Transparent and Sustainable Supply Chain: How Improving Relationships with Suppliers Minimizes the Eco Footprint in the Textile Industry.

José Pedro Guimarães Pereira Dias de Sá

Dissertação de Mestrado

Orientador na FEUP: Prof. Jonas Henriques de Lima

U.PORTO
FEUP FACULDADE DE ENGENHARIA
UNIVERSIDADE DO PORTO

Mestrado Integrado em Engenharia e Gestão Industrial

2021-06-28

Abstract

At this moment in time, the sustainability and transparency of a company is becoming exponentially more important. The following dissertation has the goal of studying new improvements and solutions in order to help Sonae Fashion, a brand in the fashion industry, to obtain a greater control of its suppliers and their information regarding production, social issues and sustainability, since these are responsible for most of the company´s environmental impact.

With the objective of making the company´s supply chain more transparent and sustainable, different actions were studied and consequently proposed. First, the environmental impact the fashion industry has was studied, alongside with the importance of a transparent supply chain and how critical it is to have good and loyal partnerships with key suppliers in the market.

After completion of the above-mentioned theoretical phase, a form containing questions regarding key information that the company did not yet have about the suppliers was developed and sent to them. Then, the gathered information was cleansed and inputted into a new database, in order to create an internal search engine of suppliers.

Finally, based on the studies about supplier loyalty, a supplier lifecycle program that separated them by different tiers, with different benefits for each one, was designed and went into an initial phase of testing.

A global solution that fits every company or supplier is non-existent due to the fact that being in different countries, having a distinct number of employees, product types or relevance in the market, brings specific issues and needs to be considered. Even though every step is important in the journey to become a greener and more transparent company, several solutions, each with their own degree of complexity and efficiency, can always be applied.

Supply Chain Transparente e Sustentável: Como Melhorar a Relação com os Fornecedores Diminui o Impacto Ambiental na Indústria Têxtil

Resumo

Atualmente, a sustentabilidade e transparência de uma empresa estão-se a tornar exponencialmente mais importantes. A seguinte dissertação tem o objetivo de estudar novas melhorias e soluções de modo a ajudar a Sonae Fashion, uma empresa no ramo da indústria têxtil, a ter um melhor controlo dos seus fornecedores e das suas informações relativamente à produção, sustentabilidade e problemas sociais, uma vez que grande parte do impacto ambiental que a empresa tem provém dessa área.

Com o objetivo de tornar a supply chain da empresa mais transparente e sustentável foram estudadas diferentes ações e, consequentemente, propostas melhorias. Em primeiro lugar, foi estudado o impacto que a indústria da moda tem no ambiente, assim como a importância de uma supply chain transparente e quão crítico é ter relações estáveis e leais com fornecedores-chave no mercado.

Após tal desenvolvimento teórico, um formulário contendo perguntas-chave acerca de informação não conhecida previamente pela empresa, acerca dos seus fornecedores, foi criado e enviado para os mesmos. De seguida, a informação recolhida foi *cleansed* e introduzida em bases de dados atualizadas, para criar um motor de busca interno de fornecedores.

Por fim, com base nos estudos feitos acerca de lealdade dos fornecedores, foi concebido um programa de ciclo de vida de fornecedores, que os dividia em diferentes níveis com diferentes benefícios em cada um, prosseguindo depois para uma fase inicial, ainda em teste.

Não existe uma solução única a todas as empresas e/ou fornecedores, uma vez que ter sede em diferentes países ou ter um número variado de trabalhadores, tipos de produto e relevância no mercado traz problemas e necessidades específicas que precisam de ser consideradas. Apesar de todos os passos serem importantes no percurso para uma empresa se tornar mais verde e transparente, podem sempre ser aplicadas diferentes soluções, cada uma com o seu nível de complexidade e eficácia.

Acknowledgments

First, I want to thank the professor Jonas Lima for the support and continuous corrections that allowed the realization of this dissertation.

Then, I'm thankful to all the people at Sonae Fashion that welcomed me as good as possible since the first day. Thank you to my mentor Ricardo Rego and my colleague José Luís Oliveira, who not only helped and taught me something new every day, but also for the constant assistance.

A huge thank you to my family and girlfriend for the emotional support and daily motivation in all the challenges I had to endure through the past 5 years. Without it, I am sure that I would not be writing this acknowledgments yet.

Finally, I would like to thank all the friends I made in this 5 years, but especially the ones that already date more than that, and that I know I can rely on for everything.

Table of Contents

List of figures

List of tables

1 Introduction

This dissertation was developed under the scope of the Master's Degree in Industrial Engineering and Management at Faculdade de Engenharia da Universidade do Porto, during the last of ten semesters. Furthermore, it was based on a project proposed by Sonae Fashion, which allowed it to be carried out during an internship.

1.1 Project Framework and Motivation

Sonae, the largest private employer in Portugal, is a Portuguese multinational group created in 1959 that controls a large portfolio within different business areas.

Sonae Fashion division, where the project was developed, focuses more on fashion and clothing industries. It is composed of five different brands: Deeply – Sports equipment and Clothing; MO – Clothing, Footwear and Accessories; Zippy - Baby & Child Clothing, Footwear and Accessories; Losan - Specialized in the wholesale business of Children's Clothing, with a strong international presence; Salsa – Jeans, Clothing and Accessories.

Figure 1 - Sonae's Fashion Logo

The project, as said before, was proposed by Sonae Fashion, and had the goal of collecting more information, both ecological, social and industrial-related about its suppliers in a fast-changing world, not only to be able to make better internal decisions but also to take a step regarding the transparency and sustainability of its supply chain.

The developed project also had the objective of laying a foundation in case the company wanted to publish its complete supplier list to its customers.

The investigation that supported the project consisted of the analysis of different articles and studies within the area. These were then compared to the company´s current situation in order to find out what was missing and what needed to be implemented. Furthermore, the actions that the main competitors were taking regarding the transparency and sustainability of their supply chains were also examined.

Alongside with that investigation, the team had previously defined actions that needed to be made, such as the creation of a questionnaire to be sent to suppliers and the input of the new information into a centralized database of suppliers that did not exist beforehand.

1.2 Global Sourcing at Sonae Fashion

Sonae Fashion Global Sourcing team is responsible for the management of suppliers during the different steps of the production process, from Sourcing to Quality Assurance and compliance.

It bases its headquarters in Maia, Portugal, and is present in Sonae Fashion´s main sourcing origins, with six production offices located in Bangladesh, China, India and Pakistan.

The team is responsible for the definition, implementation, monitoring and assurance of the brands quality standards and requirements all throughout the supply chain. It is also responsible for the assurance of full compliance by the factories of the company's Corporate Social Responsibility program.

Additionally, Global Sourcing supports brands on the definition of the sourcing strategy and on the management of the supplier panel. This is accomplished through the establishment and follow-up of performance indicators, supplier auditing, and data collection and processing.

1.3 Project Goals

Currently, the fashion industry is one of the most polluting industries worldwide (as seen in Figure 2) motivating Sonae to take bigger steps, year by year, towards the reduction of their ecological footprint. Additionally, the company also ambitions to have a wider control over their suppliers´ information, to guarantee that their workers have the best possible conditions and that their products fit the customers concerns.

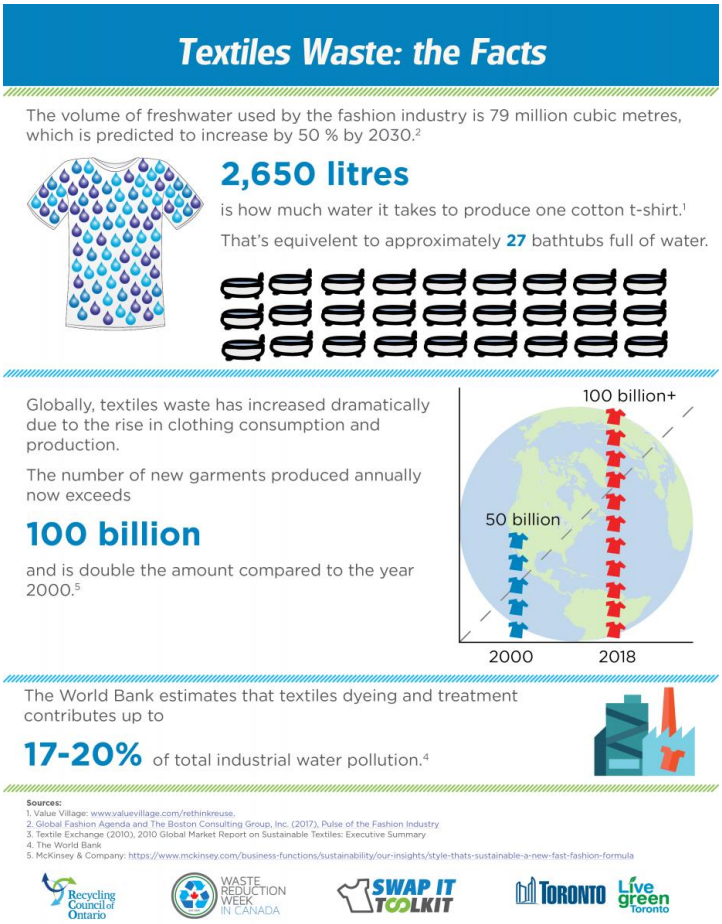


Figure 2 - Textile Industry Pollution Facts (Recycling Council of Ontario & Canada, https://wrwcanada.com/, accessed June 2021)

Therefore, the main project goal was to contribute towards a more transparent and sustainable supply chain whilst simultaneously showing the importance of such transparency to the company.

The proposed goals were to:

- Develop a fast and reliable method of obtaining the desired information from the 1st and 2nd level suppliers of Sonae Fashion brands, regarding production capacity and their profiles, and also their sustainability-related data;
- Establish methods to improve supplier loyalty, whilst improving their actions and the relationship with the company;
- Create a supplier search page in Microsoft PowerBi, only accessible to people within the company, with all the important suppliers´ information, such as their country, production lead-times and minimum order quantities, sustainability and social issues-related certificates or associations and product types and categories, so that the buyers at Sonae Fashion could, based on the requirements their products need, choose the supplier that fitted their needs the most;

- Fill in a supplier database with the previously collected information in order to create the possibility of making the list of suppliers available to all the customers if Sonae wished so, with the objective of increasing customer satisfaction and to further establish Sonae as a top brand focused on both social and environmental causes.

With those main goals, the company aims to not only increase the control and transparency of its supply chain, bringing the possibility of choosing more sustainable suppliers, but also increase the customers satisfaction.

This project also shows the continuous commitment Sonae has on becoming a better company for everyone, either from a customer to employee or from supplier to warehouse position. It also shows an evolution regarding sustainability or transparency to customer, since a different report in 2014 said that even though Sonae was a huge company, it did not focus on important issues like supplier relationships as much as it should (Teles Mendes, 2014), taking the necessary steps to do so now.

1.4 Approaching Strategies

The project comprises different areas and different objectives, thus it was subdivided in multiple phases.

Initially, meetings were elaborated with the goal of reaching all the different teams working at Sonae Fashion and understanding how their work was related. There was also intent in gaining feedback from the workers in charge of each area – sustainability, product and its design, purchases and quality control – regarding what information they had about the suppliers, and what additional information they believed could be important to have.

Following the meetings, two different Forms were created on Microsoft Forms (one regarding supplier information and another regarding factory information), which were then sent to all the suppliers with the help of colleagues from the local offices.

The ensuing phase consisted of cleansing the data and inputting it into the suppliers´ database, which allowed the Global Sourcing team to create a search dashboard, with different filters, and to set the basis of the possible future publication of the list of the suppliers to every customer.

After the goal of getting relevant information from the suppliers was set, a system of tiers of suppliers and its importance was studied and implemented.

In parallel with the previous topics, a report with all of the gathered information was created and then presented to the entire division.

It is worth mentioning that other small term objectives regarding, for example, the gathering of information about new methods of tracking raw materials or helping the team in other areas were also completed.

1.5 Structure

The report will begin with a state-of-the-art study on the most relevant topics for this dissertation, which are the importance of being transparent within the supply chain (focused on the Fashion Industry) and the developments related to the sustainability parallel to the good maintenance of a running company.

Then, the current situation at Sonae Fashion is explained and the problem is presented, comparing what the company needs with the development of this project, and the information it already has.

Afterwards there is an explanation on the actions that were developed in order to fulfill the proposed goals, also focusing on the hurdles that had to be surpassed. This chapter also justifies the study made on the previous one, i.e., it always does comparisons between what was made and why it is important to do so.

Finally, possible future solutions and bigger steps are presented so there can be a theoretical path to be pursued after the current ones are completed and successful.

2 Transparency and Sustainability of the Supply Chain

2.1 Pollution in the Fashion Industry

In the past decade, a big and concerning trend in the fashion industry has been the Fast-Fashion trend (Mcneill & Moore, 2015). Fast-Fashion occurs due to customers impulse buying clothes, and due to the fast shifts in styles and trends (Mintel, 2007) which causes an unsustainable production of pieces and therefore an increase in waste and low-quality pieces. (Mcneill & Moore, 2015).

Nowadays, the Fashion Industry is considered the fourth most polluting industry (Pal & Gander, 2018), bringing along with it an enormous potential to improve its sustainability.

One of the areas where this industry has a huge impact is in water consumption. In a time where water scarcity is increasing along with world population, an annual usage of more than 80 billion cubic meters of water, especially in areas with fresh water stress (Pal & Gander, 2018), is unsettling.

It is expected that if the world maintains its rate of fast-fashion consumption, the total weight of clothing waste will rise to approximately 33 pounds per person on Earth (Brodde, 2016) and around 80% of that waste will either be burnt or put in landfills (Lehmann et al., 2019).

Another relevant issue is the composition of the main types of fibers. The three major fiber types are, according to Shirvanimoghaddam et al (2020):

- Natural – Produced from natural resources;
- Regenerated – Require specific treatments but derive from natural polymers;
- Synthetic – Usually derive from non-recyclable resources, such as polyester or nylon.

Even though all types of fibers can bring environmental problems due to excessive water consumption, synthetic fibers are not only the most common ones, with a weight of 67% on the total textile fibers (Group, 2016) but they are also the most nefarious ones due to their composition of petroleum-based materials such as nylon or polyester whose production create a considerable rise in carbon dioxide emissions. (Echeverria et al., 2019) In order to have a more concrete idea on how problematic is this issue, the production and washing of a pair of jeans is estimated to have the same carbon dioxide emissions as driving 69 miles, since the wet treatment of the materials, the spinning of yarns and the processes of weaving or knitting mostly rely on fossil fuel energy. (Shirvanimoghaddam et al., 2020)

An option that helps fighting fast-fashion is the concept of circular economy. The concept of circular economy is, citing the Ellen MacArthur Foundation (2013) an industrial system that is restorative or regenerative by intention and design. It replaces the end-of-life concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals,

which impair reuse, and aims for the elimination of waste through the superior design of materials, products, systems, and business models.

The main goal of a circular economy is, therefore, to increase the lifetime of a product while also minimizing waste. In the fashion industry multiple stances can be taken in order to approach a circular economy view.

Starting off with the recyclability of bought clothing products, today a lot of consumers give a chance of re-utilization of their pieces by donating them to charity shops (Birtwistle & Moore, 2007) where they are either resold or distributed to poorer countries.

There are two types of waste related to this industry, that are pre-consumer and post-consumer. Pre-consumer waste is composed of the by-product materials left after production and roughly 75% of this textile waste is recycled into new materials for different areas such as automotive or even home furnishings. (Chen & Burns, 2006) Post-consumer waste consists of the textile products a consumer no longer wants and discards. (Chen & Burns, 2006) The primary focus of companies and brands that work in this branch is turning into the post-consumer waste, since it is the one consumers are getting more aware of and also because it is the most difficult one to control due to how difficult it is to recycle some of the materials present in the textile products.

The consumer itself is the most critical point of the supply chain and, therefore, has enough power to shape the products the market offers. Additionally, the customer is becoming more aware of the provenience of the products they buy and more demanding of new products that fit their needs that can be of different spectra like price, design, quality and, the more important to this study, social and environmental-related issues. (Koszewska, 2013)

2.2 Relevance of the Transparency of the Supply Chain

One of the main focuses of this study is to get a more profound understanding of the importance transparency has on different levels of the supply chain, in order to make improvements or develop new methods within the company. Therefore, the current state-of-the-art is analyzed through different scopes, mainly related to the final consumer and to the company itself.

Another point of study is to grasp how keeping a close and mutual relationship with the suppliers can not only help both sides to grow, but also promote a greener and stabler company.

In the Figure 3 a conceptual illustration portraying the connections within a supply chain demonstrates how suppliers and the companies themselves are connected, and it can be concluded that the more transparent and trustful the supply chain is, the better the control one can have over the final products.

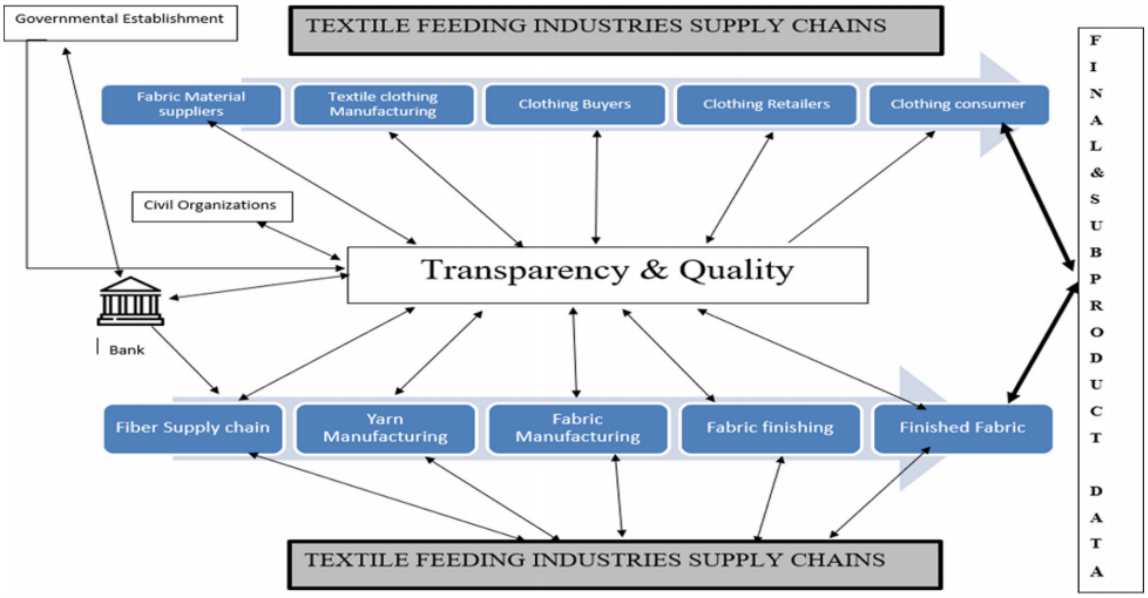


Figure 3 - Conceptual Illustration of the textile supply chain (ElMessiry & ElMessiry, 2018)

2.2.1 To the Final Consumer

Studies show that the final consumer is likely to have a good attitude regarding products more environmentally-friendly and even pay a premium on products that guarantee an ethical and sustainable background. (Cotte & Trudel, 2009)

However, different studies present opposing views in relation with consumer attitudes, the translation of these attitudes into behavioral intents, and finally these intents into concrete behaviors. For example, there are studies that conclude that consumers more willing to buy sustainable products are older and have a higher than average income (Deloitte, 2009), and studies that show less conscious attitudes in older demographics (Hootkin et al., 2008) or more social consciousness in younger consumers (Anderson & Cunningham, 1972).

Even though the literature is not unanimous when finding associations between different demographics, politics or genders and socially conscious attitudes, it agrees when concluding that consumers are aware of ethical issues regarding the products they buy, especially when they are common purchases. It is therefore reasonable to conclude that if the number of ethical and sustainable products increases, so does the number of their purchases. (Cotte & Trudel, 2009)

The Figure 4 tries to summarize what can enhance and hinder better consumer behaviors, and by looking at it, it can be seen that some enhancements like “consumer knowledge of action” can be improved by a transparent supply chain.

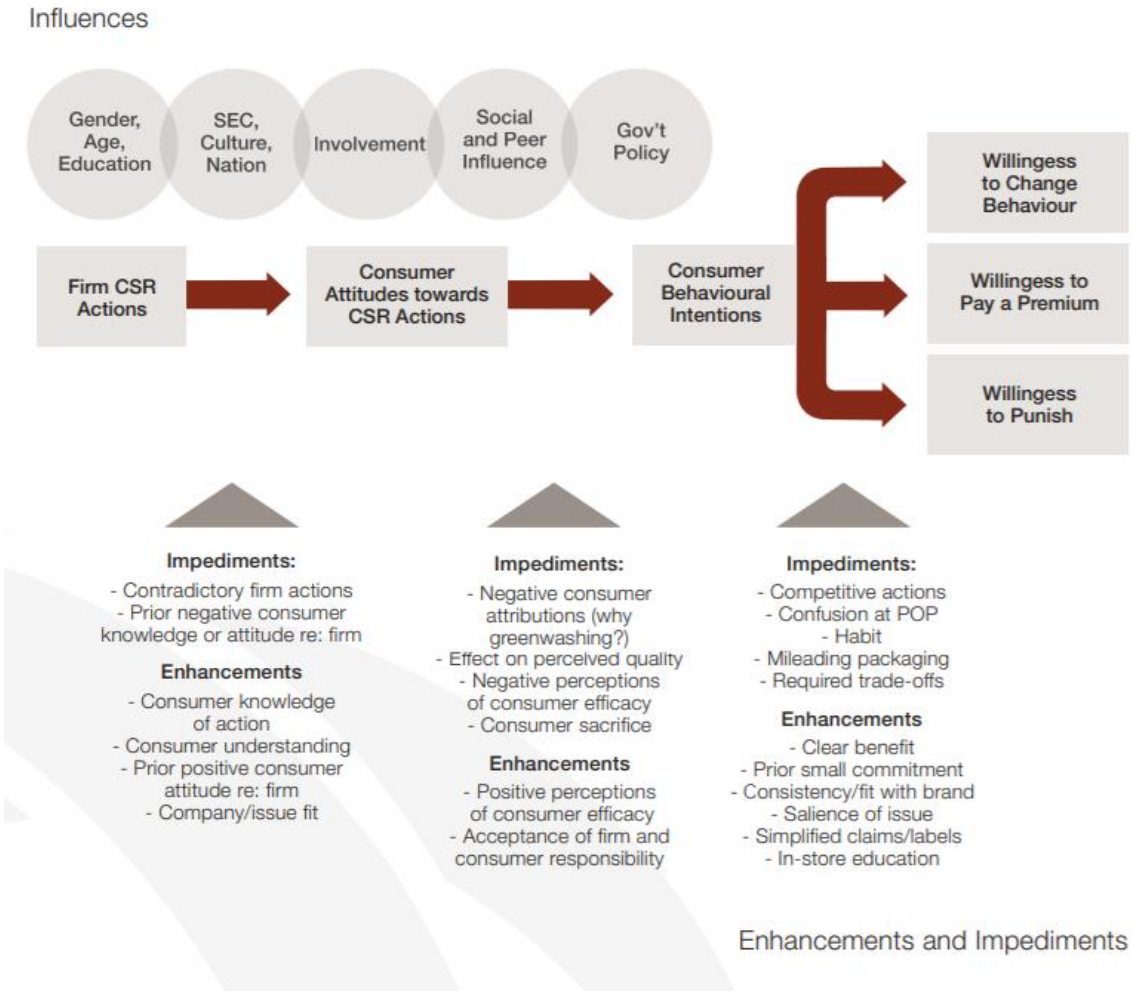


Figure 4 - Model of Socially Conscious Consumerism (Cotte & Trudel, 2009)

The figure also displays that other important issues rely on the company focusing in not overreacting their actions - the so-called "greenwashing" - having simplified labels and claims and educating their customers on what is a green and ethical product.

2.2.2 To the Company

Due to the globalization of the fashion industry, companies within the field have complex supply chains who cross the globe.

In this segment, the relationship between suppliers and the company itself is studied, in order to further justify why not only costs are important when managing a supply chain or choosing a supplier, but also other stats like trustworthiness, good communication, etc.

To begin, the definition of partnership is to "yield differentiated and intermediate or long term benefit to the parties involved in the relationship" (La Londe & Cooper, 1989) and so, it brings three main types of benefits to the parties involved: Economic, Managerial and Strategic.

Taking a closer look at Ellram & Cooper (1990), the three categories of benefits are explained in more detail. Economic improvements are the ones related directly with costs, such as cost/quality relation; Managerial benefits focus on the easiness of controlling few and stable connections, when compared to a lot of different ones; Strategic benefits are intertwined with possible competitive advantages one can gain if it has a strong relationship with a well-positioned supplier.

A better supply chain relies on four basic performance characteristics (Shin et al., 2000) which are:

- A long-term relationship with suppliers;
- Supplier involvement in the product development phase;
- A reduced number of suppliers;
- A quality focus.

A conclusion can therefore be made that less suppliers, with a more quality-focused approach will improve the final product. That affirmation brings us to the point of the importance of transparency throughout the supply chain, for the company: if one has no trust on the supplier or if the latest hides or tampers its information, the relationship will not last and, therefore, the supply chain gets weaker. Another important point is that having less suppliers makes the process of maintaining the relationships less expensive, and it also allows for the company to have a substantially higher control over them.

Obviously, there are some hurdles to getting the most out of a controlled and transparent supply chain. Some of the barriers can be, according to Benton & Maloni (2005):

- Failure to share information;
- Fear of loss of control;
- Lack of self awareness;
- Lack of partner awareness;
- Enormity of supply chain;
- Lack of supply chain satisfaction;
- Lack of customer understanding;
- Lack of understanding of supply chain;
- Myopic strategies;
- Deficiency of mutuality.

In order to overcome some of the hurdles pointed out above, the company must be careful to not overextend on the control over the suppliers and listen to their feedback. Furthermore, it needs to be able to pass the message that all the information needed will not come at an expense to the supplier, in order to make them more susceptible to share it. Once again and in accordance with the previously mentioned studies, keeping a smaller supply chain is recommended, which proves the importance of this topic.

2.2.3 Supplier Loyalty

Now that the importance of transparency and supply chain management is laid out, a topic found to be relevant to further deepen is supplier loyalty techniques.

According to Moeller et al. (2006) Supplier Relationship Management is, based on previous definitions by Robert Dwyer et al. (1987) and Reinartz et al. (2004), “the process of engaging in activities of setting up, developing, stabilizing and dissolving relationships with in-

suppliers as well as the observation of out-suppliers to create and enhance value within relationships". It is then said that Supplier Relationship Management (SRM) is divided in three main and consecutive phases: (Moeller et al., 2006)

1. Out-Supplier Management – Suppliers who are not yet related to the company are studied and observed, so that the best options existent in the market are taken. However, this option is more expensive than managing In-Suppliers and comparisons between them are often difficult to make.

2. In-Supplier Management – Suppliers who already have a relationship and/or partnership with the company and former Out-Suppliers must be observed and their feedback must be considered, in order to strengthen their bonds and improve the value of such partnerships. Additionally, companies have to study each supplier individually, since each one has different backgrounds, requests and values for the company, and so, common solutions are not the best way to further improve the connections.

3. In-Supplier Dissolution Management – Suppliers who do not fulfill the company needs and whose partnerships are found to no longer be worthy to invest in, must have their bonds broken. It can now be seen how the three phases are so strictly related: A supplier must be studied first, so that a partnership can then be created and developed until it can no longer improve and there are better Out-Suppliers in the market.

Supplier Loyalty Techniques fall onto the topic of In-Supplier Management, since its main goal is to increase supplier trustworthiness and encourage them to become better every year. Therefore, one of the major factors that help to strengthen the company-supplier bonds is the supplier satisfaction with the partnership, and the motivation it receives to become better.

The supplier satisfaction can be split into two different categories: First, there is a business-related satisfaction, which englobes all the monetary issues such as profitability, business planning and supplier engagement; The other category is not so feasible as the first one, and focus more on communication-related issues, like transparency, trustworthiness and on the importance the company puts on the supplier feedback.(Maunu, 2003)

On the other hand, suppliers can also be unsatisfied with the partnership and that can bring nefarious situation to the company if such unsatisfaction is caused by the company itself, instead of just being a partnership already falling on the third stage of the Supplier Relationship Management. Without satisfaction, a supply chain member will not create positive thoughts and actions like goodwill, commitment and once again, trust, that are essential to keep the partnerships going smoothly.(Benton & Maloni, 2005)

Concluding, there are no standardized techniques that fit all the customers the same and their individual performances and feedbacks must be evaluated in order to improve the partnerships. However, that does not mean that classifications in tier-like systems, for example, do not work, it only means that those classifications must reward the longevity of the partnerships along with the quality of the products provided, by giving suppliers means to be heard and by evaluating them based on adjusted performance indicators instead of absolute ones.

3 Current Situation and Problem Description

It was important to understand where the company stood now, relatively to sustainability projects, control of plastics and what information was missing and therefore necessary to be worked on.

A gathering of some of the sustainability and social-related projects is presented, followed by the method designed to control plastic usage and finally the problem description, that relates to lack of transparency and information.

3.1 Evolution of Sustainability and Social-Related Projects at Sonae

First, it is important to highlight the central office, located in Maia. The called Fashion Floor, seen in Figure 5, was inaugurated in the beginning of 2020 and it is an eco-efficient space designed to minimize waste and reinforce the path to sustainability the brand is adopting.

The principal steps taken were:

- Elimination of plastic glasses and the distribution of reusable water bottles and glass coffee cups;
- Withdrawal of trash bins under each table, in order to promote the recycling of produced waste;
- Removal of the usual vending-machines and creation of daily healthy meals in the dining area.

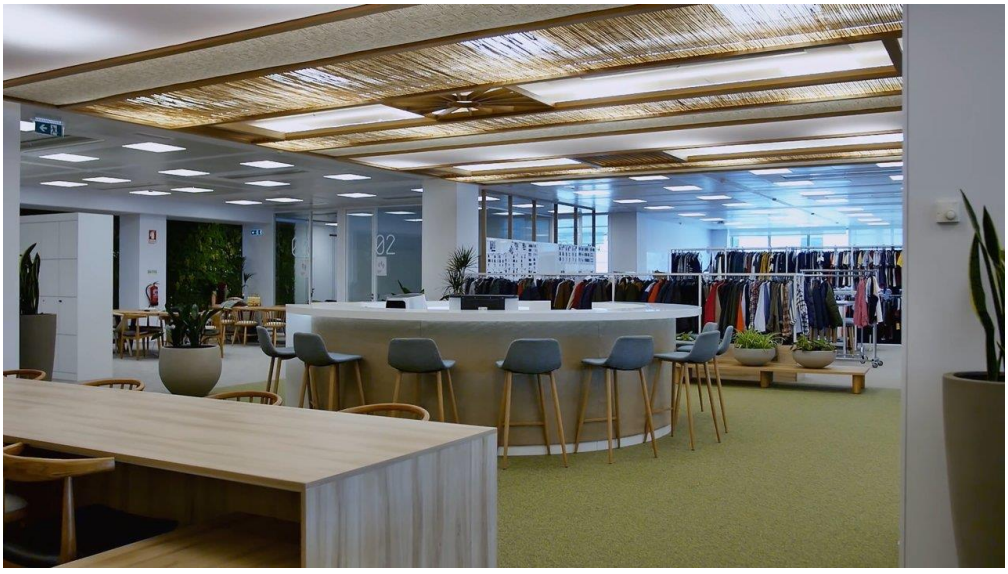


Figure 5 - Sonae Fashion Floor (Sonae, 2020)

Another project is the Sonae Forest, where the company decided to plant more than 21 thousand pine trees with the goal of offsetting the carbon dioxide emissions, while also combating deforestation.

An example of a social responsibility cause is the "MOvimento Rosa" from MO, launched in 2019. Through the development and selling of t-shirts for the cause, more than 20 000€ were raised towards IPO (Instituto Português de Oncologia), a Portuguese health unit dedicated to cancer treatment and research.

3.2 Plastics

The fashion industry produces an enormous quantity of plastics along its entire chain. Just in plastics used for fibers, there are more than 65 million tons around the world, (Henry et al., 2019) and a lot more if we were to count, for example, the packages in which they arrive the company from the supplier and the bags the stores use to deliver their products.

Sonae understands that issue and, therefore, developed a dashboard in Microsoft PowerBi designed to keep track on the plastic waste its brands produce. The dashboard is updated in real time through the information saved in the company databases and contains four different pages:

- The first page contains the broader information, like the product categories and the total sales for each type, the number of total and mapped SKU's (Stock Keeping Units, that measure the number of different products within each category), the total plastic weight both in production and in the product itself for each category and the number of packages. Furthermore, it provides four different charts: Ratio of Mapped SKU's compared with the total number; Total plastic weight by brand; Ratio of fiber types (synthetic, artificial and natural) and Ratio of synthetic fiber types. The total regarding tons of plastic in products and tons of plastic in operations are also presented.

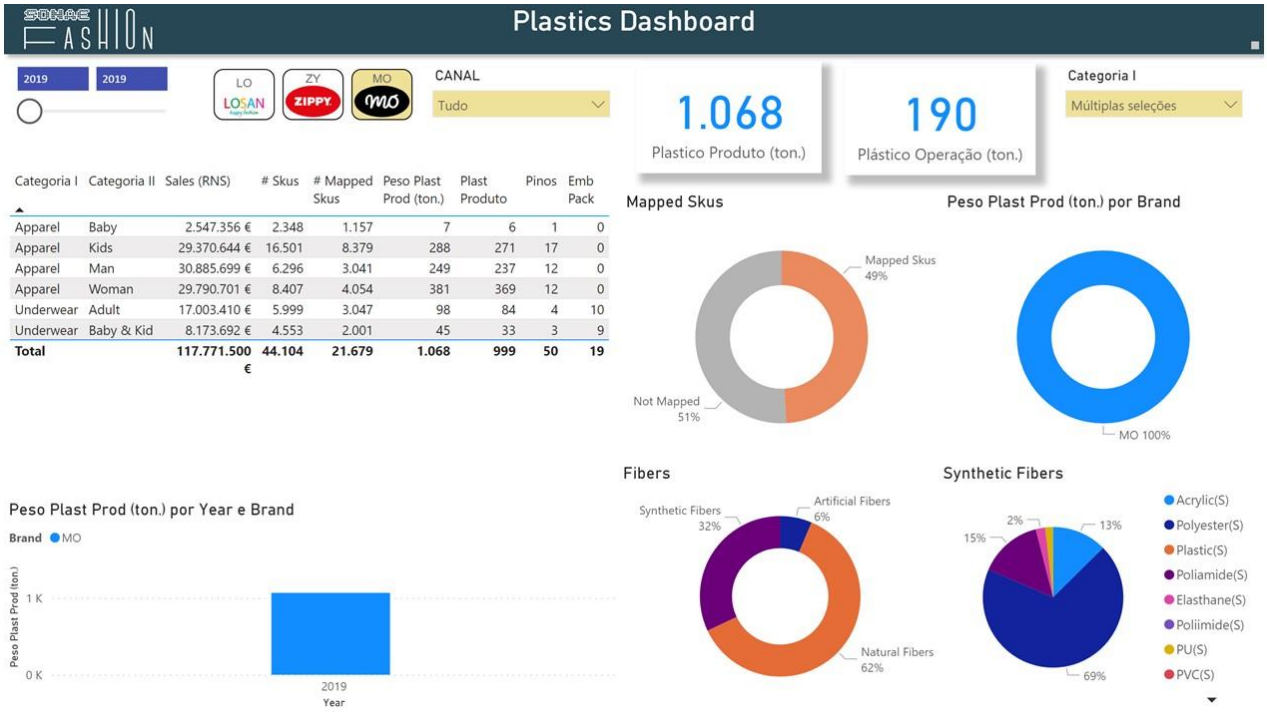


Figure 6 - Plastics Dashboard 1

- The second page shows the information regarding operations. Once again it presents the product categories along with its relevant information, and the number of polybags and individual packaging each category has. There is also a chart displaying the total weight of plastic used in operations per country and another with the Ratio of individual bags to polybags.

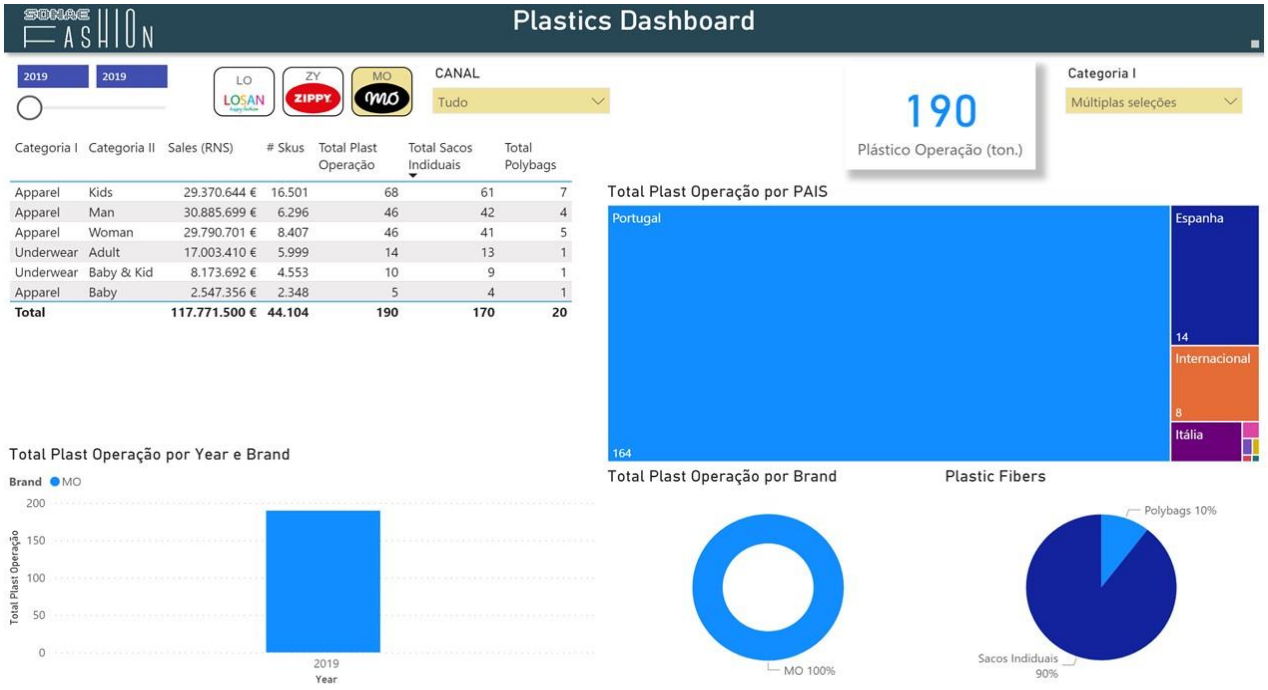


Figure 7 - Plastics Dashboard 2

- In the third page information regarding consumables is given. A table with different types of consumables, alongside its total number and weight, both total and in plastic is presented. Alongside with it, there are two different graphs showing total weight of plastic and paper used, in the selected year.

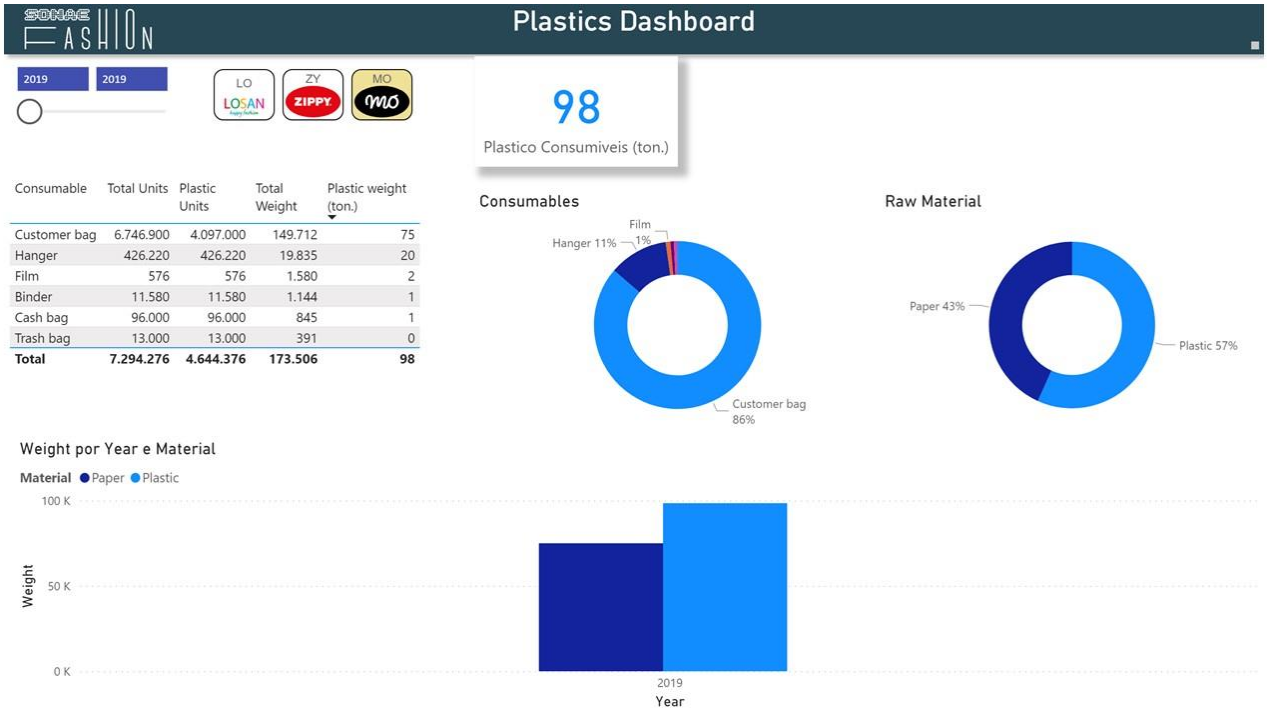


Figure 8 - Plastics Dashboard 3

- Finally, there is a page that sums up the total sales and SKU's for a selected factory, along with the type of fibers it produces and where, the fiber type distribution per year, and the total weight of plastic it produces in the products they sold to Sonae Fashion.

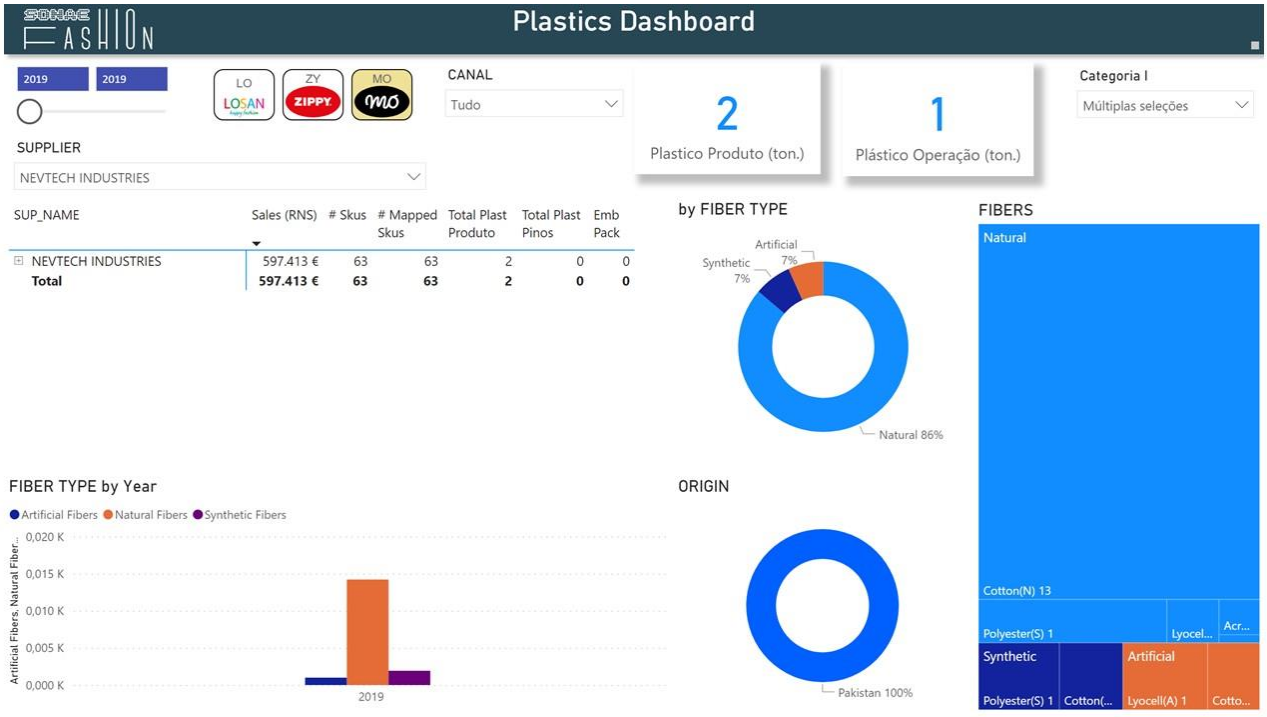


Figure 9 - Plastics Dashboard 4

Concluding the presentation of this dashboard, it is important to mention that every page has a filter for the year and the brand (LOSAN, Zippy or MO). On the last page a filter with all the suppliers the company has is also available.

With the help of this summary of information, the company and its teams have an overlook on the total amount of plastic they and their suppliers have and therefore can achieve a better control of it, in real time.

3.3 Supplier Information and Supply Chain Transparency

Now, focusing on the main issue of the dissertation, the transparency and sustainability of the supply chain are evaluated.

Of the different brands Sonae Fashion controls within its portfolio, only MO and Zippy are not acquisitions and therefore, the other brands do not have the same databases or control systems.

The only brand that is more strictly controlled by Sonae itself, hence more in line with the project, is Losan, a Spanish brand created in 1980 that was acquired by Sonae in 2015.

Both Losan and Sonae Fashion, as a whole, had a problem regarding their suppliers' information since there was not a database of suppliers and the methods used by the brands buyers relied on data that was not backed up. While some of the suppliers chosen have been connections to the brands for years due to fashion fairs, the most recent ones come from the feedback and search performed by local offices located in Bangladesh, China, India, and Pakistan.

The data MO and Zippy had from its suppliers came only through the monetary transactions and consisted of rudimentary information like their names and addresses, along with their total turnover. Furthermore, through products inspections as seen in Figure 10, some basic production capacity of such suppliers could also be perceived.

SONAE SPORTS&FASHION

INLINE INSPECTION REPORT

A. GENERAL INFO

Supplier name		Supplier code		Brand		Inline date	
Factory name		Country		Ref. design		Inline round	
Factory address				Shipment date		QC name	
PO numbers							

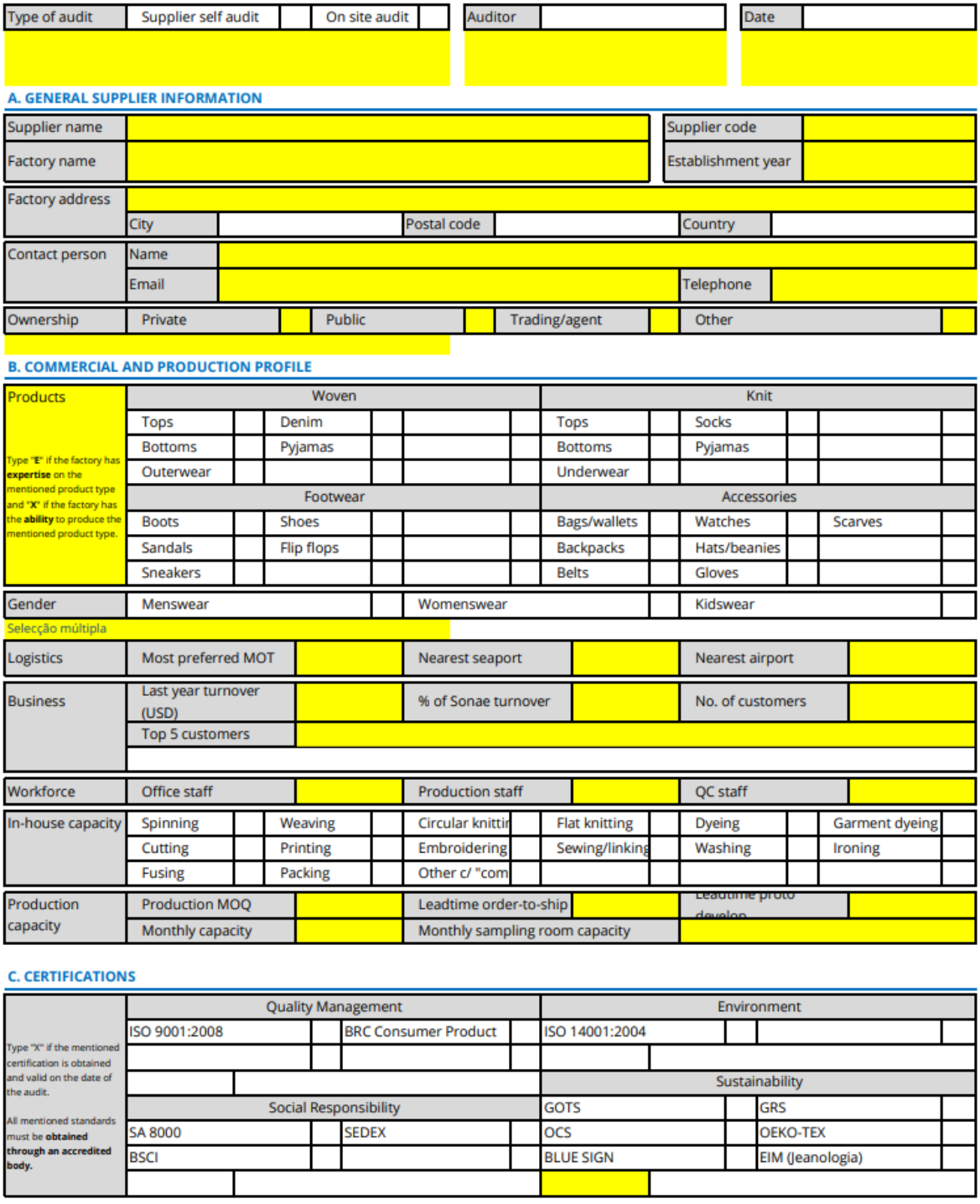
B. PRODUCTION STATUS

COLORS	TOTAL QTY	KNITTING / WEAVING	DYEING / WASHING	CUTTING	PRINTING / EMBROID.	SEWING	FINISHING	PACKING	COMMENTS
TOTAL	0	0	0	0	0	0	0	0	

NEXT INSPECTION DATE	

Figure 10 - MO and Zippy Inspection Template

Losan had access to more information since they audited their suppliers themselves. As displayed in Figure 11, information related to the commercial profile, logistics, workforce and both production and in-house capacity were gathered whenever a supplier was audited.



Type of audit	Supplier self audit		On site audit		Auditor		Date	

A. GENERAL SUPPLIER INFORMATION

Supplier name		Supplier code	
Factory name		Establishment year	
Factory address			
City		Postal code	Country
Contact person	Name		
Email		Telephone	
Ownership	Private	Public	Trading/agent	Other

B. COMMERCIAL AND PRODUCTION PROFILE

Products	Woven					Knit				
Type "E" if the factory has **expertise** on the mentioned product type and "X" if the factory has the **ability** to produce the mentioned product type.	Tops	Denim		Tops	Socks					
	Bottoms	Pyjamas		Bottoms	Pyjamas					
	Outerwear			Underwear						
	Footwear			Accessories						
	Boots	Shoes		Bags/wallets	Watches	Scarves				
	Sandals	Flip flops		Backpacks	Hats/beanies					
	Sneakers			Belts	Gloves					

Gender	Menswear		Womenswear		Kidswear	
Selecção múltipla						
Logistics	Most preferred MOT		Nearest seaport		Nearest airport	
Business	Last year turnover (USD)		% of Sonae turnover		No. of customers	
	Top 5 customers					
Workforce	Office staff		Production staff		QC staff	
In-house capacity	Spinning	Weaving	Circular knittir	Flat knitting	Dyeing	Garment dyeing
	Cutting	Printing	Embroidering	Sewing/linking	Washing	Ironing
	Fusing	Packing	Other c/ "com			
Production capacity	Production MOQ		Leadtime order-to-ship		Leadtime proto develop	
	Monthly capacity		Monthly sampling room capacity			

C. CERTIFICATIONS

Type "X" if the mentioned certification is obtained and valid on the date of the audit. All mentioned standards must be **obtained through an accredited body.**	Quality Management		Environment	
	ISO 9001:2008	BRC Consumer Product	ISO 14001:2004	
	Social Responsibility		Sustainability	
	SA 8000	SEDEX	GOTS	GRS
	BSCI		OCS	OEKO-TEX
			BLUE SIGN	EIM (Jeanologia)

Figure 11 - Losan Audit Template

However, all the brands had the same problem regarding accessibility of the data that was already lacking, since there was not a centralized database summarizing it. This caused not only extra time loss when searching for a specific supplier data, since the reports were saved individually, but also overlapping information, with some suppliers being displayed as new when in fact they already had been chosen by a brand and allocated a certain code. Figure 12 showcases one example of such problem, where the same supplier has three different codes associated with it.

# Supplier	Supplier	Supplier type	Country	Weight of Sonae in turnover	Supplier MOQ	LT Order to Ship (days)	LT Proto Dev (days)	Monthly Capacity (pcs)
50695	BASE FASHIONS LTD.		Bangladesh		2.000	90	7	300.000
10001993	BASE FASHIONS LTD.		Bangladesh		2.000	90	7	300.000
10002832	BASE FASHIONS LTD.		Bangladesh		2.000	90	7	300.000

Figure 12 - Supplier Duplication Example

On another spectrum, the information available on the suppliers, especially MO and Zippy, was lacking in important areas such as social responsibility-issues or sustainability certificates, and in more product/production related topics such as lead-times for the development of prototypes and the product categories each supplier was able to provide.

Therefore, contrasting with other areas where Sonae Fashion was already making processes like the control of their plastics or reducing carbon dioxide emissions, the transparency of its suppliers was falling behind and was something the company had to focus on. The developed work falls within this area and the implemented improvements will be discussed in a later chapter of this dissertation.

3.4 Supplier Certifications

One of the chapters developed by Losan in the audit template presented in Figure 11 was the certifications the supplier had. This is one of the most critical information the company can retrieve because it demonstrates that the supplier was approved by an independent accredited third-party and it cannot be forged due to having a specific number and expiration date that can be checked by anyone.

The company's five most relevant certifications fall within three different categories:

- **Quality Management** – ISO 9001;
- **Environment** – ISO 14001;
- **Social Responsibility** - SA 8000, BSCI and SEDEX.

3.4.1 Quality Management

Regarding the quality management certification, ISO 9001 is a certification that belongs to the ISO 9000 family of Quality Management Systems (QMS), a compilation of standards with the goal of helping organizations meet their customer needs while complying with statutory and regulatory requirements. (Poksinska et al., 2002) It was published by the International Organization for Standardization.

While ISO 9000 deals with the principal quality management principles standards, ISO 9001 evaluates the requirements needed in order to achieve those standards.

Therefore, if a supplier is certified with ISO 9001, the company can admit they assure the control of the seven quality management principles (ISO, 2015b) which are:

- Customer Focus;
- Leadership;
- Engagement of People;
- Process Approach;

- Improvement;
- Evidence-based decision making;
- Relationship Management.

It is also important to mention that the standards are periodically revised, with the current applied one dating from 2015. Previous revisions after the first implementation in 1987 were made in 1994, 2000 and 2008.

3.4.2 Environment

Within environmental certifications, ISO 14001 follows the same logic as ISO 9001. This means that it was published by the International Organization for Standardization and belongs to the ISO 14000 family of Environmental Management Systems (EMS), that are "part of the management system used to manage environmental aspects, fulfill compliance obligations and address risks and opportunities". (ISO, 2015a)

Once again, while ISO 14000 comprises the standards on environmental management, ISO 14001 seeks to evaluate and certificate that a certain factory or organization can follow such standards.

If a supplier is ISO 14001 certified, the company can assume it follows the five main stages of an Environmental Management System:

- **Commitment and Policy** - The company or organization establishes its environmental policy;
- **Planning** – Possible environmental issues are identified along with targets and programs to achieve them. This stage also includes the delegation of responsibilities and the development of schedules with the required steps to accomplish the main planned goals;
- **Implementation** – The action plan and the necessary employee training are followed. It is also necessary to document the policies and create emergency responses;
- **Evaluation** – The current organization status is evaluated and compared with the defined targets. In case they are not being satisfied, new corrective action systems are developed;
- **Review** – The final stage aims to create a continuous loop of improvement and consists of senior management teams reviewing the initial targets and re-aligning them with the organization values and policies.

Just like ISO 9001, this certification is reviewed periodically, with the current in-use version dating from 2015. Previous versions include the first one published in 1996 and an updated version in 2004.

3.4.3 Social Responsibility

As seen in Chapter 3.3, Sonae had no information regarding social issues within its suppliers. Therefore, three different certifications were considered meaningful to be checked: SA 8000, BSCI and SEDEX.

Starting with SA 8000, it is a certification developed by Social Accountability International (SAI) in 1997 that provides a framework for organizations to do their businesses in the

highest possible social standards (SAI, 2021). Since it measures an organization or factory actions according to eight different performance criteria, the company can assume the supplier who has this certification has good standards in:

- Child Labor;
- Forced and Compulsory Labor;
- Health and Safety;
- Freedom of Association and Right to Collective Bargaining;
- Discrimination;
- Disciplinary Practices;
- Working Hours;
- Remuneration.

Another relevant social standard is the SEDEX (Supplier Ethical Data Exchange) one. SEDEX is not a certification like ISO 14001, ISO 9001 or SA 8000 are, and is instead an association for organizations focused on the social issues of their supply chains. However, in order to join the association a specific audit – SMETA (SEDEX Members Ethical Trade Audit) needs to be taken and passed.

SEDEX focus on work standards, health and safety of the organization workers, facility conditions and business integrity. Therefore, if a supplier in Sonae's supply chain has a SEDEX certificate, the company can not only get access to that supplier information, but also expect it to be socially responsible.

Finally, the BSCI (Business Social Compliance Initiative) is a membership-based initiative that aims to motivate its members in the improvement of their workers conditions. It has an internal audit that certifies the supplier fulfills the necessary BSCI requirements and works as a steppingstone in order to prepare for a SA 8000 certification.

Therefore, the BSCI requirements are similar to the performance criteria used in SA 8000:

- Legal Compliance;
- Freedom of Association;
- Right to Collective Bargaining;
- Prohibition on Discrimination;
- Compensation;
- Working Hours;
- Workplace Health and Safety;
- Prohibition of Child Labor;
- Prohibition of Forced Labor and Disciplinary Measures;
- Environment and Safety Issues;
- Management Systems.

Concluding this topic, one can understand that if a certain supplier has one of the presented certifications and/or associations, the company can have a bigger trust in the

products they buy from them, due to the transparency and reliability such certifications provide.

4 Improvements and Solutions

4.1 1st and 2nd level Suppliers Data Management

The first implemented step was to get as much valuable information as possible about the suppliers, both 1st and 2nd level.

In order to do so, some hurdles that had to be studied beforehand had to be overcome. One of the main issues was the lack of transparency in the supply chain, from the moment the pieces were ordered at the central to the supplier, since some of the contacts are made directly with the factories – who, in turn, sometimes have their own suppliers (For example, a shirt can be ordered by the company with specific requirements, but the factory needs to order buttons from other factories); other suppliers are Traders, who are a singular person or group of people that have connections with different factories and therefore reach them themselves, making the best choice for the desired order. This makes the footprint of any piece of clothing spread over a dense web of, consistently, multiple countries.

Another hindrance was that suppliers - mainly Traders -, do not want to disclose all the relevant information related to the factories they make their orders from, since that would allow the company to reach the manufacturers directly and they would lose part of their revenues.

After the main issues were identified, it was important to understand how the different departments within the company felt about the available supplier information, i.e., what each department was interested in knowing in order to make better decisions and why. The following departments were consulted:

- Purchases;
- Sustainability;
- Quality;
- Product Design.

Consequently, two different forms were created based on the collected feedback, one for the Suppliers and one for the Factories. Both the forms are available in the Annex A – Supplier Profile Form and Annex B – Factory Profile Form.

4.1.1 Forms' Development

The Supplier Form was longer than the Factory one, in order to avoid the previous mentioned hurdle of the suppliers feeling like the company was trying to obtain more information than necessary. The following Table 1 systematizes the differences between the forms.

Table 1 - Systematization of Chapters by Form

Chapter/Form	Supplier Form	Factory Form
General Supplier Information	✓	✓
Main Customers	✓	
Additional Information	✓	✓
Sustainability and Social Issues	✓	✓
Products	✓	
Relationship with Sonae Fashion	✓	

The different chapters were defined as:

- **General Supplier Information**, where basic questions like their names, address and if it was a factory or a trader were asked, along with more specific ones about their contact person information, total turnover and what percentage was allocated to Sonae;
- **Main Customers**, where the objective was to understand to which competitors they sold to and how much, so that critical situations where the supplier is too dependent on only one customer could be identified and, in cases where Sonae was the main one, better plans could be made around it;
- **Additional Information**, where there was a compilation of questions about the categories of products produced and preferred Mean Of Transport (along with favored airports and seaports), combined with relevant questions about Social Responsibility, such as Average Age of workers, the level of their wages compared to the country average and percentage of female workers;
- **Products**, where the inquired lined out which products they were able to make, their capacity and lead-times, the Minimum Order Quantity needed, their In-House Capacities (for example, if they are able to do Dyeing of pieces, Washing, etc.) and finally to which markets they exported to;

- **Sustainability and Certifications**, so that the suppliers could point out their current certifications, even though Sonae always confirms this point during Audits due to its importance. Based on the certifications a supplier has, the company can assume they fulfill specific requirements, as presented in Chapter 3.4;
- **Relationship with Sonae Fashion**, where the suppliers could classify their relationship with Sonae, both in the complexity of their processes and the communication methods, since it was important to understand how suppliers feel about the company and what can be made to improve such thoughts, considering that the Company-Supplier relationship is viewed as a partnership and not a single sided contract.

On the Supplier Form all chapters were considered. However, the Factory Form was comprised of only the General Information, Additional Information (including the Social Issues questions) and Sustainability certifications chapters. The main differences were that more specific questions about, for example, contact person information and the type of products made in each factory were not asked, and there was a question about the Chemical Responsible of the Factory that was not placed on the Supplier Form.

In Table 2, a summary of some questions present on the forms are displayed, so that one can fathom what information the company aims to gather from them.

Table 2 - Forms Questions and their Relevance (S - Supplier Form; F - Factory Form)

QUESTION	RELEVANCE
15 (S) – Last Year Turnover **16 (S) – Percentage of Sonae Turnover**	Understand the supplier financial situation, the impact Sonae has in their total production and the company's attractivity in the market
27 (S) / 15 (F) – Workforce Size **32 – 34 (S) / 20 – 22 (F) – Staff Distribution**	Evaluate the supplier workforce status and compare it to their financial status. Recognize the impact a cut in orders to suppliers who are dependent on Sonae could have
28 – 31 (S) / 16 – 19 (F) – Social Issues	Gather information about gender equality, age, and retribution control of the supplier workforce
43 (S) – In-House Capacity	Perceive the capacities of the supplier facilities and conclude, based on the products they deliver, what they can do in-house and what they need to outsource
50 (S) – Export Markets	Identify possible suppliers' focus in order to understand if their products are more suitable for a certain market
23 (F) – Is there a Manager in Charge of the Chemical Management of the Factory?	If the factory does not have a manager in charge of the chemical management, it most likely will not have the safest measures and policies in place and they will need to be reviewed

After the process of getting the final questions on the forms and reaching out to the suppliers, the collected information was inputted into the supplier databases. It is worth mentioning that the process of getting the information from the suppliers was slowed down by the effects of the global pandemic, but in the end, it reached the ambitions of the team and was claimed a success.

4.1.2 Forms' Results

The suppliers that answered the forms account for 80% of the Sonae's Fashion production from the 12 months before the writing of this document - excluding the ones who only produce childcare products and a Portuguese mask's supplier that had a heavy weight in the total purchases due to the Covid-19 pandemic – and therefore the initial goal that was discussed and defined as a team, which was of more than 70% was fulfilled, so the collected data was considered sufficient to make assumptions and take actions based on those assumptions.

One of the most important recollections to this dissertation is the fact that several "red flags", that are worrying signals collected from the data that indicate possible problems within the supplier and can range from social issues to production rates, were discovered, mainly connected to the production ratios allocated to each supplier's main customer. Two of those "red flags" considered important to be pointed out by the company were the low attractivity of the company to the suppliers, since, in 37% of the suppliers, their volume of production allotted to Sonae was less than 5%; and a high risk, as 3% of the suppliers declared Sonae as their only relevant customer, and 5% declare that Sonae accounts for more than 75% of their total turnover.

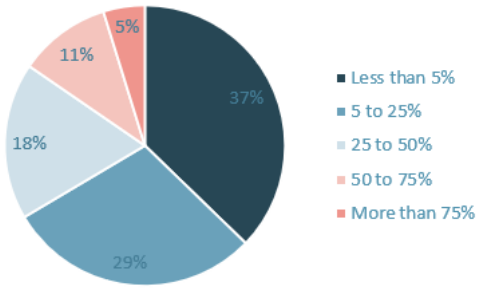


Figure 13 - Percentage of Supplier Turnover Allocated to Sonae Fashion (Sá, 2021)

Since another topic that was reviewed and considered crucial to the company was to be transparent to the customer, other analyses were made to the data the suppliers provided. In this case there were no alarming flags other than wrong inputs on the form, but since it is a sensitive topic, all the results were taken with caution and will always be evaluated when the global health situation allows for in-person audits. However, curious correlations brought hypothesis to the company. For example, the countries that have a bigger ratio of female to male workers (Portugal and China) also have the highest average age of their employees, and that shows the specialized workforce is getting older and new generations do not follow that area as much as they used to do.

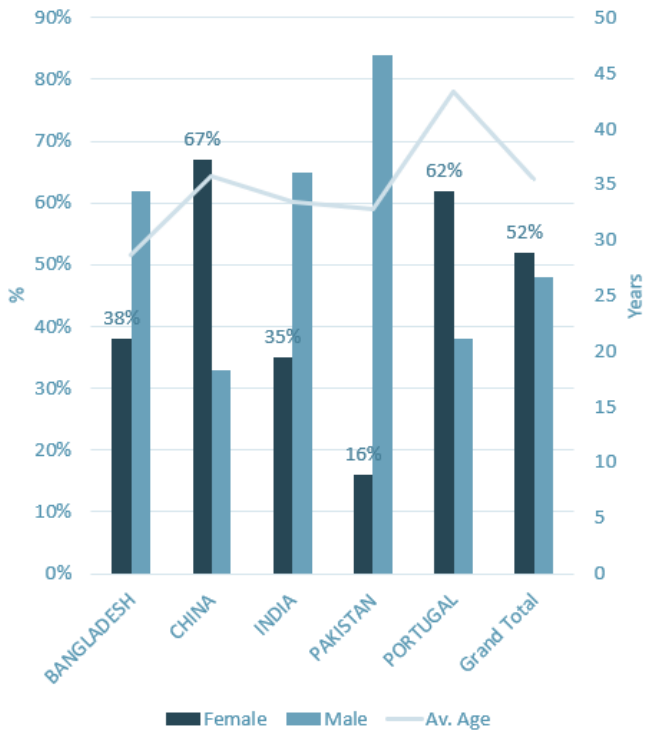


Figure 14 - Relation between Suppliers Female/Male Workers Ratio and Average Age, per Country (Sá, 2021)

In addition to the transparency and social issues, the sustainability of the company relies on greener suppliers and as was pointed out on the previous 3.1 chapter, Sonae is taking more and bigger steps each year towards becoming a better group, therefore an initial analysis was made on the answers. Due to the fact that an initial goal was not set when talking about percentages of suppliers who had the most relevant certificates, there were no complications when the results showed that only 56% of the suppliers had at least one of the following certificates:

- BSCI;
- SEDEX;
- SA8000:2014;
- ISO 14001:2015;
- ISO 9001:2015.

However, the suppliers will be encouraged to be evaluated by the proper companies and have the certificates, since it shows commitment to improving in both environmental and social issues, and therefore proves that Sonae can have trust in them and their products.

Finally, and as expected before the forms were sent, most of the suppliers are either stationed in China or rely on another level of suppliers who do, and therefore, since this country has an history of social and cultural issues, a close control of the suppliers is necessary.

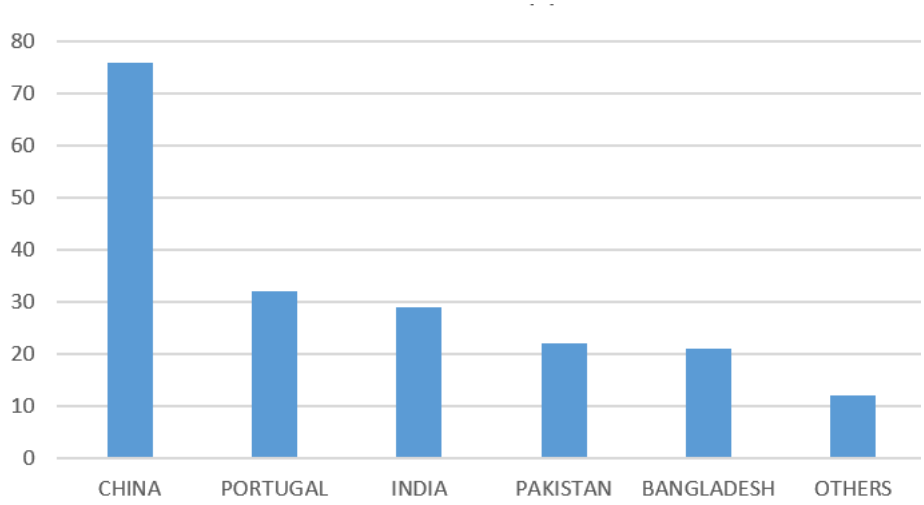


Figure 15 - Number of Suppliers per Country (Sá, 2021)

The retrieved data was crucial to the development of a new centralized database of suppliers and their factories, which in turn fueled the development of new programs such as a Supplier Lifecycle Program and a new Search Dashboard of Suppliers. Furthermore, based on the results gathered, new overviews on the suppliers' workforces and financial status were concluded, along with analysis about the company's attractiveness and the number of certified suppliers it has in its portfolio. The success of the forms also proves the suppliers are open to give their feedback and data, and that is an important step in the way to achieve transparent and better partnerships with them.

4.2 Supplier Lifecycle Program

According to what was presented in Chapter 2.2, a supplier lifecycle program was put in development, with its crucial support coming from the extra data collected in the forms sent to the suppliers.

The program was divided in four main phases:

1. **Assessment of current supplier basis** – With the main goal of understanding where the company stands before the appliance of such program;

2. **Designing of Supplier Lifecycle Program**, from on-boarding to phase out – Where the overall goals are outlined and what benefits the company can reap from the program;

3. **Consolidate the action plan** – Here the feasible steps of the development are created, i.e., the company lays out what it needs to do. In this problem, there are three development steps: Standardizing working rules with the suppliers, in accordance with their assessment; Allowing the reduction of quality costs such as inspections, audits and tests; Support what is decided on negotiations of payment methods and its terms.

4. **Governance Plan** – The final phase of development consists of keeping the partnerships on track.

A more specific analysis on each phase is laid out in the following chapters.

4.2.1 Assessment of Current Suppliers

First, a consolidation of service, weight and risk metrics was divided in three steps as can be recognized in Figure 16.

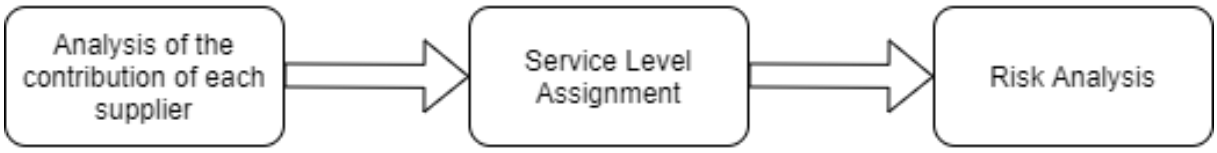


Figure 16 - Consolidation of service, weight, and risk metrics steps

In the beginning the contribution of each supplier within its product group was analyzed, then each supplier had an assigned service level based on 5 different metrics (final quality rate, delivery level, payment conditions score, SMS capacity rate and non-quality costs) and finally a risk analysis based on relative weight position and percentage of turnover allocated to Sonae was conceived.

Another important element created before the development of the program *per se*, was clusters with different definitions, which are, in an ascending order:

- Warning – Suppliers who have a high risk in terms of dependence of product type or elevated percentage of turnover allocated to Sonae, that should be pushed into risk controlled rates;
- Phase-Out – Suppliers who do not meet criteria and will be removed from the portfolio and have their partnerships terminated;
- Trial – New suppliers who will be evaluated and then moved to either Phase-Out or Approved;
- Approved - Suppliers who have a regular service but due to its small weight in Sonae purchases, can be replaced without causing disruptions;
- Core – Suppliers with good service rates and support to the regular business who can cause business disruption;
- Strategic – Suppliers who have a highly reliable service and a superior financial support and can therefore cause major disruptions. They are also characterized by a high response on critical business demands.

Then, for each major cluster, another extra classification of “conditional” could be added if the supplier had a service level below their previous cluster and needed to be re-adjusted.

This type of alignment goes to what was presented in chapters 2.3.2 and 2.3.3, where it was said that there are three different phases in Supplier Relationship Management (Moeller et al., 2006). It can be understood that Out-Supplier Management must be made in order for new suppliers to enter the Trial phase, In-Supplier Management is important for all the suppliers already in the company portfolio, and finally there is a huge parallelism between the In-Supplier Dissolution Management and suppliers whose cluster is the Phase-Out one.

An important relation between the literature review and the program Sonae is now developing is the importance of having a strict portfolio. In the Figure 17, the supplier distribution per cluster is displayed.

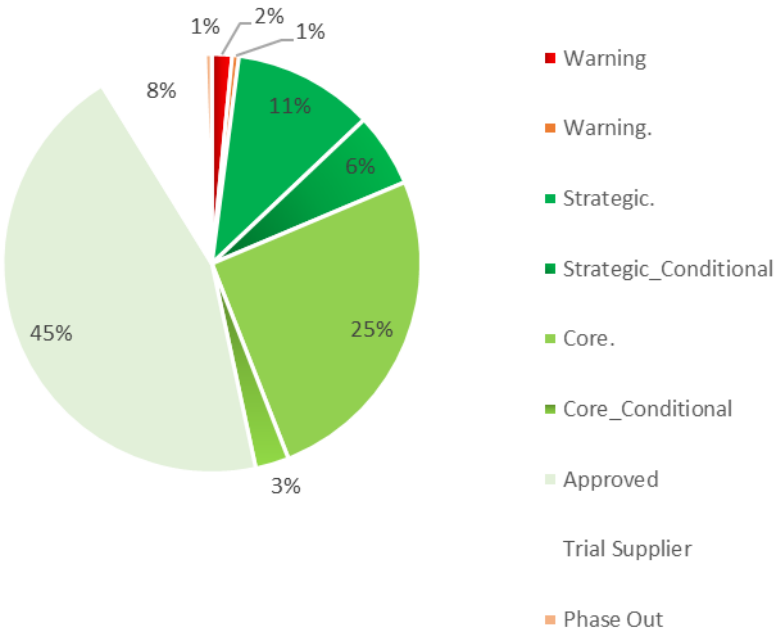


Figure 17 - Supplier Distribution per Cluster, in % (Rego, 2021)

It can be seen that this improvement can support the company towards the right direction, since it shows that there is a high number of Approved Suppliers and a polarization of sourcing. Therefore, Sonae Fashion has a supplier optimization opportunity if it tries to shorten the number of suppliers.

4.2.2 Design of Supplier Lifecycle Program

The program is only beneficial if it provides gains for both the company and the suppliers, since that is the foundation of a lasting partnership.

In this case, the benefits the supplier can nurture are:

- Access to financing tools;
- Increase of self-inspections;
- Higher audit trust in suppliers who perform better;
- Participation in Sonae Fashion suppliers Forum;
- Reduction on testing costs.

For Sonae, the benefits can be:

- Decrease of inspection costs;
- Less audit costs;
- Less control on tests if a supplier has a higher level;
- Better alignment between brands due to better negotiations on payment terms.

In Figure 18, a schematization of some advantages the suppliers can have in different clusters is displayed.

Conditions	Strategic suppliers	Core suppliers	Approved suppliers	Trial Suppliers
Investment in Inspections	Random	30% paid by SF; 70% self inspection	50% paid by SF; 50% self inspection	100% paid by Sonaefashion - 1st year
Payment Terms (days)	> 90 days (LC or RMF» 90 days) all other >90 days	»90 days	»60 days	»60 days
Payment Method	Vendor Financing; Confirming; Twinco *	LC; RMF; Datafatura	LC; CAD;RMF or datafatura	LC; CAD;RMF or datafatura
Audits	100% Audits Approved and Audits every 3 years	100% Audits Approved and Audits every 2 years	100% Audits Approved and Audits every year	100% Audits
Training	Suppliers forum - annual	Suppliers Forum . Every 3 years	NA	Onboarding
Investment in tests by SF	100% paid by SF	70% paid by SF and 30% paid by supplier	50% paid by SF and 50% paid by supplier	100% paid by SF - 1st year
% of articles with tests	» 10%	»30%	»50%	100%
	* to be developed			

Figure 18 - Supplier Lifecycle Program Plan (Rego, 2021)

It can be concluded that a supplier can be motivated towards reaching a better cluster since a promotion brings more payment options and training forums, and at the same time less control through audits or product tests.

4.2.3 Consolidation of the Action Plan

Here, different strategies were applied in order to, once again in accordance with Moeller et al. (2006), have a better In-Supplier Management.

In this stage different product types are evaluated separately with the goal of laying out possible solutions to each one of them. Figure 19 presents four different histograms with the supplier distribution per cluster in each one of them.

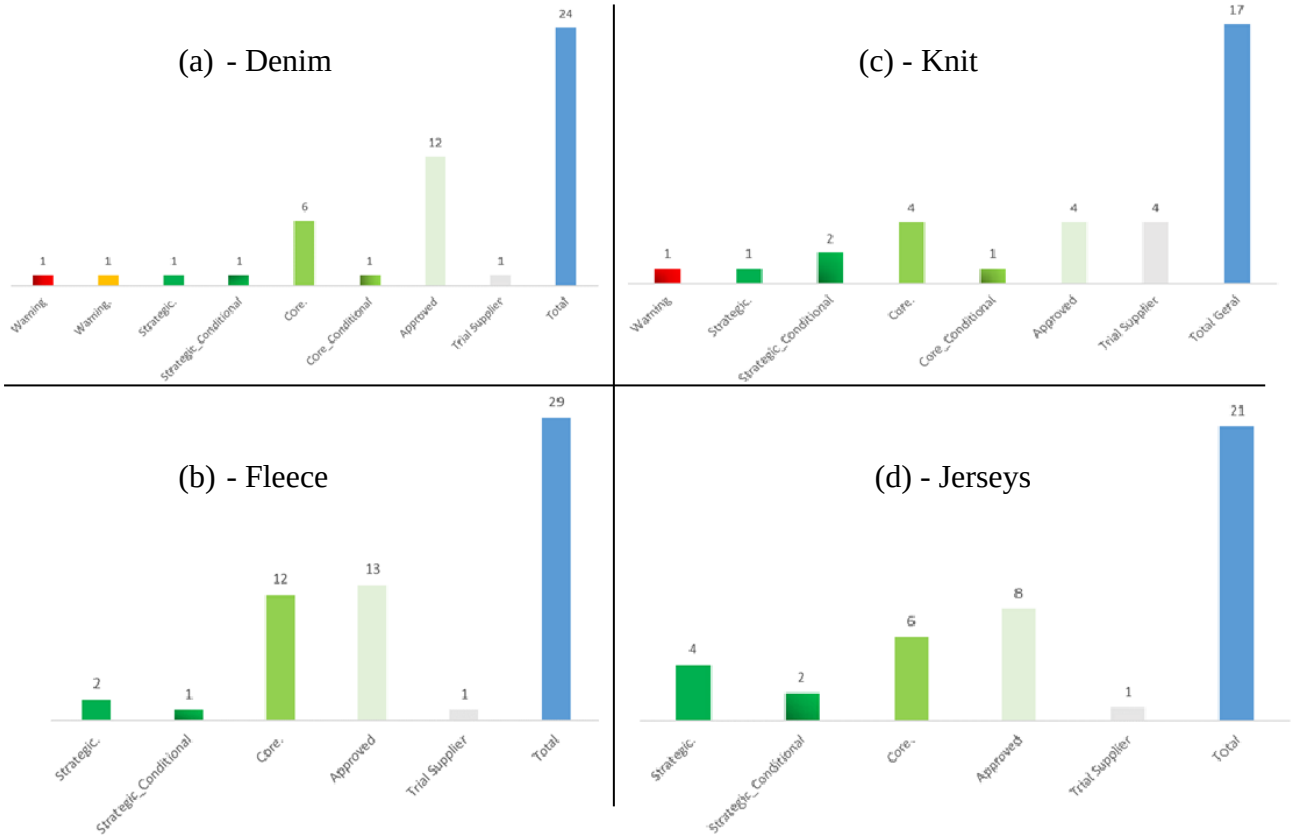


Figure 19 - Supplier Distribution per Cluster, in different Product Types

After the analysis by product type is made, different findings and examples of proposed solutions are summarized in Table 3.

Table 3 - Action Plan

FINDING	SOLUTION
(a) - Single Supplier had too much weight	Strategy of sharing suppliers between different brands within Sonae Fashion will be studied
(b) - A lot of different suppliers had a low service level	Must decrease approved suppliers and work on a better balance between clusters
(c) - Big number of Trial suppliers	Continuous evaluation of Trial suppliers and motivate them so they evolve in the SLP
(d) - Good percentage of suppliers with high service	Evaluate synergies between brands

Without a consolidation phase, the design of the Supplier Lifecycle Program would not evolve and fit the company needs. Consequently, this step needs to be developed carefully and each different finding must be studied, with distinct solutions proposed. Once again, as presented in Chapter 2.2.3, a global solution does not exist and the company must find personalized actions so that the project is successful.

4.2.4 Governance Plan

It is necessary to keep a steady track on the partnerships and to review strategies and approaches based on feedback received or new market developments, for example.

As a team it was decided to, once again, divide this phase in different steps to make the necessary measures of each point in time clearer.

In the first place, the program needs Monitoring, which is a simple but yet crucial step that consists of regular performance evaluations, normally performed every six months.

The following step is, again, the Action Plan where evaluation reports are exchanged with the suppliers, threshold measures are applied, improvement plans are developed to suppliers who are underperforming in their cluster, and risk-mitigating strategies are discussed and applied with the suppliers.

Finally, in the Mitigation phase, both Phase-Out and Warning suppliers have either their partnerships terminated or reviewed, and a new backup of Trial suppliers is developed.

In a near future, Sonae Fashion hopes to extend the Supplier Lifecycle Program to every area of the company, to reduce the number of suppliers in its portfolio and to review the action plans consistently.

Concluding, and as a preview for the next chapter, the creation of a Supplier Dashboard that works as a search engine with different filters was also developed. This is important so that every team has the most relevant information for a certain purchase in a simple Microsoft PowerBI page, and because it will make way for new analysis of what each team really finds important when making a buying decision.

4.3 Supplier Dashboard

As said before, a supplier dashboard that works as a search engine for the different teams was constructed and developed in PowerBi.

The main filters/inputs available are:

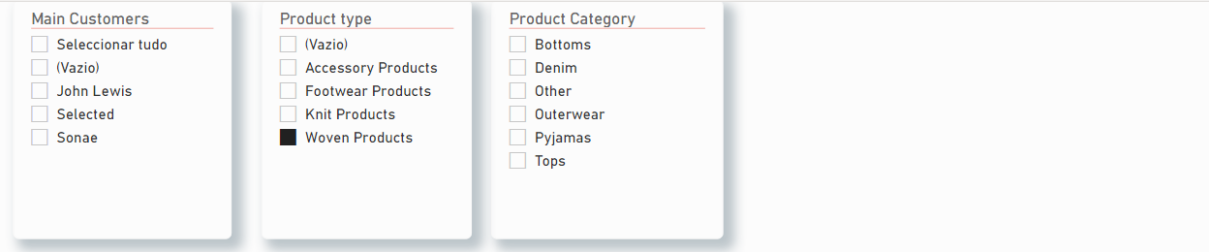
- Type of products the supplier is able to produce: woven, knitted, footwear or accessory products;
- Product Category: Backpacks, Bags or Wallets, Belts, Boots, Bottoms, Denim, Flip Flops, Gloves, Hats or Beanies, Outerwear, Pyjamas, Sandals, Scarves, Shoes, Sneakers, Socks, Underwear and Watches;
- In-house capacity of the supplier: Spinning, Circular or Flat Knitting, Weaving, *All Over Print*, Cutting, Fusing, Dyeing, Screen Printing, Sewing/Linking, Embroidering, Ironing, Garment Dyeing or Washing stations;
- Other customers the supplier works for;
- Lead-times both in order-to-ship and proto development;
- Social and Environmental certificates/associations.

After selecting the desired filters, the entire information on the suppliers who fulfill them is shown in a list-view.

The outputs are:

- Supplier code, name and country;
- If the supplier is a trader or a factory;
- Representation of Sonae Fashion in its total turnover;
- Monthly capacity of production;
- Lead-times;
- Minimum order quantities and monthly capacities;
- Certificates and Associations the supplier has.

In Figure 20 a draft-version of the search engine is shown.



# Supplier	Supplier	Supplier type	Country	Weight of Sonae in turnover	Supplier MOQ	LT Order to Ship (days)	LT Proto Dev (days)	Monthly Capacity (pcs)
50695	BASE FASHIONS LTD.		Bangladesh		2.000	90	7	300.000
10001993	BASE FASHIONS LTD.		Bangladesh		2.000	90	7	300.000
10002832	BASE FASHIONS LTD.		Bangladesh		2.000	90	7	300.000
12	YANCHENG JINGWEI INT'L GROUP CO.		China		1.000	40	6	60.000
1430	SUZHOU HONFA TEXTILES GROUP CO.,LTD		China		1.000	60	7	80.000
1470	SHISHI CREDIT FAME TRADE CO.,LTD		China		1.000	60	15	50.000
1533	WEIFANG QILI TRADING CO, LTD	Trader	China	50 to 75%	1.000	90	5	50.000
10001801	SOREMA, S.A.	Factory	Portugal	Less than 5%	999	9	9	9.999
10002363	DARKSEA - INDÚSTRIA DE CALÇADO, LDA	Factory	Portugal	Less than 5%	875	9	4	11.499
1371	WEIFANG WEIZHEN GARMENTS CO LTD		China		500	45	3	50.000
10002048	MTC-MORE THAN CLOTHING, LDA	Trader	Portugal	50 to 75%	500	5	5	9.999

Figure 20 - Supplier Finder

With such dashboard available, it is expected that the teams make better, weighted decisions. Another benefit is that the dashboard is easily recreated based on the teams' feedback, or if new and relevant information is available.

4.4 Discussion

Now that the improvements developed within the project are presented, a summary and discussion of the achieved results can be made.

Firstly, with the development of the forms and consequent communication with the suppliers, a new database of suppliers was able to be developed and the company was able to collect and save amounts of information about their suppliers it never had access to before. This information consisted of the supplier's basic information, which products they were able to deliver and how, their main customers, the impact Sonae had in their total production and both social and environmental certifications they might have. In another record, the forms also recollected the suppliers' feedback in Sonae's services.

This implementation was the most important one of the project, since it allowed the creation of both the Supplier Lifecycle Program and the Supplier Dashboard, fed by the new database of suppliers.

With the information gathered, a Supplier Lifecycle Program was studied and put into action. The findings accomplished with this program allowed the team to split suppliers into different tiers, which in turn will allow the company to take different measures, always with the main goal of improving relationships with their producers. The major conclusion taken from this program was, however, that the number of suppliers was higher than necessary and therefore the company needs to select which partnerships need to be improved, and which must be terminated.

An expected future result of this program will be the reduction of the number of suppliers, and the improvement of the tiers of suppliers that the company decides to work on. However, due to the fact that this was only implemented weeks before the writing of this document, such results will not be able to be categorized yet.

The final application was the creation of a Dashboard that works as a search engine of suppliers. This application has the main goal of allowing Sonae's teams to make the best possible decisions regarding what supplier they choose to buy from.

As in the Supplier Lifecycle Program, quantitative results related to this application cannot be calculated yet, but it is expected that since teams have the most relevant information at their disposal, the purchasing costs will decrease, and the products quality will increase.

However, another key goal in the creation of the search engine is that teams can choose suppliers that offer better conditions, both environmentally and socially. Therefore, the quantitative monetary result can be lower than expected and the program still be considered a success if the teams make more deliberated decisions.

Finally, this project gave Sonae the possibility of publishing their supplier list to the final consumers, after cleansing the non-compliant ones from their database.

4.5 Future Solutions

The developed work begins to open a path regarding transparency in the supply chain. However, there are more steps that can be taken in a near future that will not only improve the amount of transparent information the suppliers provide, but also reduce the amount of waste produced by the industry.

The most relevant topics that were discussed with the mentor, which are the development or the application of blockchain systems and new methods of progressing into a more circular economy, are presented during this chapter.

4.5.1 Blockchain/Cryptocurrencies

Blockchain can be described as a distributed database of records. It works as a public ledger of transactions executed by its users at any certain time and, once the record is written, it cannot be deleted (Crosby et al., 2016).

This technology has four key characteristics that differentiate it from other types of transactional information systems, which are:

- Decentralization;
- Security;

- Auditability;
- Smart Execution.

Whenever a new record is created and "placed" into the blockchain, it is accessible to everyone in the network. Due to the decentralization and the way the information is public, corruption or tampering with the information is almost impossible and a blockchain system is inherently more trustworthy than a different one. A simplification of the steps in a blockchain system is presented in the figure below.

Figure 21 - Blockchain System (Saberi et al., 2019)

Currently, where Sonae Fashion suppliers mainly use PDF documents to support their buying decisions, corruption from the supplier end can be an issue. Since a document is easily forgeable, the company could be trying to buy a certain quantity of 100% Recyclable Polyester and end up with a mix of 100% Recyclable Polyester and another one of less quality. Therefore, the implementation of a blockchain system that uses a cryptocurrency associated with it could help to solve this problem. This way, every product the company wants to buy would have an associated tabled cost and that amount of the currency would be "released", which, thanks to the fact that every transaction will be permanently saved in the database, makes the supply chain more transparent.

It is important to note that blockchain has some counterparts as well, like its throughput rate, associated costs and interoperability. (Aranda, n.d.)

Regarding its throughput rate, the current transactional speed is way lower than it is for Visa. According to Croman et al. (2016), Bitcoin (the most famous cryptocurrency) can perform between 3.3 and 7 transactions per second, while a Visa does in average 1667 transactions per second and can reach even higher numbers, though different sources claim different maximum numbers. (Lin et al., 2020)

Moving on to the associated costs of cryptocurrencies transactions, the average cost per transaction, for Bitcoin, was around 140$ in June 2021. Such costs come from the fact that blockchain systems need regulatory capital requirements, and the generally called *miners*, who work as middle-men also take a cut of each transaction. (*Cost per Transaction*, 2021)

Finally, every party involved in the transaction of a cryptocurrency needs to be able to process it. This means that everyone needs to have access to the same databases or blockchain systems and the currency has to be easily interchangeable with others. As it stands in the

present, with an increasing number of cryptocurrencies appearing, the interoperability of the system has to be taken into account.

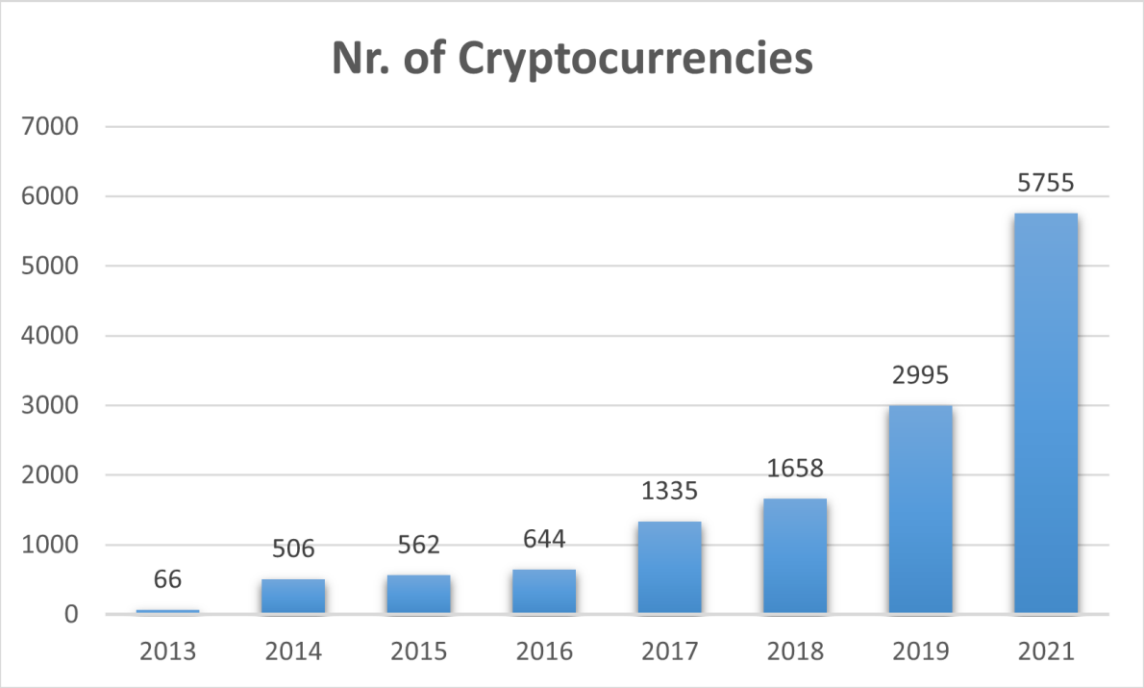


Figure 22 - Number of Cryptocurrencies per Year (Frankel, 2018; GP Bullhound, 2018; Investing.com, 2021; Liquid, 2019)

We can conclude that even though blockchain systems, along with associated cryptocurrencies could be the future step in order to achieve a more transparent supply chain, there are still implementation hurdles that need to be deeply studied in order for this to be achieved.

4.5.2 Circular Economy

Another path the company can follow is the development of actions with the objective of creating a more circular economy of their products lifecycles.

Some examples of different campaigns that can be followed are:

- Development of a rental clothing program, where people can still fulfill their current needs of a fast fashion, while they also return the pieces after some time. This minimizes the pieces of clothing still in good conditions that are wasted, increases customer responsibility in taking care of their clothes and reduces the number of pieces produced;
- Improvement of the quality and durability of some product lines and publicization as sustainable and transparent products, in order to increase the lifetime of such pieces and, in case the consumer wants to dispose of them, guarantee they are still in good conditions to be resold or sent to charity shops, for example;
- Creation of maintenance services or repairment of garments. This would help the customers perceive their products as maintaining their value longer, and it would incentivize them to not dispose of their products so easily. Several other brands like Patagonia (Patagonia, 2021) or Bergans already do this and show good results (Ellen MacArthur Foundation, 2017).

It can be concluded that not every possible step needs the same funding or development, and that, in order to give the lifecycle of clothing products a more circular route, different types of approaches can work.

5 Conclusion

Sonae Fashion, as a large company focused on the fashion industry, is taking larger steps each year towards becoming more sustainable and transparent. This dissertation is in line with the company´s Slogan: "Improving Life", since it begins with a review on the current state-of-the-art and is followed by new improvements made within the teams in order to improve, as the title of the project suggests, the present supply chain.

The sector of the company that has larger eco impact is the supply chain, since it is so entangled and globalized, where the products are manufactured along its way. Therefore, companies who wish to prevail nowadays, must maintain a good focus on their suppliers and their information has to be as transparent as possible.

It was understood that the fashion industry is a major polluter and if multinational companies do not take actions to stop it, this activity will only increase its eco footprint worldwide, with no associated sustainability at all. As presented before, the current rate of water usage, for example, is unsettling and has not showing signs of ending.

Additionally, sustainability and transparency of the supply chain are inherently related, i.e., the more information a company retains of its suppliers and how they perform, the more it can work on helping them becoming greener or, instead, a partnership can also be terminated in favor of other ones who meet the company standards better.

With that being said, it is crucial that a company fathoms how important having lasting, two-sided partnerships with its suppliers can improve not only its eco footprint, but also the quality of its final products. Therefore, a close and transparent relation with the suppliers not only helps the environment and better company decision-making, but it also boosts the quality of its products and, obviously, customer satisfaction.

Going from theory to actions in this project started with the development of a form which primary goal was to get updates of the suppliers' basic information, along with new data related to sustainability and social issues. After this was finished, the collected data was cleansed and inputted into a new database of suppliers, in order to simplify the steps taken afterwards.

With the new amount of data different strategies were developed, already in-use applications were improved, a new idea of maintaining healthy and lasting partnerships with the suppliers was born in the form of a Supplier Lifecycle Program and a new Search Engine was created so that different teams could have access to the supplier information they wanted when making their buying decisions.

The most important inferences made regarding supplier relationships were that the number of suppliers was way too large and needed to be cut shorter, the suppliers that remained in Sonae's Fashion portfolio needed to be studied and listened to, and that both sides of such partnerships can benefit at the same time.

With this project, a new path concerning transparency of the supply chain and why it is so relevant was paved, and the team believes that other areas of the company will follow in studying and applying different methods and improvements to their decisions. Nonetheless, one has to proceed with caution and take continuous steps , over trying to solve all problems immediately.

Possible future advancements and studies may focus on how developing a cryptocurrency system of payment can help the company control 100 % of its product lifecycle, from raw material to finished product, or instead focus on making the lifecycle of the product as circular as possible so that the total waste in the supply chain is minimized. Parallel to that, the company can grow new social causes to improve the idea the customers have, while helping the world becoming more equal.

The main challenges overcome during this project were the amount of information that had to be cleansed and the importance of making the suppliers understand that the company was not trying to take advantage of them and just attempting to make the supply chain more transparent and sustainable.

Concluding, now more than ever, in such a fast-paced world where supply chains are getting more and more dense, where people are becoming more aware of sustainable and social causes and where markets keep getting more competitive, a brand that wants to evolve needs to grow new sustainable and transparent ideals while maintaining focus on monetary issues. Therefore, the company benefited from having a person focused specifically on this issue, since it sped up the processes of developing a new supplier lifecycle program and increased the amount of raw information available.

Sonae Fashion is aware of that and therefore are on the right path to stay as a trustworthy company, even knowing that such developments may go against the inertia of its partners and consequently need to be made gradually.

References

Anderson, W. T., & Cunningham, W. H. (1972). The Socially Conscious Consumer. *Journal of Marketing*, *36*(3), 23. https://doi.org/10.2307/1251036

Aranda, D. (2017). *Don't Believe All the Hype 2: The Limitations of the Bitcoin Blockchain*. https://ripple.com/insights/dont-believe-all-the-hype-2-the-limitations-of-the-bitcoin-blockchain/. Accessed June 2021

Benton, W. C., & Maloni, M. (2005). The influence of power driven buyer/seller relationships on supply chain satisfaction. *Journal of Operations Management*, *23*(1), 1–22. https://doi.org/10.1016/j.jom.2004.09.002

Birtwistle, G., & Moore, C. M. (2007). Fashion clothing - Where does it all end up? *International Journal of Retail and Distribution Management*, *35*(3), 210–216. https://doi.org/10.1108/09590550710735068

Cobbing, M. & Vicaire Y.(2016). *Timeout for fast fashion* https://www.greenpeace.org/international/Global/international/briefings/toxics/2016/Fact-Sheet-Timeout-for-fast-fashion.pdf

Chen, H. L., & Burns, L. D. (2006). Environmental analysis of textile products. *Clothing and Textiles Research Journal*, *24*(3), 248–261. https://doi.org/10.1177/0887302X06293065

Cost per Transaction. (2021). https://www.blockchain.com/charts/cost-per-transaction, Accessed June 2021

Cotte, J., & Trudel, R. (2009). Socially conscious consumerism - A systematic review of the body of knowledge. *Network for Business Sustainability*.

Croman, K., Decker, C., Eyal, I., Efe Gencer, A., Juels, A., Kosba, A., Miller, A., Saxena, P., Shi, E., Gün Sirer, E., Song, D., & Wattenhofer, R. (2016). On Scaling Decentralized Blockchains Initiative for CryptoCurrencies and Contracts (IC3). *International Conference on Financial Cryptography and Data Security*, 106–125. http://fc16.ifca.ai/bitcoin/papers/CDE+16.pdf

Crosby, M., Nachiappan, Pattanayak, P., Verma, S., & Kalyanaraman, V. (2016). BlockChain Technology: Beyond Bitcoin. *AIR*, *2*. https://doi.org/10.15358/0935-0381-2015-4-5-222

Deloitte. (2009). Finding the green in today's shoppers: Sustainability trends and new shopper insights. *Prepared by Deloitte for GMA (The Association of Food, Beverage and Consumer Products Companies)*, 1–24.

Echeverria, C. A., Handoko, W., Pahlevani, F., & Sahajwalla, V. (2019). Cascading use of textile waste for the advancement of fibre reinforced composites for building applications. *Journal of Cleaner Production*, *208*, 1524–1536. https://doi.org/10.1016/j.jclepro.2018.10.227

Ellen MacArthur Foundation. (2013). Towards the Circular Economy. *Ellen MacArthur Foundation*,Volume*1*.https://www.ellenmacarthurfoundation.org/assets/downloads/publi

cations/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf, Accessed May 2021

Ellen MacArthur Foundation. (2017). *Fashion and the Circular Economy*. https://www.ellenmacarthurfoundation.org/explore/fashion-and-the-circular-economy, Accessed May 2021

Ellram, L. M., & Cooper, M. C. (1990). Supply chain management, Partnerships, And the shipper -Third party relationship. In *The International Journal of Logistics Management* (Vol. 1, Issue 2, pp. 1–10). https://doi.org/10.1108/95740939080001276

ElMessiry, M., & ElMessiry, A. (2018). Blockchain framework for textile supply chain management: Improving transparency, traceability, and quality. In *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics): Vol. 10974 LNCS*. Springer International Publishing. https://doi.org/10.1007/978-3-319-94478-4_15

Frankel, M. (2018). *How Many Cryptocurrencies Are There?* https://www.fool.com/investing/2018/03/16/how-many-cryptocurrencies-are-there.aspx, Accessed June 2021

GP Bullhound. (2018). *Token frenzy, The fuel of the blockchain*.

Henry, B., Laitala, K., & Klepp, I. G. (2019). Microfibres from apparel and home textiles: Prospects for including microplastics in environmental sustainability assessment. *Science of the Total Environment*, *652*, 483–494. https://doi.org/10.1016/j.scitotenv.2018.10.166

Hootkin, J., Hoffman, D., Pllock, J., Lubensky, D., Miller, B., Bemporad, R., Baranowski, M., & Smith, E. (2008). Conscious Consumers Report. *BBMG*.

Investing.com. (2021). *All Cryptocurrencies*. https://www.investing.com/crypto/currencies, Accessed June 2021

ISO. (2015a). *Environmental management systems — Requirements with guidance for use*. https://www.iso.org/obp/ui/#iso:std:iso:14001:ed-3:v1:en

ISO. (2015b). *Quality management principles*. https://doi.org/10.1016/b978-0-08-049219-3.50008-6

Koszewska, M. (2013). A typology of polish consumers and their behaviours in the market for sustainable textiles and clothing. *International Journal of Consumer Studies*, *37*(5), 507–521. https://doi.org/10.1111/ijcs.12031

La Londe, B. J., & Cooper, M. C. (1989). Partnerships in Providing Customer Service : a Third Party Perspective. *Council of Logistics Management*.

Lehmann, M., Arici, G., & Martinez-pardo, C. (2019). Pulse of the fashion - 2019 Update. *Global Fashion Agenda & Boston Consulting Group & Sustainable Apparel Coalition*. http://media-publications.bcg.com/france/Pulse-of-the-Fashion-Industry2019.pdf

Lin, T., Yang, X., Wang, T., Peng, T., Xu, F., Lao, S., Ma, S., Wang, H., & Hao, W. (2020). Implementation of high-performance blockchain network based on cross-chain technology for IoT applications. *Sensors (Switzerland)*, *20*(11), 1–23. https://doi.org/10.3390/s20113268

Liquid. (2019). *How many cryptocurrencies are there*. https://blog.liquid.com/how-many-cryptocurrencies-are-there, Accessed June 2021

Maunu, S. (2003). Supplier satisfaction : the concept and a measurement system : a study to define the supplier satisfaction elements and usage as a management tool. In *Acta Universitatis Ouluensis. ISSN 0355-3213; 190*.

http://linda.linneanet.fi/F/?func=direct&doc_number=003049158&local_base=fin01

Mcneill, L., & Moore, R. (2015). Sustainable fashion consumption and the fast fashion conundrum: Fashionable consumers and attitudes to sustainability in clothing choice. *International Journal of Consumer Studies*, *39*(3), 212–222. https://doi.org/10.1111/ijcs.12169

Mintel. (2007). *Clothing Retailing*.

Moeller, S., Fassnacht, M., & Klose, S. (2006). A framework for Supplier Relationship Management (SRM). *Journal of Business-to-Business Marketing*, *13*(4), 69–94. https://doi.org/10.1300/J033v13n04_03

Pal, R., & Gander, J. (2018). Modelling environmental value: An examination of sustainable business models within the fashion industry. *Journal of Cleaner Production*, *184*, 251–263. https://doi.org/10.1016/j.jclepro.2018.02.001

Patagonia. (2021). *I Fix It*. https://www.ifixit.com/Patagonia, Accessed June 2020

Poksinska, B., Dahlgaard, J. J., & Antoni, M. (2002). The state of ISO 9000 certification: A study of Swedish organizations. *TQM Magazine*, *14*(5), 297–306. https://doi.org/10.1108/09544780210439734

Recycling Council of Ontario, & Canada, W. R. W. in. (n.d.). *TEXTILES WASTE: THE FACTS*. https://wrwcanada.com/en/get-involved/resources/textiles-themed-resources/textiles-waste-facts

Rego, R. (2021). *SLP - Supplier Lifecycle program*.

Reinartz, W., Krafft, M., & Hoyer, W. D. (2004). The customer relationship management process: Its measurement and impact on performance. *Journal of Marketing Research*, *41*(3), 293–305. https://doi.org/10.1509/jmkr.41.3.293.35991

Robert Dwyer, F., H. Schurr, P., & Oh, S. (1987). *Developing Buyer-Seller Relationships*. *51*(2), 11–27.

Saberi, S., Kouhizadeh, M., Sarkis, J., & Shen, L. (2019). Blockchain technology and its relationships to sustainable supply chain management. *International Journal of Production Research*, *57*(7), 2117–2135. https://doi.org/10.1080/00207543.2018.1533261

SAI. (2021). *SA8000 Standard*. https://sa-intl.org/programs/sa8000/, Accessed June 2020

Shin, H., Collier, D. A., & Wilson, D. D. (2000). Supply management orientation and supplier/buyer performance. *Journal of Operations Management*, *18*(3), 317–333. https://doi.org/10.1016/S0272-6963(99)00031-5

Shirvanimoghaddam, K., Motamed, B., Ramakrishna, S., & Naebe, M. (2020). Death by waste: Fashion and textile circular economy case. *Science of the Total Environment*, *718*, 137317. https://doi.org/10.1016/j.scitotenv.2020.137317

Sonae. (2020). *Sonae Fashion Floor*. https://twitter.com/sonae/status/1331295169803669508, Accessed June 2020

Teles Mendes, B. (2014). A Importância da Gestão de Fornecedores na Organização da Empresa: Caso SONAE. In *Faculdade de Economia da Universidade de Coimbra*.

ANNEX A: Supplier Profile Form

English (United King...

Supplier Information Form - EN

All Suppliers must complete this form only once, regardless of the factories used for Sonae Fashion products.

* Obrigatório

General Supplier Information

1. Trader or Factory? *

- ◯ Trader
- ◯ Factory

2. Supplier Name: *

3. Supplier Code:

Available on Purchase Order or CVM.

4. Supplier Address: *

3/16/2021

5. State/Province: *

6. District: *

7. City: *

8. Zip Code: *

9. Country: *

10. Contact Person Name: *

11. Contact Person Email: *

For example: abc@sonae.pt (mailto:abc@sonae.pt)

3/16/2021

12. Contact Person Telephone: *

Answer with the country code before: +351911111111

13. Establishment Year: *

O valor tem de ser um número

14. Ownership: *

- ◯ Private
- ◯ Public
- ◯ Trading/agent
- ◯ Other

15. Last Year Turnover: *

In USD

	Less than 1 Million	1 to 5 Millions	5 to 10 Millions	More than 10 Millions
Turnover (in USD)	◯	◯	◯	◯

16. Percentage (%) of Sonae Turnover: *

	Less than 5%	5 to 25%	25 to 50%	50 to 75%	More than 75%
Percentage of Sonae Turnover	◯	◯	◯	◯	◯

3/16/2021

Main Customers

Please put Only 1 Customer in each Answer

17. 1st Main Customer: *

18. Production Capacity Allocated to 1st Main Customer: *

Only the Number, In Percentage (%).

Introduza um número inferior ou igual a 100

19. 2nd Main Customer: *

20. Production Capacity Allocated to 2nd Main Customer: *

Only the Number, In Percentage (%).

Introduza um número inferior ou igual a 100

21. 3rd Main Customer: *

22. Production Capacity Allocated to 3rd Main Customer: *

Only the Number, In Percentage (%).

Introduza um número inferior ou igual a 100

Additional Information

23. Product Category: *

Multiple Options can be Chosen

- [ ] Nursery
- [ ] Kids, Baby & Newborn
- [ ] Womenswear
- [ ] Menswear

24. Preferred MOT (Method of Transport): *

- ◯ Air
- ◯ Land
- ◯ Sea

25. Nearest Seaport: *

26. Nearest Airport: *

27. Workforce Size: *

O valor tem de ser um número

3/16/2021

28. Percentage (%) of Female Workers: *

Introduza um número inferior ou igual a 100

29. Date of Birth of Youngest Worker: *

Formato: M/d/yyyy

30. Average Age of Employees: *

O valor tem de ser um número

31. Wages Compared to Country Average: *

- ◯ Below
- ◯ On Par
- ◯ Above
- ◯ Don't Know / Don't Answer

32. Office Staff: *

O valor tem de ser um número

3/16/2021

33. Production Staff: *

O valor tem de ser um número

34. Quality Control Staff: *

O valor tem de ser um número

Products

35. Woven Products: *

	Expertise	Ability (Non-Expertise)	None
Tops	◯	◯	◯
Bottoms	◯	◯	◯
Outerwear	◯	◯	◯
Denim	◯	◯	◯
Pyjamas	◯	◯	◯
Other	◯	◯	◯

36. Other Woven Products:

37. Knitted Products: *

	Expertise	Ability (Non-Expertise)	None
Tops	◯	◯	◯
Bottoms	◯	◯	◯
Underwear	◯	◯	◯
Socks	◯	◯	◯
Pyjamas	◯	◯	◯
Other	◯	◯	◯

38. Other Knitted Products:

3/16/2021

39. Footwear Products: *

	Expertise	Availibility (Non-Expertise)	None
Boots	◯	◯	◯
Sandals	◯	◯	◯
Sneakers	◯	◯	◯
Shoes	◯	◯	◯
Flip-Flops	◯	◯	◯
Other	◯	◯	◯

40. Other Footwear Products:

41. Accessory Products: *

	Expertise	Availibility (Non-Expertise)	None
Bags / Wallets	◯	◯	◯
Backpacks	◯	◯	◯
Belts	◯	◯	◯
Watches	◯	◯	◯
Hats / Beanies	◯	◯	◯
Gloves	◯	◯	◯
Scarves	◯	◯	◯
Other	◯	◯	◯

42. Other Accessory Products:

43. In-house Capacity for: *

Multiple Options can be Selected

- [ ] Spinning
- [ ] Circular Knitting
- [ ] Flat Knitting
- [ ] Weaving
- [ ] All Over Print
- [ ] Cutting
- [ ] Fusing
- [ ] Dyeing
- [ ] Screen Printing
- [ ] Sewing/Linking
- [ ] Embroidering
- [ ] Ironing
- [ ] Garment Dyeing
- [ ] Washing
- [ ] Others

44. Production MOQ (Minimum Order Quantity): *

In number of pieces

O valor tem de ser um número

3/16/2021

45. Lead-Time Order to Ship: *

In days

O valor tem de ser um número

46. Lead-Time Proto Development in Actual Material and Design: *

In days

O valor tem de ser um número

47. Lead-Time for Salesman Samples Production (100 pieces) from Proto Approval: *

In days

O valor tem de ser um número

48. Production - Monthly Capacity: *

O valor tem de ser um número

49. Sample Room - Monthly Capacity: *

O valor tem de ser um número

50. Export Markets: *

Multiple Options can be Selected.

- [ ] Europe
- [ ] Russia
- [ ] Middle East
- [ ] China
- [ ] North America
- [ ] Central America
- [ ] South America
- [ ] Other

3/16/2021

Sustainability and Certifications

51. Select the Owned Product Certificates/Associations: *

Multiple Options can be Selected

- [ ] BCI
- [ ] C2C
- [ ] CMIA
- [ ] ECO LABEL
- [ ] FAIR TRADE
- [ ] GOTS
- [ ] GRS
- [ ] LENZING
- [ ] OCS
- [ ] OEKO-TEX 100
- [ ] OEKO-TEX GREEN
- [ ] RCS
- [ ] RWS
- [ ] None

52. Do you have BSCI Certificate? *

- ◯ Yes
- ◯ No

53. BSCI Certificate Number: *

3/16/2021

54. BSCI Certificate Expiration Date: *

Formato: M/d/yyyy

55. Do you have SEDEX Certificate? *

- ◯ Yes
- ◯ No

56. SEDEX Certificate Number: *

57. SEDEX Certificate Expiration Date: *

Formato: M/d/yyyy

58. Do you have SA8000:2014 Certificate? *

- ◯ Yes
- ◯ No

59. SA8000:2014 Certificate Number: *

3/16/2021

60. SA8000:2014 Certificate Expiration Date: *

Formato: M/d/yyyy

61. Do you have ISO 14001:2015 Certificate? *

- ◯ Yes
- ◯ No

62. ISO 14001:2015 Certificate Number: *

63. ISO 14001:2015 Certificate Expiration Date: *

Formato: M/d/yyyy

64. Do you have ISO 9001:2015 Certificate? *

- ◯ Yes
- ◯ No

65. ISO 9001:2015 Certificate Number: *

66. ISO 9001:2015 Certificate Expiration Date: *

Formato: M/d/yyyy

3/16/2021

Relationship with Sonae Fashion

In this section, please answer a few questions about how you feel about your partnership with Sonae Fashion

67. How do you compare the complexity of Sonae Fashion's processes to the complexity of the processes of other clients? *

1-Much more complex; 2-More complex; 3-Identical; 4-Less complex; 5-Much less complex

	1-Much more complex	2-More complex	3-Identical	4-Less complex	5-Much less complex
Buying	◯	◯	◯	◯	◯
Logistic – Dates	◯	◯	◯	◯	◯
Logistic - Procedures	◯	◯	◯	◯	◯
Organization and Structure	◯	◯	◯	◯	◯
Negotiation	◯	◯	◯	◯	◯
Quality	◯	◯	◯	◯	◯

68. Comments related to Sonae Fashion's processes (points of improvement and good practices of other customers that could be applied by Sonae Fashion): *

69. How do you evaluate communication with Sonae Fashion according to the following points:

1-Very Bad; 2-Bad; 3-Reasonable; 4-Good; 5-Very Good

	1-Very Bad	2-Bad	3-Reasonable	4-Good	5-Very Good	N/A
Response Time – Design	○	○	○	○	○	○
Response time – Buying Department	○	○	○	○	○	○
Response time – Logistic Department	○	○	○	○	○	○
Response time - Quality Department	○	○	○	○	○	○
Response time - Local Offices	○	○	○	○	○	○
Response time - Upstream	○	○	○	○	○	○
Last minute changes with an impact on production	○	○	○	○	○	○
Rules and Procedures	○	○	○	○	○	○
Platforms (GTNEXUS, e-mail, etc.)	○	○	○	○	○	○

70. Comments related to communication with Sonae Fashion (points of improvement, faced challenges and good practices that could be applied by Sonae Fashion): *

3/16/2021

71. Other Comments:

Este conteúdo não foi criado nem é aprovado pela Microsoft. Os dados que submeter serão enviados para o proprietário do formulário.

Microsoft Forms

3/16/2021

ANNEX B: Factory Profile Form

English (United King...

Factory Information Form - EN

IMPORTANT NOTE: Suppliers that use more than one factory for Sonae Fashion products must complete a Factory form for each facility they are using for our products

* Required

General Supplier Information

1. Trader or Factory? *

- ◯ Trader
- ◯ Factory

2. Supplier Name: *

3. Supplier Code:

Available on the Purchase Order or CVM.

4. Factory Name: *

3/16/2021

5. Factory Address: *

6. State/Province: *

7. District: *

8. City: *

9. Zip Code: *

10. Country: *

11. Establishment Year: *

The value must be a number

3/16/2021

Additional Information

12. Preferred MOT (Method of Transport): *

- ◯ Air
- ◯ Land
- ◯ Sea

13. Nearest Seaport: *

14. Nearest Airport: *

15. Workforce Size: *

The value must be a number

16. Percentage (%) of Female Workers: *

The value must be a number

3/16/2021

17. Date of Birth of Youngest Worker: *

Formato: M/d/yyyy

18. Average Age of Employees: *

The value must be a number

19. Wages Compared to Country Average: *

- ◯ Below
- ◯ On Par
- ◯ Above
- ◯ Don't Know / Don't Answer

20. Office Staff: *

The value must be a number

21. Production Staff: *

The value must be a number

3/16/2021

22. Quality Control Staff: *

The value must be a number

23. Is there a Manager in Charge of the Chemical Management of the Factory? *

- ◯ Yes
- ◯ No

3/16/2021

Sustainability and Certifications

24. Select the Owned Product Certificates/Associations: *

Multiple Options can be Selected

- [ ] BCI
- [ ] C2C
- [ ] CMIA
- [ ] ECO LABEL
- [ ] FAIR TRADE
- [ ] GOTS
- [ ] GRS
- [ ] LENZING
- [ ] OCS
- [ ] OEKO-TEX 100
- [ ] OEKO-TEX GREEN
- [ ] RCS
- [ ] RWS
- [ ] None

25. Does the Factory have BSCI Certificate? *

- ◯ Yes
- ◯ No

26. BSCI Certificate Number: *

3/16/2021

27. BSCI Certificate Expiration Date: *

Formato: M/d/yyyy

28. Does the Factory have SEDEX Certificate? *

- ◯ Yes
- ◯ No

29. SEDEX Certificate Number: *

30. SEDEX Certificate Expiration Date: *

Formato: M/d/yyyy

31. Does the Factory have SA8000:2014 Certificate? *

- ◯ Yes
- ◯ No

32. SA8000:2014 Certificate Number: *

3/16/2021

33. SA8000:2014 Certificate Expiration Date: *

Formato: M/d/yyyy

34. Does the Factory have ISO 14001:2015 Certificate? *

- ◯ Yes
- ◯ No

35. ISO 14001:2015 Certificate Number: *

36. ISO 14001:2015 Certificate Expiration Date: *

Formato: M/d/yyyy

37. Do you have ISO 9001:2015 Certificate? *

- ◯ Yes
- ◯ No

38. ISO 9001:2015 Certificate Number: *

3/16/2021

39. ISO 9001:2015 Certificate Expiration Date: *

Formato: M/d/yyyy

Este conteúdo não foi criado nem é aprovado pela Microsoft. Os dados que submeter serão enviados para o proprietário do formulário.

Microsoft Forms

3/16/2021