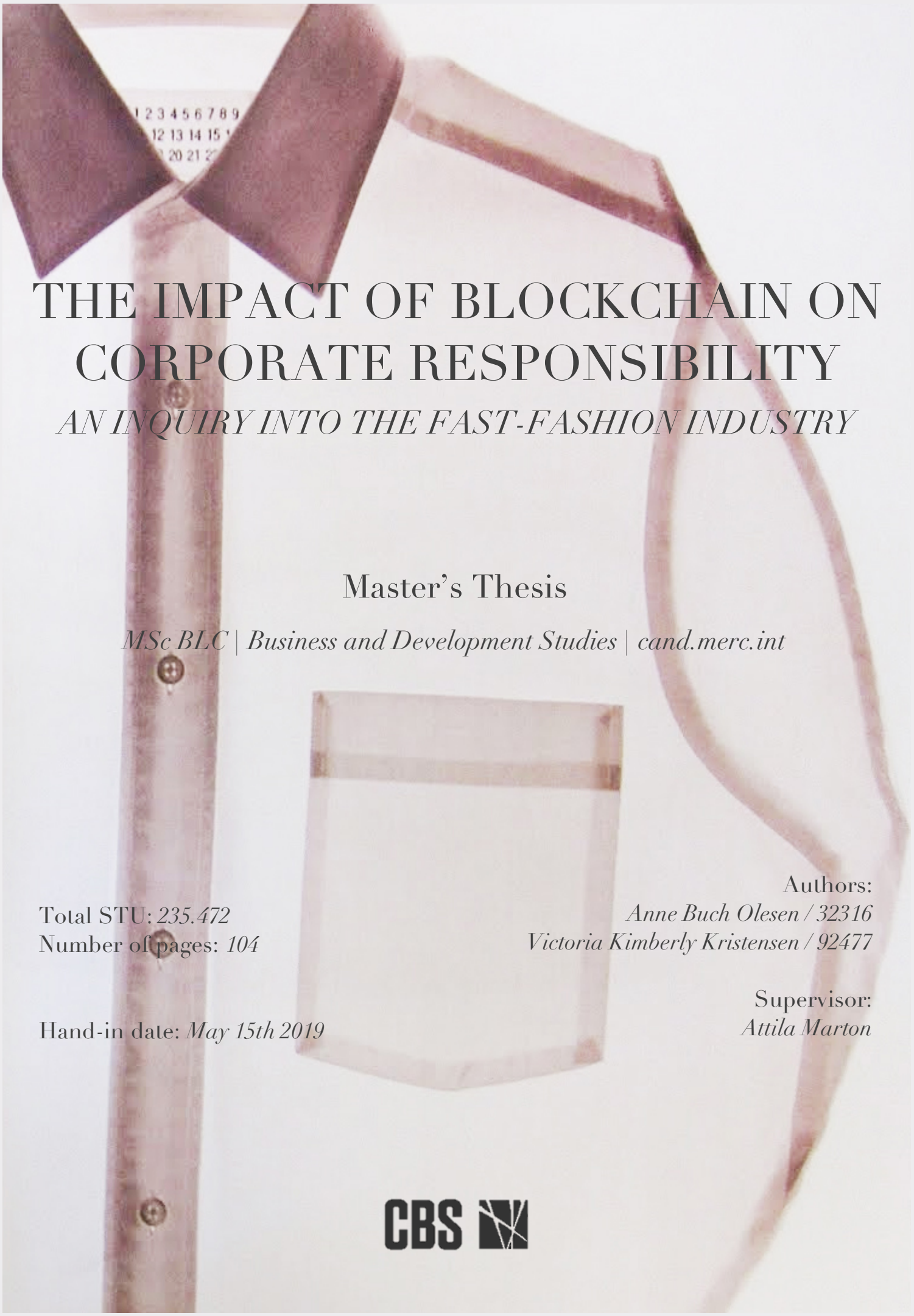

THE IMPACT OF BLOCKCHAIN ON CORPORATE RESPONSIBILITY

AN INQUIRY INTO THE FAST-FASHION INDUSTRY

Master's Thesis

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ABSTRACT

The purpose of this thesis is to reach an understanding of people's expectations about the impact of blockchain on corporate responsibility practices in the fast-fashion industry. Therefore, this thesis investigates the following research question: How do people expect that blockchain technology may impact corporate responsibility practices in the fast-fashion industry? To answer the research question of this thesis, in-depth, semi-structured expert interviews have been conducted with six people experienced in blockchain technology, corporate responsibility and/or the fast-fashion industry. Being concerned with reaching an understanding, the epistemological position of this research is social constructivism. Interpretivism serves as the philosophical position of this thesis, as an understanding of the research phenomenon has been reached through the interpretation of meanings. Qualitative content analysis has been deployed as a method for coding and categorizing the interview data. The coding scheme developed through qualitative content analysis has served as a tool for structuring the analysis of this thesis. Sensemaking constitutes the analytical perspective of this thesis, and has served to study the expectations held by the research participants about blockchain. Based on the individual sensemaking of the research participants, general expectations about blockchain have been derived. From the analysis it was found that people have general expectations about the outcome, the technical structure and the implementation of blockchain. These expectations have been discussed in conjunction with literature from the literature review about corporate responsibility, blockchain technology and the fast-fashion industry to derive an answer to the research question. This thesis has found that people generally expect that blockchain's ability to establish traceability and transparency, and the decentralized structure of the technology can impact corporate responsibility practices in the fast-fashion industry. However, it was also found that certain limitations exist inherently in the technology and the fast-fashion industry, which may obstruct the functioning and implementation of blockchain.

Table of Contents

1 Introduction

Corporate responsibility (CR) is a topic receiving increasing attention in the fast-fashion industry. Today, the industry is dominated by the fast-fashion business model, which core objective is to deliver products to the consumer as fast as possible while simultaneously catering to fast-changing consumer demands (Barnes & Lea-Greenwood, 2006). As a result, prices are constantly decreasing while consumption continues to increase (Hall, 2018). This puts a great strain on the environment, as the production of fast-fashion items consumes large amounts of water, relies heavily on non-renewable resources and is responsible for 1.2 billion tonnes in greenhouse gas emissions annually. Further, the business model of the fast-fashion industry has a detrimental impact on the social conditions throughout the supply chain where instances of modern slavery and child labor have been revealed (Ellen McArthur Foundation, 2017). Consequently, industry stakeholders demonstrate an increasing concern for the future of the industry by adding pressure on fast-fashion brands to adopt more sustainable practices. Concurrently, a limited, yet growing, number of consumers is beginning to show an interest in the CR practices followed by various fast-fashion brands, adding to the pressure felt by said brands (BoF & McKinsey, 2019). Fast-fashion brands are, thus, constantly under scrutiny and at an increased risk of being called out for having adverse impacts on the environment and the social conditions within their supply chain. As a response hereto, fast-fashion brands are currently turning to CR reporting as a means of showcasing what measures they are taking towards mitigating their adverse impacts. However, due to the widely dispersed structure of the fast-fashion supply chain, fast-fashion brands are not able to address all adverse impacts that they contribute to. This is so, simply because they do not have a full overview of all their suppliers, which oftentimes may be several thousands (BoF & McKinsey, 2019). Thus, not having an overview of their suppliers constitutes a risk for fast-fashion brands and, thereby, establishes a need for increased transparency within the fast-fashion supply chain.

Blockchain technology (BCT) is thought to be a potential solution to the problem that the fast-fashion brands are facing. The technology has previously been explained in relation to crypto currencies, such as Bitcoin. However, blockchain is far from restricted to crypto currencies and the use cases of the technology are believed to be plentiful (Gupta, 2017). That being said, very little is still known about the technology and its potential use cases, in particular, in terms of how it may be

beneficial in a CR context. Yet, leading interest groups of the fast-fashion industry point at BCT as a potential provider of transparency within the fast-fashion supply chain (BoF & McKinsey, 2019; Tärneberg et al., 2019; Lehmann et al., 2018; Ellen McArthur Foundation, 2017). However, they do not provide an explanation as to how fast-fashion brands should implement and utilize the technology. This may be so, as the fast-fashion industry has not yet seen a concrete example of how BCT may be implemented from field to finished fashion item in practice. Thus, so far no specific solution for how BCT should be implemented exists, as it has not yet been executed in reality. It is, therefore, necessary to first gain an understanding of which expectations people have towards BCT within the fast-fashion industry, and how they expect that the technology may have an impact in a CR context. This is interesting, as the findings may contribute to a general understanding of blockchain and the benefits of its attributes, which the industry is severely lacking. Moreover, the findings may provide an understanding of how BCT can be of benefit to the fast-fashion industry in a CR context, which is of importance for the future sustainability of the industry. Thus, the purpose of this thesis is to reach an understanding of the expectations that people have with regards to how BCT may impact CR practices in the fast-fashion industry.

1.1 Research Question

Based on the above, the authors of this thesis ask the following research question:

How do people expect that blockchain technology may impact corporate responsibility practices in the fast-fashion industry?

The following section will briefly account for the concepts used in the research question in order for the reader to understand the meaning that the authors assign to *people*, *blockchain technology*, *corporate responsibility practices* and *the fast-fashion industry*. The concepts of CR, BCT and the fast-fashion industry will be discussed in further detail in the literature review of this thesis. In the context of this research, people refers to the general public. In short, BCT is perceived as a distributed ledger technology, which facilitates the process of recording and tracking assets and activities in a network (Gupta, 2017). The technology builds upon a chain of blocks where each of the blocks contain transaction data that is of relevance to the specific network (Nofer et al., 2017). Throughout this thesis, the terms BCT and blockchain will be used interchangeably. CR practices is

understood as practices employed by fast-fashion brands to address their economic, environmental and social responsibilities. Finally, the fast-fashion industry is understood as an industry characterized by short product lifecycles, rapidly changing fashion trends and consumer demands, and a constant focus on shortening lead times to deliver faster throughput. It should be noted that when talking about the fast-fashion industry, the authors of this thesis employ different terms and concepts. When referring to firms within the industry, the authors name these fast-fashion brands and lead firms. The term lead firm is particularly used in a supply chain context to distinguish the fast-fashion brand from its suppliers.

1.2 Literature Review

To answer the research question, the authors have reviewed literature on CR, BCT and the fast-fashion industry. The reviewed literature constitutes the research domain of this thesis and is employed in the discussion in answering the research question. The review builds on different sources ranging from academic articles to industry reports. When discussing the literature, which introduces the concept of CR, the authors of this thesis attempt to illustrate the opposing views found amongst scholars in the field of CR. In the literature review, great attention is given to the introduction of BCT, as the authors find it necessary to first provide the reader of this thesis with a basic understanding of the technology. Literature on the fast-fashion industry consists in large part of industry reports published by fast-fashion industry stakeholders, as the authors find that the reports best describe the industry as it is currently. Based on the literature review, the authors experience a gap within the literature, which this thesis contributes to filling.

1.3 Analytical Perspective

This thesis is concerned with reaching an understanding of the expectations that people have with respect to how blockchain may impact CR practices in the fast-fashion industry. To reach such an understanding, this thesis employs sensemaking as its analytical perspective. The authors break with orthodox sensemaking theory, as they claim that sensemaking of expectations takes place prospectively rather than retrospectively. The reason for this is that expectations have a future-oriented dimension to them. Based on theoretical concepts of sensemaking theory, the authors develop a sensemaking model, which allows them to address the prospective sensemaking

processes, i.e. expectations, of the research participants. The authors have singled out the theoretical concepts of identity, bracketing and enactment as elements that impact the prospective sensemaking of individuals to construct a sensemaking model, which serves the purpose of this thesis. The model is depicted as a cyclical process to illustrate the ongoing property of sensemaking. In the analysis, the model is applied to the empirical data to analyze and interpret how each of the research participants make sense prospectively of their expectations about blockchain. Based on the individual sensemaking of the research participants, the authors group the respective expectations to derive general expectations about blockchain. These general expectations serve as the grounds upon which the discussion builds. In the discussion, the authors combine the results of the analysis with literature from the literature review. It is from the interaction between the results of the analysis and the literature that the authors derive an answer to the research question of this thesis.

1.4 Methodology

This section serves as a brief introduction into the epistemology, the philosophical position and the methods used in this thesis, which has informed the entire research process. The concepts presented in this section will be discussed in further detail in the fourth chapter of this thesis.

This thesis is concerned with reaching an understanding of people's expectations about how BCT may impact CR practices in the fast-fashion industry. Due to the focus on reaching an understanding, the epistemological position of this thesis is social constructivism. Social constructivism holds that meaning is created through social interactions (Crotty, 1998), and the authors, therefore, establish an understanding of the research phenomenon by interacting with the research participants in the interview situation. Being concerned with reaching an understanding implies that the authors of this thesis do not intent to obtain a definitive explanation, but rather a plausible explanation of the research phenomenon.

The authors of this thesis establish an understanding of the research phenomenon by studying and interpreting the meanings presented by the research participants in the interview situation. Therefore, this thesis takes an interpretivist philosophical position, which invites the authors to interpret the meanings of the research participants (Williams, 2000). Through the interpretation of meanings, the authors derive how each of the interview participants make sense of the research

phenomenon. This comes forth in the analysis where sensemaking is employed as an analytical perspective to identify the expectations held by the research participants about the research phenomenon. The information that is open to interpretation in this thesis is that which emerges from the interaction between empirical data, theory and the authors themselves. The information derived from the interaction of these three elements serves as the grounds for answering the research question of this thesis.

The empirical data, which is open to interpretation, is that which has been collected for the specific purpose of this thesis. The authors have collected qualitative data through the means of semi-structured expert interviews, which provide the base upon which the authors interpret meanings to establish an understanding of the research phenomenon. A total of six interviews have been conducted with people who are experienced in BCT, CR and/or the fast-fashion industry. This thesis employs semi-structured expert interviews as a stand-alone method, which dictates a mono-method research design. The authors have selected the research participants based on their relevance to the research question and their ability to enrich the concepts and theories of this thesis. In this respect, the authors have identified the professional background and area of expertise of the interview participants as a critical sampling criterion. Therefore, this thesis employs purposive sampling as its sampling strategy. The data collected through semi-structured expert interviews is interpreted and grouped through the means of qualitative content analysis. This results in a coding scheme, which sets the structure of the analysis. The overall ambition of this thesis is to make new discoveries in a field that has not yet been addressed by existing theories, which makes this research highly exploratory in nature.

1.5 Findings

From the analysis the authors find that there are general expectations about the outcome, the technical structure and the implementation of blockchain. In the discussion, the empirical results from the analysis are discussed in relation to the literature presented in the literature review.

Based on the discussion, the authors derive an answer to the research question, which is that traceability, transparency and the decentralized structure of blockchain are expected to have an impact on CR practices in the fast-fashion industry. More specifically, it is found that traceability

and transparency can provide fast-fashion brands with a better overview of their supply chain, as it allows fast-fashion brands to identify social and environmental impacts in the supply chain and, thereby, critical points where action is needed; enables fast-fashion brands to take full responsibility for their actions; leads to greater control of the supply chain, which is key to managing the highly fragmented fast-fashion supply chain; and facilitates the process of aligning CR practices across the supply chain. Moreover, traceability and transparency may strengthen current approaches taken towards CR reporting in the fast-fashion industry. Transparency can establish a greater level of inter-organizational trust, which can provide more certainty that supply chain actors fulfill their respective responsibilities. Furthermore, traceability may align the focus of CR practices with the principles of a circular economy, as the ability to trace fashion items may lead to a greater focus on recycling. Finally, the decentralized structure of blockchain can establish greater supply chain collaboration, supply chain integration, facilitate the process of sharing CR data, and strengthen collaboration across the supply chain.

However, the research also reveals that there are certain limitations with respect to BCT and barriers within the fast-fashion industry that should be addressed if blockchain is to have an impact on the CR practices in the industry. The limitations, which the authors identify, are the uncertainty that the data, which is logged onto the blockchain is authentic; the general resistance towards collaboration and information sharing; the lack of human resources who possess the necessary knowledge about blockchain; the general reluctance towards new technologies and slow technological adaptation; and, finally, the cost of implementing and utilizing blockchain.

1.6 Structure of the Thesis

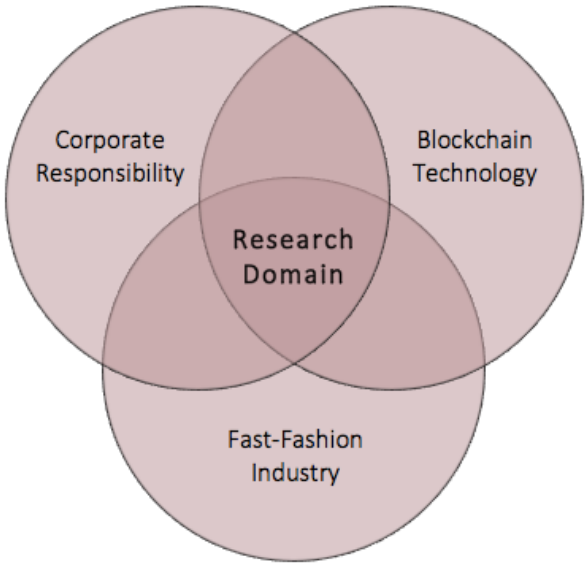
Following the introduction, the authors will introduce and discuss literature within the fields of CR, BCT and the fast-fashion industry to account for the research domain of this thesis. Hereafter, the analytical perspective is presented, which takes its point of departure in sensemaking literature. The authors dive into sensemaking theory in order to construct a model that serves the purpose of analyzing and interpreting the prospective sensemaking processes of the research participants. Hereafter, the authors account for the methodological choices made throughout the research process. The research question informs the choice of epistemology, philosophy of science and methods. The application of the aforementioned sensemaking model will play out in the analysis

where the model interacts with the empirical data collected for the purpose of this thesis. Based on the individual sensemaking processes of the research participants, the authors derive general expectations about blockchain. The results of the analysis are summarized at the end of the analysis before they are discussed in relation to literature from the literature review. Through the interaction of empirical results and literature, the authors derive the findings of the research and, thereby, the answer to the research question. The thesis finishes with a conclusion, which provides concluding remarks on the findings of this thesis.

2 Literature Review

The purpose of this thesis is to reach an understanding of how people expect that BCT may impact CR practices in the fast-fashion industry. To reach such an understanding, the authors find it necessary to first review literature within the fields of CR, BCT and the fast-fashion industry. The reviewed literature constitutes the research domain of this thesis. In general, the literature review provides a foundation of knowledge on the topic being researched and identifies a gap in the literature to which this thesis seeks to contribute. Later, the presented literature will be included in the discussion, where it interacts with the empirical findings of the analysis to reach an answer to the research question. This chapter will commence by presenting literature on CR. Hereafter literature on BCT is introduced. Finally, the fast-fashion industry and its characteristics are accounted for.

Figure 1: Research Domain



2.1 Corporate Responsibility

For blockchain to have an impact on CR practices in the fast-fashion industry, the authors find that fast-fashion brands within the industry are the ones that should implement the emerging technology. This is so because society will never achieve sustainable development without support from firms,

as they are representative of the productive resources of the economy (Bansal, 2002). Therefore, the authors address CR from a firm perspective.

CR has its grounds in the concept of sustainable development, which was introduced by the World Commission on Environment and Development (WCED) in 1987. Sustainable development addresses the growing conflict between economic, environmental and social matters, and is defined by the WCED as the *"development that meets the needs of the present without compromising the ability of future generations to meet their own needs"* (United Nations, 1987: p. 41). The concept of sustainable development is grounded around three principles: environmental integrity, economic prosperity, and social equity. In order for economic development to be sustainable, each principle must be supported (Bansal, 2005). To achieve sustainable development, literature suggests that firms are the actors that must implement it (Bansal, 2002; Hahn & Figge, 2011).

The terminology employed in literature to address the responsibilities of the firm varies greatly. Terms such as "corporate sustainability" (CS) (Hahn & Figge, 2011), "corporate social responsibility" (CSR) (Carroll, 1991), and "corporate responsibility" (CR) (Blowfield & Murray, 2014) are employed sporadically in literature. Although there is no sound definition of sustainable development from a firm perspective, there seems to be consensus that CR is a multi-faceted construct, which entails social, environmental and economic organizational outcomes (Hahn & Figge, 2011). This thesis employs the term *corporate responsibility* to address the environmental, economic and social responsibilities of the firm. The authors find this notion to be more neutral terminologically, as it does not emphasize the social or sustainable aspects of corporate responsibility, as is the case with CS and CSR.

The utilization of the term CR in literature has experienced great growth from less than 10 articles written on the topic in 1990 to thousands of articles available today (Baden & Harwood, 2013). Despite the increasing popularity driven by corporate oriented publications, key institutional players and key media (Matten & Moon, 2004), the CR terminology being used today is not fitting for the purpose anymore (Baden and Harwood, 2013). CR has become instrumental in reaching shareholder satisfaction and, thus, has lost its foundation in ethics. Consequently, the term CR has become counter-productive in the sense that attention on solutions for social impact is taken away (Baden & Harwood, 2013). Moreover, Hahn and Figge (2011) criticize current approaches to

research on CR for focusing on environmental and social measures as instruments to achieve improved financial outcomes. They contend that a sole focus on financial gains leads to a misconception of CR and misguiding signals for corporate practice, which the researchers name bounded instrumentality (Hahn & Figge, 2011). For firms to properly assess CR, they must consider both the economic, environmental and social dimension of the construct. Thus, there should be no a priori predominance of any of the dimensions when firms decide to embark on CR practices (Hahn & Figge, 2011). To eliminate the economic bias of CR, Hahn and Figge (2011) propose an inclusive notion of corporate profitability, which addresses all three forms of capital, namely economic, environmental and social capital. In this thesis, the authors acknowledge that CR is an inclusive notion, which incorporates both the economic, environmental and social responsibilities of the firm.

2.1.1 Frameworks for Corporate Responsibility Assessment

CR practices are voluntary in nature (Khan & Lund-Thomsen, 2011) and, therefore, various tools and frameworks have emerged to aid firms in the assessment of and reporting on CR practices (Searcy & Buslovich, 2014). The authors of this thesis expect that blockchain in the future may impact conventional methods taken towards CR practices. Today, employing such methods has become the most dominant approach to CR. Some of the most prominent tools and frameworks employed by firms are the Global Reporting Initiative (GRI), the UN Guiding Principles (UNGPs) and the Sustainable Development Goals (SDGs). These will be briefly described in the following section to enhance the understanding of how firms currently approach CR.

Global Reporting Initiative

Sustainability reporting (SR) is a corporate practice that takes its point of departure in the 'Triple Bottom Line' (TBL) (Milne & Gray, 2013; Lozano & Huisingh, 2011). The construct of the TBL was introduced by Elkington in 1998, and reflects the economic, environmental and social performance of the firm. The economic bottom line addresses the profit figure of the firm, thus, paying more attention to the interests of shareholders than other stakeholders. The environmental bottom line is concerned with the natural environment surrounding the firm and focuses on reducing water usage, emissions, use of chemicals, waste generation etc. in the activities of the firm. Finally, the social bottom line takes into account the social and societal responsibility of the firm. Social issues that need to be addressed are relations with surrounding communities,

employment of minorities, human rights, irresponsible marketing, wages, working conditions etc. (Elkington, 1998).

The most prominent sustainability reporting guidelines are the ones put forth by the GRI. SR is a voluntary activity in most jurisdictions, and firms therefore turn to the GRI guidelines to figure out how to approach SR (Searcy & Buslovich, 2014). Milne and Gray (2013) hold that SR has become synonymous with CR. They consider SR and the GRI as insufficient conditions for firms to sustain Earth's ecology, arguing that SR and the GRI promote business-as-usual and un-sustainability (Milne & Gray, 2013). Lozano and Huisingh (2011) present a Two Tiered Sustainability Equilibria (TTSE). The first tier is concerned with the economic, environmental and social dimensions, while the second tier is focused upon the time dimension of SR. With SR being based on the TBL, Lozano and Huisingh (2011) accuse the GRI for creating compartmentalization as it separates the economic, environmental and social dimensions, and thereby neglects the possible synergies between the three dimensions. Additionally, the time dimension of sustainability is limited to comparing a report to that of the previous year. They conclude that available sustainability guidelines do not properly address the TTSE.

UN Guiding Principles

In 1999, the United Nations (UN) established the Global Compact, a voluntary initiative, which seeks to engage company CEOs in supporting the UN goals through the implementation of universal sustainability principles. The UNGPs were introduced in 2011 as a reporting framework that firms employ in their assessment of how they respect the human rights. This is done through the "Protect, Respect and Remedy" framework, developed by John Ruggie. Through due diligence, in which firms should asses actual and potential human rights impacts, and integrate and act upon their discoveries, firms are able to address the adverse impacts of their business activities (United Nations, 2011). Yet, the due diligence approach has also been subject to much criticism. Bonnitcha and McCorquodale (2017) pinpoint that the UNGPs employ two different approaches to due diligence; one is a process to assess business risk while the other is *"the standard of conduct required to discharge an obligation"* (Bonnitcha & McCorquodale, 2017: p. 899). They argue that an issue occurs, as the two approaches are not explained in relation to one another. This creates uncertainty about a firms' degree of responsibility concerning human rights and how that responsibility is related to the firms' corresponding responsibility of providing remedy when human

rights are disobeyed (Bonnitcha & McCorquodale, 2017). Another criticism centers on the moral commitment of firms in the context of UNGPs' human rights due diligence. Fasterling and Demuijnck (2013) state that the UNGPs' unspecified method for implementing due diligence may result in a depreciation of the UN human rights principles. This is so, as the unspecified method allows firms to implement the UNGPs for strategic purposes.

Sustainable Development Goals

Today, one of the most popular ways of reporting on CR is through the SDGs introduced by the UN in 2015. There are a total of 169 sub-goals grouped into 17 main goals (GRI, UNGC & WBCSD, 2015). The goals cover various areas all related to sustainable development, and are being used by organizations and firms of all shapes and sizes. In spite of the apparent popularity, the SDGs have already been scrutinized by many researchers. The concept of SDG washing, which was born out of term greenwashing, was quickly adopted and applied to firms criticized for contributing positively to some SDGs while neglecting the subsequent negative impact on other SDGs (Eccles & Karbassi, 2018). Additionally, the SDGs have received criticism for the top-down approach employed in the development of said goals, as the development was conducted by the political elite (Caiado et al., 2018). Sachs (2012) too argues against the top-down approach, however, related to the implementation of the SDGs. He states that sustainable development should rather be reached through a multi-actor resolution network of firms, governments, NGOs, universities and, most importantly, the younger generation (Sachs, 2012).

2.1.2 Drivers of Corporate Responsibility

This thesis associates drivers of CR with factors affecting CR practices that are both internal and external to corporate decision-makers. Based on literature, the authors suggest that significant internal drivers of CR are strategic value creation and reputation management. For external drivers, the authors identify institutional and stakeholder pressure as the most prominent drivers. The drivers are explained in further detail in the following section to establish an understanding as to why firms may engage in CR practices. This understanding needs to be established, as these drivers may constitute the grounds as to why firms may employ blockchain as a tool for CR.

Over time, great attention has been devoted to the strategic implications of CR. By taking a strategic view on CR, scholars seek to understand how CR practices may generate strategic value

for firms (McWilliams et al., 2006; McWilliams & Siegel, 2001; Branco & Rodrigues, 2006). To study how firms may gain strategic value from CR practices, resource based perspectives (RBP) have proven to be useful (Branco & Rodrigues, 2006; McWilliams et al., 2006; McWilliams & Siegel, 2001). Branco and Rodrigues (2006) contend that a RBP enhances the understanding of why firms engage in CR practices and disclosure. They argue that CR provides both internal and external benefits, and that *"firms engage in CSR because they consider that some kind of competitive advantage accrues to them"* (Branco & Rodrigues, 2006: p. 111). In this context, internal benefits relate to the development of new resources and capabilities, while external benefits are associated with the effect of CR on corporate reputation (Branco & Rodrigues, 2006). McWilliams and Siegel (2001) investigate the impact of CR on financial performance. To do so, they employ a theory of the firm perspective on CR, which perceives CR as a form of investment. Based on their findings, the authors argue that *"managers should treat decisions regarding CSR precisely as they treat all investment decisions"* (McWilliams & Siegel, 2001: p. 125). In line with this, McWilliams et al. (2006) claim that CR is an integral part of firms' differentiation strategies, and therefore *"should be considered as a form of strategic investment"* (McWilliams et al., 2006: p. 4).

McWilliams et al. (2006) affirm that *"CSR can be viewed as a form of reputation building or maintenance"* (McWilliams et al., 2006: p. 4). In line with this statement, Agudo-Valiente et al. (2017) identify reputation management as a central driver of CR. Company stakeholders' increasing interest in the morals and values of the organizations behind different brands and products has brought along increasing pressure on both brand and reputation management (Lewis, 2003). As a result, Lewis (2003) argues that CR should be implemented in a company's brand management in order for consumers to translate their knowledge of the company into action. In line with this, Baraibar-Diez and Sotorrío (2018) investigate the relationship between CR and the development of corporate reputation. They argue that organizations must communicate on their CR activities in a transparent fashion, as this will enhance the corporate reputation held by stakeholders (Baraibar-Diez & Sotorrío, 2018), which supports the claim made by Agudo-Valiente et al.; *"CSR has a positive effect on corporate reputation"* (Agudo-Valiente et al., 2017: p. 7).

Adding on to this, Lewis (2003) incorporates consumer trust into the equation. The researcher explains that the public is not as trusting as it was back in the 1970s, and argues that instead of

reversing the tendency, i.e. try to make the public more trusting again, firms should instead focus on renewing the level of trust through CR (Lewis, 2003). Pivato et al. (2008) believe that consumer trust is the first outcome of a company's CR practices, thus, CR becomes a facilitator of trust. Their research investigates the correlation between a retailer's corporate social performance and the consumer's trust in said retailer. The result of their study shows a direct link between the consumer's perception of a retailer's social orientation and the consumer's level of trust towards the retailer (Pivato et al., 2008). Supporting the notion that CR generates consumer trust is Swaen and Chumpitaz (2008) who, in addition, address consumers' perception of quality. Taking this into consideration, the researchers argue that a brand's CR practices may even lead to consumer loyalty. However, if a company aims at generating and maintaining consumer loyalty, the CR activities implemented should be distinct from competing firms and most importantly be of value to the consumers (Swaen & Chumpitaz, 2008).

The institutional view is concerned with the social context within which firms operate (Bansal, 2005). Firms experience an increasing institutional pressure, thus, failure to conform to institutional norms can threaten the firm's legitimacy and access to resources, e.g. loss of earnings. By committing to CR practices, firms can build acceptability and legitimacy in their operational environments. Additionally, certain elements of sustainable development are becoming institutionalized through regulations and international agreements, leaving a coercive pressure on firms to engage in CR. Mimicry is another institutional pressure of less "aggressive" nature that impact firms' engagement with sustainable development. Through mimicry, firms imitate their peers to reduce the likelihood of public or financial sanctions. Bansal (2005) argues that firms that mimic the structures and activities of similar firms are less likely to suffer sanctions due to *"the legitimacy that is often conferred when many players are engaged in the same practice"* (Bansal, 2005: p. 202). An example of this could be the publication of firm-specific codes of conduct. Adding on to this is the pressure from stakeholders, which Agudo-Valiente et al. (2017) identify as a key factor that motivates firms to engage in CR. The fear of negative media attention from e.g. environmental interest groups, social activists and human rights ambassadors can add pressure on firms to implement sustainable development practices (Bansal, 2005).

2.2 Blockchain Technology

The authors of this thesis find it necessary to describe in detail the characteristics of blockchain to provide the reader with insights into the technicalities and functioning of the technology. This is important, as blockchain is a highly complex technology and, therefore, requires an initial explanation for it to be understood in a business context. In addition to this, various concepts concerning BCT will be used in the analysis of this thesis, and the authors, therefore, find it of relevance that the reader obtains a preliminary understanding of the technology. It is not possible to describe all aspects of BCT in this thesis, therefore, the following section will provide only a limited overview of BCT.

2.2.1 Introduction to Blockchain Technology

BCT was introduced in 2008 by an unknown person or persons, who went under the pseudonym Satoshi Nakamoto, as the underlying technology of the crypto currency, Bitcoin. Bitcoin was developed to address the vulnerabilities, inefficiencies and costs of existing transaction systems, particularly in the financial sector. In the white paper, *Bitcoin: A Peer-to-Peer Electronic Cash System*, Nakamoto (2008) portrays the Bitcoin as a peer-to-peer version of electronic cash, which eliminates the need of financial institutions in transactions, as cash is sent directly from one party to another (Nakamoto, 2008). Thus, unlike traditional currencies, Bitcoin has no central monetary authority (Gupta, 2017). Since the introduction of BCT, the financial industry has been considered the primary user of this emerging technology (Nofer et al., 2017). At first, adoption of blockchain took off very slow, but from 2015 to 2017 adoption of the technology has experienced exponential growth due to an increasing public interest in Bitcoin (Google Trends, 2019). It has been found that blockchain has various potential use cases, as it can be used to record any transaction and track the movement of any asset, whether tangible or intangible (Gupta, 2017). A new stream of literature looking into other potential use cases of blockchain recognizes the growing interest in the technology. Research suggests that blockchain has the potential to disrupt, not just the financial domain, but various domains of organization. However, blockchain is still in its infancy and the understanding of its potential remains limited (Francisco & Swanson, 2018; Saberi et al., 2018; Wang et al., 2018; Babich & Hilary, 2018).

2.2.2 What is Blockchain Technology?

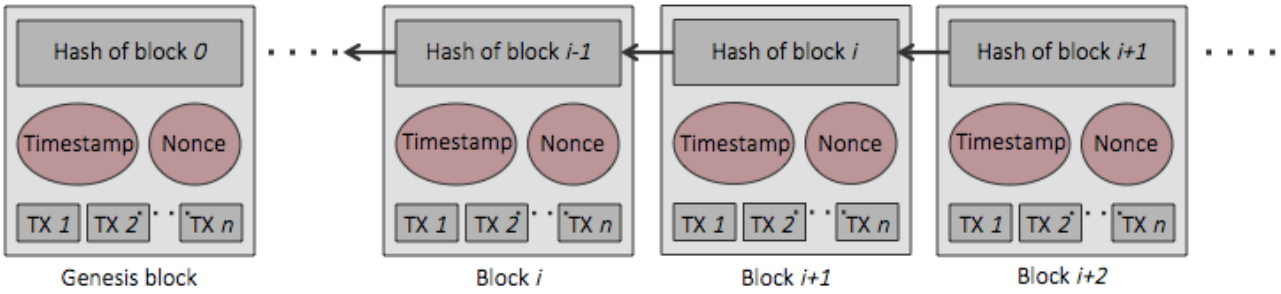
Blockchain is a shared, immutable ledger, which facilitates the process of recording transactions and tracking assets in a network (Gupta, 2017). The technology can be perceived as a chain of data packages (blocks), where each block contains various transactions (Nofer et al., 2017). A transaction can be defined as *"the act of transferring ownership from one owner to someone else"* (Drescher, 2017: p. 65). The amount of transactions that a blockchain can contain is dependent on the size of the block and the size of each transaction (Zheng et al., 2018). As new blocks are added to the chain, the blockchain grows, turning the blockchain into a complete ledger of transaction history (Nofer et al., 2017). Drescher (2017) suggests that this history of transaction data constitutes the heart of any blockchain. Every time a transaction is added to the blockchain, the ledger is shared, updated and replicated among network participants in real time (Gupta, 2017).

Gupta (2017) identifies four key characteristics of the BCT: consensus, immutability, asset provenance and finality. Blockchain employs a consensus-based model, meaning that the majority of the network participants (nodes) must agree upon the validity of a transaction. This eliminates the need for a trusted third party, e.g. banks. Data added to the blockchain is shared with all nodes in the network, which makes it close to impossible to tamper with the blockchain. The provenance characteristic allows all nodes in the network to keep track of the origins of an asset. Finally, in a single shared ledger there is only one place to go to determine ownership of an asset or the completion of a transaction. By virtue of the four characteristics presented above, Gupta (2017) argues that blockchain eliminates the need for trust and increases the level of trust among the nodes in the network simultaneously.

To understand the functionality of BCT, it is essential to explain its technical architecture. To validate a new block, the network uses cryptographic means, which contributes to the overall consensus of the network. Each block contains a timestamp, the hash of the previous block, and a nonce, which is a random number for verifying the hash. This helps ensure the integrity of the blockchain all the way to the first block, also named the genesis block. In a blockchain network, hashes are unique and fraud can be detected immediately, as changes of a block would change the respective hash value. First when the majority of the nodes in the blockchain network agree on the validity of a block, it can be added to the chain. This mechanism ensures that new transactions are not added automatically to the ledger. Instead, they are stored in a block for a certain amount of

time, waiting to be validated by the network. Every time a block is to be added or rewritten it requires the solution of a hash puzzle. Drescher (2017) uses the metaphor of a combination lock to describe the functioning of hash puzzles: *"Hash puzzles are computational puzzles that can be seen as the digital equivalent to the task of opening a combination lock by trial and error"* (Drescher, 2017: p. 89). To solve such hash puzzle simple knowledge and data are not enough, instead it requires great computational resources (Drescher, 2017). When the hash puzzle has been solved, the block is added to the chain and can no longer be changed (Nofer et al., 2017).

Figure 2: Illustration of the Architecture of Blockchain.



Adapted from Zheng et al. (2018).

To sign transactions, blockchain uses digital signatures. Every node in the network owns a private key and public key. Typically, a digital signature involves two stages, namely the signing phase and the verification phase. For instance, when a node in the network wants to sign a transaction, this person must first generate a hash value derived from the transaction. Using the private key, this person should encrypt this hash value and send the encrypted hash with the original data to another node in the network. The receiving node then verifies the received transaction by comparing the decrypted hash (using the previous node's public key) with the value derived from the received data by the same hash function (Zheng et al., 2018).

2.2.3 Outlining the Types of Blockchain

Blockchain can be categorized into three types: private blockchain, consortium blockchain and public blockchain (Zheng et al., 2018). In a private blockchain, one organization or limited sets of nodes are authorized to access the blockchain and transact in the network. In a consortium blockchain a pre-selected set of nodes participate in the consensus process. Thus, in both private and consortium blockchains the validators of a transaction are known and limited. Contrary to

private and consortium blockchains, public blockchains are open and can be accessed by anyone. Due to its high degree of openness, public blockchains are likely to obtain network effects (Buterin, 2015).

Zheng et al. (2018) compare the three types of blockchain based on six different perspectives, which are all central to the BCT. These are listed and described below.

Consensus determination: In a private blockchain, one organization is in full control of who can determine the final consensus. In a consortium blockchain, a selected amount of nodes are responsible for validating a transaction. Finally, in a public blockchain, the blockchain is open to everyone and each node can take part in the consensus process.

Read permission: In a private and a consortium blockchain, transactions are only visible to the selected number of nodes in the network, whereas in a public blockchain they are visible to everyone.

Immutability: As previously mentioned, transactions on the blockchain cannot be tampered with. This statement holds for public blockchains. However, private and consortium blockchains can be tampered with in case the majority of the nodes in the blockchain want to do so.

Efficiency: Private and consortium blockchains have fewer transaction validators, and are therefore likely to be more efficient. In a public blockchain, there is a larger number of nodes, which may make this type of blockchain less efficient. However, overall network safety is likely to be much more strict in a public blockchain.

Centralized: The main difference between the three types of blockchain is the degree of centralization. A private blockchain is highly centralized as one organization is controlling the blockchain. Consortium blockchains are partially centralized, and public blockchains are fully decentralized.

Consensus process: While private and consortium blockchains are permissioned, public blockchains are permissionless. This implies that any person in the world could join the consensus process of a

public blockchain. In a private and a consortium blockchain, the node contributing to the blockchain has to be certified to join the consensus process.

While Zheng et al. (2018) find that there are three types of blockchains that can be compared on six parameters, Drescher (2017) takes a slightly different approach to identifying the different types of blockchain. He takes his point of departure in two conflicts that the blockchain is currently facing: transparency versus privacy and security versus speed. The concept of transparency is key to the blockchain for verifying ownership, but it may conflict with the concept of privacy. Thus, one must decide on the degree of transparency and privacy of the blockchain, which implies deciding on whom to grant *reading access*. To manage who has the right to read the blockchain, Drescher (2017) suggests deciding on either a private (grant read access to a preselected group of nodes) or a public (grant read access to all nodes) blockchain. A private blockchain would enhance privacy, but reduce transparency, while the opposite would be the case in a public blockchain.

The other conflicting concepts are security and speed. Hash puzzles do not only enhance the security of the blockchain, they also slow down the speed of the system, as they require a lot of computational resources to be solved (Drescher, 2017). This creates a conflict between the need for securing the history of transaction data and the commercial requirements of speed and scalability. By deciding on whom to grant *writing access*, one can balance the need for security versus speed. Here, Drescher (2017) distinguishes between permissioned and permissionless blockchains. In a permissioned blockchain, writing access is only granted to a limited and preselected group of nodes. Only that group is allowed to verify transactions and take part in the consensus procedure. Permissionless blockchains provide writing access to everyone, meaning that everyone can verify transactions and add blocks to the blockchain (Drescher, 2017). Permissioned blockchains offer increased speed, but less security, while permissionless blockchains offer reduced speed due to the many transactions taking place, but increased security.

By combining reading and writing restrictions, Drescher (2017) identifies four versions of blockchain. In the first version, everyone has reading and writing access, thus, the blockchain is public and permissionless. In the second version, reading access is granted to everyone, but writing access is restricted, which makes the blockchain public and permissioned. In the third version, reading access is restricted, but writing access is provided to everyone, making this blockchain

private and permissionless. Finally, the last version operates with both restricted reading and writing access and is therefore private and permissioned (Drescher, 2017).

Table 1: Types of Blockchain

Writing access	Reading access and creation of transactions	
	Everyone	Restricted
Everyone	Public & Permissionless	Private & Permissionless
Restricted	Public & Permissioned	Private & Permissioned

Adapted from Drescher (2017).

2.2.4 Business Use Cases of Blockchain Technology

The following section will look into potential use cases of blockchain in a business context. As previously mentioned, BCT may have the potential to disrupt various domains of organizations. An organizational area that is receiving particular interest in relation to BCT is supply chain management (Wang et al., 2018; Abeyratne & Monfared, 2016; Saberi et al., 2018; Treiblmaier, 2018). Many speculate on how BCT may impact supply chains, however, the current understanding remains limited (Wang et al., 2018). In spite of this, literature suggests that BCT can have a significant impact on supply chain transparency, traceability and sustainability (Francisco & Swanson, 2018; Abeyratne & Monfared, 2016; Wang et al., 2018; Saberi et al., 2018).

As supply chains become more complex, more extended and more global, product traceability is becoming an increasingly urgent requirement and a fundamental differentiator in various supply chain industries (Saberi et al., 2018; Abeyratne & Monfared, 2016). Though millions of products are being manufactured everyday globally, much of the product history is presently obscured (Abeyratne & Monfared, 2016; Francisco & Swanson, 2018).

Currently, supply chains rely on centralized information management systems such as enterprise resource planning (ERP) systems, where only a limited number of supply chain actors have access to relevant transaction information (Saberi et al., 2018). These systems may have their pitfalls, as they make it more challenging for supply chain actors to keep an overview of supply chain transactions due to limited access to transaction information (Abeyratne & Monfared, 2016; Saberi

et al, 2018). Francisco and Swanson (2018) state that BCT can enhance supply chain transparency, by making information available to the parties involved in a supply network. Wang et al. (2018) argue that blockchains are expected to add the most value to supply chains through their extended visibility and product traceability. Moreover, they state that product traceability will likely be the point at which blockchain experience large-scale deployment. Francisco and Swanson (2018) find that BCT lends itself well to traceability applications, due to its ability to create an immutable and distributed aspect of the product record. Thus, supply chain traceability leverages transparency as it allows firms and consumers to keep track of raw material origins and provides context to a final product or service (Francisco & Swanson, 2018). However, due to the infancy of blockchain it is still poorly understood how BCT can be adopted in the supply chain to enhance traceability (Francisco & Swanson, 2018).

While some authors find BCT useful for supply chain transparency and traceability, others believe that the emerging technology could have an impact on CR. Kewell et al. (2017) hold that BCT may be a viable catalyst for achieving sustainable development. They find that blockchain can be used to track potential social and environmental conditions that may be of risk to the environment, our health and safety. Following Saberi et al. (2018) blockchain has the potential to address all aspects of the TBL. From an economic perspective, blockchain can help reduce transaction costs and time, thus, allowing for greater supply chain performance. From a social point of view, blockchain can prevent corrupt individuals, governments or organizations from seizing assets from people in an unfair manner. Additionally, blockchain traceability promotes sustainability as it ensures human rights and fair, safe work practices. Finally, from an environmental perspective, blockchain can help reduce rework and recall, thereby decreasing resource consumption and greenhouse gas emissions (Saberi et al., 2018).

In line with the above, Babich and Hilary (2018) argue that by knowing the provenance of goods, BCT can help ascertain that goods have been manufactured in factories certified as capable of ethical and/or environmentally responsible production. At first, this will require the involvement of regulatory bodies such as NGOs, governments and industry self-regulators to conduct inspections and provide certifications. Once certifications are in the blockchain system, they become immutable and publicly visible, if the blockchain is publicly accessible. Though there are many potential advantages of blockchain, the technology may also be subject to failure in a sustainability context.

The weak point of the blockchain is where information is created and entered into the system. On the blockchain, certificates are verifiable, but there is no guarantee that suppliers actually follow the required practices (Babich & Hilary, 2018).

2.2.5 Limitations of Blockchain Technology

Having addressed the characteristics of blockchain and its potential use in a business context, this section will look into the limitations of the BCT. It is important to address its limitations, as they are likely to create barriers for its future adoption and implementation. The first part will look into the particular barriers that firms are facing in terms of implementing BCT in the supply chain. Following this, the second part will be concerned with the technical and non-technical limitations of BCT.

Adoption and Implementation Barriers

In a supply chain and sustainability context, Saberi et al. (2018) identify four different categories of barriers that influence the implementation of blockchain in sustainable supply chains. These are intra-organizational barriers, inter-organizational barriers, system-related barriers and external barriers (Saberi et al., 2018). The first set of barriers stem from activities taking place inside the organization. Inter-organizational barriers introduce challenges associated with supply chain relationships. Francisco and Swanson (2018) argue that inter-firm trust is critical for technology acceptance and information sharing. System-related barriers point at issues related to the implementation of the technology, and finally, external barriers are concerned with challenges stemming from external stakeholders, industries, institutions and governments (Saberi et al., 2018). Table 2 (see below) lists the different barriers associated with each category.

Table 2: Barriers of BCT Adoption in Sustainable Supply Chains.

Intra-organizational	Inter-organizational	System-related	External
Financial constraints	Lack of customer awareness and tendency about sustainability and BCT	Security challenge	Lack of governmental policies
Lack of management commitment and support	Problems in collaboration, communication and coordination in the SC	Access to technology	Market competition and uncertainty
Lack of organizational policies for using technology	Challenge of information disclosure policy between partners in the SC	Hesitation to adopt BCT due to negative public perception	Lack of external shareholders' involvement
Lack of knowledge and expertise	Challenges in integrating sustainable practices and BCT through SCM	Immaturity of technology	Lack of industry involvement in ethical and safe practices
Difficulty in changing organizational culture	Cultural differences of SC partners		Lack of industry rewards and encouragement programs
Lack of tools for BCT implementation in sustainable SCs			

Adapted from Saberi et al. (2018).

Technical and Non-Technical Limitations of Blockchain Technology

Though BCT may be *"the masterpiece of an ingenious mind"*, it is not perfect nor free of limitations (Drescher, 2017: p. 205). Drescher (2017) divides the limitations of BCT into two categories: non-technical limitations and technical limitations. The non-technical limitations are concerned with the social, economic, legal and psychological aspects of adapting to a new technology. Drescher (2017) identifies the lack of legal acceptance and the lack of user acceptance as the two most critical non-technical limitations. With its open and distributed nature, BCT offers a new way to manage ownership. Due to this, it is crucial to address the legal implications and acceptance of the transactions taking place in the blockchain. For users to utilize and trust BCT,

they must first acquire knowledge about its fundamental functioning. Therefore, knowledge and education are two criteria that are key to user acceptance (Drescher, 2017). As for technical limitations, Drescher (2017) identifies the following seven that cause major hurdles for blockchain's commercial use. These are described in further detail below.

Lack of privacy: This limitation is a constituting element of BCT in the sense that all transaction data is shared among all nodes in the network. As previously stated, BCT works to establish full transparency, however, for purposes that require more privacy BCT may not be appropriate.

The security model of BCT: Drescher (2017) criticizes BCT for its lack of additional safety nets. The private key is the only security instrument that gives a user the authorization to transact on the blockchain and protects the property that is associated with an account. If the private key is given to someone else, either on purpose, by accident or due to a malicious attack, there is no additional measures that can be taken to protect the individual node.

Limited scalability: The fact that BCT allows everyone to add new transaction data to the blockchain while simultaneously working to ensure that the transaction history is protected may cause limitations to its scalability. Every time a block is added, a hash-puzzle needs to be solved, and this is, on purpose, very time consuming. This results in reduced processing speed, and thereby limited scalability of BCT. In contexts where processing speed, high scalability and high throughput are critical, this may be a critical barrier.

High costs: BCT brings high computational costs, which can be expressed as the number of computational cycles, physical time, electrical energy and money. The magnitude of the costs incurred by the blockchain is highly dependent on the difficulty of the hash puzzle that needs to be solved.

Hidden centrality: BCT has an element of hidden centrality because there is a risk that only those that have sufficient computational power in the form of specialist hardware can contribute to the blockchain. At one point, this leaves the responsibility of maintaining the integrity of the system in the hands of very few people, thereby undermining the decentralized nature of BCT.

Lack of flexibility: When implemented, it can be very challenging to make changes to the blockchain, as there are no procedures in place on how to modify larger components of the blockchain. Additionally, the immutability of the blockchain makes it more difficult for developers to fix bugs or make modifications to the blockchain protocol. These aspects both limit the flexibility of BCT.

Critical size: For BCT to be effective, the blockchain network needs to reach a critical size. Small blockchain systems with limited computational power are more vulnerable to malicious attacks, as it is easier to reach majority consensus, i.e. 51 percent. Thus, to make the blockchain more resistant to attacks from people with large computational power, it is of crucial importance to any blockchain that it is composed of a critical mass of honest nodes. However, reaching a critical mass that makes 51 percent attacks impossible is a great challenge that all blockchains will need to face (Drescher, 2017).

2.3 The Fast-Fashion Industry

The purpose of this thesis is to gain an understanding of how people expect that blockchain may impact CR practices in the fast-fashion industry. Being concerned particularly with the fast-fashion industry, the following section will outline the characteristics of said industry to provide an overview of the context in which blockchain is to be implemented. The current business model of the fast-fashion industry has a detrimental impact on the environment and social aspects of conducting business. Consequently, the authors believe that there is a need for the fast-fashion industry to acknowledge its negative impact. In this respect, the authors assume that blockchain may be a solution that can help the industry break with its negative impact.

2.3.1 Industry Characteristics

The fast-fashion industry is characterized by low predictability, short product lifecycles, high volatility, high consumer impulse purchase, international sourcing, high product variety and continuous downward price pressure (Bruce et al., 2004; Perry & Towers, 2013). Perry and Towers (2013) argue that the latter has intensified the market competition and led to increased pressure on profit margins. As a result, the fast-fashion industry has experienced a move from local production towards global production during the past decades (Cooper, 2010). Western fast-fashion brands

have increasingly relocated production to offshore locations in developing countries and least developed countries (Perry & Towers, 2013; Richero & Ferrigno, 2017). The main pull-factor driving this change has been the low labor costs in developing countries, which lead to competitive advantage and the ability to cope with downward price pressures. Today, globalization of the industry continues to evolve, as sourcing and production increasingly takes place overseas (Bruce et al., 2004). As a consequence of this globalization, the supply chain becomes increasingly more complex and more difficult to control (Pedersen & Gwozdz, 2013).

Currently, the fast-fashion industry is dominated by the fast-fashion business model, which is widely acknowledged as a key strategy for success in the fast-fashion industry (Barnes & Lea-Greenwood, 2006). The fast-fashion business model builds on two core ideas, which are to reduce lead times to get products faster to the consumer and to take the nature of consumer demand and preferences into account. Previously, retailers would dictate what was "in", and push their designs to the market. Today, the fast-fashion business model has largely replaced the push-driven supply chain with one that is driven by consumer pull (Sull & Turconi, 2008; Barnes & Lea-Greenwood, 2010). In general, fast-fashion can be understood as *"a business strategy which aims to reduce the processes involved in the buying cycle and lead times for getting new fashion products in stores, in order to satisfy consumer demand at its peak"* (Barnes & Lea-Greenwood, 2006: p. 259). Barnes and Lea-Greenwood (2010) argue that rapidly changing fashion trends and consumer demands have contributed to the rise of the fast-fashion business model. The lifetime of fashion trends is defined by the product life cycle, which has faced a significant decline over time. Moreover, as consumers have become more interested in fashion, the demand for new fashion items continues to rise. This has put a great pressure on retailers to constantly produce new items to keep up with new trends (Barnes & Lea-Greenwood, 2010; Sull & Turconi, 2008).

Effective management of the supply chain has been established as a key concept to fast-fashion (Barnes & Lea-Greenwood, 2010). The supply chain of fast-fashion brands is becoming increasingly more responsive, thus, allowing lead firms to reduce lead times and meet consumer demands (Hall, 2018). Different concepts have been introduced to address and improve the responsiveness of the fast-fashion supply chain. Some of these concepts are lean supply chain and just-in-time (JIT), agile supply chain and leagile supply chain. The core philosophy of lean is to eliminate all waste, including time (Bruce et al., 2004). Karlsson and Åhlström (1996) argue that

lean production can enhance overall firm performance, as it increases productivity, improves quality, shortens lead times and reduces costs. The principle of JIT is key to the lean paradigm and is about creating flow in the production process (Karlsson & Åhlström, 1996). Agile supply chains are very flexible and demand driven, and therefore able to respond rapidly to real time changes in consumer demand (Barnes & Lea-Greenwood, 2010; Bruce et al., 2004). The ability of buyers and suppliers to share information is key to agile supply, and firms must therefore acquire appropriate information technologies (Bruce et al., 2004).

Childerhouse and Towill (2000) argue that the supply chain needs to be tailored to different customer requirements. They propose that agile supply chains are most appropriate for innovative products with unpredictable demand. Lean supply chains, on the other hand, should be used for functional products where demand is predictable (Childerhouse & Towill, 2000). Bruce et al. (2004) address both the lean and agile supply chain paradigm, but find that fast-fashion brands do not fit neatly into either category. Instead, they suggest that a combination of the two, a leagile supply chain paradigm, is more appropriate to cope with the prevailing characteristics of the fast-fashion industry. The leagile supply chain paradigm employs the logic that lean and agile are combined at a strategic decoupling point for optimal supply chain management. It is argued that lean principles should be applied upstream to minimize costs, while agile principles should be used downstream to ensure responsiveness to fluctuating consumer demands (Bruce et al., 2004; Childerhouse & Towill, 2000). The leagile paradigm offers *"the best of both worlds"* (Childerhouse & Towill, 2000: p. 341) as it ensures fast product replenishment and high responsiveness to consumer demands (Bruce et al., 2004).

2.3.2 Consequences of the Fast-Fashion Business Model

One of the major consequences of fast-fashion is that it reduces prices and increases consumption (Hall, 2018). A report by McKinsey & Company reveals a significant increase in clothing production and a critical change in consumer behavior. In 2014, the annual production of clothing items reached 100 billion items, and consumers now keep their clothing items for about half as long as they did 15 years ago (Arthur, 2016). According to the Ellen McArthur Foundation (2017), the fast-fashion system of today is very wasteful and polluting. The current fast-fashion business model can be perceived as a "take-make-dispose" model, where fashion items are highly underused and disposed after a short period of time. The linearity of the fast-fashion business model is highly

criticized as it leaves economic opportunities untapped. After their use, most fashion items are discarded, and the value of the materials is lost. It is estimated that 87% of the total fiber input used in the production of garments is landfilled, constituting an annual loss of more than $100 billion (Ellen McArthur Foundation, 2017). With its low rates of utilization and low levels of recycling the fast-fashion business model generates significant negative externalities for the environment and society (Ellen McArthur Foundation, 2017).

On an annual basis, the fast-fashion industry relies on 98 million tons of non-renewable resources. These include oil used in plastic-based textiles, pesticides and fertilizers for cotton production and chemicals such as dyes used to manufacture fibers and textiles. Together, the production of textiles and cotton farming consumes 93 billion cubic meters of water annually. This represents 4% of freshwater withdrawal on a global scale (Ellen McArthur Foundation, 2017). Adding to this, washing garments in washing machines requires an additional 20 billion cubic meters of water per year. Washing of garments is considered to have a critical impact on the environment and health, as it releases trillions of plastic microfibers, which ultimately end up in the ocean. Besides its large water usage, the fast-fashion industry is also responsible for a significant share of the world's greenhouse gas emissions (Ellen McArthur Foundation, 2017).

In addition to its environmental implications, the fast-fashion industry has also put its mark on society. As a consequence of the fast-fashion business model, high costs and time pressures are imposed on the entire supply chain. This often implies a significant degradation of working conditions and low wages. Often, workers are required to work in dangerous working environments where buildings are unsafe and they are exposed to health threatening substances (Ellen McArthur Foundation, 2017). Particularly working conditions obtained a growing focus after the Rana Plaza building collapse in Bangladesh in 2013, where 1,132 workers were killed and more than 2,500 were injured. This was one of the worst accidents in the history of the fast-fashion industry (ILO, 2019).

To address the negative externalities, more fast-fashion brands are engaging in environmentally and socially responsible practices (Lehmann et al., 2018). It is argued that existing business models and solutions will not deliver the necessary impact to transform the fast-fashion industry. If the fast-fashion industry continues to do business-as-usual, negative impacts may become unmanageable

and the profitability of the industry could be at risk. However, by successfully addressing environmental and social issues, the benefit to society would be about $192 billion (Ellen McArthur Foundation, 2017). It is argued that the industry needs more systemic change (Lehmann et al., 2018). To reach the needed impact, the industry should focus on joint innovation and investment to target the unsolved challenges in the supply chain. Fast-fashion brands should engage in closer collaborations with their stakeholders to create an ecosystem that promotes transformational innovation and disruptive business models. This is argued to be of particular relevance to raw materials and end-of-use, which are the most challenging stages of the supply chain (Lehmann et al., 2018).

Most lead firms in the fast-fashion industry do not have direct ownership of their manufacturing and supplier plants. This makes it difficult for lead firms to manage and control environmental impacts and working conditions across the very complex and globally dispersed supply chain. Due to this, lead firms have a tendency to elude responsibility in respect to how their products are manufactured (Ditty, 2019). Lead firms work with thousands of suppliers worldwide with the majority of which they have no direct business relationship. Global Fashion Agenda propose supply chain traceability as a core priority for immediate implementation in the fast-fashion industry. They suggest that supply chain traceability is key to identifying and enhancing the environmental, social, ethical and financial impact of the fast-fashion manufacturing process (Tärneberg et al., 2019). Traceability enables the identification of challenges and risks along the supply chain, and may provide lead firms with an understanding of the opportunities to introduce sustainable practices (Tärneberg et al., 2019). Global Fashion Agenda contend that *"traceability is also a prerequisite for transparency"* (Tärneberg et al., 2019: p. 14). Transparency continues to pose a major challenge for the global fast-fashion industry (BoF & McKinsey, 2019). According to the State of Fashion 2019 report, consumers are increasingly concerned with social and environmental issues, such as fair labor and sustainable sourcing. As a consequence hereof, fast-fashion brands are progressively becoming more transparent, sharing information about e.g. product origins and the environmental impact of their manufacturing process (BoF & McKinsey, 2019). The State of Fashion 2019 report holds that fashion brands in the near-coming future will commence to audit their business practices to identify areas in which consumer trust may be eroded. In doing so, it is argued that some fast-fashion brands may resort to blockchain to boost supply chain transparency (BoF & McKinsey, 2019).

The Ellen McArthur Foundation (2017) suggests that the vision of the fast-fashion industry should be aligned with the principles of a circular economy. This entails a restorative and regenerative system that keeps textiles and fibers at their highest value during and after use by ensuring that they re-enter the economy and never end up as waste. Being distributive by design, this system enables value to circulate among all enterprises of all sizes in the supply chain, thereby allowing businesses and their employees to participate in the wider economy (Ellen McArthur Foundation, 2017).

2.4 Identifying a Gap in the Literature

From reviewing literature on the subjects of CR, BCT and the fast-fashion industry, the authors have found that there has been conducted research on each topic in isolation. It has to a varying degree been possible to find literature that combines two of the research areas. Literature that merges CR and the fast-fashion industry is plentiful. The fields of CR and BCT are rarely discussed in conjunction, while literature investigating the intersection between BCT and the fast-fashion industry barely exists. In the review process, the authors have experienced that research combining all three research areas is next to non-existent. This may be due to the fact that BCT continues to be in its infancy, and the understanding of the technology therefore remains limited. In this thesis, the authors merge the three research areas and, thereby, contribute to filling the current gap in the literature. The authors seek to fill the gap by reaching an understanding of the expectations that people have about the impact of BCT on CR practices in the fast-fashion industry.

3 Analytical Perspective

The following chapter is dedicated to outlining the analytical perspective of this thesis. The purpose of this thesis is to gain an understanding of how people expect that BCT may impact CR practices in the fast-fashion industry. This is a question to which no one has a definitive answer, as blockchain is yet to be implemented in the fast-fashion industry. Since there are no concrete examples of how blockchain can impact CR practices, the analysis builds upon *expectations* of experts extracted from in-depth semi-structured interviews, which is presented in further detail in the analysis. To assess these expectations, sensemaking as an analytical lens is found useful. This perspective allows the authors to gain an understanding of how individuals make sense of events, as it provides the authors with a conceptual framework that serves as a means to address the sensemaking processes of individuals. In this thesis, the event that the authors make sense of is the potential impact of BCT on CR practices in the fast-fashion industry. To address the expectations of the research participants, this thesis breaks with orthodox sensemaking, as the authors perceive sensemaking of expectations to be prospective rather than retrospective. In order to study the expectations of the research participants, the authors develop an analytical model based on concepts of sensemaking theory. This model will be described in detail at the end of this chapter.

Given the breadth and depth of sensemaking literature, it has been necessary to limit the amount of literature used for the construction of the analytical perspective. The authors have reviewed literature where a sensemaking perspective has been employed to study the implementation of new technologies in organizational settings (Jensen et al., 2009; Svejvig & Jensen, 2013; Wang et al., 2019). Common for all of the articles is that they center on the work of Karl E. Weick. This literature has served as a source of inspiration, as it provides an idea of how sensemaking can be used to study a new technology, which in the case of this thesis is blockchain. Consequently, the analytical framework will primarily build upon the contributions of Karl. E. Weick.

The following section will start by defining the concept of sensemaking and describing the sensemaking process. Hereafter, the authors introduce the concept of frames, which is central to how individuals make sense. Weick's (1995) classical properties of sensemaking will be outlined, from which identity, bracketing and enactment together with prospective sensemaking will form the base of the model developed for the purpose of this thesis.

3.1 Sensemaking

Sensemaking has evolved out of organization studies (Jensen et al., 2009), and is a term that has a great variety of definitions in literature. Karl E. Weick, the "father" of sensemaking (Ancona, 2011), came up with a very simplistic definition of sensemaking as the *"making of sense"* (Weick, 1995: p. 4). According to Jensen et al. (2009), *sense* is equivalent to meaning, and *making* addresses the process of constructing or creating something. Weick et al. (2005) contend that *"sensemaking involves turning circumstances into a situation that is comprehended explicitly in words and that serves as a springboard into action"* (Weick et al., 2005: p. 409). Maitlis and Christianson (2014) perceive sensemaking as the *"process through which people work to understand issues or events that are novel, ambiguous, confusing, or in some other way violate expectations"* (Maitlis & Christianson, 2014: p. 57). Sensemaking is comprehended as an ongoing process, however, the need for sensemaking is intensified when one is confronted with an unexpected event characterized by high levels of uncertainty and ambiguity. This uncertainty causes a shock in the sensemaker (Weick, 1995), which then activates the sensemaking process. In such events, sensemaking is particularly useful for addressing the cognitive and social mechanisms of individuals (Jensen et al., 2009).

Svejvig and Jensen (2013) hold that sensemaking may be a useful perspective to employ when studying social aspects of technology adaptations. While much literature on technology adaptations focus on the implementation phase, very little emphasize the pre-adoption phase of a new technology (Wang et al., 2019). However, the pre-adoption phase may be just as important, as this is where people *"become aware of a technological innovation, sense its potential disruptive effect, conduct an initial exploration and decide whether to ignore or embrace the innovation"* (Wang et al., 2019: p. 224). Wang et al. (2019) contend that a solid sensemaking process in the pre-adoption phase may aid appropriate decision-making. When introduced to a new technology the sensemaking process intensifies, as people develop assumptions and expectations of it, which contribute to shaping the way in which people interact with the technology (Svejvig & Jensen, 2013). The new technology that is referred to here is BCT. The use of blockchain in a business context remains fairly limited, and organizational members, therefore, have relatively little experience with this emerging technology. Thus, it can be argued that when people are introduced to a new technology, such as blockchain, it may cause a certain degree of uncertainty in those who are going to use it.

To make sense of the new situation, people engage in a process of *bracketing*, which involves *"singling out items and/or events related to the technology in order to connect them"* (Svejvig & Jensen, 2013: p. 6). During the bracketing process, people extract cues which are related to a specific cognitive frame that an individual holds. It is when these cues are connected that meaning is created. This meaning will serve as a guide for one's future actions and attention in other situations. The bracketing process is ongoing, and it may create new structures or reinforce existing ones. Svejvig and Jensen (2013) argue that it is in this respect that *"the users of a technology create the reality that they respond to in a process of enactment"* (Svejvig & Jensen, 2013: p. 6). The concept of identity is closely related to bracketing and enactment since *"who we think we are (identity) as organizational actors shapes what we enact and how we interpret"* (Weick et al., 2005: p. 416). When introduced to a new technology, users will seek to place it in a frame and connect their interpretations of the technology to the expectations they have of their identities, roles and responsibilities (Svejvig & Jensen, 2013). The identity thereby questions *""who we are" vis-á-vis the technology"* (Svejvig & Jensen, 2013: p. 6).

3.2 Frames

The way people make sense of and act in their environments is closely linked to their cognitive frameworks, or so-called frames (Mishra & Agarwal, 2010). Consequently, the authors hold that it is necessary to understand the functioning of cognitive frameworks, as it provides the grounds on which sensemaking takes place. Frames can be defined as *"definitions of organizational reality that serve as vehicles for understanding and action"* (Gioia, 1986 in Orlikowski & Gash, 1994: p. 176). The overall purpose of frames is to serve as a set of guidelines that shape our interpretations and give meaning to new situations. Thus, frames implicitly guide us to make sense and take action in the situations we face. Central elements of frames are our assumptions, knowledge and expectations, which can be expressed either via linguistic or visual means (Orlikowski & Gash, 1994). The structure of a frame can be compared to that of a spider's web in the sense that frames are very flexible and have several dimensions, which change according to time and context (Orlikowski & Gash, 1994).

When an individual makes sense or acts in a situation, the frame tends to operate in the background where it may be both facilitating and constraining the sensemaking process. Frames are facilitating

when they structure experience, *"allow interpretation of ambiguous situations, reduce uncertainty in conditions of complexity and change, and provide a basis for taking action"* (Orlikowski & Gash, 1994: p. 176). One may find frames constraining when they *"reinforce unreflective reliance on established assumptions and knowledge, distort information to make it fit existing cognitive structures, and inhibit creative problem solving"* (Orlikowski & Gash, 1994: p. 177). As long as technology constitutes a core element in organizations and industries, one would believe that a significant part of an individual's frame would concern technology. Orlikowski and Gash (1994) address the importance of sensemaking when individuals are faced with a new technology. They propose the term *technological frames* for addressing the assumptions, expectations and knowledge people create about a technology. Moreover, they consider the technological frame to be crucial for understanding how one acts towards a technology and cope with technological development and change (Orlikowski & Gash, 1994).

3.3 The Seven Properties of Sensemaking

In 1995, Weick introduced seven properties of sensemaking, which serve to describe the characteristics of the sensemaking process. These will be presented in the following section to establish a solid understanding of sensemaking and, thereafter, to single out the elements of sensemaking that are of relevance to this thesis. According to Weick (1995), sensemaking is a process that is:

Grounded in identity construction: Identity in sensemaking refers to a person's sense of who he or she is in a given setting. Weick et al. (2005) state that *"who we think we are as organizational actors shapes what we enact and how we interpret"* (Weick et al., 2005: p. 416). Identity, therefore, is key to how individuals make sense, but sensemaking also shapes identity as individuals through sensemaking question existing understandings of identity (Jensen et al., 2009). Thus, the sensemaker is undergoing a process of continuous redefinition (Weick, 1995).

Retrospective: Sense is based on past experiences, and when individuals are faced with new situations they draw on these past experiences to give meaning to the current situation. Sensemaking, therefore, is a process influenced by how far back people look and how well they remember what they were doing in the past (Weick, 2001). The retrospective characteristic of

sensemaking makes it a highly adaptive process as truths of the moment may *"change, develop and take shape through time"* (Weick et al., 2005: p. 412-413). Hence, what was considered to be right at one point in time may no longer be acceptable and vice versa. An ongoing debate in sensemaking literature is the temporal orientation (Maitlis & Christianson, 2014). Whereas Weick (1995) conceives sensemaking as retrospective, other scholars look into the more future-oriented aspects of sensemaking. Gioia et al. (1994) labelled future-oriented sensemaking *prospective sensemaking*, which is *"the conscious and intentional consideration of the probable future impact of certain actions, and especially nonactions, on the meaning construction processes"* of people (Gioia et al., 1994: p. 378).

Enactive of sensible environments: Weick (2001) contends that *"what one sees in any moment of sensemaking is a partial reflection of oneself"* (Weick, 2001: p. 463). This implies that the sensemaker takes active part in producing the environment he or she is facing through a process of enactment (Weick, 1995). Enactment can be described as a bracketing activity where individuals punctuate raw information to make sense of it (Weick, 1979 in Mills, 2003: p. 174). Weick et al. (2005) claim that *"sensemaking starts with noticing and bracketing"*, and *"once bracketing occurs, the world is simplified"* (Weick et al., 2005: p. 411) Following Mills (2003), effective enactment is highly dependent on bracketing of one's experiences.

Social: Sensemaking is a process that is contingent on others, thus, people cannot make sense on their own (Weick, 1995). This turns sensemaking into a highly social process, where *"human thinking and social functioning are essential aspects of one another"* (Resnick, Levine & Teasly, 1991 in Weick, 1995: p. 38). Should it happen that a person becomes socially isolated, he or she will lose sense of what is happening (Weick, 2001).

Ongoing: Sensemaking recognizes that people are constantly thrown into the middle of things. These things are also referred to as "projects". People are immersed in flows, and if an interruption occurs to this flow it is likely to induce an emotional response. This leaves room for emotion to influence sensemaking. Only when boundaries are put around the continuous flow of experience or when an interruption occurs, the continuous flow becomes an event (Weick, 2001). This implies that sensemaking is not only constrained by past events, but also *"by the speed with which events flow into the past and interpretations become outdated"* (Weick, 2001: p. 462).

Focused on and by extracted cues: Following Weick (1995) *"extracted cues are simple, familiar structures that are seeds from which people develop a larger sense of what may be occurring"* (Weick, 1995: p. 49). Cues for sensemaking are extracted from the process of noticing, meaning that only if events are noticed, they are available for sensemaking (Weick, 1995). When people try to understand what is going on in a given situation or what might take place in the future, cues play a vital role in this process (Wang et al., 2019). In general, cues trigger sensemaking, and provide grounds for action.

Driven by plausibility: The fact that sensemaking is *"driven by plausibility rather than accuracy"* (Weick, 1995: p. 55) turns sensemaking into a process that is based on plausible reasoning and incomplete information (Wang et al., 2019). Sensemaking is, therefore, not about finding the truth, but more about making an ever evolving story more comprehensive (Weick et al., 2005). People might have different perceptions of what is plausible, as plausibility is highly dependent on the individual that is making sense (Weick et al., 2005). Therefore, sensemaking in this thesis is not a matter of truth, but rather the individual's momentary understanding of what may happen.

3.4 Developing a Sensemaking Model

The section above has introduced various concepts of sensemaking to provide a thorough understanding of the sensemaking process. It should be noted that the authors are aware that the realm of sensemaking theory has not been exhausted, neither is that the purpose of this thesis. Also, the seven properties of sensemaking will not be evenly represented in the analysis, simply because some are found to be more important than others.

As previously stated, this thesis breaks with orthodox sensemaking theory, because the authors study the expectations of the interview participants, which are made sense of prospectively rather than retrospectively. This is because expectations have a future-oriented dimension to them. Previously, prospective sensemaking was defined as *"the conscious and intentional consideration of the probable future impact of certain actions, and especially nonactions, on the meaning construction processes"* of people (Gioia et al., 1994: p. 378). With its emphasis on prospective sensemaking, this thesis addresses how individuals make sense of future events. In this context,

events refer to the possible impact of BCT on CR practices in the fast-fashion industry. Blockchain is still in its infancy, and there are a very few cases of its implementation in a business context, particularly in one such as the fast-fashion industry. Due to this, it is difficult to gain exact information on the potential impact of blockchain on CR. Therefore, it is deemed necessary to rely solely on the *expectations* of individuals. This supports the statement presented earlier: this thesis is not about obtaining truth, but rather a plausible understanding of what may happen.

For analytical purposes, the concepts of most relevance to the research are singled out to construct an analytical model. This is done by reviewing literature of other researchers who employ sensemaking as an analytical perspective for studying the implementation of technologies. When deciding on the concepts, the researchers have been inspired by the work of Wang et al. (2019), Jensen et al. (2009) and Svejvig and Jensen (2013) as they all use sensemaking as an analytical perspective in addressing the implementation of technologies in organizations. Wang et al. (2019) investigate how blockchain may impact supply chains, and for this they employ a prospective view on sensemaking. Jensen et al. (2009) and Svejvig and Jensen (2013) emphasize identity, bracketing and enactment when studying the implementation of ERP systems and accounting systems, respectively, in organizations. On the basis of this, the authors emphasize the concepts of prospective sensemaking (Gioia et al., 1994; Wang et al., 2019), identity, bracketing and enactment (Jensen et al., 2009; Svejvig & Jensen, 2013). The authors of this thesis hold the work of the respective researchers together to develop an analytical model that serves the purpose of this thesis. It should be noted that whereas some authors employ sensemaking in the context of an organization, this thesis focuses on sensemaking at an individual level. Therefore, the analytical model is developed for the purpose of analyzing individual sensemaking processes.

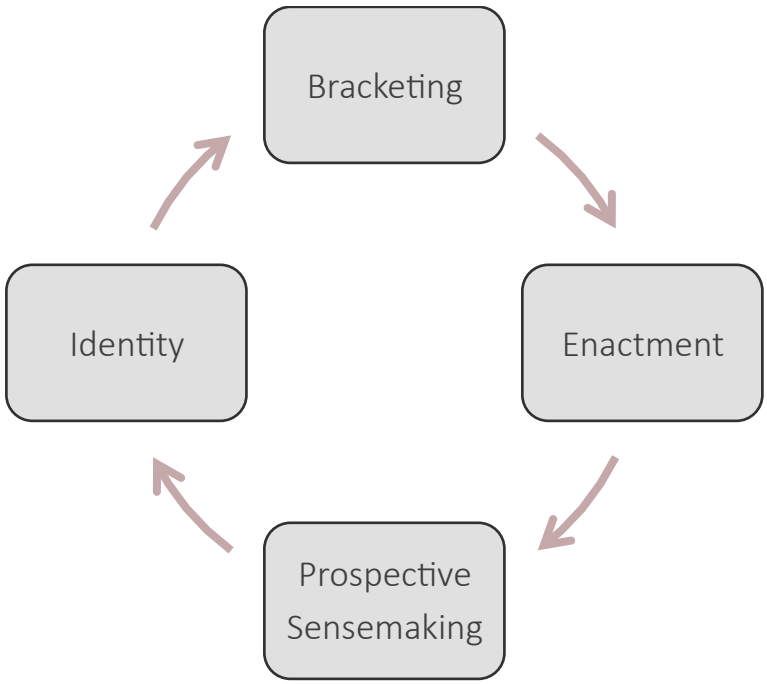
The individual identity shapes what people enact and how events are interpreted. In alignment with Jensen et al. (2009), this thesis contends that identity informs the sensemaking process when one is to make sense of a new technology, but the sensemaking process also informs the identity, as it questions and challenges current understandings (Jensen et al., 2009). In the analysis, bracketing is treated as the process through which individuals single out elements of BCT to make sense of it. This process is considered to be crucial to how individuals present their expectations and, thereby, make sense prospectively. Closely related to bracketing is the process of enactment. Bracketing is in fact fundamental to effective enactment (Mills, 2003). Through a process of enactment,

individuals seek to connect cues to their existing frames to create meaning and thereby construct the reality that they each respond to (Jensen et al., 2009).

The authors of this thesis argue that identity, bracketing, enactment and prospective sensemaking are all elements that are highly interconnected. Their relationship is, therefore, depicted in a cyclical model to illustrate how identity dictates bracketing, which informs enactment and results in a prospective sensemaking process. Finally, the cycle repeats itself as prospective sensemaking informs identity, as suggested by Jensen et al. (2009). The cyclical depiction addresses the processual and ongoing property of sensemaking, and suggests that prospective sensemaking is subject to constant change. Based on the interview data, the authors have found that the research participants look back in retrospect to make sense of their expectations. Thus, the authors contend that past actions and past sensemaking dictate prospective sensemaking.

Below is a depiction of the prospective sensemaking process established by the authors. The depiction illustrates how identity, bracketing, enactment and prospective sensemaking are all interconnected in a cyclical on-going process.

Figure 3: Prospective Sensemaking Process



4 Methodology

The following chapter accounts for the methodological practices employed throughout the research process of this thesis. The chapter will commence by presenting the epistemological position of this research, social constructivism. In continuation, interpretivism, which is the philosophical position of this thesis, will be outlined to account for the lens through which the authors view the topic under study. Next, the logical reasoning in the form of abduction is described to provide the reader with an understanding of how the research process has evolved. In continuation, the research design and strategy will be presented. Here, the authors argue that this thesis is an exploratory interview study, which employs a qualitative, mono-method research design. The following section accounts for the sampling rationale of this thesis, which builds upon a purposive sampling strategy. In this section the authors account for the selection of interview participants and the sample size. Following this, the authors present the data collection technique employed for this research, which is semi-structured, expert interviews. The collected data is analyzed through the means of qualitative content analysis and organized in a coding scheme for the purpose the analysis. Finally, the authors account for the quality of this research by addressing the quality criteria of credibility, transferability, dependability and confirmability.

4.1 Epistemology

The epistemological stance of this thesis is determined by the purpose of the research question, which is to establish an understanding of people's expectations about the potential impact of blockchain on CR practices in the fast-fashion industry. As briefly touched upon, this is done through the lens of sensemaking theory, which instead of reaching full accuracy aims at reaching plausibility. This understanding can be established through the social interaction between the interview participants and the authors of this thesis. Being concerned with other people's thoughts and ways of reasoning, this research can be placed within the realm of social constructivism, which also supports the notion that meaning is constructed through social interactions. Social constructivism is *"the view that all knowledge, and therefore all meaningful reality as such, is contingent upon human practices, being constructed in and out of interaction between human beings and their world, and developed and transmitted within an essentially social context"* (Crotty, 1998: p. 53).

Social constructivism has its foundation in one or more of the following key assumptions (Burr, 1995). The first assumption holds that the researcher should take a critical stance towards his or her *"taken-for-granted ways of understanding the world"* (Burr, 1995: p. 2). This implies that one should constantly question his or her assumptions of how the world is to be perceived. When doing research in the constructivist vein, one should not *"remain straightjacketed by the conventional meanings we have been taught to associate with the object"* (Crotty, 1998: p. 63). Rather, the researcher should approach the research topic with great curiosity and radical spirit (Crotty, 1998). Throughout the entire research process, the authors have demonstrated openness and proactivity, since there is no "recipe" on how to approach a research topic as new and recent as this. Consequently, it has been necessary to put in abeyance the predispositions and taken-for-granted knowledge held by the authors.

The second assumption contends that all knowledge is historically and culturally specific (Burr, 1995), meaning that all knowledge of the world is relative. The knowledge people hold about the world is not a direct perception of reality, but rather a version of reality that they themselves construct. Consequently, the constructivist epistemology abandons the idea that any definitive truth exists, and instead perceives truth as a product *"of the social processes and interactions in which people are constantly engaged with each other"* (Burr, 1995: p. 3). From a social constructivist standpoint, the findings of this thesis are, therefore, not illustrative of the whole truth and are, as such, not definitive. The choice of sensemaking as an analytical perspective also emphasizes this fact, since sensemaking does not seek accuracy, but plausibility, as previously noted. People make sense of reality in quite different ways, and therefore, in social constructivism there is no such thing as valid or true interpretation. There may definitely be useful interpretations, but not valid or true interpretations (Crotty, 1998).

The third assumption insists that *"knowledge is sustained by social processes"* (Burr, 1995: p. 3). Researchers abiding to social constructivism embrace *"the idea that society is actively and creatively produced by human beings"* (Marshall, 1994 in Crotty, 1998: p. 66). Knowledge of reality is therefore not derived from objective observation as in the objectivist epistemology, rather it is socially constructed through daily interactions (Burr, 1995). Thus, social constructivism neglects the belief that there is an objective truth regardless of our interpretation of it. All kinds of social interactions are of interest to social constructivists, but language receives a particular focus

(Burr, 1995). In the social constructivist epistemology, language is assigned a performative role, as it is perceived as the means through which people construct the world. In this research, language plays a critical part in establishing an understanding of how blockchain may impact CR practices in the fast-fashion industry. It is through language that the research participants construct meaning of the phenomenon under research.

Finally, the fourth assumption argues that knowledge and action are interdependent. The construction dictates what action is appropriate in different situations. This suggests that constructions of the world invite certain patterns of social action and exclude others (Burr, 1995). This final assumption is of less relevance to this research, as it is not the aim of this thesis to investigate how the constructions of the research participants dictate certain actions. It is not the purpose to study the actions of the research participants, but rather the way in which they express themselves through language.

Social constructivism is an epistemology, which embodies an interpretivist philosophical position. In the following section, interpretivism will be presented as the lens through which the authors of this thesis study the research topic.

4.2 Philosophical Position

The purpose of this thesis is to reach an understanding of how people expect that blockchain may impact CR practices in the fast-fashion industry. To establish this understanding, the authors of this thesis have been concerned with studying the meanings articulated by the research participants in the interview situation. Being concerned with the meanings of the research participants, the authors have sought to understand the research phenomenon from the point of view of the participants, thereby entering their social world of meaning. The way in which the authors have established an understanding of the research phenomenon is through the *interpretation* of the meanings presented by the research participants. Thus, the authors concentrate on a linguistic interpretation of the research participants' meanings (Williams, 2000). Due to the emphasis put on meanings and the interpretation of these, the authors of this thesis take an interpretivist philosophical position. Interpretivism may be referred to as a strategy in sociology, which *"interpret the meanings and actions of actors according to their own subjective frame of reference"* (Williams, 2000: p. 210).

The interpretivist position invites the authors to interpret the meanings of the research participants. Interpretivism, therefore, enables the authors to investigate how each of the research participants make sense of the research phenomenon by interpreting their meanings. The information that is open to interpretation in this thesis is that which emerges from the interaction between empirical data, theory and the authors of this paper. It is from this information that the authors have sought to derive meanings.

4.3 Logic of Inquiry

By virtue of the exploratory nature of this research, the ambition of this thesis is to make new discoveries and contribute with new research findings to a field that has not yet been explained by current theories. To establish an understanding of the research phenomenon and address the research question of this thesis, the authors have sought to continuously connect empirical data with theoretical concepts. Thus, the authors have engaged in an iterative research process where new insights have emerged by continuously interpreting the information resulting from the interaction of the data collection and theory. This iterative research process begs an abductive logic of inquiry. Abduction has been defined as *"the logic used to construct descriptions and explanations that are grounded in the everyday activities of, as well as in the language and meanings used by social actors"* (Blaikie, 2004: p. 2). Abductive reasoning begins with a surprising observation that the researcher seeks to explain through the identification of conditions that make the surprising observation less surprising (Schwartz-Shea & Yanow, 2012). Abduction is a process of transforming the descriptions made by social actors into technical descriptions (Blaikie, 2004). As a means hereof, the researcher seeks to first; describe the activities and meanings of the social actors, and second; derive concepts and categories that may construct the foundation of an understanding of the surprising observation (Blaikie, 2007), which results in the researcher identifying the best available explanation of said observation.

In line with this, the research process of this thesis was initiated by the surprising observation of an empirical phenomenon, which had not yet been explained or addressed by existing theories. Overall, the authors have sought to make the empirical phenomenon less surprising by collecting empirical data to obtain an understanding of said phenomenon. By analyzing the empirical data and connecting it to theory, the authors have explained the observed phenomenon in the best way

possible. The research process can be depicted as a cyclical model, which is initiated by an observation. This observation then leads to data collection to establish an understanding of the observation. Based on the empirical data, the authors have then abduced the best possible explanation to the research question. To exemplify the iterative research process, the authors have analyzed the collected data in connection to sensemaking theory, which has lead the authors to the observation of general expectations about the research topic. The general expectations were then discussed in relation to the literature from the literature review, which enabled the authors to derive the most appropriate explanation to the research question.

4.3.1 Bounded Rationality

The authors of this paper embrace the concept of bounded rationality, which was introduced in 1947 by Herbert A. Simon. Bounded rationality holds that individuals are restricted in their actions due to incomplete information, inability to predict the consequences of future actions, and scarce knowledge of possible human behavior (Cristofaro, 2017). These restrictions emerge due to limited cognitive capacity, the difficulty of accessing information and physical constraints, which exist inherently in humans. Moreover, individuals are influenced by their social environments when they are to make decisions, and this causes decisions to be rather satisficing than optimal (Cristofaro, 2017). Thus, individuals may be perceived as only partly rational, and irrational in the remaining part of their actions.

The authors of this thesis recognize that the decisions made throughout the research process and during the writing of this thesis, may have been influenced by the cognitive limitations of the authors themselves. It is acknowledged that at each decision point of this thesis, the authors have sought to make the most appropriate and satisficing decision. This does, however, not imply that the most optimal decisions have been made. Particularly the newness of the research topic, has made it difficult for the authors to access information, and therefore, the authors have been restricted by incomplete information in their decision-making processes.

4.4 Research Design and Research Strategy

This thesis employs sensemaking as an analytical perspective to study the expectations of the research participants towards the potential impact of blockchain on CR practices in the fast-fashion

industry. In order to study this, the authors have used semi-structured expert interviews as a stand-alone method to obtain explanatory data. Thus, this thesis employs a mono-method research design. The mono-method entails exactly what the name indicates; one single method irrespective of it being either qualitative or quantitative. Since the aim of this thesis is to obtain an understanding through the interpretation of meanings, this thesis begs a qualitative research strategy, and disregards the need for quantitative methods. Qualitative research may be understood *"as a cyclical process of exploring, describing or explaining social phenomena"* (Marton, 2013: p. 5). Due to the exploratory nature of the research question, the research strategy must encompass individual assessments that encourage personal in-depth reflections. This emphasizes the relevance of and need for semi-structured expert interviews compared to e.g. focus group interview sessions and observations. Consequently, this thesis favors a qualitative mono-method research strategy. Cassell (2015) argues that employing a single method comprised of a series of qualitative interviews can, in itself, *"provide a rich enough data set"* (Cassell, 2015: p. 4) to answer a research question.

This thesis is not seeking to test existing theories, nor is it aiming at developing new theory. Instead, the ambition is to make new discoveries and contribute with findings to a field that has not yet been explained by existing theories. The authors have sought to make new discoveries by going to the field and conduct interviews with relevant candidates. Moreover, the newness of the research topic has invited the authors to be constantly open towards new observations in order to make insightful discoveries. Due to the newness of the research topic and the ambition of making new discoveries, this research can be characterized as being highly exploratory in nature.

Exploratory research should be conducted when the field being researched is rather new and unfamiliar in order to gain a better understanding of said field (Flick, 2018). It is a type of research that aims at obtaining *"a preliminary understanding of a decision-making environment"* (Erickson, 2017: p. 30) or *"to discover what is happening and gain insights"* (Saunders, 2012: p. 171). To obtain an understanding of the research topic, this research has been conducted in a rather open manner (Flick, 2018; Saunders, 2012) by the means of qualitative, in-depth interviews with a small group of research participants (Saunders, 2012; Erickson, 2017). Having a small group of participants has proven to be advantageous in the sense that it has enabled the authors to thoroughly comprehend and interpret the meanings of each respondent (Crouch & McKenzie, 2006). This becomes relevant when applying the analytical lens of sensemaking, as it allows for comparison and

interpretations to be performed, which would not have been possible with a large number of interviewees (Crouch & McKenzie, 2006). Other advantages of conducting exploratory research on this particular topic are the flexibility and the adaptability to change (Saunders, 2012). The qualitative research strategy and the use of semi-structured interviews has provided the authors with in-depth, open-ended responses from the research participants, which, in turn, has resulted in further exploration (Erickson, 2017). Taking all of the above into consideration, this thesis can be categorized as an exploratory interview study.

4.5 Sampling Rationale

The most dominant sampling strategy employed in this thesis is purposive sampling. This type of sampling implies that *"members of a sample are chosen with a 'purpose'"* (Cassell, 2015: p. 33). In addition to purposive sampling, this thesis has to a limited extent made use of snowball sampling. This sampling strategy entails that a potential interview participant is recommended by another interviewee (Cassell, 2015). This happened when Interviewee 3 recommended the authors to approach Interviewee 5. Besides this one example of snowball sampling, all the interview participants selected for this research, were all chosen because of their professional background and respective areas of expertise. An essential sampling criterion has been to talk to people who are experienced in BCT, CR and/or the fast-fashion industry. Some have expertise in just one of these areas while others work in the cross-field of two or all three of these areas. Very few are experienced in all three areas, which may be due to the fact that the interviewees all come from different professional backgrounds. The authors advise the reader to take a look at Table 3 (see below) for an overview of the different interview participants and their respective professional backgrounds and areas of expertise.

The initial sampling strategy involved approaching fast-fashion brands alone to address the research domain. However, it was discovered early in the research process that either they did not have the resources, or they felt that they were not able to contribute to answering the research question under study. Thus, it was necessary to change focus, and approach a broader segment of people to get access to useful and valid data. This supports the abductive logic of this thesis. Initially, the authors assumed that fast-fashion brands would be able to provide empirical data, however, since they declined our requests or did not respond at all, the authors abduced the best possible explanation in

the moment: Fast-fashion brands may simply not have sufficient knowledge about blockchain and how it may impact CR practices in the fast-fashion industry. Based on this possible explanation, the authors started approaching a broader segment of people to gain valid insights, which also explains the great variety in professional backgrounds of the interviewees. Thus, instead of approaching fast-fashion brands only, the authors changed their sampling strategy and started reaching out for technology consulting firms, university professors and researchers, and companies that operate in the cross-field of BCT, CR and the fast-fashion industry.

Throughout the research process, six interviews have been conducted. There are no guidelines in terms of how many interviews are enough in qualitative research (Cassell, 2015). Instead of focusing on the number of interviews, the authors have been concerned with the quality of the samples (Flick, 2018), as it was of major importance to find sources with direct relevance to the research question. Therefore, the authors have not aimed at obtaining representativeness of a given population through random sampling. Rather the authors have purposefully selected research participants based on their ability to enrich the concepts and theories of this thesis (Marton, 2013). By purposefully sampling data, the authors do not intend to generalize towards a given population, but rather towards a theory, which is also termed analytic generalization (Yin, 2003). With analytical generalization the aim is to *"generalize a particular set of results to some broader theory"* (Yin, 2003: p. 37). In this thesis, analytic generalization takes place in the discussion chapter where the authors discuss the findings of the analysis in relation to theory from the literature review to derive an answer to the research question. Based on the discussion, the authors derive theoretical explanations about the impact of BCT on CR practices in the fast-fashion industry.

To account for why the different interview participants were selected, each participant and their background will be presented in further detail below (see Table 3 for a quick overview). The interviewees are presented in the chronological order in which the interviews were conducted.

Interviewee 1: Researcher at the ITU and Facilitator at the EBC

Interviewee 1 works at the IT University (ITU) in Copenhagen and is a facilitator at the European Blockchain Center (EBC). Due to his engagement in the EBC, Interviewee 1 is informed about the most recent developments within the field of BCT, and is knowledgeable about which sectors are

front runners with respect to the implementation of BCT. His many years of experience from the business world, working at large companies and as a self-employed consultant, enable Interviewee 1 to make sense of how blockchain can be applied in a business context, especially with regards to supply chain. He has obtained solid technical and practical knowledge about BCT through his participation in several research projects, both through ITU and EBC. Moreover, his work at ITU permits him to delve into the technicalities of BCT. Overall, Interviewee 1 is very knowledgeable about BCT, but has little insights into CR and the fast-fashion industry. His experience from the business world, however, enables him to imagine how blockchain potentially could be implemented in the fast-fashion industry. Therefore, Interviewee 1 is of relevance to this research due to his technical and business acumen.

Interviewee 2: Manager in Technology Consulting at EY

Interviewee 2 works as a manager within technology consulting services at the consulting firm EY. He has been involved in a project that concerned the implementation of blockchain in the fast-fashion industry, however, the project was never completed. The focus of this project was how blockchain could be used to track the provenance of raw materials in fast-fashion supply chains. Interviewee 2 has looked into how blockchain can be used in other contexts such as high value items, including art and design to secure the authenticity of the product. Furthermore, Interviewee 2 has been engaged in projects where blockchain has been implemented, e.g. a project concerning royalties in the gaming industry and a project regarding payments of fees in the transportation of goods. Having a strong understanding of BCT, and some insight into CR and the fast-fashion industry, interviewee 2 is considered to be a valuable source in answering the research question of this thesis.

Interviewee 3: CR Quality Manager at Tiger of Sweden

Interviewee 3 is the CR Quality Manager at Tiger of Sweden, and has been in this position for one and a half year. Her background is in buying and production, and she has worked at the brand before she got the position as CR Quality Manager. Tiger of Sweden is owned by the Danish company, IC Group. The CR activities of Tiger of Sweden used to be centralized at IC Group, however, two years ago all work related to CR was decentralized to the brand. Interviewee 3 has been deeply involved in this whole transformation by taking all the work that has been done by IC Group, and adjusting it to the values of Tiger of Sweden. Last fall, the brand held a big business

meeting, where one of the key priorities was CR. One of the main goals with regards to CR is transparency and traceability, and to obtain this goal the brand intends to implement BCT. Working in the fast-fashion industry and having an extended focus on CR and a limited focus on BCT, makes Interviewee 3 a source with direct relevance to the research question under study.

Interviewee 4: Technology Senior Consultant at EY

Interviewee 4 works in Advisory services in the field of technology at the consulting firm EY. Interviewee 4 is located in Rome, which is the blockchain hub of the Mediterranean area. The Consulting firm started the blockchain journey three years ago. Interviewee 4's work is not limited to one sector, instead he works across sectors such as energy, transportation, finance, food etc. Interviewee 4 has been involved in various blockchain projects at EY. In 2016, the consulting firm found that the food industry and especially the wine industry could benefit from BCT to establish full traceability and auditability throughout the supply chain. In 2017, they came out with the first product that was blockchain certified, which was a wine. According to Interviewee 4, they are blockchain leaders in the food industry, where they have implemented blockchain for a large supermarket chain. EY is applying blockchain in various sectors, such as automotive. Also they are working to implement blockchain for a large ecommerce platform in the Chinese market to trace products and provide transparency for its customers, but also integrate it in the entire supply chain, from production to sale. Interviewee 4 is of relevance to this research in the sense that he is very experienced with BCT. A limitation of this source, is that Interviewee 4 does not have relevant insights into the fast-fashion industry, nor CR.

Interviewee 5: Co-Founder and Chief Technical Officer (CTO) at TrustTrace

Interviewee 5 is the co-founder and CTO at TrustTrace. He is responsible for the entire technology and engineering of the product. TrustTrace is helping brands in the fast-fashion industry with getting into sustainable practices through the implementation of BCT. They seek to track the quality of the product, the sustainability practices followed by the suppliers who are processing the material, and how the product is being consumed. At the moment, the company is only operating in the fast-fashion industry, but at some point they will look into other industries as well. TrustTrace is mostly interested in the process aspect of business. In the future they may approach industries such as pharma and liqueur as these are also highly process-oriented. Since Interviewee 5, as a

representative of TrustTrace, is very experienced with blockchain and employs it as a tool for CR in the sphere of the fast-fashion industry, he is highly relevant to the research question under study.

Interviewee 6: Working in the sphere of sustainability, technology, art and fashion

Interviewee 6 is educated from the Academy of Arts in Copenhagen. She has worked at the brand Vivienne Westwood where she was responsible for the creative direction of their diffusion line named Red Label. Hereafter, she worked for the brand All Saints. Moreover, she has worked as head of design of female apparel at the brand Diesel in Italy. Since this, she has been working independently in London on various projects. In the beginning she worked as a traditional fashion start up label, where she focused a lot on sustainability and continues to do so. In London, Interviewee 6 has also worked with sustainability at the London College of Fashion, and been involved with the British Fashion Council showroom. Recently, she has moved into a cross field of fashion, technology, sustainability and art. She started to do visionary, future-oriented projects. One of these projects included a blockchain project with the company Provenance. The purpose of this project was to track the journey of raw materials throughout the fast-fashion supply chain until it reached the stage as a finished garment (Arthur, 2017). Interviewee 6 is of relevance to this research due to her extended experience with sustainability, fashion and technology. Working in the cross-field of this three areas, she is a valuable source with regards to answering the research question of this thesis.

The table below provides the reader with a brief overview of the different interview participants and the details of the interviews, such as time and location.

Table 3: Overview of Interview Participants

	Interviewee 1	Interviewee 2	Interviewee 3	Interviewee 4	Interviewee 5	Interviewee 6
Position	Facilitator at EBC and researcher at ITU	Manager, Technology Consulting at EY	CR Quality Manager at Tiger of Sweden	Senior consultant at EY Tech	Co-founder and CTO at TrustTrace	Working in the field of sustainability, technology, art and fashion
Location	Copenhagen, Denmark	Copenhagen, Denmark	Stockholm, Sweden	Rome, Italy	Chennai, India	London, United Kingdom
Date and lenght of interview	March 12th, 2019 1 hour and 43 minutes	March 12th, 2019 1 hour and 21 minutes	March 13th, 2019 36 minutes	March 18th, 2019 21 minutes	April 2nd, 2019 50 minutes	April 4th, 2019 47 minutes
Experience with BCT (high/medium/low)	High	High	Low	High	High	High
Experience with CR (high/medium/low)	Low	Medium	High	Low	High	High
Experience with fast-fashion industry (high/medium/low)	Low	Medium	High	Low	High	High

4.6 Data Collection

This thesis employs semi-structured expert interviews as a stand-alone method. This method has proven to be useful, as it has enabled the authors to gather a rich and nuanced data set, which clearly presents the meanings of the interview participants. Gaining insight into the meanings of the interview participants has been of particular importance to this research, as it has allowed the authors to study how each of the participants make sense of the research phenomenon. Semi-structured interviews mainly consist of prepared and open-ended questions that guide the interviewer and leave room for the interviewee's perspectives (Flick, 2018). For each interview, the authors prepared a list of questions. The interview questions have been adjusted to the area of expertise of each of the interviewees. However, to allow for comparison of the answers, certain questions have been repeated in all of the interviews. Due to the semi-structured nature of the interviews, the interviewers would sometimes deviate from the questions depending on the response of the interviewee. Thus, the interviewees have taken an active role in constructing and directing the interview, which is typical in more qualitative approaches (Cassell, 2015). The aim of employing this interview structure is to encourage the interviewees to freely speak their minds. This has provided the interviewers with more in-depth answers and the opportunity to seek new recognitions and viewpoints on the research topic.

As previously mentioned, the interviewees were selected based on their professional background and area of expertise. Thus, when selecting the interviewees it was not their personal characteristics that were of interests, but rather their capacities as experts in BCT, CR and/or the fast-fashion industry. This thesis, therefore, makes use of expert interviews in an attempt to answer the research question. Due to the newness of the research topic, very few people are knowledgeable about it, and the number of potential interviewees to choose from was therefore slightly limited. Thus, to collect valid data, the authors deemed it necessary to approach people with expertise in the fields of BCT, CR, and/or the fast-fashion industry. There are different opinions about who should be considered an expert (Flick, 2018). This research perceives experts as people who either possess practical and technical knowledge about BCT, who are experienced in CR, and/or have hands-on experience from the fast-fashion industry.

Using expert interviews as a stand-alone method is feasible *"if the study aims at a comparison of contents and differences of expert knowledge in a field which is held by representatives of different institutions"* (Flick, 2018: p. 238). As previously stated, the interview participants have different professional backgrounds and, therefore, represent different institutions. Additionally, by applying sensemaking as an analytical framework, the authors have assessed each of the interview participant's prospective sensemaking process. This has allowed the authors to identify the areas in which the interview participants differed or coincided in their meanings towards the research phenomenon. Semi-structured expert interviews as a method has been found useful for this research, however, it also has its limitations (Flick, 2018). One of the major challenges faced by the researchers when applying this method, was the difficulty of identifying the *right* experts. Finding experts that were experienced in either blockchain, CR or the fast-fashion industry was not that much of a challenge. Instead, the challenge mainly resided in identifying experts who worked in the cross-field of all of these three areas.

All the interviewees were interviewed individually. There are various reasons as to why individual interviews were preferred. First of all, most of the interview participants are located in different countries. Additionally, to exploit each of the interviewees' area of expertise, it proved to be advantageous to conduct individual interviews as it allowed the authors to ask more in-depth and targeted questions. The choice of individual interviews, over e.g. group interviews, eliminates the risk that the interviewees' opinions are affected by the opinion of others. This is particularly

important, as it allows the authors to properly assess each of the interviewees' sensemaking process.

When deciding on the format of the interviews, factors such as accessibility of interviewees and availability of technology have been taken into account. Accessibility played a key role in deciding on which format to use. Two of the interviewees were located in Copenhagen, Denmark, and the interviews were therefore conducted face-to-face. This offered the advantage of experiencing the interviewees' visual cues and environment (Cassell, 2015). The final four interviewees were located in Sweden, India, Italy and England. Since the authors did not have the resources, particularly time, to travel to either of the destinations, Skype and Google Hangout provided the ability to conduct the interviews at a distance.

4.7 Data Analysis

As already stated, the authors of this thesis have been concerned with studying the meanings of the research participants to establish an understanding of the expectations they hold about how BCT may impact CR practices in the fast-fashion industry. Empirical data has been gathered through semi-structured expert interviews, which the authors have sought to analyze. To extract the information of most relevance for the purpose of this research, the authors have employed qualitative content analysis as a method for coding and categorizing the information made available through the interviews. Coding is *"a process of labeling and categorizing data as a first step in the analysis"* (Flick, 2018: p. 423). This method allows for all forms of textual material to be processed (Flick, 2018), hereunder transcribed expert interviews. Moreover, qualitative content analysis aims at reducing the collected data. Particularly this aspect of the coding method was found beneficial by the authors, as the majority of the interviews lasted close to or more than one hour, thereby covering various aspects of blockchain.

The coding scheme has enabled the authors to sort the interview data and group it into categories for analytical purposes (Flick, 2018). After having conducted the interviews, the authors identified two main categories, which set the frames of the grouping of the interview data. As it appears in the coding scheme (see Appendix A), these categories are *expected potential benefits of BCT* and *expected potential challenges of BCT*, respectively. These were identified prior to reading and

analyzing the interviews in detail. Taking their point of departure in these two categories, the authors analyzed the interview data in detail and identified five themes related to each of the two main categories. With respect to the potential benefits of BCT, the authors identified the following themes: traceability, transparency and provenance; decentralization and network dynamics; immutability; trust; and technological attributes. Looking into the challenges of BCT, the authors found the following themes: knowledge and resources; resistance to collaborate; risks; cost; and, finally, industry barriers (see Appendix A for an overview). These themes have been identified based on the meanings of the interview participants. The coding scheme serves as the grounds upon which the analysis builds, and will be used to set the structure of the analysis.

4.8 Quality Criteria

This section seeks to account for the overall quality of the research conducted in this thesis. The quality of research is concerned with answering the following questions: How can the researcher establish confidence in the truth of the findings? How to determine if the findings have applicability in other contexts? Would the findings reveal the same if the research was replicated with the same research subjects in the same or a similar context? And finally, how does the researcher avoid that the findings are influenced by biases or personal interests? (Lincoln & Guba, 1985). To answer these questions, the authors of this thesis employ four quality criteria that suit the purpose of addressing the quality of qualitative research. These are credibility, transferability, dependability and confirmability (Lincoln & Guba, 1985). Each of the four quality criteria will be briefly presented and discussed to account for the quality of the research conducted throughout this thesis.

4.8.1 Credibility

Credibility refers to the trustworthiness of the findings (Lincoln & Guba, 1985), and *"the degree to which the research represents the actual meanings of the research participants"* (Moon et al., 2016: p. 2). Those to judge if the findings are credible are the research participants. Operating within the realm of social constructivism, this research acknowledges that multiple realities exist, and is therefore concerned with articulating the reality of the research participants to whom the research is credible (McGinn, 2010). Thus, credibility is not an inherent part of research, but rather something that must be assessed from the perspective of the research participants. The technique used for establishing a certain level of credibility and trustworthiness of the findings of this thesis,

is prolonged engagement (Lincoln & Guba, 1985). Embracing this technique implies that the authors have sought to spend a lot of their available time in the field to obtain a wide scope of data that contains a broad spectrum of meanings from each of the interview participants.

4.8.2 Transferability

Transferability addresses the degree to which the authors have provided access to the data corpus of this thesis so that other researchers are able to transfer the findings to another setting (Marton, 2013). In the section of appendices, the authors provide the reader with direct access to the data corpus of this thesis. Here, all six interviews that were conducted have been transcribed in detail to make the transcriptions fully illustrative of the exact statements and meanings presented by the interview participants. In addition to this, the authors provide the reader with access to the coding scheme used to categorize the data stemming from the interviews. This gives the reader insights into how the data has been handled and grouped into categories for analytical purposes.

4.8.3 Dependability

Dependability of research implies that the research process and its product has been verified by an inquiry audit (Marton, 2013). The research process and the final thesis have not been subject to an inquiry audit or a peer review, which may diminish the overall level of dependability of this research. However, in an attempt to heighten the level of dependability, the authors have sought to be consistent throughout the entire research process and be transparent about their methodological choices. The authors have been consistent in the sense that all interview participants have been selected purposefully based on their areas of expertise and relevance to the research question. In addition to this, all interviews have been conducted in a semi-structured manner to leave room for the meanings of the interview participants. A certain level of transparency of the research process has been established by documenting the methodological choices made throughout the process. This is done in the previous sections of this chapter where the authors have outlined the epistemological and philosophical stance of this research to account for their implications on the research process. Next, the research design and the research strategy have been presented to establish the boundaries of the research. Finally, sampling rationale, methods for data collection and data analysis procedures have been explained in detail.

4.8.4 Confirmability

Confirmability is concerned with the bias or influence of the researcher on the empirical study. This criterion emphasizes that the findings should only be a result of the inputs of the research participants, and not the interests of the researcher (Moon et al., 2016). Crucial to the criteria of confirmability is the reporting on the researcher's predispositions and assumptions, i.e. the epistemological and philosophical position (Moon et al., 2016). The epistemological and philosophical positions of this thesis have been clearly outlined and their implications on the research process have been identified. As social constructivists, the authors seek to take a critical stance towards their taken for granted knowledge to avoid the potential influence of personal predispositions on the research findings. Additionally, working in the realm of interpretivism, the authors strive to view situations and events from the viewpoints of the research participants. Both the epistemological and the philosophical position of this research, thus, dictate that the authors should put their bias and predispositions in abeyance.

5 Analysis

The purpose of this chapter is to derive general expectations about blockchain based on the meanings and assumptions presented by the research participants. Thus, the authors move from the individuals' understanding to a more general understanding of the expectations towards blockchain. The general expectations derived from the interview data will constitute the grounds upon which the authors build the discussion. Constituting the frame of the analysis is the sensemaking perspective presented in the third chapter of this thesis. The authors employ the sensemaking model developed for the purpose of this thesis (see Figure 3) to analyze the prospective sensemaking, i.e. the expectations, of the research participants. By applying the model to the interview data, the authors address how the identity of the research participants informs their respective bracketing, enactment and prospective sensemaking processes. Where relevant, the different elements of the sensemaking model have been identified. This is done in order to establish an understanding of the expectations that each of the research participants hold with respect to BCT.

The structure of the analysis is based upon the coding scheme that the authors have created for assessing the meanings of the research participants (see Appendix A). By following the structure of the coding scheme, the authors have divided the analysis into two major sections. The sections present the research participants' prospective sensemaking of the potential benefits and the potential challenges of blockchain, respectively. Each of the two sections contain five themes that represent the various topics that the research participants touch upon. The authors have identified the themes of each section by thoroughly reviewing the interviews to identify repetitive topics. At the end of the analysis, the authors summarize the general expectations derived from each of themes to establish an overall understanding of the expectations towards blockchain.

5.1 Expected Benefits of Blockchain Technology

In the following section, the authors introduce different themes associated with the potential benefits of BCT. These themes have been established based on the interview data, and are, therefore, representative of the meanings presented by the research participants in the interview situation. Based on the interview data, the authors have identified the following themes:

traceability, transparency and provenance; decentralization and network dynamics; immutability; trust; and, finally, technological attributes.

5.1.1 Traceability, Transparency and Provenance

By analyzing the interview data, the authors have found that the research participants pay particular attention to blockchain's ability to establish traceability, transparency and provenance. They identify these three areas as important outcomes of the implementation of BCT.

In the case of Interviewee 1, bracketing takes place when he singles out the elements of infrastructure and provenance in an attempt to make sense of blockchain in relation to the fast-fashion industry. He links these elements to his current frame in a process of enactment by providing the example of a jacket or a dress from the high-end brand, Chanel. He contends that through the use of BCT one can trace the Chanel item back to its origin to provide certainty that the item is real. Moreover, if the Chanel item carries a certain tag provided for tracing, the consumer will be able to see which manufacturing plants were involved in producing that exact item.

> *"If you go for the infrastructure, that is where blockchain shows its advantage. This is one of the things that is important in a blockchain solution; provenance. Some piece that comes, now we can take some kind of fashion item, that is, some dress or some jacket, but if you can show that it is from Chanel, it has its Chanel tag. And then we can see that if we click on it - or at least then Chanel can say - which factories have helped to make this jacket and maybe which sewing rooms etc."* (Appendix B, p. 130).

Another element that Interviewee 1 singles out is transparency. In a process of enactment, he links transparency to supply chains, and states that *"I would say that it is crucial for success in the supply chain industry, that is transparency. It is end-to-end transpareny. It determines it"* (Appendix B, p. 145). He presents this statement as if it is valid to supply chains in general, thus, the authors of this thesis assume that when Interviewee 1 makes this point he believes that it may also be applicable to supply chains in the fast-fashion industry.

Interviewee 2 singles out provenance as a central element of blockchain. He has been involved in a project where the focus was to establish provenance of high value-merchandise such as art and

design furniture through the use of BCT. In addition to this, he has worked on a project, which looked into how blockchain could be used for provenance in the fast-fashion industry. These past actions are part of his identity, and, therefore, dictate how he makes sense prospectively of blockchain in relation to the fast-fashion industry. This is seen in a process of enactment, where he draws on his past experience to establish examples of how provenance may be relevant in the fast-fashion industry, thereby linking cues to his existing frame. He believes that it is of relevance to focus on provenance in respect to fashion items that are subject to counterfeiting, as this would allow the manufacturers to secure their market and justify their price levels. Moreover, with respect to provenance, Interviewee 2 contends that it may be beneficial to use BCT as a tool for tracing and documenting what happens to a fashion item throughout its production process. In relation to this, he suggests that blockchain can be used to trace the origin of cotton and its processing, and if the right chemicals have been used in the production process. Due to this, he states that blockchain is useful for providing documentation and control of the conditions under which a fashion item has been produced. Interviewee 2 continues the process of enactment by linking provenance to CR, and claims that blockchain can address the different aspects of CR. In relation to this, he exemplifies that blockchain is useful for monitoring social aspects of CR, as it can validate that a manufacturing plant in for instance Pakistan or India has proper working conditions, pays its workers well and takes distance towards child labor.

> *"It could be advantageous to use blockchain to record along the way what is happening; where will this cotton be produced, where will it be picked, what will happen to it during the process, if some kind of processing occurs, and maybe it is included - it may well be that something has been added, so there is no moth in the product while it is on the ship. But that is the allowed substances or in the permitted quantities. And that there is some kind of documentation for it, and when it is produced, there is some control that there will not be added bleaching agents, which makes it possible to get the rash. And that form, from field to consumer documentation, we found that to be very interesting. One can easily connect the other aspects of CSR, something like that it might be produced in Pakistan or India, but it is on this and this factory where they get a proper pay and there are no child workers and the factory does not collapse"* (Appendix C, p. 148).

Additionally, Interviewee 2 enacts his understanding of provenance by using Fairtrade coffee as an example. His identity informs this enactment, as he has experienced that the attention paid towards verifying where goods, such as coffee, come from and how they are being produced has increased throughout this lifetime. He holds that this information is of value to the end-users and that the value has increased, as the end-users have become more conscious about their consumption patterns. Based on this, his prospective sensemaking is that there may be a business case in the verification of goods, and that it can be advantageous to log the verification process on a blockchain as the product information then becomes transparent, accessible and immutable. He states that *"verification can advantageously be put on blockchain, because then it can become transparent, it can become irrefutable, and it can be made available to everyone"* (Appendix C, p. 149). The authors, thus, assume that the verification of goods would also constitute a business case in the fast-fashion industry.

In a process of bracketing, Interviewee 3 singles out the elements of traceability and transparency as key to why Tiger of Sweden has decided to embark on blockchain. Her identity, and thereby her sensemaking process, is highly influenced by her role as an employee at Tiger of Sweden. This is exemplified in the sense that she enacts her understanding of traceability and transparency by linking it to the business context and CR practices of Tiger of Sweden. Her prospective sensemaking of BCT is that it can be used, in the beginning of its implementation, as a tool for providing transparency and traceability for internal purposes at Tiger of Sweden. She expects that in the future the brand will also use blockchain to establish transparency towards their customers to provide them with information about the provenance of the products. Moreover, she believes that blockchain can give Tiger of Sweden a better overview of their suppliers and provide the brand with more information through the technology's ability to establish traceability. Currently, Tiger of Sweden has a good overview of their first and second tier suppliers. However, Interviewee 3 indicates that the problem is to be found in the lack of overview of their sub-suppliers. She states that *"you never know what happens when you are not there, so blockchain and traceability would provide us with more information, which is key"* (Appendix D, p. 173). In this case, blockchain could be used as a tool for creating this overview. For the solution to be properly implemented, her prospective sensemaking is that the brand should start by having an open dialogue with its suppliers to get them onboard. Moreover, she finds it important that the brand has a clear focus in terms of what they want to get out of the blockchain strategy, and not at least establish an idea of what

information is important for the brand to have. Finally, she contends that it should be a long-term commitment rather than short-term as the brand will put a lot of energy into making this shift.

Interviewee 4 engages in bracketing by singling out the elements of transparency and traceability as important properties of blockchain. To make sense of BCT in relation to the fast-fashion industry, Interviewee 4 draws on a case that he has worked on for the food industry. Thus, he enacts his understanding of transparency and traceability by using examples from the food industry. This illustrates that his identity is clearly informing his sensemaking, as he uses past experience to construct examples. Interviewee 4 has experienced how supply chains in the food industry have been able to benefit from blockchain and its ability to establish transparency and traceability. Based on this past experience, his prospective sensemaking is that other supply chains might as well benefit from the transparency that blockchain creates.

> *"So, while the food sector could most benefit from blockchain thanks to transparency and full traceability, other kinds of supply chains could [also] benefit from the transparency of the parts of the production, but most of all for the anti-counterfeiting of products. So blockchain could enable this guarantee to have a real product"* (Appendix E, p. 178).

In general, he expects that what could benefit the most from blockchain is the supply chain itself. He enacts this statement by providing examples of potential benefits to the supply chain:

> *"So, when we are not in the food sector, the most benefit could be the integration of the supply chain, the ability to automate some tasks, provide better visibility to each stakeholder, and improve control and traceability of the production"* (Appendix E, p. 178).

Interviewee 4 presents these examples of benefits as if they are applicable to supply chains in general. Thus, the authors assume that these benefits may also take effect in fast-fashion supply chains. In addition to the above, Interviewee 4 enacts his understanding of transparency and traceability by linking these elements to product quality and product sustainability. Drawing on an example from the food industry, his prospective sensemaking is that blockchain may enable traceability of product quality and product sustainability. This traceability can, in turn, create more

transparency, as every time a supplier logs sustainability or product data on the blockchain it cannot be tampered with.

Being the co-founder and CTO of a company which handles traceability in the fast-fashion industry on a daily basis, Interviewee 5 is influenced by his identity when he is to make sense of BCT. This comes forth when he singles out the element of traceability, and, in a process of enactment, links his understanding of it to the procedures followed by TrustTrace. Based on his past experience from TrustTrace, Interviewee 5 suggests that there are three things that one should be concerned with, with regards to traceability:

> *"One is the quality of the product. Two, the sustainability practices that are followed by the suppliers who is processing that material. The third thing that you want to know is how the product is being consumed once it reaches the customer. All of this has to be tracked, and then the use cases can be multiple"* (Appendix F, p. 185).

At TrustTrace they focus on tracing where the raw materials come from and placing the material through its processing. As potential use cases of traceability, Interviewee 5 suggests that blockchain can be used to trace the quality of raw materials, if materials are certified, or the material composition. Tracing the material composition is useful, he suggests, as it provides valid information in terms of how a fashion item can be recycled in the future, if data about its material composition is logged on a blockchain.

> *"[...] one of the use cases can be about the material composition so that when I am doing recycling of that material I know what is the right way to recycle that material. [...] Today if I want to recycle or if I want to capture the data it will be used for recycling two years down the lane, not today, because when I am making a product today it will come to recycling in at least two years. It is better that I capture the data today so that two years down the lane the recycler can use that data. That is the whole value"* (Appendix F, p. 185).

Interviewee 5 suggests that the first step towards traceability and transparency involves getting to know the supply chain, because without knowing what is already there, it is not possible to document or verify that the necessary changes have been made. He holds that *"one of the primary*

goals is to know your supply chain. You need to know, first of all, before you bring in some change" (Appendix F, p. 190). To enact this statement, Interviewee 5 provides an example of a company that aims at becoming child labor free or remove toxic materials from its products. He suggests that it is unimaginable that this change will take place without the fast-fashion brand knowing its suppliers and what is already in the end product. Based on this, his prospective sensemaking is that traceability is the first step that fast-fashion brands need to take to get to know their suppliers and their products. In relation to this, he states:

> *"Unless you know who is producing the product, unless you know what raw materials are getting used in the product. How will it change? So traceability is your, if I may say, is your center where you start this journey. Then you start making your changes"* (Appendix F, p. 190).

When asking Interviewee 5 about what a blockchain system may look like in the fast-fashion industry, he enacts his response by connecting the cues to the practices they use at TrustTrace. Once again, he pays particular attention to traceability and builds his sensemaking upon the measures they take at TrustTrace.

> *"I can tell you what we are doing from TrustTrace. There are two interesting things, which are related to the garment for us. One is the product, which is the garment per se, looking at the traceability, tracing that product back to understand what materials were used to manufacture the product etc. The second interest is the entire supply chain network, because if you take sustainability, one is the material the other thing is how do I handle my labor, how am I impacting the social and other influential factors from my plant. These are the two pieces of information that we are right now using the blockchain for"* (Appendix F, p. 193).

Interviewee 6 has previously worked on a project with the company Provenance where the ambition was to trace how garments pass through the supply chain from production to the end-consumer in order to establish transparency around the origin of the product. This past experience seems to have influenced her current bracketing, as she points out transparency and traceability as important properties of blockchain. She enacts her understanding of transparency and traceability by linking the elements to different points that she finds to be of importance. When making sense of

transparency and traceability, she draws a link between these two properties and consumption patterns. She believes that transparency and traceability may be key to changing consumption patterns as people become more aware of the amount of resources and empathize more with the people that are involved in producing a fashion item. Additionally, she believes that transparency can make consumers more informed about what they support when they make a purchase. She enacts this statement by comparing it to food declarations, claiming that just like people demand declarations on the food they consume, people may also demand information that allows them to check how and where fashion items are produced. If it is used correctly, she expects that BCT can make this kind of information available to the consumer. In relation to this, she anticipates that if fast-fashion brands in the industry go all in on this kind of transparency, they can obtain added value and a competitive advantage.

Overall, the authors find that there is a general expectation that transparency will be the outcome of implementing blockchain. Transparency is closely linked to blockchain's ability to establish traceability, as traceability is seen as a prerequisite for transparency. Being able to trace the origin of a product, it is expected that people can document the provenance and authenticity of the product which, in turn, can help prevent counterfeiting of fashion items. Moreover, it is expected that traceability enables firms to document the production process of a fashion item and thereby account for the product's quality and sustainability. In addition to this, traceability can allow firms to trace the material composition of a product. This information is expected to be of relevance for recycling purposes, because based on the material composition, firms are able to decide on the right way to recycle a certain fashion item. Another result of transparency is that consumers become more empowered to make informed choices, as they obtain greater access to product information, if fast-fashion brands decide to be transparent towards their consumers. Finally, it is expected that fast-fashion brands stand to gain greater visibility of their supply chain, as they through traceability, can gain insights into the practices, including sustainability practices, followed by their suppliers throughout the entire supply chain. As activities within the supply chain become more transparent through traceability, supply chains may become more integrated as stakeholders get a better overview of the chain, and the overall control of the production of fashion items is improved.

5.1.2 Decentralization

From analyzing the interview data, it was discovered that many of the research participants single out the decentralized structure of BCT as a characteristic of the technology that allows for the creation of supply chain collaboration and integration.

Interviewee 1 points out the distributed structure of blockchain in order to make sense of the technology. He enacts an example by relating the technology's distributed structure to the systems of the future. Based on this enactment, his prospective sensemaking is that the systems of the future will be much more distributed, and that BCT may be a viable solution in this respect. He states:

> *"Are the systems of the future more or less distributed? They are much more distributed! And here comes the blockchain. [...] So, there are other distributed systems, but the only thing that has really gained ground is blockchain solutions"* (Appendix B, p. 132).

In relation to this, he states that blockchain is useful when there is a need to manage shared data, distributed users and use, safety and security. He expects that the distributed nature of blockchain enables the technology to support many more people than what current systems are capable of. In continuation of his enactment, he draws a link between the distributed structure of blockchain and supply chains. His sensemaking of a supply chain is that it is a net rather than a linear chain. Due to this, he expects the structure of BCT to be suitable for managing supply chains, as they are both highly distributed in their form.

Looking at how blockchain could be implemented, Interviewee 2 proposes an industry solution rather than a one-firm solution. He makes this suggestion based on his past experience from a project on blockchain in the fast-fashion industry, which was about creating a collective solution for the entire industry rather than one single firm. He enacts his suggestion by relating his past experience to the case of the Danish fashion company, Bestseller, in order to exemplify his point. He states that although Bestseller is a large company, it would not be viable for a single company alone to be the front-runner in creating a blockchain solution. Based on this statement, his prospective sensemaking of a possible implementation is that it would only be feasible if the industry association offered all its members to be part of a blockchain, thereby making it a collective effort.

In a process of bracketing, Interviewee 5 singles out the element of decentralization as an important property of BCT. To enact his point with regards to decentralization, he draws a link between the circle of influence of the firm (i.e. the supply chain) and current IT systems. Based on this, he states that current IT systems are only capable of handling a lead firm's first tier suppliers with which the firm is conducting direct business transactions. He contends that it is beyond the first tier suppliers that the property of decentralization becomes interesting, where there are no clear business relationships. Using a fiber manufacturer as an example, he argues that the lead firm has no influence on the fiber manufacturer because the fiber manufacturer is not aware that it is supplying to that particular lead firm. Interviewee 5 builds his prospective sensemaking on this exemplification by stating that:

> *"Blockchain becomes interesting in these use cases where there is no clear circle of influence, there is no clear relationship that gets established when the actual raw material is produced. [...] That is where blockchain makes it interesting, and that is where the entire idea of decentralization makes it even more interesting"* (Appendix F, p. 183).

Adding to this, he further enacts his point about decentralization, by comparing a centralized system to one that is decentralized. He holds that in a centralized system clear relationships exist between the parties involved in a transaction, whereas in a decentralized system no direct relationships exist. To exemplify this latter statement, he links it to the fast-fashion supply chain. Interviewee 5 contends that in the fast-fashion supply chain no clear relationship exists between the fiber manufacturer, the yarn manufacturer and the actual end buyer (i.e. the fast-fashion brand). He builds his prospective sensemaking on this and states:

> *"...that is where blockchain makes it more interesting because you are now connecting those parties who are traditionally not connected and there is no contractual obligations for parties to work together or to share data. That is where the blockchain makes it more interesting, where it creates a decentralized network where people start sharing data irrespective of knowing who is the consumer of the data"* (Appendix F, p. 184).

He expects that as the raw material gets consumed higher up in the value chain, the end buyer gets access to the data about that material and can start enriching the data. This data will enable fast-

fashion brands to track the lifecycle of products and thereby create an information chain across multiple entities that have not usually been connected. He believes that it is by connecting the entities across the supply chain that blockchain can add a lot of value.

When assessing how blockchain can be implemented in the fast-fashion industry, his enactment is highly influenced by his identity as he draws on his experience from TrustTrace to make sense of the implementation of blockchain. At TrustTrace, they take a consortium-based approach, because they do not believe that it is feasible to create one big blockchain for the fast-fashion industry, and expect that firms in the industry will simply just contribute to it. Instead his prospective sensemaking of a blockchain solution for the fast-fashion industry is one that takes a micro customer-based approach, where firms that share a common product and customer base come together to form a consortium.

> *"Our procedure has been a consortium-based approach. We are working with some early consortium discussions, with some specific segments of garments. We can't create one big blockchain for the entire garment industry, and hope that everybody, like fast fashion to shoe manufacturers, all participate to it. What we believe in is a micro customer-based approach where we will create more smaller groups of companies who come together, who have a common product base, who have a common set of customers with whom they work, to come together to form a consortium"* (Appendix F, p. 187).

When Interviewee 6 is to make sense of blockchain, she brackets the decentralized structure as a property of blockchain, which she finds particularly interesting. In a process of enactment, she creates a link between the decentralized structure of blockchain and the future. In her opinion there are many properties of blockchain that are extremely relevant. She expects that for the future to be sustainable and intelligent, it should empower people, rather than simply centralizing money and power as it is done currently.

There is a general expectation that the decentralized technical structure of blockchain yields several benefits. It is expected that systems of the future will be much more distributed, and it is in this respect that BCT is expected to be advantageous, as it is capable of supporting a lot more people due to its decentralized structure. The decentralized structure of blockchain is expected to be

particularly beneficial to fast-fashion supply chains due to their highly distributed and complex nature. Compared to current IT systems, blockchain has a much greater reach due to its decentralized structure, which enables the technology to reach beyond the first tier suppliers. In relation to this, the property of decentralization is expected to be of importance as it makes it possible to connect parties in the supply chain who are usually not connected. Thus, decentralization is expected to be relevant in cases where there are no direct business relationships, as is the case in the fast-fashion supply chain, where raw material suppliers and the lead firms have no direct business relationship. With its ability to connect people in the supply chain, it is expected that BCT can create a decentralized network where people exchange data irrespective of knowing who will be the consumer of that data, creating a thread of information that spans across the entire supply chain. It is by connecting all the parties of the supply chain that blockchain is expected to add a lot of value.

With respect to the implementation of blockchain in the fast-fashion industry, it is considered to be useless to create a blockchain solution for a single fast-fashion brand. Instead, it is expected to be more beneficial to create a blockchain solution where more fast-fashion brands come together and contribute to the same blockchain. The decentralized structure of blockchain is expected to enable just that.

5.1.3 Immutability

Another characteristic that the research participants point out when making sense of BCT, is the ability of the technology to make data immutable once it is logged on the blockchain.

Immutability is mentioned by Interviewee 1 in relation to the technology's append-only construction. In doing so, he continues the process of bracketing through the identification of the append-only characteristic of blockchain, which is singled out to make sense of the concept of immutability. He enacts his understanding of the append-only construction through the example of a sailors logbook in which one writes what happens without going back to what has previously been written: *"The point is that you don't go back. You go forward."* (Appendix B, p. 134). Returning to immutability, Interviewee 1 emphasizes the importance of the element by highlighting it as one of the strengths of blockchain. It is in this respect that he explains immutability as an element that may lead to frustrations among some people. Here, he draws on previous experience from working with

the Chinese government in creating a blockchain for their national identification database. In a process enactment, he explains that the Chinese representatives requested a blockchain in which changes could be made, which would allow them to "get rid of" a person. However, the immutability of blockchain renders such an activity impossible. It is thus Interviewee 1's identity created through his previous experience that allows him to connect cues from that exact situation to make sense of why immutability is one of the strengths of blockchain. When asked about the possibility of manipulating the data in a blockchain, Interviewee 1 assures that it is not possible, as the structure of the technology is built in such a way that *"nobody can touch it"* (Appendix B, p. 143). The grounds of his confident response may be traced back to his background as a researcher within the field of blockchain at ITU. Thus, his identity, which has informed his bracketing process, once again prevails in his enactment and sensemaking of immutability.

Similarly, Interviewee 2 brackets the immutability of blockchain as an element, which adds value to the technology and which may impact CR practices. To this he adds that immutability allows for information to be presented without having been fiddled with, as this is not a possibility once the data has been added to the blockchain. The benefit of this in relation to firms' CR reporting, would, according to Interviewee 2, be that firms by the means of a blockchain will be able to take a step back and say: *"The information is here, we do not tamper with it. You can trust that we certainly haven't fiddled with the data."* (Appendix C, p. 154).

Interviewee 5 is in complete accordance with Interviewee 2, as he also believes that once data has been added to a blockchain it is tamper proof. To this end, he states:

> *"Blockchain can solve the problem of tamper proofing that data once it is there. […] You never know what is the purpose or how the data is coming into the system, but what we can do is once it comes into my system it is tamper proof."* (Appendix F, p. 194).

In summary, there is a clear expectation that the immutability of blockchain will ensure that data, which is logged on the blockchain, cannot be tampered with. This is made possible by the append-only construction of the technology, which renders it impossible to fiddle with logged data. Thus, blockchain is expected to be 100% tamper proof. This translates into an expectation towards the

technical structure of blockchain in the sense that the technology ensures that the data on the blockchain remains unchanged.

5.1.4 Trust

Another element that has been identified from the collected interview data is trust. Some of the interview participants single out trust as a potential outcome of the implementation of BCT.

In a process of bracketing, Interviewee 4 singles out trust in his sensemaking of BCT. He believes that partners collaborating in a supply chain may gain more trust in each other as a direct consequence of the implementation of blockchain within the supply chain. His reasoning behind the statement relies on the anticipation that untrue information provided by one entity will easily be detected by the following entity in the supply chain. In this regard he states:

> *"They can have more trust, because if someone says that this lot of production has been produced in that way, the next step in the supply chain could prove that that is not true. There is more trust in this sense. Or if anyone in the supply chain is not fair; the production or the one that is not fair is easily discovered."* (Appendix E, p. 180).

However, Interviewee 4 also accounts for the potential decrease in the need for trust resulting from the implementation of blockchain. In his enactment process, Interviewee 4 draws on automation in the form of smart contracts to make sense of how the need for trust could decrease once blockchain has been implemented in a supply chain.

Interviewee 6 also identifies trust in her sensemaking process, pin pointing it as an essential outcome of blockchain. She states:

> *"There is extremely little trust in many large brands, but also in the fashion industry. I don't even need to list all of the things that are wrong with it because then we will never finish. But yes, for sure, creating transparency and trust I think is absolutely essential."* (Appendix G, p. 202).

In the case of Interviewee 6, it is evident that her identity, which has been shaped by the experiences she has had throughout her life as a fashion artist, impacts her bracketing process. This is because her experiences have made her very aware of the negative impacts that the fast-fashion industry brings about. As a consequence hereof, a lot of her attention has been directed towards information that one can trust, thereby constituting the grounds of her bracketing. Therefore, she sees a need for systems in which trust is established by different means and where people can connect in a different manner as well. She believes that blockchain may provide this sense of trust, as it creates both trust in *"the [blockchain] system and in each other"* (Appendix G, p. 203). It is in this regard that Interviewee 6 makes sense of trust as an outcome of blockchain that could potentially benefit CR practices.

Overall, the expectation is that blockchain automatically will provide the creation of more trust among the people who are connected to the same blockchain and in the blockchain itself. Furthermore, the implementation of blockchain is expected to decrease the level of trust needed within a supply chain, as the technology allows for certain tasks to be automated. Thus, there is a distinct expectation that trust will become a concrete outcome of the implementation of blockchain.

5.1.5 Technological Attributes

From the analysis of the interview data, it was discovered that the interview participants point out a wide variety of technological attributes of BCT that may constitute different potential benefits of the technology.

With his background as a researcher at ITU, Interviewee 1 has accumulated vast technological knowledge, which informs his identity, as the knowledge that he has acquired takes part in shaping his existing frames. Thus, it is his identity, which enables him to bracket various technological attributes of blockchain. The data collected from the interview conversation with Interviewee 1 reveals eight elements within the category, these being larger capacity, greater flexibility, shorter development time, lower cost of ownership, less likelihood of hacking, decrease in manual control, removal of double spend and increased overall control. He links the element of capacity to his existing frame in which he draws on his knowledge about the capacity of the world's largest application, Bitcoin. It is from this enactment process that Interviewee 1 confidently states that the implementation of blockchain would not suffer from problems regarding capacity:

"It's not a problem. It is absolutely true that there are capacity issues with Bitcoin. It is the world's largest application, and it is the one that has been running for the longest time. Since its inception, it has not had a millisecond breakdown. It is not possible that it breaks down." (Appendix B, p. 134).

However, as Interviewee 1 is an expert within the field of blockchain, it to some extent hinders him from engaging in processes of enactment, because sensemaking of blockchain is second nature to him. Thus, he rarely makes sense of the bracketed elements through enactment.

Interviewee 4, who previously in his career has dealt with the implementation of blockchain in the food sector, also brackets several technological attributes of blockchain. Like Interviewee 1, Interviewee 4 also singles out capacity in his sensemaking of BCT. In this regard, he links the element of capacity to system integration, and enacts this through his experience with creating tailored blockchain solutions in past projects. When asked about the technical infrastructure of blockchain in terms of capacity and whether he detects any challenges in this regard, Interviewee 4 answers:

"I will say no. If we have a technological solution like IBM Fabric, and we have to adapt the system for [IBM] Fabric, this is a problem. While in my case, I always make tailored solutions for our clients. We assess the supply chain and in our experience, we have always been able to adapt the blockchain system to actual systems. So I don't see any blocking problem." (Appendix E, p. 179).

Further, Interviewee 4 touches upon the flexibility of the technology in the sense that it can be applied to any sector. Through his enactment process, he gives an example from the transportation sector and, more specifically, the automotive sector, but quickly goes on to state that *"any sector [that] has its own supply chain can apply it"* (Appendix E, p. 179).

When asked about the benefits of BCT, Interviewee 5 commences by pointing at the low complexity of the distributed ledger technology. In this regard, he states:

"There is no complexity in the technology. The point is how you are executing the project. The technology is just a decentralized ledger, there is nothing great about that technology. Distributed ledger [technology] has always been existing for ages." (Appendix F, p. 187).

To this end he adds that blockchain is trivial to understand and easy to implement. While creating meaning of the low complexity of the technology itself, Interviewee 5 goes through a process of enactment in which he connects the ease of implementation to the creation of a new crypto currency. Therefore, it is his current frame, which builds upon his knowledge as a blockchain expert that permits him to make such a connection.

Another technological attribute that Interviewee 5 brackets is storage of information. In this context, Interviewee 5 contends that blockchain will, in a CR context, never become an auditing platform, but it will be able to store information about which certifications a fast-fashion brand has attained:

"Assuming that guy who is giving you the certificate, who is doing a social audit on you, doing interviews of your employees etc., and he is giving you a certificate, and that certificate is published on to the blockchain. Then the claim can be verified on the blockchain. That is where we are talking about the value. Blockchain per se is not going to be an auditing platform. Blockchain per se is going to store those certificates." (Appendix F, p. 194).

Thus, Interviewee 5 argues that blockchain, as a consequence hereof, will allow for claims to be verified. In relation hereto, Interviewee 5 holds that fast-fashion brands' clothing labels may not become obsolete as a result of the implementation of blockchain. However, blockchain will serve as a platform in which customers can verify the information provided by the fast-fashion brand, e.g. that the fast-fashion brand in actual fact holds the certifications which it claims.

In general, the technological attributes of blockchain are expected to be superior to the technological attributes of current systems. The attributes of the technology are believed to be of a better "quality" compared to other solutions in the sense that they are expected to provide improved capacity, flexibility and overall control. Further, it is assumed that the attributes will contribute in minimizing manual control, development time, likelihood of hacking and cost of ownership. Moreover, it is expected that the technological attributes of blockchain will lead to the removal of

double spend. Lastly, the low complexity of the technology itself is expected to facilitate an ease of implementation.

5.2 Expected Challenges of Blockchain Technology

The following section outlines the potential challenges inherent in BCT and the fast-fashion industry based on the meanings of the research participants. Just like the potential benefits, the potential challenges have been divided into different themes which include: Knowledge and resources; resistance to collaborate; risks; cost; and, finally, industry barriers. These themes have been established based on the interview data, and are, therefore, representative of the meanings presented by the research participants.

5.2.1 Knowledge and Resources

A challenge that is pointed out by the research participants is the lack of knowledge and resources. The former element is primarily connected to people's general lack of understanding of BCT, while the latter element solely concerns human resource deficiency.

When commenting on some of the issues concerning blockchain, Interviewee 1 points at the "nitwits" that watch a 15 minute YouTube tutorial and then embark on the creation of a smart contract, stating that *"You can do serious damage without intending to"* (Appendix B, p. 134). One of the things, which he views as a big problem is that people who have had a great idea often have a rather unspecific reason as to why the idea should be put on a blockchain. In his position as a facilitator at EBC and as a researcher at ITU, he often encounters ideas that have nothing to do with blockchain, but for some reason end up on a blockchain. A reason for this, he finds, is that people simply do not understand BCT, because it is different compared to what they otherwise know of. According to Interviewee 1, it is a mental rather than economic barrier that people must overcome:

> *"People take the world that they know and "blockchain" it. It is not because they are stupid or bad. It's only human and natural to do so. It is only when we begin to free ourselves from how things are done currently. That's the socio-technical. The worst prison that we have is our own mental prison."* (Appendix B, p. 146).

Adding on to this, he explains that it is not easy and it will take a while getting an understanding of blockchain. In his own words, he explains that *"Blockchain is a completely different way of viewing the world. And that is also what is difficult. People really need to keep an ear to the ground"* (Appendix B, p. 144). In the course of his prospective sensemaking process, Interviewee 1 ties cues to the IT industry in which he has been working for a great part of his professional life, and which has played a large role in shaping his identity. Accordingly, his enactment builds on experiences that he has had throughout his career, and it is on this basis that he believes that the IT industry, in particular, will continue to oppose blockchain because it is not qualified or equipped to rise to the challenge.

Lastly, Interviewee 1 brackets the scarce pool of human resources as part of his prospective sensemaking. He underlines this as the main implication in implementing blockchain and states that in the US, blockchain developers is the most sought-after resource. However, in the opinion of Interviewee 1, it is especially the limited number of CEOs, managers and politicians who possess knowledge about blockchain that pose a challenge for the implementation of the technology. In continuation, Interviewee 4 contends that developing skills that are already on the market is the main challenge to blockchain implementation.

Similar to Interviewee 1, Interviewee 5 brackets the lack of understanding of BCT as an implication to the technology's implementation. His process of bracketing is informed by his identity in the sense that the experience, which he has obtained from working with brands that wish to implement blockchain, has taught him that fast-fashion brands are unaware of the possibilities that BCT may pave the way for. For instance, he states that fast-fashion brands today are still unsure of how to use the data that a blockchain provides. Interviewee 3 confirms this statement, claiming that she still has some questions about how Tiger of Sweden is going to use the technology and how it will work.

Thus, in terms of knowledge and human resources in relation to BCT, it is firstly assumed that people are not able to comprehend the functioning of the technology. Secondly, it is assumed that there exists a lack in skilled human resources with regards to both managers and developers. And, thirdly, it is expected that developing the human resources that are already in the market will be a main challenge in relation to the implementation of blockchain. In summary, there is a general

expectation that the implementation of blockchain may come to suffer from a lack in skilled human resources with the necessary knowledge of the technology.

5.2.2 Resistance to Collaborate

Based on the interview data, the authors have found that some of the research participants single out the unwillingness to share information as a potential barrier to the functioning of blockchain. The majority of the interview participants link information sharing to the supply chain or the fear of loosing competitive edge.

When asking about challenges with respect to the implementation of BCT, Interviewee 1 singles out information sharing as a barrier to the implementation. To enact his point about information sharing, he draws a link between information sharing and the supply chain. He expects that challenges will arise in the implementation process, as suppliers may not be willing to share their information with the other parties in the supply chain. He claims that *"there will undoubtedly be challenges [with respect to suppliers]. People do not like to provide information"* (Appendix B, p. 137). Moreover, Interviewee 1 singles out collaboration in the supply chain as an important factor in the implementation of blockchain. He expects that if a lead firm forces its suppliers to implement blockchain, there is a risk that they will resist to collaborate and not follow the order of the lead firm. Therefore, he states that collaboration is essential in supply chains.

> *"Yes, and then the lead firm can tell its sub-suppliers: You must! And that's what happens. Secondly, they will not collaborate and partly they will not collaborate with the big ones, because they do not want to be under the big ones. Then one can say that in the supply chain industry one has to collaborate"* (Appendix B, p. 137).

Interviewee 2 makes sense of information sharing in a different way than Interviewee 1, as Interviewee 2 enacts his understanding of information sharing by linking it to competitive advantage. He expects that some firms may not like to share certain information, as it may be a source of competitive advantage. He exemplifies this by saying that some firms may source their products from India, while others might source theirs from Vietnam, where they can be produced 5% cheaper. This information they may not want to share with others. Thus, the sense that he makes out of this example is that firms want transparency, but not at any cost.

> *"If you would like to be public about it - and I can imagine that some clothing suppliers will not tell where they get their clothes from, because it is a competitive advantage. It may well be that everyone else gets it from India, but then there are some who have it produced in Vietnam and that may cost 5% less, but they do not want to tell the others. So yes, we would like transparency, but also as a company, but there are some things that we are not happy about telling everyone else."* (Appendix C, p. 151).

Like Interviewee 1, Interviewee 3 also singles out information sharing as a potential challenge, and enacts her understanding of it by drawing a link to Tiger of Sweden's supply chain. Once again, her identity comes forth in her prospective sensemaking as she draws on her experience from Tiger of Sweden to make sense of how information sharing may constitute a challenge going forward in their blockchain project. She believes that it is important for the brand to weigh how open their suppliers are to sharing information related to CR. In Scandinavia, her experience is that fast-fashion brands are very open about sharing information, as everybody is concerned with sustainability. However, she thinks that the openness towards sharing information about sustainability may be different with respect to the suppliers as the focus on e.g. climate may not be the same in the countries of the suppliers. She claims that *"you also have to weigh how your suppliers are open to sharing this information. [...] for sure we have to value our suppliers and partners. We have to have them onboard as well"* (Appendix D, p. 173). Thus, her prospective sensemaking indicates that it is important for the brand to get its suppliers onboard in the blockchain project to make them feel comfortable about sharing information with the brand.

When making sense of the challenges concerning the implementation of blockchain, Interviewee 4 draws on his past experience from a project in the food industry. Thus, his identity clearly comes forth in his sensemaking. He builds his enactment on his past experience and connects it to other industries. When implementing blockchain for a large super market chain, he did not experience any issues in terms of convincing the suppliers to implement blockchain and provide their data to the lead firm. He believes that the reason why there were no complications was due to the presence of a lead firm, which was capable of convincing its suppliers to participate to the blockchain. He builds his prospective sensemaking on this past experience and states that an issue might arise with respect to convincing the suppliers if there is no lead firm present in the supply chain able to convince them.

"So, for example, the large super market chain decided to apply it and since [then] have different suppliers that have [applied it been] ready to provide data. It has not been an effort to convince suppliers to provide data. If we are in another kind of supply chain, a challenge could be to convince any player in the supply chain to apply it. [...] There is this issue in other kinds of supply chains where there isn't a big player that can convince the other suppliers." (Appendix E, p. 178).

As previously stated, Interviewee 5 does not find it feasible to create one big blockchain for the entire fast-fashion industry, nor does he find it useful that just one fast-fashion brand implements the technology. Instead, he believes in a consortium-based solution for the fast-fashion industry where groups of fast-fashion brands come together to implement blockchain technology. In relation to this consortium-based solution, he singles out the decentralized structure of the blockchain network as being the main challenge with respect to the execution of this solution.

"Like I said, the technology is not a problem, the entire concept of a decentralized network is the problem. How do I make that decentralized network work? What is the value I can create out of the decentralized network?" (Appendix F, p. 189)

He enacts his understanding of the challenge by linking it to the motivation or incentive of the supplier to participate in the blockchain network. He claims that *"the challenge with blockchain is how we execute it. How do you incentivize people to participate in your network?"* (Appendix F, p. 187-188). He believes that the globally dispersed nature of the fast-fashion supply chain constitutes a complex problem with respect to incentivizing the suppliers to participate in the network.

"Still the fundamental idea is what is the motivation for the supplier to participate. That will never go away, because the farmer will be in India, the manufacturer will be in China, the brand might be in Europe, and the final consumer might be in the US. It is a very complex problem." (Appendix F, p. 188-189).

In a process of bracketing, Interviewee 6 singles out IP protection and the fear that something might go wrong as potential factors that may inhibit transparency, and thereby information sharing. She

believes that factors such as these make firms hesitate to engage in full transparency about their activities.

A low willingness to share information could impede the implementation of blockchain in the fast-fashion industry. It is expected that some suppliers in the fast-fashion supply chain may not be willing to share sustainability information. A reason for this may be that the supplier does not have the same level of concern for sustainability issues as the lead firm it is supplying to, which makes it reluctant to share this information. There is a general consensus that people do not like to share information. It is assumed that some firms in the fast-fashion supply chain may be reluctant to share their information due to the fear of losing competitive edge. Another factor that is expected to obstruct full information sharing is the fear that something might go wrong. If firms decide to engage in full transparency about their activities, there is a greater risk that accidents or scandals will be revealed to the public. Collaboration within the supply chain is expected to be essential, because if suppliers are simply forced by the lead firm to implement blockchain, there is a great risk that they will refuse to do so. To implement blockchain throughout a supply chain, it is suggested that there should be a lead firm present, which is able to convince the suppliers to implement the technology and to provide their data. By virtue of the decentralized structure of blockchain and the highly dispersed nature of the fast-fashion supply chain, there is expected to be a challenge with respect to how one should incentivize people to participate to the blockchain.

5.2.3 Risks

Based on the interview data, it was found that the research participants have a varying understanding of the risks associated with BCT. For instance, elements such as permissioned versus permissionless, fraud versus error, and authenticity of data are singled out to make sense of the potential risks.

According to Interviewee 1, there are certain risks associated with permissioned blockchains that do not apply in the context of permissionless blockchains. He maintains that it is nonsense that a permissioned blockchain is the most optimal choice in a business context, and clarifies that people with this perception neglect to consider the safety aspect:

"People state: "Permissioned is much better than permissionless". If you're a hacker, you'll search for something that is already defined. The good thing about permissionless is that it is not defined. And there you have much higher safety." (Appendix B, p. 135).

His many years of experience working with large international corporations and his identity as a businessman allow him to envision how blockchain would be applied in a business context. Another disadvantage of permissioned blockchains that Interviewee 1 brackets is the aspect of ownership, which he is occupied with on a daily basis as a researcher at ITU. He comments:

"Another disadvantage of permissioned and permissionless: A permissioned you can take possession of. This you cannot with a permissionless. […] If we imagine that we hack ourselves into a permissionless. In a permissionless you need the majority. And the moment that you assume possession of it, you can actually turn it to your own advantage. In a permissioned it's easy to assume possession. If you hack the one that has the rights, then you have the control." (Appendix B, p. 145).

Lastly, Interviewee 1 comments on the potential risk of fraud versus errors. In this regard, he agrees that fraud is a possibility in terms of the data being inserted on the blockchain. However, Interviewee 1 contends that an even bigger risk lies in the potential errors made by the people adding data onto the blockchain. Thus, his prospective sensemaking is largely influenced by his identity as a businessman and as a researcher, because it allows him to bracket different elements of BCT and enact them based on cues from both his former business career and his current research career.

Interviewee 2 contends that blockchain enables people to trust the data once it is stored on the blockchain. However, blockchain cannot be used to ensure the authenticity of said data. He bases these statements on his past experience from the blockchain project that he worked on for the fast-fashion industry, and thereby lets his identity come forth in his sensemaking. He believes that the value of the data that is logged on the blockchain will never become greater than the level of knowledge that the party who put it on the blockchain had at the time the data was stored. People can only verify things based on the level of knowledge they have at that exact time when they are to log data onto the blockchain. To verify if what is logged on the blockchain is really true,

Interviewee 2 contends that the only way to do so would be to actually go to a laboratory and have that particular piece of garment tested. He enacts this statement by drawing on an example of Bestseller. If Bestseller states that a garment is organically produced and this information is stored on the blockchain, the consumer could have the garment tested to see if the information that Bestseller provides is authentic.

Interviewee 5 brackets the authenticity of data as a risk related to BCT. He holds that although blockchain solves the problem of tamper proofing the data that is added to the blockchain, it does not solve the problem of data authenticity, i.e. that the data added to the blockchain is correct.

Albeit blockchain may provide many benefits, there is an overall expectation that there still are certain risks that the technology cannot eradicate. As has already been stated, there exists a clear expectation that the immutability of blockchain will ensure that data logged on the blockchain cannot be tampered with. However, another clear expectation is that blockchain will not be able to ensure the authenticity of the data, which has been logged on the blockchain. Additionally, BCT is not immune to man-made errors nor fraud. Thus, fraud and man-made errors are expected to continue to make up a risk. Furthermore, a permissioned blockchain is believed to constitute a greater risk with respect to safety, i.e. hacking, and the change of ownership as a result of hacking. Thus, it can be argued that there is a general expectancy that the technical structure of blockchain will not be able to eradicate all potential risks.

5.2.4 Cost

The interview data revealed that some of the research participants perceive cost as a potential barrier that may constrain the implementation of BCT. In relation to this, issues concerning transaction costs and cost of implementation have been identified.

As part of his prospective sensemaking, Interviewee 2 singles out and brackets the transaction costs associated with blockchain that in aggregate may become very costly. In his enactment, Interviewee 2 links the bracketed element with the Ethereum platform (i.e. a blockchain platform) when he explains that a transaction on Ethereum may amount in 20 USD due to the expenditures, e.g. electricity, that need to be covered by the managing organization. In relation hereto, Interviewee 2 emphasizes the importance of bringing down the transaction costs, which would entail creating a

blockchain capable of managing large amounts of transactions per time unit. In continuance hereof, Interviewee 2 reflects on the possibility of implementing a cap, stating that:

> *"[...] you should also, maybe in reality, have a cap on how many can be involved. That cap is currently on the cost of electricity. [...] an increase in electricity prices, given that the prices of electricity for some odd reason rose to double the amount during the next quarter, then the shit would close down. And you can't base your business on that."* (Appendix C, p. 159).

Additionally, Interviewee 2 brackets the cost of creating a blockchain, which is enacted as he mentions the case of Condordium, which, according to Interviewee 2, has spent huge amounts of money on its blockchain project. Also considering cost as a potential challenge is Interviewee 6. Her statement is based on her previous experience, i.e. her identity. She states:

> *"I can primarily speak from the experience that I have. The experience that I have is that it is costly. It costs time and money. It's a cliche, but regardless of whether you are a start-up or a larger company, it is something that requires resources."* (Appendix G, p. 202).

Thus, there are expectations towards the costs associated with the implementation and utilization of blockchain. Firstly, it is expected that the implementation of the technology will be quite an expensive affair. Secondly, the many transactions completed within a blockchain are expected to potentially amount in high costs. The expectations in terms of costs can therefore, on a more general level, be considered as expectations towards the necessary resources needed for the implementation and utilization of blockchain.

5.2.5 Industry Barriers

When analyzing the interview data, the authors discovered that certain barriers to the implementation of blockchain exist inherently in the fast-fashion industry. This entails that the industry itself may impede the implementation of the technology.

Interviewee 6 expresses a lot of concern in regards to the industry itself. Her identity has been largely impacted by her several years of hands-on work within the fast-fashion industry and the numerous visionary projects in the cross field of fashion, sustainability, art and technology that she

has steered. Consequently, she has become very sceptical of the fast-fashion industry and the impact that it has on a global scale, which, in turn, has affected her bracketing process when trying to make sense of blockchain. Of the six interview participants, Interviewee 6 is the only one who points directly at the fast-fashion industry as a hindrance if the technology were to be implemented. One thing about the industry that interviewee 6 brackets is that the industry is simply not ready for blockchain:

> *"Currently, the biggest problem in the industry is, of course, that it is not seamlessly integrated. The fact that it is not scalable, it is just not really there yet. We're not there yet. Enough have seen the light of the technology, but whether it is that exact technology or if it will be another technology that mimics the best features. That we can't know."* (Appendix G, p. 203).

As part of her prospective sensemaking, she states that the idea of a blockchain that can be adopted by fast-fashion brands is good. However, she stresses that issues with respect to the sustainability and the scalability of the technology have not yet been solved and, therefore, still exist. Her prospective sensemaking is grounded in an enactment process in which she ties cues to her existing frame of knowledge of the fast-fashion industry from which she has experienced a general reluctance towards new technologies and a slow adaptation.

Another bracketing that Interviewee 6 makes is that of the profitability that still exists in the fast-fashion business model prevailing today. She holds that the business model is not yet completely broken, as people are still making ridiculously large amounts of money, and states:

> *"That is, after all, really the biggest problem in the fashion industry right now. That almost everything gets broken by the way in which the business in run, but the business model still works. In reality, it is business hacking that we need to get going. As long as you continue to make a lot of money, there is no particularly good incentive to change. The fashion industry is amazing in that sense […] We're back at the board room and the shareholders, and that people just want money. That is what we're back at"* (Appendix G, p. 203-204).

In line with this, Interviewee 6 continues her sensemaking by diving into the sustainability conversation, which she compares to board room diversity. In her process of enactment, she states that while it from a logical point of view makes sense to implement board room diversity, as it secures a business, not all businesses chose to do so, in spite of it being the most reasonable choice. The same, she states, can almost be said for sustainability, however, adding that it unfortunately is not yet completely sure that sustainability will lead to increased profit. In her mind, consumer demand has to drive the change by requesting more.

Consumer demand, thus, becomes another element singled out by Interviewee 6. She believes that consumer demand will at some point in time drive industry change, but acknowledges that there still exists a rather large consumer group to whom the sustainability agenda is of no interest, as their sole focus is on the low price of the product. To this end she adds that awareness of and interest in a product's provenance is still a niche. Therefore, she sees a need to build a general level of education towards the consumers:

> *"It is very much about building a general level of education, understanding and empathy, so that we understand what it means to knit a jumper or something [like that]. […] So there is the education, but there are also all the other aspects. It is very complex, but it is very much about creating information and examples so that consumers know what is possible."* (Appendix G, p. 205).

In summary, it can be stated that there is an overall expectation that the fast-fashion industry itself will serve as a barrier for the implementation of BCT. It is expected that industry characteristics such as a reluctance towards new technologies, slow technological adaptation, limited consumer demand in terms of sustainable practices, prevailing profitable business models, the uncertainty about the profitability of sustainability and, lastly, the immaturity of the industry itself will inhibit the implementation of BCT.

5.3 Summary of the Analysis

Overall, the authors identify three major categories of expectations towards blockchain. First of all, there are general expectations with respect to the outcome of blockchain. The outcomes of

blockchain, which have been identified in the analysis, are transparency and trust. There is an overall belief that BCT's ability to establish traceability can result in greater transparency within supply chains in the fast-fashion industry. Moreover, once implemented, the parties who are connected to the same blockchain stand to gain more trust in each other. Simultaneously, the need for trust decreases as blockchain allows for the automation of tasks, minimizing the need for manual work and control.

Secondly, the authors find that there are general expectations towards the technical structure of blockchain. First of all, the technological attributes of blockchain are expected to be superior to those of current IT systems. It has been found that the technological attributes of blockchain are expected to provide greater capacity, flexibility and overall control, while minimizing manual control, development time, likelihood of hacking and cost of ownership. The decentralized structure of blockchain is expected to yield various benefits, such as the ability to connect parties in the fast-fashion supply chain that are usually not connected, allowing for these to exchange data. Due to the technical structure of blockchain, it is expected that data, which is logged onto the blockchain becomes immutable, making it completely tamper proof. However, there is also an overall expectancy that the technical structure of blockchain will not provide the protection against certain risks, such as data authenticity, fraud and man-made errors.

Finally, there are general expectations towards the implementation of blockchain, which primarily concern barriers that may impede the implementation of the technology. First of all, it has been found that the implementation of blockchain may suffer from an overall lack of human resources that are knowledgeable about blockchain. Moreover, the unwillingness of firms in the supply chain to share information and to collaborate may complicate the process of implementing BCT throughout the fast-fashion supply chain. In the same sense, the cost of implementation is expected to impede the implementation of blockchain. Lastly, the fast-fashion industry itself may complicate the process of implementing the technology as it has a low incentive to change.

6 Discussion

The purpose of this chapter is to discuss the findings derived from the analysis in relation to the literature presented in the literature review. In the analysis, the authors found that there are general expectations with respect the outcome, the technical structure and the implementation of BCT. These are the empirical findings that will be discussed in this chapter. Through the interaction of empirical findings and literature from the research domain, the authors generalize towards a broader set of theories to answer the research question of this thesis. At the end of the chapter the authors will briefly summarize the main findings of the discussion, which contribute in answering the research question. Based on the discussion the authors propose recommendations for fast-fashion industry managers, which may be taken into consideration in case they decide to embark on blockchain.

6.1 Implications of the Outcome

Increased transparency and trust are expected to be the outcome of the implementation of blockchain. The reason why blockchain is able to create greater transparency is due to the technology's ability to establish traceability. Traceability is seen as a prerequisite for transparency, particularly within supply chains in the fast-fashion industry. Firms in the industry may think that they have a few thousands of suppliers, but in reality they may have up to 50,000 suppliers if they include all their sub-suppliers (BoF & McKinsey, 2019). The fact that firms in the industry are not even aware of their extensive number of suppliers complicates the matter of taking full responsibility of their activities. Stakeholders of the fast-fashion industry, therefore, perceive supply chain transparency to be of critical importance, as the highly fragmented structure of the fast-fashion supply chain may easily obscure accountability.

It has been found that firms in the industry are beginning to look into blockchain, and slowly start to employ the technology in a CR context. The expected benefits of employing the technology in a CR context are increased traceability and transparency of the supply chain, and product provenance. It is argued that in order for firms to change their CR practices, they should first know who their suppliers are and how their products are being manufactured. It is in this respect that traceability becomes particularly relevant, as it can provide fast-fashion brands with the necessary information

about the sustainability practices followed by their suppliers and the materials used in their products. It is expected that when firms have this information, they are able to make the necessary changes in relation to their own CR practices.

The Global Fashion Agenda laid out in their CEO Report that supply chain traceability is a core priority for immediate implementation within the fast-fashion industry. It is suggested that supply chain traceability is critical if fast-fashion brands should be able to identify challenges and risks along the supply chain, and enhance their environmental, social, ethical and financial impacts (Tärneberg et al., 2019). In addition to this, it is expected that traceability enables fast-fashion brands to document the production process of a fashion item and, thereby, account for overall product quality and sustainability. As traceability makes the supply chain more transparent, fast-fashion brands obtain a much better overview of the activities taking place throughout the chain and these activities' social and environmental impact. This enables fast-fashion brands in the industry to take greater responsibility for their practices as they obtain the necessary overview to see where they should take action. This may be key to improving the CR practices of the fast-fashion industry as it becomes much easier to point out where specific action is needed.

Traceability and transparency are expected to result in increased trust among the actors who are connected to the same blockchain. Also, the characteristics of consensus, immutability, asset provenance and finality are argued to, simultaneously, reduce the need for trust and increase the level of trust between the actors who are connected to the same blockchain (Gupta, 2017). With respect to the supply chain, the need for trust may also decrease, as blockchain is expected to enable the automation of tasks, thereby, minimizing the need for manual work and control. Establishing a more profound level of trust between actors in the supply chain may benefit CR practices, as more certainty is established that each of the actors live up to the CR practices they may be required to follow.

Transparency may also yield certain benefits in the sense that firms may gain more trust from their consumers if they are transparent about their CR practices. Additionally, if firms communicate in a transparent manner about their CR practices, they may enhance the corporate reputation held by stakeholders (Baraibar-Diez & Sotorrío, 2018). This may be an incentive for firms in the fast-fashion industry to embark on blockchain and use it as a tool for establishing greater transparency

about their CR practices. Consumers demonstrate an increasing concern for social and environmental matters (BoF & McKinsey, 2019), which puts a pressure on fast-fashion brands to become more transparent about the social and environmental impact of their production process. The pressure coming from key stakeholders may constitute a critical motivation for fast-fashion brands to demonstrate more transparency about their CR practices. Although there is an increasing interest in firms' social and environmental practices, the consumer demand for more sustainability remains relatively low. As a result, fast-fashion brands do not feel a tremendous pressure to get involved in CR practices for the sake of their consumers. This translates into a general expectancy that firms in the fast-fashion industry have low incentives to engage in CR practices, which, in turn, may serve as a barrier to the implementation of blockchain.

The fast-fashion business model employed today continues to be very profitable, which provides less incentive for firms to change their practices. Fast-fashion brands, therefore, maintain conducting business-as-usual. However, the world of business is currently experiencing a revolution. Certain elements of sustainable development are being institutionalized through regulations. Simultaneously, an increasing amount of CR initiatives and CR reporting frameworks, such as GRI, the UNGPs and the SDGs, commence to attract the attention of civil society. In turn, fast-fashion brands are increasingly experiencing institutional pressure from industry stakeholders to conform to the "new norms" within the industry. Failure to do so may threaten the legitimacy of the fast-fashion brand and can potentially result in loss of earnings. Consequently, fast-fashion brands are employing CR practices for the purpose of corporate reputation management and to avoid negative attention from the media. Thus, the incentives for fast-fashion brands to engage in CR practices are slowly beginning to grow.

Current approaches towards CR reporting may benefit from blockchain. The increased traceability and transparency may be used by fast-fashion brands in monitoring their contribution to the SDGs. The authors believe that blockchain, in particular, may be advantageous for fast-fashion brands' fulfilment of SDG 12 (responsible consumption and production) and SDG 17 (partnerships for the goals), as a consequence of the increased traceability and transparency. In relation to the UNGPs, blockchain may help facilitate the process of human rights due diligence, in which firms must identify, prevent, mitigate and account for their adverse impacts. Once again, it is the traceability and transparency enabled by blockchain that proves to be beneficial, as it may help firms identify

where adverse impacts occur throughout the supply chain. This enables fast-fashion brands to take responsibility and action. The GRI sustainability standards require fast-fashion brands to report on the economic, environmental and social impacts of their business, both the positive and negative (Global Reporting Initiative, 2019). In this regard, blockchain may not only provide the necessary information on which the report is reliant, but also allow for more assurance for the fast-fashion brand publishing the report. It may do so, as the fast-fashion brand through blockchain has direct access to the source of the data presented in the report. Thus, if necessary, the fast-fashion brand is able to substantiate the claims of the report and ensure that the data has not been fiddled with. In sum, blockchain will not be able to replace fast-fashion brands' CR reporting, but may help strengthen the current approaches towards CR reporting.

Blockchain and traceability are found to have several use cases, and the technology's full potential is still to be explored. In the fast-fashion industry, it is expected that blockchain can be used to trace the origin of raw materials and place them through their processing; trace the quality of raw materials; trace whether materials are certified; and trace the material composition of fashion items. The last use case of tracing the material composition of fashion items may be of particular relevance to the overall sustainability of the fast-fashion industry. By tracing the material composition of fashion items and logging the data onto the blockchain, the industry is able to use that data for recycling purposes. The current business model of the fast-fashion industry is highly criticized for leaving economic opportunities untapped due to its linearity. Often, the value of materials is lost as fashion items are discarded after a short period of time, and therefore do not re-enter the fashion system to create new value. The low rates of utilization and recycling have detrimental consequences for the environment and society (Ellen McArthur Foundation, 2017). The ability of blockchain to trace the material composition of fashion items and store the data to use it for recycling purposes in the future, may break with the linearity of the industry's current business model. Rather than disposing materials at their end of use, the materials could re-enter the fashion system to be recycled and turned into new products, thereby making the business model more aligned with the principles of a circular economy.

6.2 Implications of the Technical Structure

The technical structure of blockchain is built in a way, which allows for data to become immutable once it is stored on the blockchain. Thus, there is a general consensus that once data is logged on the blockchain it cannot be tampered with. Although blockchain can ensure that data cannot be changed once it is on the blockchain, there is an expectancy that the technology cannot guarantee the authenticity of the data. This implies that there may be a risk that the data on the blockchain is not credible. Consequently, blockchain is not immune to man-made errors nor fraud, as it has a weak point where the information is created and entered into the system (Babich & Hilary, 2018). This could potentially constitute a risk to the CR practices followed by lead firms in the fast-fashion industry, as their suppliers may not follow the required practices set forth by the lead firm, although they claim to do so. Often, lead firms work with certified suppliers to have some certainty that they are capable of ethical and environmental production (Babich & Hilary, 2018). Blockchain can to some extent help ascertain that products have been manufactured by suppliers that are ethically and environmentally responsible due to the technology's ability to store and verify the certifications held by the suppliers (Babich & Hilary, 2018). However, due to blockchain's weak point where information is entered into the system, there is no certainty that the suppliers follow the required practices set forth by the lead firm.

The globally dispersed and complex structure of the fast-fashion supply chain constitutes a great issue in this respect, as it complicates the matter of monitoring the actual practices followed by the suppliers. In addition to this, lead firms often do not have direct ownership of their suppliers, making it difficult for them to control the social and environmental impacts of said suppliers (Ditty, 2019). This is an issue that blockchain, unfortunately, is not going to solve, as the technology is not an auditing platform per se, but rather a platform capable of storing the certificates held by the suppliers within the supply chain. Thus, lead firms will still need to audit their suppliers in order to document and verify that they follow the required CR practices. The technological attributes of blockchain are expected to improve the overall level of control and thereby minimize the need for manual control within the supply chain. However, in a CR context, it seems that there will still be a need for some manual control to ensure that the suppliers follow the CR practices required by the lead firm. Hence, lead firms may not be able to rely fully on the blockchain, as there is no certainty that the CR data, which is added to the blockchain, is error-free or true.

Although there may be a need for some manual control, it is still expected that blockchain can establish a greater level of control within the supply chain. This is essential as the global and complex structure of the fast-fashion supply chain makes it extremely difficult to maintain control of ones activities (Pedersen & Gwozdz, 2013). In this respect, blockchain can reduce the need for control by establishing greater visibility throughout the supply chain, thereby giving the lead firms a better overview of the CR practices followed by their suppliers. This may incentivize firms within the fast-fashion industry to embark on blockchain and use it as a tool to monitor their CR practices throughout the supply chain.

Currently, supply chains rely on centralized systems. These systems may have some pitfalls as they can only support a limited number of supply chain actors, which makes it challenging to gain a full overview of the supply chain (Saberi et al., 2018). In contrast to existing systems, blockchain has a highly decentralized technical structure, which, to some extent, makes it superior to existing technologies that are used in supply chains. The reason for this is that the decentralized structure of blockchain enables the technology to support and connect a lot more people. This is of particular relevance to the fast-fashion supply chain, as it consists of thousands of actors that are widely dispersed. Up until now, the complex structure of the fast-fashion supply chain has caused lead firms to ignore their responsibility with respect to how their products are manufactured (Ditty, 2019). However, through the use of blockchain, it is expected that lead firms can reach beyond their first tier suppliers and connect actors of the supply chain who are usually not connected. By connecting the actors in the supply chain, lead firms may obtain a better overview of their supply chain, making it easier for lead firms to take responsibility for their overall practices.

There is a chance that the improved overview will enable lead firms to ensure that their CR practices are aligned between the actors in the supply chain. Additionally, as the supply chain becomes more integrated, relevant information related to CR practices may become more easily accessible, as the blockchain allows supply chain actors to exchange data, irrespective of knowing each other. This information may be concerned with who produced the product, the use of certain materials and chemicals in the production, and the working conditions at the manufacturing plant. As actors in the fast-fashion industry become more informed about what is going on in the supply chain, it may be easier for them to address the negative externalities that they are currently causing on the environment and society. Thus, blockchain may provide firms in the fast-fashion industry

with much better insight into their environmental and social impacts as the supply chain becomes more integrated.

Some of the value of blockchain may lie in its potential to create a decentralized network where actors in the fast-fashion supply chain start sharing data irrespective of knowing who the consumer of that data is. Often, in the fast-fashion supply chain no clear relationship exists between the raw material supplier and the lead firm that is buying the raw material. The raw material supplier may not even be aware that it is supplying a particular lead firm. The decentralized structure of blockchain makes it possible to connect these parties and allows them to share data. This would result in greater collaboration across the entire supply chain, which may be key if the industry is to reach systemic change (Lehmann et al., 2018). It is argued that the current business model is not capable of delivering the necessary impact to transform the industry (Ellen McArthur Foundation, 2017). Therefore, the fast-fashion industry should break with the current business model and instead focus on joint innovation and investment to target the unsolved challenges in the supply chain, which are primarily to be found at the stage of raw materials and end-of-use (Lehmann et al., 2018).

With its ability to connect actors across the entire supply chain, blockchain may be a solution that can break with the industry's current business model, as the technology promotes less centralization and greater collaboration among industry actors. For blockchain to promote collaboration across the supply chain and the industry as a whole, it is expected that a blockchain solution for one single firm is useless. Moreover, it has been found unfeasible to create one big blockchain solution for the entire fast-fashion industry, as it is unimaginable that all actors in the industry, regardless of the product they are manufacturing, would contribute to the blockchain. Alternatively, a micro customer-based approach is suggested as a potential blockchain solution where groups of firms, which have a common product and customer base, come together to form a consortium. If the creation of such consortium blockchains in the fast-fashion industry is realizable, it may be of benefit to the overall CR practices of the industry since more actors, who may share common goals, would work together on reducing the negative impact of the fast-fashion industry.

6.3 Implications for the Implementation

In a CR context, various benefits could accrue to the industry if these consortiums become a reality. However, it requires that actors in the fast-fashion supply chain are willing to collaborate and share data with each other. A general expectation is that resistance to collaborate, particularly with respect to suppliers, could constitute a barrier to the implementation of BCT and the creation of these consortium blockchains in the fast-fashion industry. Other inter-organizational barriers to the implementation could be problems with communication and coordination in the supply chain, and cultural differences of the supply chain actors (Saberi et al., 2018). Moreover, it is expected that suppliers may be reluctant to share information about their CR practices if they are not as concerned with responsible production as the other actors in the supply chain. Yet another impediment to supply chain collaboration is the unwillingness of firms to share information as they fear to lose competitive advantage. This may put at risk the whole idea and functioning of a consortium blockchain in the fast-fashion industry. All these potential barriers together with the fragmented structure of the fast-fashion supply chain constitute a challenge with respect to how the industry is to execute these decentralized, consortium blockchains. The overall question is how one should incentivize and motivate actors in the industry to participate in the blockchain network and share their data. This is a question, which the fast-fashion industry is yet to answer.

There exists a clear expectation that the implementation of BCT will suffer from a lack in skilled human resources who possess the necessary knowledge about blockchain. Saberi et al. (2018) identify this exact deficiency as an intra-organizational barrier influencing the implementation of blockchain. Furthermore, as it is necessary that potential users of blockchain acquire knowledge about the technology's fundamental functioning prior to implementing it (Drescher, 2017), the inability of people to comprehend the technology itself will also serve as a hindrance to the implementation. Thus, developing the human resources and knowledge that already exist within the industry will become a great challenge, yet crucial. This is in line with Drescher (2017), who holds that both education and knowledge are key to user acceptance of blockchain (Drescher, 2017). User acceptance, on the other hand, may serve as an obstacle specific to the fast-fashion industry, as it is characterized by an overall reluctance towards new technologies and slow technological adaptation. However, as the fast-fashion industry is driven by consumer demand, effective management of the supply chain is crucial, and employing the appropriate IT systems becomes a central requirement in meeting consumer demands. The reluctance towards new technologies, thus, may restrain fast-

fashion brands in meeting consumer demand. In turn, this may affect the brands' competitiveness within the market, creating an incentive for fast-fashion brands to invest in new IT systems such as blockchain.

The cost of blockchain, both in terms of the implementation and the utilization of the technology, is expected to be yet another impediment to the implementation of the technology. One of the characteristics of the fast-fashion industry is the continuous downward price pressure, which has brought forth an increased pressure on profit margins (Perry & Towers, 2013). Fast-fashion brands are constantly trying to cut costs, which also affects their engagement in CR practices. This has huge consequences for the environment and for the people working within the supply chains, as sustainable practices are not regarded a high priority. Thus, due to the high cost of blockchain it becomes less likely that fast-fashion brands are willing to invest in the implementation of the technology. Moreover, BCT is also associated with high transaction costs. This is partially due to the current capacity of the technology, which does not allow for large amounts of transactions per time unit. However, as the capacity of the technology increases, so do the transactions per time unit. In relation hereto, Saberi et al. (2018) contend that blockchain may contribute to a reduction in transaction costs and, as a consequence hereof, allow for greater supply chain performance (Saberi et al., 2018). Thus, firms may gain a competitive advantage from the implementation of blockchain, which creates yet an incentive for firms to implement the technology.

6.4 Summary of the Discussion

Based on the discussion, the authors of this thesis find that people expect that blockchain may impact CR practices in the fast-fashion industry in the following ways:

- Blockchain's ability to establish traceability and transparency may enable firms in the fast-fashion industry to gain a better overview of their supply chain. This is of importance as it: allows firms to identify social and environmental impacts in the supply chain and, thereby, critical points where action is needed; enables firms to take full responsibility for their actions; leads to greater control of the supply chain, which is key to managing the highly

fragmented fast-fashion supply chain; and facilitates the process of aligning CR practices across the supply chain.

- Blockchain's ability to create transparency can promote inter-organizational trust between the actors connected to the same blockchain. This, in turn, can establish more certainty that actors in the blockchain network fulfil their respective CR responsibilities.

- Blockchain's ability to establish traceability and transparency may stregthen current approaches towards CR reporting as it may: help firms identify where adverse impacts occur throughout the supply chain, enabling them to report in a more honest and transparent manner; contribute to the monitoring of CR activities; and provide the necessary information for CR reporting purposes.

- Blockchain's ability to establish traceability may align the focus of CR practices in the fast-fashion industry with the principles of a circular economy. The reason hereto is that traceability can serve as a means to establish greater levels of recycling within the industry, thereby making the view on CR rather circular than linear.

- The decentralized structure of blockchain will make it possible to: connect and support all the actors involved in a supply chain; establish greater supply chain integration; facilitate the process of exchanging CR data between supply chain actors; and strengthen collaboration across the supply chain. All of these points are identified as key to the overall sustainability of the fast-fashion industry.

However, the fast-fashion industry and the technology may constitute certain limitations, which may impede the implementation and functioning of blockchain. These limitations are:

- The uncertainty that the data, which is logged onto the blockchain is authentic.

- The general resistance towards collaboration and information sharing between supply chain actors.

- The lack of human resources who possess the necessary knowledge about blockchain.

- The general reluctance towards new technologies and slow technological adaptation, which exist inherently in the fast-fashion industry.

- The cost of implementing and utilizing blockchain.

Overall, the authors identify traceability, transparency and decentralization as being the elements of blockchain, which have the greatest impact on CR practices in the fast-fashion industry. Thus, the answer to the research question of this thesis is that people expect that traceability, transparency and the decentralized structure of blockchain may impact CR practices in the fast-fashion industry. However, people also expect that certain limitations related to the technology and barriers within the fast-fashion industry must be addressed in order for blockchain to have an impact on CR practices within the industry.

6.5 Recommendations for Managers in the Fast-Fashion Industry

Based on the above discussion, the authors have the following recommendations for managers working in the fast-fashion industry:

- Decide if they are open to being transparent about its activities.
- Be prepared to collaborate and share information with industry actors, particularly supply chain actors.
- Have a clear focus and purpose of implementing blockchain, and decide on what data provided by the blockchain is necessary to meet the purpose.
- Develop human resources that are knowledgeable and capable of utilizing the technology in a business context.
- Start by obtaining an overview of the supply chain and the production process through the means of traceability before making changes to CR practices.

7 Conclusion

This thesis has sought to answer the following research question: How do people expect that blockchain technology may impact corporate responsibility practices in the fast-fashion industry? The answer to this research question is that people expect that traceability, transparency and the decentralized structure of blockchain may impact CR practices in the fast-fashion industry.

It has been found that traceability and transparency can provide fast-fashion brands with a better overview of their supply chain, as it: allows fast-fashion brands to identify social and environmental impacts in the supply chain and, thereby, critical points where action is needed; enables fast-fashion brands to take full responsibility for their actions; leads to greater control of the supply chain, which is key to managing the highly fragmented fast-fashion supply chain; and facilitates the process of aligning CR practices across the supply chain. Furthermore, it has been found that traceability and transparency may strengthen current approaches taken towards CR reporting in the fast-fashion industry, as it may: help firms identify where adverse impacts occur throughout the supply chain, enabling them to report in a more honest and transparent manner; contribute to the monitoring of CR activities; and provide the necessary information for CR reporting purposes. Transparency has been found to be able to promote inter-organizational trust between the actors connected to the same blockchain. This, in turn, can establish more certainty that actors in the blockchain network fulfill their respective responsibilities. Moreover, the traceability of blockchain has been found to align the focus of CR practices in the fast-fashion industry with the principles of a circular economy, as it can serve as a means to establish greater levels of recycling within the industry. Lastly, the decentralized structure of blockchain has been found to establish greater supply chain collaboration, supply chain integration, facilitate the process of sharing CR data, and strengthen collaboration across the supply chain.

However, it has also been found that people expect that certain limitations related to the technology and barriers within the fast-fashion industry must be addressed in order for blockchain to have an impact on CR practices within the industry. The limitations which the authors have identified are the uncertainty that the data logged onto the blockchain is authentic; the general resistance towards collaboration and information sharing; the lack of human resources who possess the necessary

knowledge about blockchain; the general reluctance towards new technologies and slow technological adaptation; and, finally, the cost of implementing and utilizing blockchain.

The purpose of this thesis has been to reach an understanding of the expectations that people have with regards to how BCT may impact CR practices in the fast-fashion industry. Employing the lens of social constructivism, the authors have acknowledged that meaning is constructed through social interactions. This epistemological position has, therefore, invited the authors to reach an understanding of the research phenomenon by socially engaging with the research participants to create meaning. The interpretivist philosophical position employed in this thesis has enabled the authors to interpret the meanings of the research participants, which has contributed to reaching an understanding of the research phenomenon. The meanings that have been open to interpretation are those, which have been collected through semi-structured expert interviews.

The authors have reached an understanding of people's expectations about the research phenomenon by employing sensemaking as an analytical perspective. To address the expectations held by the research participants, the authors have constructed a model, which builds upon theoretical concepts of sensemaking theory, namely identity, bracketing, enactment and prospective sensemaking. In the analysis, this model has been applied to the empirical data to analyze and interpret how each of the research participants make sense prospectively of their expectations about blockchain. The authors have grouped the expectations of the research participants based on their individual sensemaking to derive general expectations about blockchain. It was found that people have general expectations about the outcome, the technical structure and the implementation of blockchain.

These general expectations have served as the base upon which the discussion builds. As interpretivists, the authors have, in the discussion, interpreted the information that emerged from the interaction of the empirical data, the literature presented in the literature review and the authors themselves. These interpretations have finally resulted in the findings that answer the research question of this thesis. At the end of the discussion, the authors have established some recommendations for managers in the fast-fashion industry, which may serve as pieces of advice if they decide to embark on blockchain.

As a concluding remark, the authors want to emphasize that this thesis is a snapshot of the expectations that people hold about blockchain's impact on CR practices in the fast-fashion industry. The expectations that are presented in this thesis will undoubtedly be subject to great change, as sensemaking processes are ongoing. Moreover, blockchain remains in its infancy and is yet to be implemented in the fast-fashion industry. Therefore, only a limited number of use cases have been identified so far, and one could expect that more use cases are to be discovered in the future as blockchain gains ground in the fast-fashion industry.

8 List of References

Front page photo courtesy of Pinterest.dk

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