

THE IMPACT OF BLOCKCHAIN TECHNOLOGY ON BRAND LOYALTY IN
THE CONTEXT OF SUSTAINABILITY IN FASHION INDUSTRY

BY

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DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS
ADMINISTRATION

IN

DEPARTMENT OF BUSINESS ADMINISTRATION

YEDİTEPE UNIVERSITY

JAN, 2022

PLAGIARISM

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ABSTRACT

This study, which was carried out as qualitative research, aimed to search the effects of blockchain technology on the brand loyalty acquisition of fashion brands as an era of use in the fashion industry in the context of sustainability. The in-depth interview method was used as a qualitative research method. Seven basic semi-structured questions were formed by evaluating the literature research, sector professionals working professionally in the context of sustainability in the fashion industry and interested in blockchain technology were identified, and interviews were identified conducted with them. It has been made inference that the use of blockchain technology has a positive effect on gaining brand loyalty in the fashion industry in the context of sustainability. In this respect, it has been developed a new conceptual model for future researches.

Keywords: blockchain technology, sustainability, fashion industry, brand loyalty,

ÖZET

Nitel bir araştırma olarak yürütülen bu çalışma blockchain teknolojisinin, sürdürülebilirlik bağlamında moda endüstrisinde kullanım alanı olarak moda markalarının marka sadakati kazanımı üzerine etkilerini incelemeyi amaçlamıştır. Nitel araştırma metodu olarak derinlemesine görüşme (In-depth interview) yöntemi kullanılmış ve literatür araştırmaları değerlendirilerek yedi temel yarı yapılandırılmış soru oluşturulmuş, hem moda endüstrisinde sürdürülebilirlik bağlamında profesyonel olarak çalışan hem de aynı zamanda blockchain teknolojisiyle ilgilenen sektör profesyonelleri saptanarak bunlarla görüşmeler gerçekleştirilmiştir. Blockchain teknolojisinin kullanımının, sürdürülebilirlik bağlamında moda endüstrisinde marka sadakati kazanımı üzerine pozitif bir etkisi olduğu çıkarımı yapılmıştır. Bu doğrultuda gelecekte yapılacak araştırmalar için yeni bir kavramsal model geliştirilmiştir.

Anahtar kelimeler: blockchain teknolojisi, sürdürülebilirlik, moda endüstrisi, marka sadakati

ACKNOWLEDGEMENT

I would like to thank to everyone who encouraged and supported me for writing the thesis. I am grateful for all the supports. First of all, I would like to thank my supervisor Prof. Tulin Ural, who has supported and encouraged me for my research with her great knowledge and skills. Secondly, I would like to thank all my interviewees. Their contribution for this research were extremely valuable. Finally, I thank to myself for having the courage to choose a topic on which the thesis has not been written before.



Elyesa Eyiñç

Istanbul, 7 January 2022

TABLE OF CONTENTS

Plagiarism	i
Özet.....	ii
Abstract.....	iii
Acknowledgments.....	iv
Table of contents.....	v
List of figures.....	vii
List of tables	viii
1. INTRODUCTION.....	1
1.1 Purpose of the research.....	1
1.2 Importance of the research.....	1
1.3 Research questions.....	2
2. LITERATURE REVIEW.....	3
2.1 What is the blockchain technology?	3
2.1.1 General view of blockchain technology.....	4
2.1.2 The use of blockchain technology in fashion industry.	5
2.1.3 Understanding the public and private blockchain.....	7
2.1.4 The similarities of public and private blockchain.....	8
2.1.5 The differences of public and private blockchain.....	8
2.1.5.1 Public blockchain.....	9
2.1.5.2 Private blockchain.....	10
2.2 Fashion industry.....	11
2.2.1 Challenges in sustainable fashion industry.....	15
2.2.1.1 Environmental issues.....	17
2.2.1.2 Ethical issues.....	17

2.2.1.3 Traceability.....	17
2.2.1.4 Transparency.....	18
2.2.1.5 Truthfulness.....	18
2.2.2 Customer satisfaction in sustainable fashion industry.....	19
2.2.3 Brand loyalty in sustainable fashion Industry.....	20
2.2.4 Life-cycle of a fashion product.....	22
2.3 Blockchain implementations for fashion industry.....	23
2.3.1 Advantages of blockchain technology for fashion brands.....	23
2.3.2 Disadvantages of blockchain in fashion industry.....	24
3. METHODOLOGY.....	24
3.1 Interviews.....	25
3.2 In-Depth interviews... ..	25
3.3 The respondents, In-depth interview questions and answers.....	27
4. RESULTS.....	46
5. DISCUSSION.....	47
6. REFERENCES.....	49

LIST OF FIGURES

Figure 2.1. Types of networks.....	3
Figure 2.2. Life-cycle of a fashion garment.....	22
Figure 3. The effect of blockchain technology implementations on brand loyalty.....	46



LIST OF TABLES

Table 2.1. Types of blockchain configurations.....	7
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1. INTRODUCTION

1.1. Purpose of the research

The purpose of the thesis is to examine the potential impact of blockchain technology on brand loyalty in the fashion industry in the context of sustainability. Furthermore, to get deeper understanding the possible factors could effect to empower brand loyalty by implementing blockchain technology in their operations by fashion brands.

1.2. Importance of research

The importance of this study, which is carried out as qualitative research, is to investigate the effect of blockchain technology on brand loyalty in the fashion industry in the context of sustainability and to examine how fashion companies can offer several application areas in which they can integrate this technology into their brands in terms of gaining brand loyalty. In addition, another importance of this research is that since it examines a subject on which no academic study has been done before, it will examine whether the data to be obtained as a result of the study can pave the way for future academic studies.

1.3. Research questions

Within the scope of the aim, two research questions were generated: Research question 1: How does the use of blockchain technology by fashion brands relate to gaining brand loyalty in context of sustainability? Research question 2: Does using blockchain technology have intermediate effects on brand loyalty acquisition? If so, what is the relation of these intermediate effects on brand loyalty acquisition?

To be able to find out the answers for two research questions, the following seven semi-structured interview questions have been formulated to be asked to selected six fashion industry professionals who are familiar with the blockchain technology and sustainability practices in the fashion industry.

1-How to open up the concept of sustainability in the fashion industry?

2-How to describe the relationship between blockchain technology and sustainable practices in the fashion industry?

3-In the context of sustainability in the fashion industry, is it possible to point out a trust problem between brands and customers?

4-To what extent could fashion brands' use of blockchain technology build trust between consumers and brands in terms of sustainable practices?

5-What would be the effects on customer satisfaction of building trust by blockchain technology between brands and customers in the context of sustainability?

6-How to define the relationship between customer satisfaction and brand loyalty?

7-What are the effects of using blockchain technology on creating brand loyalty in the context of sustainability?

2. LITERATURE REVIEW

2.1. What is the blockchain technology?

Blockchain technology is a distributed, decentralized ledger as an open-source network software, has been invented by a person (or group of people) using the name of Satoshi Nakamoto (probably a pseudonym), who created Bitcoin and brought blockchain technology to the world. An electronic ledger built around a peer-to-peer system lies behind the blockchain as a technology. One can make open sharings among disparate users to create an unchangeable record of transactions that guarantees truthfulness.

Since its inception, blockchain has been a powerful candidate for the next big technology to transform industries such as the fashion industry, manufacturing, healthcare, logistics, and many more. (Joshi, 2020).

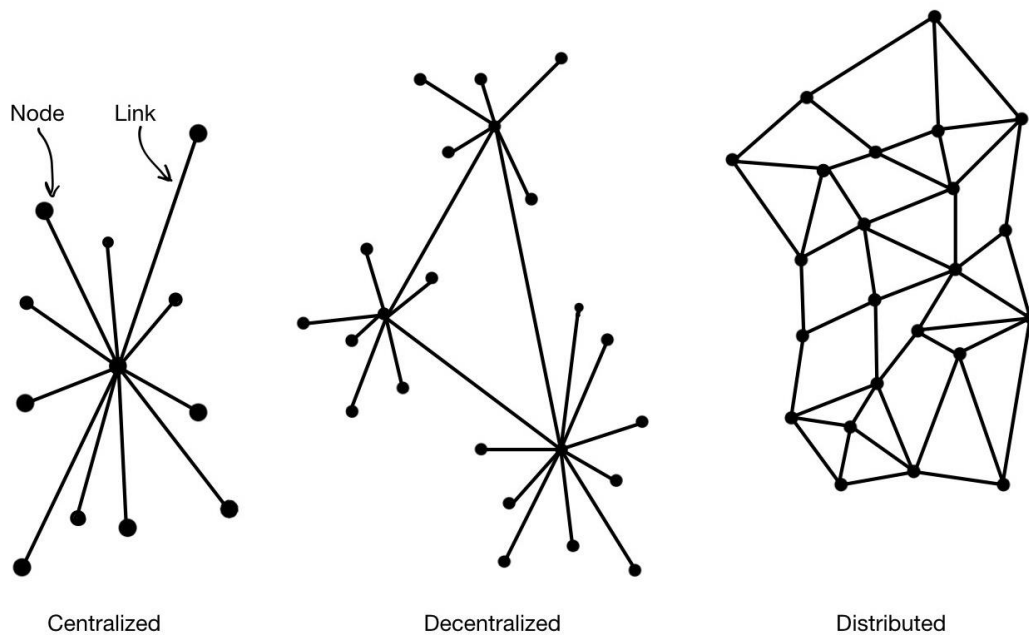


Figure 2.1. Types of networks.

2.1.1. General view of blockchain technology

Blockchain -unlike centralized structures- describes a decentralized and distributed ledger as an agreement software.

Blockchain network specifications can be summarized as the following:

- Distributed ledger technology or DLT: identical copies of a digital ledger maintained by several nodes that is computing devices.
- Consensus: updates to the ledger are achieved by a pre-defined mechanism that ensures that all nodes have the same copy of the ledger.
- Chain of blocks that is blockchain: a form of DLT in which the ledger data is collected in the blocks.
- Blocks are engaged and secured with each other.
- The impossibility of deletion of the recorded information on each blocks.
- Hence, the blockchain is well-suited to record events, manage records, process transactions, trace assets, and vote. (Hegde, 2019)

This technology provides a lot of applications that can be used in different eras such as crypto currencies, contents that designed for digital era, electronic voting systems, transparency and accountability, smart contracts, supply chain and DAOs.

Especially implementing transparency and traceability in the life cycle of a design product are undoubtedly relevant for the fashion industry. (Pautasso, Ferro, & Osella, 2019)

As fundamental level, blockchain could be explained as a chain with blocks that each one is lined by each other. To use "block" and "chain" in this subject reflects digital data (the "block") recorded in data (the "chain"). (Quora, 2018)

2.1.2 The use of blockchain technology in the fashion sector

Using the blockchain technology is an indispensable part of the fashion sector's evolution from slow-evolving to become an early-adopting sector to engage the needs of this century. (Coleman, Nevalainen, Pirinen, & Sundberg, 2020).

With the current demand for transparency from today's customers, many fashion brands are operating methods to bring supply and distribution processes more effectively. (Nevalainen et al. 2020). Blockchain can be used by each suppliers and whole logistic operations to record the all data for fashion garments. These data can show the origins and ingredients of product so that this technology gives an opportunity to companies to verify their products' authenticity. The labels such as "organic," "local," and "fair trade" also become objectively reliable by the process. (Conway, 2021).

By linking blockchain technology with "quick response" codes also know as QR system, fashion brands could follow the many levels regarding sourcing the raw materials, distribution operations, creating the garment and transporting to retails for the customers. (Nevalainen et al., 2020). Moreover, one can use the blockchain to provide that the all steps are operated ethically, sustainably, and securely by monitoring the intermediaries. (Greene & Longobucco, 2018).

In summary, using blockchain technology for a fashion product's life cycle would create greater transparency and strengthen verifiable trust between brands and consumers. Thus, brands would gain stronger brand loyalty in the industry among consumers.



2.1.3. Understanding the public and private blockchain

Blockchain can be public and private and both of them has its own unique configurations.

Public	Private
Voting Finance Supply Chain Video Games Data Traceability DAO Ecosystems NFT Metaverse	National Defence Military Law Enforcement Cyber Security Private Communication

Table 2.1. Types of blockchain configurations.

2.1.4. The similarities of public and private blockchain

The meaning of public and private blockchain technology is often misunderstood. This misunderstanding is inevitable for many people since these two blockchain features have some similar identities (Jayachandran, 2017):

- Public blockchains and private blockchains provide decentralization.
- Each of these blockchains record data securely.
- In both blockchains, changing or hacking data is impossible.
- They both are “peer-to-peer networks.”

2.1.5. The differences of public and private blockchain

The main difference between public and private blockchain is linked by who can connect to the related network and who can not. Furthermore, the data in public blockchain is reachable by third parties but in private blockchain, it is not allowed but just identified parties. (Jayachandran, 2017)

2.1.5.1. Public blockchain

A public blockchain has an “open-source” network. The whole data which has recorded in this chain is reachable for people. Due to its permissionless nature, everyone can display the data, they can read the informations and can also interact by writing and recording data on the blockchain. The data is accessible to all. No particular participant has control over the data in a public blockchain. Public blockchains are also decentralized and immutable. It means that once an entry is made on the blockchain, it cannot be modified or deleted once the entries are validated. Some of the benefits of public blockchain are (Joshi, 2020):

- Distributed ledger: All nodes in the blockchain participate in the validation of transactions.
- Open reading and writing of data: Any participants could view, write, and view information.
- Immutable: Once an entry is validated, it cannot be modified or deleted.

A public block chain can be useful for fashion industry. For example, fashion brands can use block chain technology to have a historical record of all their operations. The data can be added by manufacturers, distributors, designers and other professionals regarding the details of a product’s life-cycle from birth to the end consumers, the cost of production, and other costs involved in the ecosystem. The data can be viewed by everyone on the block chain, bringing in transparency, however, the data once added cannot be modified.

2.1.5.2. Private blockchain

A private blockchain is also known as a consortium blockchain which is an invitation-only blockchain. It requires permission for the participating parties to read, write, or audit the blockchain. The blockchain can have multiple layers of data access to keep certain pieces of data confidential. Therefore, private blockchains ensure a higher level of security, privacy, and performance. Due to their confidential nature, they are suitable for specific sectors such as finance and government services. The transactions and data are not publicly visible and can only be accessed by the participating parties. Some of the benefits of a private blockchain are as the following (Joshi, 2020):

- **Permissioned blockchain:** The consortium has the only authority for the data recorded on the blockchain.
- **Improved privacy:** The transactions on the blockchain can only be accessed by parties that get permission.
- **Increased scalability:** Enterprises can add and remove nodes on the network on demand.
- Private blockchains can be adopted in the corporate sector, where details must be shared only between particular nodes. For example, a consortium of banks can adopt a private blockchain where financial transaction details are only shared with the relevant parties.

2.2. Fashion industry

“Fashion as an industry is a product of the modern era. Before the mid-19th century, practically all clothing was handmade for individuals, either as home production or on order from dressmakers.” (Steele, and Major, 2020; 1) By the early-age of the twentieth century, with increasing of new technological equipments like the sewing machine, the increase of capitalism and the improvements of the factory operations of creating garments, and the proliferation of retail stores, fashion products had rapidly become to be mass-produce. Even though the fashion sector developed in European countries and in America, today this industry became a global industry. The system of producing a fashion garment has often designed in one country, produced in another country, and shipped to one another country to be sold . (Steele, and Major, 2020)

The fashion industry has there major levels:

- Pre-producton: the production of raw materials
- Production: creating fashion garments in atelier
- Post-production: transporting the garments to retails, marketing process and also selling in second hand markets

These there main steps have its own sectors. (Steele, and Major, 2020)

The fashion sector is worth approximately \$3 trillion, yet it faces multiple problems. These problems vary; unethical working spaces for labors, sustainability, environmental conditions and concerns – wasting fabrics, not being focused to reuse clothes and fashion products, consuming natural resources. All these problems are difficult to handle but not impossible to solve.

Blockchain and arising technologies present a chance to leverage sustainability, social impact, and ethical sourcing in one of the world's biggest industries. The fashion industry is complicated and on the point of a collapsing ecosystem. Moreover, its \$800 billion international clothing industry has become notorious for its challenges concerning the ethical treatment of industry workers, IP, counterfeit supply chain problems, environmental and sustainability and illicit competition, and lack of rentability of the industry. A product's life-cycle lacks transparency from raw materials to the end products and even in the second-hand market.

One in every six people in the world is connected with the fashion sector, and it accounts for 4% of the world's Gross Domestic Product (GDP), which only makes the situation even more noticeable as it touches today's whole civilization customers, designers, fashion industry players, and producers plus the end of the chain shoppers. (Turrillo, 2020).

Blockchains are the foundational confidence technologies of our time as public and private. Blockchain or distributed ledger technologies have a holistic genetic structure and multiple capacities that can fix issues such as supply chain route records to create confidence in the origin of products and identify sources of production and manufacturing while also bettering some middlemen's serious issues. On the other hand, it can improve the understanding and processing of data to optimize operations in the global business landscapes. This leads to optimizing resources, preview issues, finding the best approach to tackle issues, automating and predicting, and managing serious concerns of production, distribution, and quantifying and optimizing processes and operations in real-time.

The challenges with these new technologies need lots of maturities and a robust road map to push them forward. Moreover, how to make it a global powerhouse that works to enhance things besides the advertising and find actual scope and scalable resolutions to entire industries and sectors. This is even more significant when it comes to blockchain. Can this technology and the new fashion and technology (fash tech) movement optimize the whole fashion industry? Furthermore, how can this central part of the world economy and society use DLT blockchain technologies to solve the issues and challenges? (Turrillo, 2020).

The fashion sector faces issues from labor force rights and essential concerns such as imitation, handling of production by emerging countries, and more. From an environmental point of view, things get even worse. First of all, there is the overuse of water. According to a report by the Boston Consulting Group (BCG, 2021), the extensive use of water will cause excessive absence in countries like China and throughout Asia by 2030. Fashion manufacturing produces over 92 million tons of substantial debris, which goes to terrible and brutal trash yards or up in smoke. Last year, one of the significant fashion premium global brands alone was called out to burn \$37 million of clothes and goods rather than sell them at a discount — a standard procedure to preserve a brand's luxury shine. (Turrillo, 2020).

These profound challenges have made the fashion industry go through essential changes. The fashion industry is shifting faster than ever. Customers have started to pay attention to where the products come from, the conditions of the workers, and the impact on the environment that the clothes have. In this age, structuring strong brand

loyalty is quite complex and challenging than ever. Brands need to satisfy their consumers by their sustainable and ethical movements transparently. As it seems, there is only one way to obtain this, and it is implementing blockchain technology to their operations to reveal their authentic product's life-cycle transparently to strengthen trust among consumers to gain brand loyalty. Meanwhile, new designers in the skin of entrepreneurs and new collaborations try to distinguish from their well-known prominent opponents. They have found a loophole in this overpopulated market to contrast while providing inexpensive, sustainable, and more suitable products by bringing a fully translucent ecosystem.

Much has been written about blockchain in these few tech-frenzy years, and much has been talked about how unjust and unsustainable the fashion enterprise is in today's dominated world. If blockchain can set up a decentralized and more democratic medium, this technology can help a more inclusive, tolerable fashion industry within the Fashtech movement. (Turrillo, 2020).

2.2.1. Challenges in sustainable fashion industry

The fashion sector is being defined as the second-biggest polluting industry right after aviation. This is one of the very new findings of a new research has been written by Kirsi Niinimäki from Aalto University, who says that fashion contributes almost 190,000 tonnes of microplastic pollution -which has been recorded in oceans- besides generating huge amount of fabric waste in every year, consuming approximately trillion liters of water per year (Mavrokefalidis, 2020).

The fashion sector has important sustainability and ethical problems. By 2030, it is estimated that the fashion industry's water use will increase by almost 50 percent to 118 billion cubic meters, its carbon foot-print will rise to 2,791 million tons, the weight of waste the industry produces will hit 148 million tons. Due to these estimations, fashion brands have announced some operational practices to reduce the demand on sources and minimize harmful effects on environment. (Sumner, 2019).

When we think of industries harming the nature, food production, transportation, energy sector, clothing might come to mind. However, the fashion sector is one of the biggest resource-demanding industries. Current fashion industry accounts for 4% of greenhouse gas emissions and 20% of industrial water pollution globally, and workers work under unethical conditions and earn unfair salaries (GFA, 2021).

There is a case could be considered as a game changer for whole fashion ecosystem to overcome unsustainable operations and unethical conditions. It is called “Rana Plaza” collapse. On April 24 of 2013, building named as “Rana Plaza” is collapsed in Dhaka, Bangladesh, which had five manufacturing factories, killed 1,132 workers, and injured more than 2,500 people due to unethical and unsustainable working conditions such as low-level work safety and unrestraint in the factories. Only five months earlier, at least 112 people who works the company has died in Dhaka for similar problems.

After a considerable level of consciousness about the consequences of the dark side of the industry, the frontiers of the fashion industry have begun to organize international events such as Copenhagen Fashion Summit (+CFS), to discuss the issues within the industry runners such as brand owners, designers, suppliers, manufacturers, editors. To critic the components of the fashion industry to redesign the fashion ecosystem for the better. Besides these movements, there has also been another awakening among consumers. Non-profit organizations like Fashion Revolution (Fashion Revolution, 2021) have been organizing meetings physically and digitally to feed society to increase the demand for greater awareness among consumers for transparency in the industry.

2.2.1.1. Environmental issues

In the fashion industry's current production model, non-renewable resources are being used to create fashion garments often used for only a short period. Based on Ellen MacArthur's research, the fashion sector causes a big amount of waste and pollution because of its operations to produce fashion products. Carbon emission from clothing sector is around 1.2 billion tons yearly. Additionally, less than 1% of the fabrics used to manufacture garments is recycled into new products, it means loss of \$100 billion worth of materials. (Pautasso et al., 2019).

2.2.1.2. Ethical issues

From the social perspective, the fashion sector also faces important difficulties. The extensive recourse for outsourcing to low-wage countries results in poor working conditions offered to work much hours than agreement, not earning full salary, hiring child as workers in emerging countries. In 2013 "The Rana Plaza collapse" in Bangladesh shows the possible risks linked with those non-ethical working conditions. (Pautasso et al., 2019).

2.2.1.3. Traceability

The concept of transparency has become highly important as a means for tracking supply chains and showing sustainability-driven operations, and handling against counterfeiting. In this point traceability becomes one of the main tool to create sustainable and ethical ecosystem. Counterfeiting issues are described by digital media called The Business of Fashion, as one of the main problems occur in international fashion market. (Pautasso et al., 2019). Implementing blockchain's traceability configuration to fashion brands would overcome this treat in efficient way.

2.2.1.4. Transparency

The fashion industry, in particular, is known for its “best-kept secrets,” the manufacturing of fashion or middlemen has never been an open book, which gives businesses their competitive advantage. However, it is believed that the fashion players cannot play with these typical traditional practices again in the future, as long as they want to have a long-standing performance across the business.

Given the consumer demands for greater transparency through the value chain, we can see the three essential dynamics (transparency, traceability, and trust) in the coming period. This is why consumers need to know their purchasing power to urge the brands further to take transparency and traceability seriously, which includes knowing where all the stages of the supply chain are. There is no doubt that “sustainability” is no longer a trend but a business imperative. (Lam, 2020).

2.2.1.5. Truthfulness

Today's informed consumers are closely watching brands' social and environmental practices in the fashion industry. However, one of the most significant issues is how consumers trust the brands have truly sustainable approaches and trust the information that brands share transparently regarding their ethical and sustainable practices without needing any third intermediates. What would be the critical point that consumers would understand the brands' reliability on these subjects? There seems to be merely one way to solve this challenge in today's technology: implementing blockchain technology.

2.2.2. Customer satisfaction in sustainable fashion industry

Customer satisfaction evaluates customers' perceived satisfaction with their experience of a company's offerings. It is mostly based on survey data and expressed as a rating. This metric quantifies an important dynamic. When a firm has customers as loyal ones, it has word-of-mouth marketing in a positive way, which is "free-of-money" and quite effective. In a survey of almost 200 expert marketing managers, 71% answered that they took the "customer satisfaction" metric quite helpful in managing their companies and operations. Customer satisfaction is described as a term that defines how satisfied customers are with a firm's products, services, and capabilities. Customer satisfaction plays an essential role in the success of any business in the fashion industry since the primary condition for creating brand loyalty is to achieve customer satisfaction. In other words, customer satisfaction is defined as a prerequisite for creating brand loyalty. (Farris, Paul W.; Neil T. Bendle; Phillip E. Pfeifer; and David J. Reibstein, 2010)

Achieving customer satisfaction even in the sustainable fashion industry is positively related to the truthfulness of sustainable practices that brands claim to implement. In this respect, blockchain technology emerges as the most important tool that can make this truthfulness visible.

2.2.3. Brand loyalty in the sustainable fashion industry

Brand loyalty could be defined as when a consumer has a good experience and dedication for a brand (Jacoby & Kyner, 1973). The loyal customer buys the same product or services from the same company again and again, even though there are some optional brands in the sector (Jacoby & Kyner, 1973). The engagement of a brand loyal customer will not replace against the brand, regardless of opponent's practices or changes in the occasions (Oliver, 1999).

Brand loyalty is also a part of the fashion industry, where brands in this sector face problems achieving it in current generations due to sustainability and ethical values. The 2013 Rana Plaza collapse killing more than a thousand people was destructive and eye-opening to fashion customers. The catastrophe sparked “the Fashion Revolution” campaign and sustainability in fashion, making fashion a secure, reliable, and fair industry. Reporter companies did many surveys, and the results showed that today's consumers are getting more conscious about their purchases. They demand more transparency from brands. They want to know exactly where those products get made, who makes them, and under which working conditions they are produced. (K3, 2021)

Buying decisions are used to often to be run by desires associated to pleasure and excitement. Nevertheless, things have gotten different lately. Today, consumers' purchase decisions are also linked to sustainability and transparency regarding the industry's brands' operations.

The fashion ecosystem is evolving rapidly, during a couple of years have seen how challenging it is for clothing brands to integrate to these changes. As stated by digital

media called The Business of Fashion's report by 2019 (McKinsey & Company, 2021), one of the most urgent difficulties for the year onward for businesspeople in the fashion sector is the "need to achieve greater sustainability and transparency" to satisfy consumers' needs to structure the strong brand loyalty among today's -conscious-consumers. (K3, 2019)

Therefore, the brands in the fashion industry have started to redesign their business models to create a more conscious ecosystem to greater customer satisfaction to strengthen brand loyalty. However, there has been a big problem with how consumers would trust the brands that genuinely run a sustainable and ethical business ecosystem.

In today's technology, there has been only one option to solve this issue is implementing blockchain technology which represents a distributed ledger and provides open-source data sharing so that brands would store a product's complete life-cycle data such as components of fabrics, transportation process, the usage amount of water and electricity while producing, who made the garments, where has been manufactured and stocked. Implementing the technology to redesign the business model would give an enormous opportunity to verify the trust of the brands among today's consumers.

2.2.4. The life-cycle of a fashion product

In this study, the definition of the life-cycle of a fashion product covers all the processes of making the fashion product in three phases classified as pre-production, production, and post-production.

- Pre-production: producing and gathering necessary components of the products, as sown, grown and harvest it to create ready-raw materials.
- Production by Atelier: cutting, sewing, and other steps to create finished products.
- Post-production by Retail: packaging, the transformation of the end products to the digital and physical retails and renting -second hand- market and after collecting unused garments to convert it as raw material by the relevant factory.

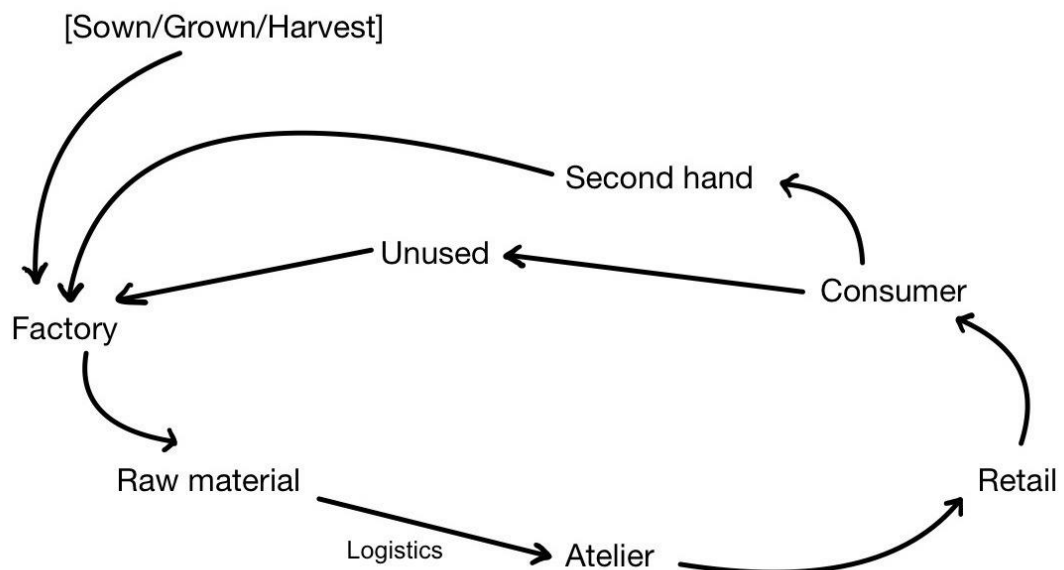


Figure 2.2. Life-cycle of a fashion garment. Each arrow represents a logistics process such as between Raw material and Atelier. (This figure is developed by researcher.)

2.3. Blockchain implementations for the fashion industry

2.3.1. Advantages of blockchain technology for fashion brands

Blockchain is more than just a data repository system. Other than data hold, the data can also be shared with other partakers safely and securely. (TOC Logistics, 2019) With the application of blockchain technology to supply chains, transparency is one of the great promises of blockchain technology. Since transactions are recorded on a blockchain chronologically, collaborating parties in the blockchain can see transactions. In this way, collaborating parties move away from the idea of having their data silos and take a more honest, translucent technique instead. The benefit for the parties in the chain is that the data is auditable for every party. (Taylor, 2017)

A blockchain is a network of collaborating parties with a decentralized database. It means that most parties that cooperate on a blockchain have copies of all transactions. For business connections where confidence is prominent, the idea of possessing a copy of all the transactions can provide much conviction. Compare having a copy of a blockchain's transactions to depending on a single, central entity providing their transaction database. How would someone know if the primary party always tells the truth? Blockchain technology also includes instruments to guarantee that parties consider and agree on the data when data is added to the blockchain. Since the commitment of all parties on a blockchain might not be certified, reaching a consensus on new transactions gives more reliable contracts to the group of all parties as a whole. (Taylor, 2017)

2.3.2. Disadvantages of blockchain in the fashion industry

Cost, scalability, and lack of understanding: Blockchain might be one of the most effective tools to ensure consumer satisfaction and brand strength in today's age, but implementations still have some difficulties as stated above (Guillén, 2019).

Blockchain technology has not yet been developed and understood completely. Many analysts warn against adopting blockchain platforms for large-scale production (TOC Logistics, 2019). Since this technology is not fully understood, implementing blockchain technology in brands' operations might not make sense for the consumers in the society, so the consumers must be educated about what blockchain is and what it would mean to create a greater sustainable fashion ecosystem.

3. METHODOLOGY

The main purpose of this study is to examine the potential impact of blockchain technology on brand loyalty in the fashion industry in the context of sustainability. Furthermore, to get deeper understanding the possible intermediate factors that could effect to empower brand loyalty by implementing blockchain technology in their operations by fashion brands. A qualitative research was conducted to achieve this aim.

Due to the magnitude of the studies, there is a need to collect as much important data regarding possible blockchain configurations in fashion industry, sustainability in fashion industry and brand loyalty as possible from the selected managers and fashion industry professionals to accomplish a deeper understanding of the external and internal factors of using The Blockchain Technology on Brand Loyalty in The Context of Sustainability in Fashion Industry.

3.1. Interviews

The semi-structured interview is neither a free communication nor a highly structured questionnaire. Semi-structured interviews ensure the possibility to regulate the order of the questions, and the respondents can express their own thoughts and tell everything in detail more than relying only on forms and questions prepared in advance of the interview.

In other words, semi-structured interviews are quite flexible than standard methods such as structured interviews or surveys. Besides all, semi-structured interviews create the possibility of having a deep understanding of the studies, which is stated as in-depth interviews.

3.2. In-Depth Interviews

A qualitative data collection method, in-depth interviews provides the opportunity to gather rich, detailed information regarding how people think and behave and unfolding complicated activities. They can be used as a standalone research method or as part of a multi-method design, depending on the needs of the study. The style of the interview depends on the interviewer. Efficient in-depth interviewers listen rather than speak.

The interview is conducted using a discussion plan which facilitates the flushing out of the respondent's views through open-ended questioning. Projective techniques can be incorporated into the interview too. Designing in-depth interview is a rarely structured interview. It provides freedom for both the interviewer and the interviewee to express additional spots and change the way conversation evolve, if it is needed.

In-depth interviews are generally made out face to face so that a rapport can be created with respondents. However, due to the Covid-19 pandemic conditions, most companies and professionals tend to have meetings virtually. Thus, all the meetings for the interview were scheduled for a virtual meeting. In-depth Interviews has been made by having Zoom (which is a cloud-based video communications application) meetings.

Each of the in-depth interviews took approximately two hours. The data obtained during the interviews were instantly recorded on the computer in a word file created with the name of in-depth interview notes. A specific word file has been created for each of the In-Depth interview separately.

In-depth interviews started on April 7, 2021, and were held with 6 different industry professionals in about 3 months, and the interviews were completed on July 13, 2021. The notes taken during the in-depth interviews has been reviewed in late July. In August 2021, the notes based on the answers were organized and separated according to the order of the questions without adding any comments. Each answers that gattered from interviewees added to the thesis.

Communication continued with these six industry professionals who were interviewed until October 19, 2021, including July and August. Communication were conducted via e-mail correspondence and video calls over the phone. In this process, additional questions were asked and deeper and wider information was obtained. The information that gathered in these communications, which were made as a video call over the phone and/or via e-mail, was recorded instantly on the computer, in a word file created under the name of in-depth interview notes.

As of October 19, 2021, the relations with the interviewees were terminated and the thesis writing process was focused on the data obtained during all the In-Depth interviews with six industry professionals.

3.3. The respondents, In-depth interview questions and answers

The issue of sustainability and ethical practices in the fashion industry has become the most important topic on the agenda especially after the Rana Plaza incident in 2013.

After the Rana Plaza incident in 2013, many discussion sessions have been held on the topic of sustainability and ethical practices in the fashion industry until today. Speech panels and various campaigns are also held on sustainability during the years. All these and similar events are organized by global corporate organizations and non-profit associations that shape the fashion industry in different fields. Some of these institutions are; Swedish Fashion Association, WGSN (the global authority on change, using expert trend forecasting combined with data science to help you get ahead of the right trend), Fashion Revolution (a not-for-profit global movement for a clean, safe, fair, transparent and accountable fashion industry), The Business of Fashion VOICES (a digital media and The Business of Fashion VOICES: BoF VOICES is an annual event that brings speakers together from the worlds of technology, business, politics, finance, science, health & wellness , philanthropy, activism, and of course, fashion), Global Fashion Agende (a non-profit organization that fosters industry collaboration on sustainability in fashion to drive impact), Copenhagen Fashion Summit (one of the leading business event on sustainability in fashion). Along with all these events in the fashion industry that are specific to sustainability, and various reports have also started to be publishing.

Despite the fact that various practices in the field of sustainability and ethical practices in the fashion industry have been implemented by fashion brands and steps have been taken to overcome sustainability and ethics problems, it has been expressed since 2017 that the step to be taken in order to share these steps with consumers as a kind of proof of the accuracy of these steps is possible with blockchain technology. While sustainability and ethical practices were the most important issues of the industry, which was opened for discussion with the events organized by the leading organizations of the industry in the fashion industry as of 2013, the topic continued with the addition of blockchain applications in the fashion industry as of 2017.

In this study, industry professionals who were deemed suitable for in-depth interviews were selected among all these events titled sustainability and ethical practices organized as of 2013 and also the sessions organized by under the name of blockchain technology in sustainable fashion industry. Besides all these events, some interviewees have been also selected from The Business of Fashion Global Reports has been prepared with cooperating McKinsey Company that published as of 2017. In this research, it has been determined that these six sector professionals interviewed in-depth are well-equipped both for sustainability and ethical practices in the fashion industry and for the concept of blockchain technology.

As a result, six fashion industry professionals who have familiarity with blockchain technology and sustainability issues were defined. The interviewees were selected from Istanbul/Turkey, Oslo/Norway, Stockholm/Sweden, Copenhagen/Denmark and London/United Kingdom. In-depth interviews were done with those six international fashion industry professionals to get better results for this research. Due to the pandemic conditions, all conversations were made virtually. Primarily video meetings were scheduled for the interviews by using Zoom and Google Meet programs.

Before the interviews, many interview questions were prepared regarding blockchain technology, sustainability, trust, customer satisfaction, and brand loyalty, then, some of them were eliminated, and some of them were combined so that the main questions were finalized in a reasonable number. The motivation behind all questions was to understand the relations between blockchain technology and brand loyalty in terms of sustainability in fashion sector.

After the interviews, communication with some interviewers continued. Correspondence continued via e-mail and video calls on phone to clarify some issues, and final results were obtained. All questions and answers were collected under the seven main Interview questions by six sector professionals.

Details of the interviews:

Thesis subject: The Impacts of The Blockchain Technology on Brand Loyalty in The Context of Sustainability in Fashion Industry

Interview with P1, P2, P3, P4, P5, P6,

P1: Person 1

Profession: Fashion School Manager and Fashion Brand Management Lecturer

Age: 30-40

Gender: Male

P2: Person 2

Profession: Fashion Consultant and Influencer

Age: 30-40

Gender: Female

P3: Person 3

Profession: Chef Brand Officier for an International Fashion and Jewelry Brand

Age: 30-40

Gender: Female

P4: Person 4

Profession: Fashion Consultant

Age: 40-50

Gender: Female

P5: Person 5

Profession: Sustainable Fashion Activist and Blockchain Technology Expert

Age: 20-30

Gender: Female

P6: Person 6

Profession: Blockchain Software Developer and Fashion Consultant

Age: 30-40

Gender: Male

IQ: Interview Question

A: Answer

IQ1/ How to open up the concept of sustainability in the fashion industry?

P1-A1: Minimizing the possible damage to the nature by not using chemical fabrics and getting rid of waste of fabrics by re-separating a used fabric such as denim into yarns and reusing them again as we call it recycling. All these approaches would define the concept of sustainable practices in the fashion sector.

P2-A1: The concept of sustainability in the fashion industry means a fashion ecosystem that is carried out without causing any direct or indirect damage to the environment and nature.

In addition to this, I think that the ethical approaches such as working conditions, proper salaries and positive discrimination would be considered under the main topic of sustainability.

P3-A1: In her speech at the TEDxCopenhagen organization in October 2013, Eva Kruse, CEO of the Copenhagen-based Global Fashion Agenda Company, explained the fashion ecosystem as one of the dirtiest industries in the World.

She also stated that compared to other industries, water and energy consumption in the fashion industry is also increasing uncontrollably. Additionally, “The Collapse of the Rana Plaza” textile building in Bangladesh in April 2013 caused the thousands of deaths of fashion textile workers. This collapse has opened the eyes of fashion Industry. Sustainability and ethical issues started to be discussed more than ever.

In this context, eliminating the pollution in fashion Industry and providing proper working conditions and salaries would explain the concept of sustainability in the fashion ecosystem.

P4-A1: The notion of sustainability is quite comprehensive. During the cutting phase of a product produced by traditional methods, could create waste of fabric parts can be left behind. There are new technologies that prevent this problem and it is called zero-cut. For example, this is an example of sustainability. It prevents fabric waste.

The use of chemical dyes also damages the nature. Preventing this damage could also possible by some investments to produce organic dyes. This would also be an another

sustainability attitude. In short, we can say that a model that does not harm nature and can prevent waste of fabric, water or energy could name as sustainability.

P5-A1: The concept of sustainability in the fashion industry refers an ecosystem that does not pollute nature and provides ethical working conditions.

P6-A1: Sustainability in fashion Industry would express an ecosystem compatible with nature by reducing carbon footprint, by not creating waste of fabrics during production and by not using chemical dyes.

IQ2/ How to describe the relationship between blockchain technology and sustainable practices in the fashion industry?

P1-A2: Blockchain is still quite new technology for all industries. Blockchain is an open source system of recording information in a way that makes it almost impossible to change, hack, or cheat the system. In the fashion industry, it is possible to record the amount of electricity and water consumed for the production of a product, the type of fabric used, the logistics model applied, etc. many data could be recorded on this technology. All data could be written by costumers with this tech.

Since the data processed in this technology is immutable, it can encourage the industry to make the production process as wasteless as possible in order to enter more reasonable data. This could contribute to the sustainability understanding in the sector and could satisfy the consumers by transparent data.

P2-A2: Brands that declare that they implement sustainable practices in their ecosystems can record their operations with blockchain technology and share this with everyone as open source. I think that the generation-Z, which grows with technology, would attract more attention. I believe that the brands that are compatible with blockchain technology will also be positively differentiated in the sector.

P3-A2: It's a fairly new technology. The area of use in the field of Fintech (Financial Technologies) is becoming widespread. In the fashion industry, this technology can be used especially in the supply chain. It is possible to record information such as the amount of water and energy used in the production process and also the properties of the fabrics used. All those informations would be shared with customers as an open source and unchangeable form with blockchain technology which could create more transparency and built trust between brands and customers.

As this perception becomes established, brands will want to take more sustainable steps and will want to share this data. I think thik tech will positively affect the sector in context of sustainability.

P4-A2: A brand that uses the zero-cut method as I mentioned in the first question and a brand that prefers organic dyes instead of chemical dyes can record these practices with blockchain technology.

All those data can be shared with consumers through an open source site by the properties of blockchain technology. For example, a QR code could be placed on product labels, the dates we record with blockchain would be linked with this QR code

and by this code, many stages of that product can be viewed by customers instantly. I see blockchain as a very valuable technology for brands that claim to be sustainable.

Using blockchain technology is like a true guarantor of being sustainability.

P5-A2: It is said that blockchain technology can solve the problem of sustainability in the fashion industry. What is expressed as the problem here; it's about the possibility of using this concept as a marketing tool.

This creates distrust between brands and customers. With this technology, it is possible to record and share all the stages from the production stage of the main materials of a product to the moment that product is produced and entered the store. As a result, this technology provides an opportunity for brands to disclose what they are doing in the name of sustainability to be able to gain trust in the industry.

P6-A2: Recording the practises made in the context of sustainability with blockchain technology is a kind of definitive proof of the accuracy of these practices in fashion Industry.

IQ3/ In the context of sustainability in the fashion industry, is it possible to point out a trust problem between brands and customers?

P1-A3: I do not believe that the trust issue has been completely overcome yet.

However, the interest in brands such as Reformation, which have built all their operations on sustainability, is an indicator that many brands will follow. I also see the

developments in big organizations such as H&M and Inditex positively, but personally, I also have a trust problem against brands. Many brands may say that they are taking more ethical and sustainable steps, but I still think they don't explain much. For instance let's think about The Rana Plaza collapse. If this hadn't been, perhaps these issues would still not have occupied such a place on our fashion industry's agenda.

P2-A3: I can say that the concept of sustainability has become a trend. Sustainability has become an element that appeal to customers. For this reason, many brands has been expressing that they are a more sustainable brand via their communication channels or they are willing to be more sustainable, but it is very difficult to know whether this is really true or they are doing it just for marketing purposes. In this sense, I observe that there is a serious problem of trust in the sector.

P3-A3: Yes. The notion of sustainability has become very trendy in the sector. It is quite difficult to understand whether a brand is actually implementing the practices as they say or not. There are third-party firm in this regard.

These firms examine brands and draw conclusions about sustainability approaches to let customers trust the brands but we do not know how ethically this process works. For this reason, it is very possible to use the concept of sustainability as a marketing tool and this creates a trust problem in the sector.

P4-A3: Unfortunately yes. It is very possible for the brands to use this concept as a marketing tool. This creates a trust problem in the industry because we may not know whether the methods said to be applied are actually applied.

P5-A3: Yes I do. Especially in the last few years, we have heard about the sustainability in many campaigns of the fashion brands. Everyone seems to give attention to sustainability. However we can't really know what they are actually doing. I more feel like this concept is being used for marketing for the motivation of profitability.

P6-A3: The main reason for this trust problem is that brands use many concepts as a marketing tool with the motivation of profitability and I think sustainability has become one of these concepts.

IQ4/ To what extent could fashion brands' use of blockchain technology build trust between consumers and brands in terms of sustainable practices?

P1-A4: In addition to large companies such as H&M, Inditex, smaller-scale brands, even luxury segment brands, may have some manifests for sustainability practices they have announced. It is very difficult to know whether or to what extent they actually implement these practices that they claim in their manifesto. We, as consumers, either have to believe and trust brands or the related-institutions that control these brands.

Blockchain technology may be vital at this point. For example, suppose a brand records all datas regarding sustainability with blockchain technology as they promises to make. In this case, since the data processed by this technology becomes a reliable sources, and we may not have to believe neither the brand nor the third-party institutions. At this point, I find this technology very important to build trustful ecosystem.

P2-A4: The blockchain technology is a sort of software, an algorithm. The data processed by this technology can't get lost and almost impossible to manipulate.

In particular, the fact that the information recorded with blockchain technology is unchangeable and can be shared as open source is a kind of guarantee document on behalf of the processed information. If a brand claims to implement sustainable practices and can record the data regarding sustainability approaches with this technology and share it as an open-source with its customers, at this point it is quite possible for a sense of trust to arise from.

P3-A4: Data processed on blockchain technology cannot be changed and these data can be shared directly with customers without an intermediary institution and that makes the technology is a kind of guarantee on behalf of the data being processed.

For this reason, I think that brands that integrate this technology into their work-flow would create a more permanent trust with their customers.

P4-A4: As I stated before; If a brand is involved in sustainable actions, the most up-to-date and correct way to prove this is to record these applications with blockchain technology and share these data with consumers.

I can say that this will undoubtedly build trust between brands and consumers. Of course, this technology is quite new and it is necessary to raise awareness and explain the importance of the technology to the consumers.

P5-A4: As someone who knows what blockchain technology is, it is enough for a brand to record and share the steps and methods applied in the name of sustainability with blockchain technology would be more than enough to gain my trust.

As this perception settles, this technology will turn into litmus paper. I think it will positively differentiate brands in the sector for sustainability. I would like to speak the way to brands: Are you really doing something for sustainability, then record it on the blockchain. This builds trust.

P6-A4: As a blockchain software developer, I can say that in order to solve the trust problem, the most efficient technology we have in the software-technology world by now is the blockchain. It is possible to provide trust with this technology and create transparency with the consumers by recording data related sustainable approaches and share the data without the need for an intermediary in the name of transparency.

For instance Burberry -one of the most luxurious fashion brands in the World based in London, UK- aims to record the production processes of its garments on blockchain by signing a protocol with IBM (International Business Machines Corporation) company to be able to create a permanent trust in the context of sustainability with consumers.

It is also possible to say the same for DeBeers -the jewelry brand- and Louis Vuitton, as these brands have announced that they have started initiatives for blockchain technology adaptation.

IQ5/ What would be the effects on customer satisfaction of bulding trust by blockchain technology between brands and customers in the context of sustainability?

P1-A5: Especially with the rapid development of the digital world in the last few years, we have come to witness more the effects of global warming in many parts of the world. In this case, the generation-z seems that they have a higher sensitivity in this regard. on this issue the influence of the Swedish climate activist Greta Tunberg is enormous, I think. Hovewer this situation offers a good opportunity for brands that want to gain customer satisfaction.

Whatever steps a fashion brand takes to reduce global warming, they could record these informations with blockchain technology and share it with the customers. It is possible to satisfy such a new and wide audience with this technology, of course consumers should be taught why this technology is vital on this regard.

P2-A5: The sense of trust to be created between brands and their customers will undoubtedly have a positive effect on customer satisfaction. In other words, we can say that the sense of trust is the most important pioneer of building the customer satisfaction.

P3-A5: Being a sustainable fashion brand has now become an indispensable part of the industry. This is a qualification that consumers are looking for from the brands.

We can say that a brand that has created a sense of trust in this regard will also have a stronger stance in customer satisfaction.

P4-A5: Since the data recorded with blockchain technology cannot be changed, the data processed here gives confidence in the name of accuracy, which undoubtedly brings customer satisfaction. For this reason, I think this technology offers a serious opportunity for brands that want to be sustainable and transparent.

P5-A5: Customer satisfaction is not possible without trust. The key to create sense of trust between brands and consumers is blockchain technology. Not only for the fashion industry, but also for finance, arts, and more. Since If this technology exists, it means that there is a trust protocol between the seller and the buyer.

P6-A5: I do not think that fashion brands that do not adapt to blockchain technology in their operations in the context of the sustainability will be able to create customer satisfaction, especially after the first quarter of the 21st century. Blockchain technology is going to become a prerequisite for a sense of trust.

We can say that those who can build trust can only create customer satisfaction. To make a ranking; In the context of sustainability, blockchain technology builds trust and this leads to customer satisfaction.

IQ6 / How to define the relationship between customer satisfaction and brand loyalty?

P1-A6: In the fashion industry, we can say that brand loyalty is the ultimate goal for brands to reach. Becoming a consumer's love brand and establishing a loyal relationship with the consumer, of course, goes through customer satisfaction.

Analyzing the expectations of the consumers well, detecting the changing and transforming customer perception and being able to give them what they want creates customer satisfaction and this is the most important method leading to brand loyalty.

P2-A6: Customer satisfaction develops with the ability to respond to customers' demands. For this reason, brands should be able to analyze their customers well and respond to their demands that may change over time. I can say that this will lead to loyalty between customers and brands over time.

P3-A6: Brand loyalty is the most important topic on every brand's agenda. In order for brand loyalty to be formed, it is necessary to ensure permanent customer satisfaction.

P4-A6: We can say that customer satisfaction is a prerequisite for brand loyalty. Of course, this satisfaction should be permanent, merely in this way, customer satisfaction could turn into brand loyalty over time.

P5-A6: I don't think brand loyalty is easy to gain. This is a process that needs to be approached very sensitively. In order for a brand to gain the loyalty of its consumers, it must be able to establish a permanent customer satisfaction ecosystem. First of all, trust must be established. This trust will create customer satisfaction. Of course, we can say that if customer satisfaction is ensured permanently, it can turn into brand loyalty.

In other words, first of all, trust must be established, then permanent customer satisfaction and brand loyalty will follow.

P6-A6: Brand loyalty can only be born after a strong sense of trust and long-term customer satisfaction. This is an ultimate goal that fashion brands want to achieve in the eyes of consumers.

IQ7 / What are the effects of using blockchain technology on creating brand loyalty in the context of sustainability?

P1-A7: We can say that many fashion brands have started to invest in the concept of 'sustainability' for a long time. As of course, this trend in fashion brands is aimed at meeting the demands of customers in this direction. Although blockchain is a quite new technology, brands should invest in it and educate and enlighten their consumers on this issue so that they can show their consumers how assertive they are in this field. The ultimate key to be able to create a brand loyalty is customer satisfaction, and I think using blockchain technology in the field of sustainability will increase trust and customer satisfaction, and this would make brand loyalty more permanent over time.

P2-A7: As generations change, consumers' expectations can also change in fashion industry. In today's age, generation-z is highly demanding consciousness from fashion brands as being more sustainable.

Even though the brands say that “we are now a more sustainable and more conscious fashion brand”, unfortunately, it is not possible for us to test what has been said, and I think that, this discourse is now used as a marketing argument. For this reason, if fashion brands have the motivation to become a more sustainable brand, I can say that

this is an unconditional necessity for a brand to maintain its vitality in the sector, they can record their sustainable practices with blockchain technology and thus build a strong sense of trust with their customers, which results in customer satisfaction. As a result, the phenomenon of brand loyalty can be created in a healthy way.

P3-A7: We said that for brand loyalty, customer satisfaction must be ensured permanently. I think the most valuable tool for a brand, especially in terms of sustainability, is blockchain technology. As I mentioned before, with this technology, you can record all your sustainability practices and share them directly with your customers without the need for an intermediary institution's approval. This technology is a guarantor of the data you process in the field of sustainability. For this reason, with this technology, permanent satisfaction can be achieved in the field of sustainability and in this manner, brand loyalty could be created effectively.

P4-A7: We know that the fashion industry is one of the dirtiest in the world, and that's not good. We cannot pollute nature for the sake of dressing well, we have no right to do so. At this point, the concept of sustainability is now the most vital topic in creating brand loyalty. Recording the steps taken on sustainability practices with blockchain technology and sharing this with the society will be the most critical and right move for brands.

P5-A7: I have stated that the primary criterion for the formation of brand loyalty is to create a sense of trust. I think the key to this sense of trust is blockchain technology. Of course, the technology is new, and the importance of blockchain technology may not be fully understood. Brands should grasp this issue as soon as possible, integrate it into

their structures, and take an important step at this point and raise awareness of their consumers. I think that this action will provide brands with a permanent position in the sector and will positively differentiate brands in terms of gaining brand loyalty.

P6-A7: We said that trust is the priority for customer satisfaction. Blockchain technology is also the most honest application we have for trust building. Therefore, it is possible to build trust with blockchain technology and thus create customer satisfaction. As a result of making this satisfaction permanent, brand loyalty may arise. Consequently, I think blockchain technology has gained vital importance in terms of creating brand loyalty in terms of sustainability.

4. RESULTS

In this study, it has been clearly seen by answers of P1, P2, P3, P4, P5, P6 on the 7th interview question, the answer for research question 1 is the use of blockchain technology for fashion industry brands can positively affect brand loyalty in the context of sustainability. In addition to the direct positive relationship of blockchain technology on brand loyalty acquisition, for the answer of research question 2 is it has been also clearly observed from the In-Depth interviews that there are some intermediate effects of this technology in the brand loyalty acquisition process. These are traceability as seen from the answers of P4, transparency as seen from the answers of P3, trust as seen from the answers of P1, ethics as seen from the answers of P5 and environment as seen from the answers of P2 and P6. It is seen that these five intermediate factors, which emerged with the integration of blockchain technology, have positive effects on brand loyalty.

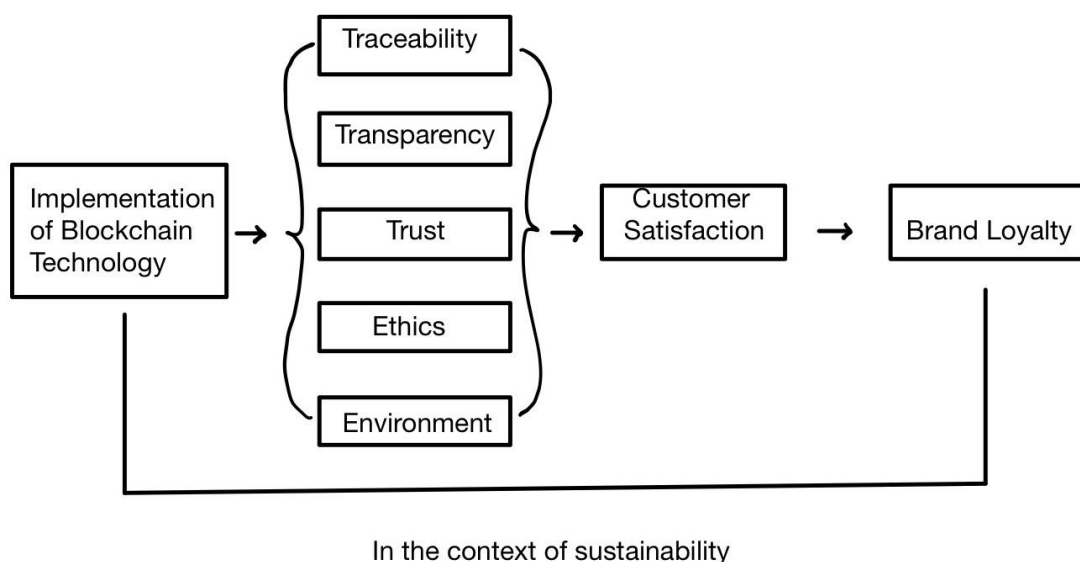


Figure 3. The effect of blockchain technology implementations on brand loyalty. (This figure is developed by researcher.)

5. DISCUSSION

Many outputs were obtained from the in-depth interviews conducted for this thesis. Since these outputs can contribute to the academy and the professional fashion industry, they can be grouped under these two main headings.

Contribution to the academy;

Primarily, the hypothesis of ‘The use of blockchain technology has a positive contribution to brand loyalty.’ has been formed with the results obtained in this qualitative study. This hypothesis can form the basis for the quantitative validity of future academic studies.

Besides of primary hypothesis, six more hypotheses regarding traceability, transparency, trust, ethics and environment, can be also formed with the results obtained in this qualitative study either. These are:

- 1- Tracking a fashion product by blockchain technology’s traceability configuration creates positive effect on brand loyalty.
- 2- The use of blockchain technology has a positive effect on the transparency of brands.
- 3- There is a positive relationship between using blockchain technology and creating a sense of trust.
- 4- The use of blockchain technology for fashion brands positively effects to the implementation of more ethical practices.
- 5- Setting up blockchain configurations for fashion brands can empower to create sustainable environment.
- 6- There is a positive relationship between customer satisfaction and brand loyalty.

These six secondary hypotheses can also form the basis for the quantitative validity of future academic studies.

Contribution to the fashion industry;

The subject of this study was not encountered in previous academic thesis studies. Therefore it is the first study in terms of its subject. At the same time, since this technology is new, there is not yet a brand that fully incorporates it. Since no brand uses blockchain technology in the subject we are researching, quantitative data has not been collected from the sector. For this reason, it was not appropriate to conduct a survey, and in-depth interviews were emphasized.

With this study, it has been seen that blockchain technology has positive contributions to brand loyalty creation. Blockchain technology is also foreseen to be used by fashion brands soon. Fashion brands such as Burberry, Louis Vuitton, H&M, Stella McCartney have announced examining this technology. For this reason, it is thought that this academic study can provide strong and positive contributions to branding in the sector in the steps that fashion industry brands will take in the context of this technology.

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