ARTISAN FABRICS FOR SLOW FASHION

“Versão final após defesa”

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Declaração de Integridade

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Dedicatory

Dedicated to the only person who has given me my parents, my brother José Antonio, my sister Gabriela and who put on my path my life partner, Rafa; dedicated to God.

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I want to thank Professor Rui Miguel, who has guided me wisely to get the best result of the project, I thank every person I have met at the university, especially my parents and my brothers who have supported me from afar, I thank my boyfriend who has encouraged me every day with much love and my cousin Martina who encouraged me to do my studies in this beautiful country.

Resumo

Do ciclo de produção e venda de vários produtos de moda, surgiu nos últimos anos a fast fashion, uma forma de compra barata e de peças de vestuário que seguem tendências passageiras, mas que ao mesmo tempo são fabricadas com a premissa de terem uma vida útil curta.

O projeto é desenvolvido neste ambiente, onde se acredita que podem ser fabricadas peças de vestuário mais respeitadoras do ambiente. Para além disso, pretende-se desenvolver em termos mais artesanais, começando pela tecelagem, com o objetivo de testar novas técnicas no momento da produção. Por esta razão, o tear artesanal foi escolhido como ferramenta para produzir os tecidos e, por conseguinte, também a peça de vestuário.

Como introdução, serão analisados os mercados de slow fashion e fast fashion para compreender o contraste entre os dois. Também será revisto um pouco da história dos teares e das marcas de moda que lidam com a sustentabilidade e trabalham com tecidos feitos à mão. Isto dar-nos-á o conhecimento para obter um capacete clássico que possa ser durável e que os seus processos respeitem o ambiente e, assim, acabar por determinar se esta forma é bem sucedida para uma compra e venda diferente da que estamos habituados hoje em dia.

Palavras-chave

Tear, artesanato, slow fashion, vestuário

Abstract

From the production and sales cycle of various fashion products, the last few years have seen the emergence of fast fashion, a form of cheap shopping and garments that follow fleeting trends, but at the same time are manufactured on the premise of being short-lived.

The project is developed in this environment, where it is believed that more environmentally friendly garments can be made. In addition, it is intended to be developed in more artisanal terms, starting from the weaving, with the aim also of testing or adding new techniques at the time of production. For this reason, the artisan loom has been chosen as a tool to produce the fabrics and, therefore, also the garment.

As an introduction, the slow fashion and fast fashion markets will be analyzed to understand the contrast between the two. It will be conducted a review some of the history of looms and fashion brands that deal with sustainability and work with handmade fabrics. This will give us the knowledge to obtain a classic jacket that can be durable and that its processes respect the environment, and thus end up determining whether this form is successful for a purchase and sale different from what it is used today.

Keywords

Loom; handicraft; slow fashion; clothing.

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1. Introduction

Clothing has always been present as part of our lives, from humanity's earliest use of animal skins to the present day, having gone from large ornamental garments, conveying a certain social status or represent a particular social group regardless of their specific role within a given setting, to evolving into a massive production and rapidly changing trends, however dressing stans for a much more deeper meaning and representation in our daily lives than just a choice of what usually people decide to wear in the morning before leaving home. Therefore, this master project aims to study the main material that makes up the clothing, thus being the fabric, with an emphasis on the artisanal process.

This method will fit in the concept of Slow Fashion, due to the procedure of fabrication being manual, aiming to demonstrate if this manufacturing process could be posed as an alternative for Fast Fashion production, concept which will be deepened later in the definition of the problem and the components of the problem. This master project was born as an inspiration obtained throughout the university degree, during the execution of different assignments, where it was required to realize different prototypes proposed in the subject of Design, looms were made in the form of the pattern required, this allowed to create the fabric from scratch, reducing waste and obtaining the pattern almost ready for sewing.

Another purpose of this project will be to study the procedure, based on Bruno Munari's design methodology, adapting it to this project. In the initial section, the process will be explained, followed by the definition of the problem and its components, with the focus on handmade fabrics, looms, slow fashion and as a matter of course, fast fashion will be address.

Consequently, references of slow fashion will be reviewed, altogether with the techniques and methods employed and recorded. Subsequently, the experimental phase of the project will commence, where the materials and tools required for the construction of the fabrics will be detailed. In addition, the procedures performed will be documented. As the final segment, the fabrics will be test with the construction of a jacket and concluded whether it is possible to construct handmade fabrics using looms in the form of a pattern as an alternative for fast fashion.

1.1 Objectives

General Objectives

To design and develop a garment using sustainable production techniques, with a focus on slow fashion, using handmade and non-conventional looms, promoting ethical awareness in fashion and respecting the durability of the product as well as craftsmanship and creativity.

Specific objectives

1. To contrast the problem of adopting ethical and slow fashion in contrast to fast fashion and its impact on the environment and labor practices.

2. Contextualize artisan looms in the market more suitable to slow fashion and to artisan and creative products.

3. Analyze the consumer behavior of fashion products, which are within the Z generation and millennials.

4. Explore case studies of brands that apply slow and ethical fashion principles, analyzing their impact on the contemporary market.

5. Develop the design and prototype of a fabric and a jacket, based on the concept of slow fashion.

6. Evaluate the goals achieved to consider a future perspective of the project in terms of economic and social value.

1.2 Analysis of the problem

The idea for this master's degree project comes from the need to improve and test a procedure. From a young age, I observed my mother crafting various types of shawls using simple looms, with a wide variety of yarns and diverse forms, although the "basic" of interweaving, presented forms that gave a softer product, more concise or with different shapes, were built by the contrast of colors. From this knowledge acquired through observation, during the degree, with prior knowledge about pattern making, the inspiration gained merge those looms that I saw in my youth with the patterns I was learning, although the first prototype had its mistakes, more knowledge was acquired that was later applied again in one of the last works of the degree.

A loom with the shape of the pattern, spawned questions about the process, the type of yarns that could be use, what kind of samples could be done, and what kind of designs could be achieve, but above all, what kind of contribution could deliver to a society that is saturated by trends and fast fashions. In this sense it is written that "Consumers now increasingly prefer to select their products from the immense pool of options and want them to be delivered in a very short time. It is challenging for fashion retailers to fullfil consumer demands in a short time interval." (Giri & Chen, 2022)

It can be seen how fashion today is dominated by the "Fast Fashion" where all trends presented in the fashion weeks are spread instantly in various parts of the world and these in the hangers of the stores for early consumption, falling into a cycle of irresponsible buying and selling, both from a demand for purchase and excessive sales by various companies, also causing competition and

negative impacts. Companies that expand through the Internet and its applications are clear examples of quick sales and low-priced products. "According to the BoF-McKinsey State of Fashion 2024 Consumer Survey, 40 percent of US consumers have shopped at Shein or Temu in the past 12 months; in the UK, a newer market for the retailers, that figure is at 26 percent."(The State of Fashion 2024, n.d.)

The project was born in this context, where fashion lives to mass produced clothing to satisfy the masses, and the public being led by today's internet and social networks has generated the "reduction" of gaps and times in a unidirectional way, making everything takes place in a fast time and always thinking about tomorrow.

The State of Fashion 2024, n.d. in its report on fashion for this year describes that this industry needs a reform, the past year has seen strong weather changes in several seasons and in various parts of the world, in its "Climate Urgency" section it writes about natural disasters in the United States greater than 2020, the drought in Argentina, economic losses of $ 7.6 billion in China due to a severe drought in 2022. "By 2030, extreme weather events could jeopardize $65 billion worth of apparel exports and eliminate nearly one million jobs in four economies that are among the most central to the global fashion industry - in Bangladesh, Cambodia, Pakistan and Vietnam." [Between now and 2030, extreme weather events could jeopardize $65 billion worth of apparel exports and eliminate nearly one million jobs in four economies that are among the most central to the global fashion industry - in Bangladesh, Cambodia, Pakistan and Vietnam.](BOF TEAM, 2023). (BoF Tema & Mc Kinsey & Company, 2023)

"The past year has provided ample examples of why climate de-risking needs immediate action given fashion value chains' exposure to extreme weather conditions around the world" (The State of Fashion 2024, n.d.) . In both the United States and the European Union, various terms have been proposed for the regulation of brands that produce pollution, fashion is described as "responsible for significant emissions, pollution and waste" (The State of Fashion 2024, n.d.) "of between 3% and 8% of total greenhouse gas emissions" (BoF Tema & Mc Kinsey & Company, 2023).

The European Union has taken action to counteract the damage caused, taking into account that 80% of the environmental impact occurs at the design stage where materials and dyes are incorporated. This is why the EU's flagship Ecodesign for Sustainable Products Regulation (ESPR), set to come into full effect by 2025, sets minimum design standards for all individual products sold within the EU. This includes requirements around recyclability, durability, reusability, repairability and use of hazardous substances. Digital product passports that collect and share this information with consumers" (The State of Fashion 2024, n.d.)

In addition to this, studies on how to solve the needs that the system itself has caused by excessive and irresponsible productions can be added to the study, it is written that "a mix of short- and long-term strategies can help companies address the climate challenge. Companies, for example,

may look to de-risking the value chain and revamping structural and operational legacies, or doubling down on sustainability." (BoF Tema & Mc Kinsey & Company, 2023)

On the other hand, there are also regulations that "require companies to both fix their own operations and force higher standards in their supply chains. The regulations apply across key areas of activity, impacting consumers and companies within and outside the EU." [requiring companies to fix their own operations and force higher standards in their supply chains. The regulations apply across key areas of activity, impacting consumers and companies within and outside the EU.") (The State of Fashion 2024, n.d.). While there are ways in which fashion is beginning to regulate the damage it causes, as emerging designers, it is responsible and mandatory to be aware about the environment in which it is developing a design.

In this regard, the European Commissioner for the Environment, Oceans and Fisheries explains that "The European Commission wants to ensure companies only manufacture the number of products they need. It will stop short of imposing restrictions, instead asking firms to police themselves to be called sustainable" (REUTERS, 2023).

Design is about solving problems, creating solutions that can be functional, practical and long-lasting, knowing who to design for and being able to contribute to society helps. "The era of the fashion industry self-regulating sustainability [...] rules could have a widespread impact on both consumers and fashion players. Brands and manufacturers need to revamp business models to align with the changes ahead." (The State of Fashion 2024, n.d.)The purpose of this project is to generate fashion in a responsible way, considering a value chain where the product is thought in terms of sustainability and responsible production.

The project is generated in this context, between the contrast that exists between a world collapsed by the 'Fast Fashion' but also generated between the 'Slow Fashion' where this second sector of fashion on the contrary generates necessary garments and with the aim of being durable. Also, it cannot fail to mention the social aspect that brings the slow fashion with respect to the work that produces labor when talking about craft aspects, in this sense the manual processes that will be used seeks to bring social and inclusive work.

Understanding the context in which it is generated, how the idea was born, having as a the lead factor an objective to explore the process and to know if it can be an alternative way in the world of fashion, then it can be pose the question "It is possible to generate handmade fabrics for slow fashion from handlooms?" the question that will be our guide to be able to answer it with the development of the project.

1.3 Design methodology

Next, it will be explained the methodology used in the thesis, since it will be our guide for the study of this project. Starting by establishing that it will be used a project methodology, defining each word etymologically as; metodo, from the Greek methodos, which translates to method or

treatise; while; project is derived from the Latin proiectāre which means to throw by or to throw forward. So, it will be defined the project methodology as a treatise that is projected forward to realize an idea, that is, the methodology will be a yarn or a guide to build an idea that solves a problem.

1.3.1 Bruno Munari

Bruno Munari was born in Milan on October 14, 1907, he is considered the father of the design methodology, in 1927 he came into contact with the futurist movement founded in Italy by Filippo Tommaso Marinetti, which focuses on rejecting the traditional. Bruno Munari created several works under his name, he is considered today a designer, poet, sculptor, pedagogue and author of books (Colomer, 2023)

Bruno Munari wrote several books that contributed to the world of design, among *them El arte como oficio (1966), Da cosa nasce cosa (1981), Diseño y comunicación visual: Contribución a una metodología didáctica (1968)*, and one of the books that will help the realization of this project will be *¿Cómo nacen los objetos? (1983)* in this book he writes about the project method and the way in which it can find solutions to several problems. Next, it will be described the steps that our author defines and describes, making it clear that this method will be our guiding yarn for this project.

In a first instance Munari (1983) writes the four rules of the Cartesian method, which will have to be present throughout this method, the first is not to accept things as true, the second is to divide the problem into as many small parts as possible and necessary to solve it, the third is to lead the thoughts from the easiest to the most complicated and finally to make numbering and general revisions constantly checking that nothing is being omitted (Munari, 1983).

Having clarified the rules that must be in place during the whole process of project development, reviewing the questions that Munari (1983) writes in his book, where he describes that “The project method consists simply of a series of necessary operations, arranged in a logical order dictated by experience. Its purpose is to achieve a maximum result with a minimum of effort” (Munari, 1983).

He also describes that it is not correct to carry out a project without a method, and makes a reflection, from which he writes that not having a guiding yarn that directs a work can lead to “creativity”, which can be mistaken as improvisation and thus only the first idea that comes to the mind of the designer without making a previous study of the surrounding context,(Munari, 1983).

It should also be clarified that Munari (1983) writes that this method is not something absolute and definitive, in fact it is more flexible at the moment of finding objective values, describing objective values as values that are recognized by all, that is, information that is objective and not modifiable.

Bruno Munari (1983) makes a comparison with a green rice recipe for the explanation of the methodology, as it can be seen in Figure 1, in each of them is shown a description that serves as an example to explain or exemplify each of the stages, it can be observe and thus understand in a more simplified way. From the problem to the solution, one must go through a series of steps that with the "rice recipe" it can be applied to this project.

Figure 1. Project methodology. Project methodology. Munari (1983)

1.3.2 Gui Bonsiepe

An industrial designer born in Germany in 1934 who writes that the definition of "'Project' refers to the anthropological dimension of the creation and formation of material and symbolic artifacts, while 'design' means a mode of late capitalist strategic activity, as it has spread globally since the

1970s. (Bonsiepe, n.d.)As it can be seen Bonseipe describes strategic design as the creation of artifacts and materials for an activity, in this case referring to the capitalism that spread globally in the 70s.

Bonsiepe has a more practical vision of design, he has a very strong link with the industry and with Latin American design, for him the functionality that design can provide is important, he writes in his book "Design, culture and society" that "Design has distanced itself more and more from the idea of 'intelligent solution of problems' and has come closer to the ephemeral, to fashion, to rapid obsolescence - the essence of fashion is rapid obsolescence -, to the aesthetic-formal game, to the glamorization of the world of objects." (Bonsiepe, n.d.)

This idea agrees with the ideas of Munari (1983) since both describe that the design is increasingly approaching a fast and disposable form, therefore it can be stated that designers also choose to focus more on a product that is fashionable, but not in itself that can provide a solution to a problem. On the other hand, a contrast is generated between Munari (1983) and Bonsiepe (1992) who writes that methodology "Não se deve porém confundi-la com uma receita, pois uma receita significa rotina, ou seja, formas prestáveis para atingir um determinado fim que se estabeleceu." (Bonsiepe, 1992)

Then Bonsiepe (1992) contrasts in a certain way the idea of Munari (1983)describes that the project methodology (design) differs from research in the way it works, but that both have as their objective the resolution of problems and that the methodology should not be confused with a recipe, since it is not a routine that will always be the same but will depend on the conditions in which the resolution of the problem is carried out.

The way in which Bonsiepe describes that "methodology" is understood here as the modalities of action in a certain field of problem solving. It is expected help from the methodology to determine the sequence of actions (when to do something) and the content of the action (what to do) and to define the specific processes to be applied (how to do, what techniques to use)" (Bonsiepe, 1992)

In this way, Bonsiepe (1992) describes a taxonomy of problems in which he defines that a problem may have 4 possible combinations, these being the following:

- Well-defined initial situation, ill-defined final situation
- Well-defined initial situation - well-defined final situation
- Poorly defined initial situation - poorly defined final situation
- Initial situation poorly defined - final situation well defined

For the author these four forms of problems will have 3 stages for the realization of the project, starting with the structuring of the problem, then moving on to the project, i.e. what to do and finally the realization of the project. Each of these phases are divided into more subtopics in order to reach the realization of each of these points.

1.3.3 Mike Baxter

As the last methodology to be reviewed, an in a more briefly way the methodology of Mike Baxter, in his book “Product Project” (1995) focuses more on a product that is successful in the market, for the author it is important that there is innovation in the product.

Mike Baxter (1995)writes that there are four stages for project planning. As can be seen in Figure 2, the first stage is the project's innovation strategy; as mentioned above, innovation is important for the author, and it also outlines the orientation of the project and establishes the objectives. In the second part, the development of a specific product begins, moving on to the third part, where a search and analysis of opportunities and restrictions is carried out. Finally, It is left a product with specifications and justifications.

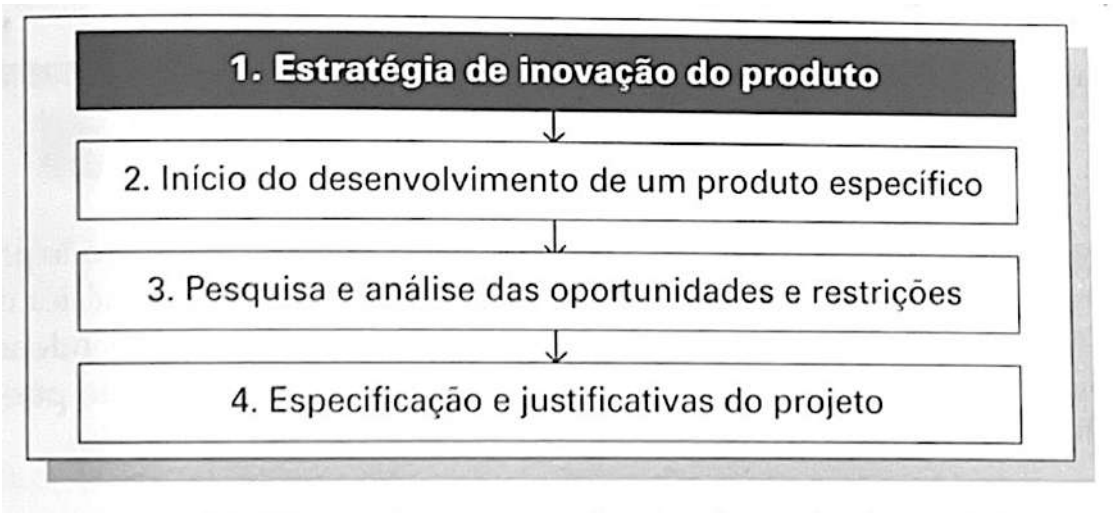


Figure 2. Baxter's methodology (Baxter, 1995).

> Multiple designers often describe this period as “free fall.” You're dropped into space, where there are lots of ideas floating around, and you have to grab them before they get out of reach. If, during the free fall, you are able to grab a good idea and turn it into a design specification, your parachute opens and you land softly on the ground, confident and ready to start the product project. (Baxter, 1995)

For Baxter (1995) the way to start a project is described as a free fall, of course it will depend on the designer to create a product by modifying, joining techniques or thinking of a completely new product, but it is considered that for this process it is necessary that, in this free fall, a “good” idea can be grasped or considered viable to be able to settle it in a project and even more to be able to insert it in the market. This is why for the author, to obtain an idea that is considered innovative and where it can already develop the specifications of the

product and where it can be seen the opportunities and restrictions, moving to the last stage where there are commitments, as can be seen in Figure 3, the specification of the opportunities that will have to do more with the commercial part, if it is viable in terms of investment and what convenience it will have in the market; On the other hand, there will be the technical specifications, where the technical commitments that were made in the development of the product, i.e. the technologies with which they worked and how they compare with the competitors in the market, will be presented.

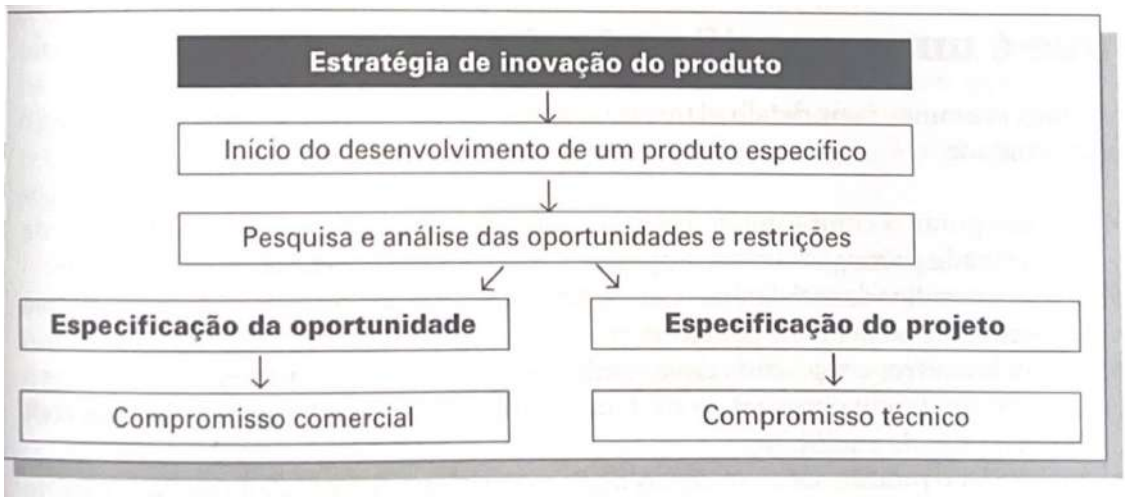


Figure 3. Baxter's methodology, product innovation (Baxter, 1995).

As it may be observed, Baxter (1995) has a more commercial perspective, where the market study in which the product will be developed is considered. It is important to take into account these stages and even more so if the product created is innovative; according to the author, the separation between these opportunity and project specifications presents several opportunities.

1.4 Design Methodology Adopted

After the review of methodologies of these three authors, Munari, (1983), Bonsiepe, (1992) and Baxter (1995), it is possible to define the methodology used for this project, thus being an adaptation of Munari, for the author is important that each of the steps, and even more, the experimentation to reach the best result (Table 1).

The project will start from the analysis of the problem (P), where the main focus will be on the development of handmade fabrics for slow fashion, then will move to data collection (RD) where a theoretical framing is to be made, perform the search for information on the issues involved in the thesis, and will reach the next point, the practical development, being the next step, the data analysis (AD), the limits that make up the project will be developed, both in the market and technological, this will help frame the project to move to the creative part (C), will be part of the concept and the colour palette, the materials will be chosen (MT) and will move to the

experimental part (E) where can be seen various types of samples and materials combined and then reach the final sample (M). As final points and with the final sample, make the respective technical data sheets, being this process of verification (V) and then pass to the process of confection as the solution (S) of our project. As explained in the Table 1.

Table 1. Adaptation of methodology (Own Authorship)

DESIGN METHODOLOGY		
Phases	**Design Project Methodology**	**Metodologia de Projeto de Design de Tecidos**
Structuring the problem	PROBLEM DEFINITION	- Development of handcrafted fabrics for slow fashion, with the use of special looms.
	DATA COLLECTION Analysis of psychological and physical components	- Ethical Fashion - Slow Fashion - Handmade Looms - Contemporary Consumer - Slow fashion: Lifestyle trends - Slow fashion case studies - High fashion and craftsmanship
	DEFINING THE BOUNDARIES	- Market limits - Technological limits
Design and Experimentation	CREATIVITY Materials, technologies and experimentation	- Concept: Collection Inspiration Panel - Colour Palette -Materials, fibers and yarns, inputs, collection materials panel -Structural characteristics of the product: woven and fabrics
	MODELS and VERIFICATION Choice of alternatives and development	- Experimental creative sketches - Fabrics and Jacket - Simulations in Cad system - Fabrics and Jacket
	PROJECT Technical drawing	Technical Data Sheet: - Fabrics - Jacket
Realiza tion	PROTOTYPE	- Prototype production - Weaving - Jacket - Photo Shoot

2. Elaboration of the Project

2.1 Problem

After the analysis made in point 1.2, it was noted that fashion is one of the most polluting industries, that the climate changes occurring today affect various sectors not only at an environmental level, but also at a social and economic level. It was also possible to analyze that several organizations that participate or are related to this sector, have put "hands to work" as the realization of strategies to counteract the damage that fashion causes, and also the slow fashion emerges as an option to customers who currently seek more sustainable brands. The project focuses on finding solutions for the development

of a fabric and a jacket made according to the principles of slow fashion in manual looms that are not conventional, aimed at a niche of consumers who value the product.

2.2 Theoretical Framework and Data Collection

2.2.1 Ethical fashion

2.2.1.1 Definition of ethical fashion

In order to start with the framing of the theoretical framework, it will begin by reviewing definitions of ethical fashion, i.e., authors who define this concept. In this regard, the definition of Joergens (2006)cited by Lui et al. was found, in which it is written that "Ethical fashion was defined as" fashionable clothes that incorporate fair trade principles with sweatshop-free labour conditions while not harming the environment or workers by using biodegradable and organic cotton" (2020). Joergens (2006) defines ethical fashion as "fashion with a conscience" indicating principles that this fashion sector defines as important, such as good labour conditions and care for the environment by using biodegradable and organic materials.

Edemas, Thomas (2008) cited by Haung & Busch (2016)writes that "the term 'ethical' is a recent arrival in fashion terminology and is often used in relation to manufacturing, consumption, fashion design and trading.". Being able to contextualize more about ethical fashion, where it can be understood that this term is relatively new in the fashion world and also reaffirming that this sector focuses on manufacturing, fashion design and trade in a more conscious way.

On the other hand, the 2014 Ethical Fashion Forum cited by Haug & Busch (2016) describes that "ethical fashion represents an approach to the design, sourcing and manufacture of clothing which maximizes benefits to people and communities while minimizing impact on the environment" (2016). It refers to the objective or objectives of the same, since beyond taking into account the fashion process itself, it aims to maximize the life of the garment and the benefits to people.

It should also be noted that in the fashion market "A growing body of consumers wants to invest in high-quality, well-designed products that are environmentally sustainable, help disadvantaged groups and reflect good working conditions" (Domeisen, 2006)It is understood then that these sectors reproduce these products thinking of their consumer, ethical fashion is not only a product for sale, but in their produced objects they support lifestyles that are more friendly not only with the environment but with those people who are behind the production and gives a value to the object for its materials and durability, giving a sense of belonging to the consumer and its user. In addition, it also cares for and protects the development of its traditions and culture, taking advantage of the development of national brands (Domeisen, 2006)

In conclusion, then it can be said that ethical fashion is defined as a sector that considers the value chain in a more responsible way with the materials, process and people involved in the production

of products, although there is demand for this sector is always thinking of a consumer who engages with the standards that this fashion sector provides.

2.2.1.2 Contrast with conventional fashion

From the definition of ethical fashion, it can be made a contrast or a small comparison with conventional fashion, defining conventional fashion as that traditional production, which starts from the design, inspiration and projection of the idea in mind that want to create, thinking about our audience, trends, materials and technologies that are in the context and thus to configure a prototype; the same that takes a process of choosing fabrics, yarns and inputs, pattern making, cutting, technologies in garments; and then goes to a larger reproduction, in order to reach a sales process. Generally speaking, it is understandable that the process of creating clothes in conventional fashion moves between these terms.

Skov (2010) cited by Haug & Busch (2016) defines five problems in the fashion industry, which can be said to speak to the process described above, being the following. "(1) representations of idealized gender and body images, (2) fakes and counterfeits of branded goods, (3) working conditions, (4) environmental impact and sustainability, and (5) animal rights."(Haug & Busch, 2016). In this regard it can be said, that ethical fashion focuses on the resolution of these problems, as it seeks the creation of friendlier products.

Thus, can then recognize the contrasts that exist between these two types of fashion, on the one hand, there is conventional fashion, which although it is the industry that satisfies the need to dress, it is also the one that has caused negative environmental and social reactions.

> When we consider fashion ethics today, arguments for sustainable production are mainly based on concerns regarding the long-term consequences of traditional production methods. The lack of prudence, or wisdom of the practitioners in fashion production, has been a target for at least part of the sustainability debate. On the other hand, the fashion industry also stands accused of not fulfilling their ethical responsibility to both current generations (in the form of third world workers, for example) and future generations (in the form of those who might be negatively affected by standard unsustainable production). What we see now is the attempt by the fashion industry to establish trust and goodwill between itself and the consumers. (Haug & Busch, 2016)

There is then this contrast between the two forms of fashion production, even more so about the way in which fashion production is thought of, there is this way of thinking about the reproduction of "creatively innovative" ideas referring to an aesthetic that "has not been seen before" in being aesthetically striking and for obtaining that status that fashion gives. On the other hand, there are all the polluting processes that make these "creatively innovative" ideas become ideas that are reproduced without wisdom or prudence. And beyond a serious pollution, the current and future generations are not taken into account either.

This is why conventional fashion is in search of generating trust in the public and generating new processes that are less impactful and more responsible. In this regard, it is written that "In the fashion industry, many of the large companies have increasingly invested in developing more socially responsible fashion collections, for example Nike, GAP, Marks & Spencer, Timberland and Levi Strauss. Some fashion chains, such as H&M and MUJI, have even launched organic collections and fair-trade products." (Haug & Busch, 2016). On the other hand, Haug & Busch (2016) cite several authors such as Lipson (2008) which reports that "the global market for environmentally friendly apparel is relatively small, accounting for only about 1% of total apparel market."(Haug & Busch, 2016)

One can then see the contrast that exists between conventional fashion and ethical fashion, not only in the way in which each is developed for the production of products, but also in the amount that each sector of this market covers. The contrast between these two sectors is in itself great, despite having the production of a product in common, the form and practice of each of them are completely opposite, and it can also be concluded that conventional fashion seeks through ethical fashion to generate confidence to communicate to consumers that it is interested in fulfilling principles of responsibility to society and the environment, which also leads to conclude that although they contrast they also merge or can go hand in hand as can be seen in the brands that were mentioned as an example.

2.2.1.3 Evolution of the ethical fashion movement: Historical background and context.

Although it has already been analysed the way in which these two sectors contrast and in a certain way complement each other, it is also necessary to analyse the context in which this fashion sector was born. For this it will be consider Tocqueville's principle, which is quoted by Machuco Rosa, writing:

> The principle of "equality of conditions", we will show that the historical evolution of changes in fashion is guided by a principle of differentiation, which consists in the reality of anti-fashion as a form displaying a certain kind of higher existence. Anti-fashion is initially presented as an adherence to a principle of functional comfort that implicitly criticizes the artificiality and ostentation of previous fashion."(2013)

This principle will be taken into account in order to understand fashion as an ecosystem, and this principle will become a "rule" in this ecosystem, where the first one will be differentiation, which will always guide the ecosystem and the way the masses move within it. There will always be a group of "fashion" and "anti-fashion", Toccqueville describes that the "anti-fashion" shows a major type of existence, he presents a thought of functional comfort that criticizes in an implicit way the artificial and the ostentation that the "fashion" presents, in addition he leaves a thought that explains that the "fashion" that will be criticized will be old fashion.

This principle, in order to understand that, during the history of fashion, these two groups will always exist and that they will always be related to each other, starting with an example from the creation of Haute Couture, where Charles Fredercik Worth (1825-1895) began to sign his creations, this expression was;

> "a social dynamic which resulted in the reversal of positions: during the nineteenth century, the position of the new haute couture fashion designer changed from one of inferiority to one of superiority, while the lord became the customer. The one who was the client/servant became the master, and the one who was the lord became the client." (Machuco Rosa, 2013)

If it is remembered then the rule wrote above, it can be seen then, that the way in which the articles were associated to what the fashion was looking for previously changed, because the way of buying clothes passed from, the gentleman directing the dressmaker, to, the dressmaker directing what the gentleman (now becomes a customer or user) has to wear. These ideas contrast and it can be said that it goes from being on the one hand "fashion" (man / dressmaker) and "anti-fashion" (dressmaker / customer); clarifying that in the future, the "anti-fashion" will then become "fashion", thus creating what it is known today as fashion cycles.

The purpose of this analysis is to study the way in which fashion behaves and has been behaving during its existence, the fashion regime with Worth changed and gave a new face to the system of today, but this fashion ecosystem is always and will always be in constant movement.

Another example that can be brought to the table to understand this interaction comes later during the 1920's with the work of Gabrielle (Coco) Chanel, where her work

> consisted in the final break with the ostensibly conspicuous luxury as displayed by more traditional fashion. The conspicuous still appeared in a couturier who was a contemporary of Chanel, Paul Poiret, with his opulent, sophisticated, wide and long dresses, made from luxurious materials like satin (cf. Figure 1). In contrast, Coco Chanel often resorted to less noble materials like jersey, seeking above all the simplicity of the cut that facilitated agile body movements.(Machuco Rosa, 2013)

This example puts even more in context, the way in which fashion moves, having two contrasts, "fashion"; in this case, the opulence of the hand of Poiret; and "anti-fashion"; This being the simplicity and where Chanel also bet on comfort, but today Chanel has become a meaning of knowing fashion, being fashionable and luxury, it has become "fashion" and in contrast to this idea have emerged other forms of fashion that oppose it, being these "anti-fashion".

From this analysis with the passage of time fashion and anti-fashion have always been interacting and adapting over time, to contextualize ethical fashion can be described that "according to the theory of the vertical diffusion of fashion designs by Thorstein Veblen: fashion is initially adopted

by the upper classes and afterwards is imitated by the lower classes (Veblen, 1994 [1899])." ((Machuco Rosa, 2013). This in order to understand that fashion had a vertical development, where new ideas are adopted by upper social classes, and then down to a lower social class that wants to look like upper classes.

Machuco Rosa (2013) also describes that, in 1960, Yves Saint Laurent, played an important role for the democratization of fashion, because the fashion designer thought that fashion could be designed in a different way and for everyone, this new idea is opposed to what was described above. Being this idea of the democratization of fashion as the "anti-fashion". Entices describes that "there was a movement towards the democratization of luxury, in that fashion started to be a little bit all over the place, no longer confined to the narrow circle of the creations of fashion designers of the first major Maison's." (Machuco Rosa, 2013)

This idea, with the passage of time became "fashionable" even more so in the 1980s and 1990s, where, according to UNESCO (2023) writes that in the 1980s and 1990s fashion aimed to sell to a wider public, which is why production turned "towards the Asian world, where labor costs were lower. As clothing became cheaper, consumers began to buy more and tolerate lower quality, as it was easier to replace items that cost less. [to the Asian world, where labor costs were lower. As clothing became cheaper, consumers began to buy more and to tolerate lower quality, as it was easier to replace items that cost less] "That is, for the democratization of fashion, tools and ways were used that brought a new way of making fashion, such as these, productions that are cheaper and products that obviously will also be cheaper.

So, this thought that in 1960 was an "anti-fashion" way in the 1980s and 1990s, started to be "fashion" even more so in the 2000s with the advent of the internet.

> The Internet made it possible for fashion lovers to shop 24 hours a day in a wider range of shops. Finally, the advent of social media made it possible for brands to promote their products 24 hours a day, 7 days a week. (UNESCO, 2023)

The internet can be seen as an accelerator of sales and a tool that breaks barriers and borders, as well as the production of trends and also being able to observe what people are wearing on the other side of the world. There are clothing brands that also attributed the growth and to this movement, as well as with the arrival of brands such as Zara, belonging to the Inditex group, in which its creation process is described as:

> "Creativity and quality design together with a rapid response to market demands" and the "democratization of fashion."2 To deliver rapid responses to customer demands and reasonable prices, Inditex abandoned the fashion industry's traditional [...] integrating design, just-in-time production, distribution, and retail sales to speed communication from customers to designers.(Crofton & Dopico Macrometrix, 2007)

As can be analysed then, the fashion market bet on a production that encompasses the response of consumers, as described above, fashion had a hierarchy of consuming the new (upper classes) and then move to an expansion (lower classes). With Fast Fashion, a response is created to give those fashion pieces in a faster and more accessible way, this and the internet (where also enters social networks) produced a quantitative reproduction on a large scale also making communication between brands and customers faster.

So, it can be said that ethical fashion was born in this environment, and it became even more conscious in April 2013 when an international factory building called Rana Plaza collapsed in the Bangladeshi capital, Dhaka. More than 4,000 workers were employed in factories that exported garments. Over 1,100 people died in the disaster, and some 2,000 workers were injured, many becoming permanently disabled. (Aizawa & Tripathi, 2016)

It begins to make itself felt in this context of 'anti-fashion', because from the 1960s onwards, it starts with an accelerated sale of products and an extreme massification of brands that want to cover more market. And from events such as Rana Plaza in Bangladesh, the need to regulate the forms of production not only towards a form of environmental protection but also towards social protection is created; although the policies of each country belong to each country, the way in which ethical fashion wants to develop, moves in this context of creating rules for the production of clothing brands that have a high production and that provoke negative consequences.

In conclusion then, as a first part it can be understood that the current of fashion moves between 'fashion' and its opposite 'anti-fashion', being these currents always changing, and as it could be described, with the birth of fast fashion as a need to satisfy a democratization of fashion, a counterpart was also born, which from various events that affect the environment and society, also wants to be able to satisfy and cover these needs. It can be said that the birth of ethical fashion is a consequence of this democratization and excessive production, which, although it is a movement that has existed for several years, has been gaining strength with various incidents that can be seen and notice today.

2.2.1.4 Sustainable practices in ethical fashion:

Once the definition of ethical fashion has been reviewed, it is necessary to carry out an analysis of the practices that this fashion sector carries out, including a review of sustainable materials, how it defines sustainable production and fair trade in this sector.

- **Sustainable materials:**

Ethical fashion focuses primarily on materials. As it is known, the materials used in everyday clothing are based directly on fabrics, which is why, for ethical fashion, it is important to take into account the fibres of which these fabrics are composed. "What must a fabric have to be eco-friendly for it to be environmentally friendly?"

> For a textile to be certified as ecological in its manufacturing process, it must minimise environmental impact, use natural resources rationally, consume the minimum amount of energy, recycle water, use hydroponic crops (which do not need soil), maintain the natural characteristics of the raw material, not use chemical but physical or mechanical processes, use biodegradable elements and not harm the health of workers or users. (Marin & Monroy, 2013)

Marin & Monroy (2013)describe that the characteristics that the fibres of an ecological textile should have, it is logical that they are mainly focused on the characteristics of impact towards the environment, from the collection of the fibre, weaving of the fibre, process, to its finishing. They describe all these physical and chemical processes, from the creation of the fibre, the process to its commercialisation, as well as remembering that ethical fashion also takes into account the care of the workers involved in the process and its users, every decision taken has to be thought about the reduction of these impacts, and thus produce a textile that is friendly to human beings and the environment.

Marin & Monroy (Marin & Monroy, 2013) also describe some fibres that can be used in an environmentally friendly way, among the vegetable fibres are: organic cotton, bamboo, recycled polyester, wood pulp, soy, cannabis, flax, jute, jute, coconut fibre, corn and pineapple; among some characteristics that describe these fibres are soil care, as they do not need strong chemicals or pesticides; also the time in which some of these fibres can be obtained is short, in relation to the skin, some have antibacterial characteristics, absorb sweat, retain a fresh smell, others do not require less carbon emissions.

On the other hand, they also describe some animal fibres, among them silk, cashmere, alpaca, salmon skin, crab skeleton chenille. Eco-friendly characteristics that these fibres have are described, such as 'peaceful silk' which is produced after the worm has left its cocoon, on the other hand, it has long lasting characteristics, algae do not need to be treated with insecticides and do not need to be treated with insecticides.(Marin & Monroy, 2013)

These fibres are some of the materials that can be considered environmentally friendly, taking into account that "The main objective is to reduce the effects of the carbon footprint1 that humanity as a whole has produced on the planet, including the use of eco-friendly fibres and fabrics, natural dyes and non-toxic finished products". (González, 2013)

- **Responsible production:**

Another important point in ethical fashion, apart from the materials, is the way in which the fabrics are produced, as the aim is for this value chain to be responsible with the environment and with the people who work in it.

Bastos Rudolph et al (2023) They write an article in which a moral basis is promoted to companies (15 brands) that declare themselves ethical, they describe the production process of ethical

fashion as can be seen in Table 2, from this table they proceed to describe how the production is done from the workflow to the business conduct.

Table 2. Production comparison between fashion sectors (Bastos Rudolph et al., 2023)

Features	Traditional	Fast fashion	Ethical
Orientation	Supply driven	Consumer driven	Value driven
Workflow	Longer lead times	Shorter lead times	Intermediate to longer lead times.
Production Frequency	Large standardized production runs	Shorter production runs	Short and more personalized production runs
Supply-chain relationship	Pressure on retailers (large inventories)	Increasing pressure on suppliers (shorter lead times)	Reduction of pressure and conflicts in the supply chain
Empowered party	Manufacturer power	Retailer power	Supply chain power
Manufacturing features	Outsourcing and increasing separation of activities	Elimination of stages in the supply chain	Addition of stages (monitoring, auditing, quality control)
Sourcing driver	Price driven sourcing regions	Emergence of sourcing regions for different purposes	One-by-one relationship building with suppliers
Business conduct	Emergence of unethical practices	Unethical practices	Distributive Justice
Evidence source	LITERATURE		EMPIRICAL

Source: Authors.

Starting with the workflow, which is driven by the value in the product, and not in the consumer or what is needed in the supply, this production approach changes the way the product is thought of, for in ethical fashion, the product is thought of as an object that not only satisfies needs but also cares for the environment and cares for the way it is produced.

Lead times in ethical fashion can also be extended, from short to long lead times depending on the product to be developed, but always with a view to a finished product that is well developed and finished. In addition, ethical fashion, customised production for clients where production is less pressurised and less conflict in the supply chain, means that there is a friendlier production with materials and people in the workforce. It follows that the power is in the supply chain, as they basically control the production.

Production, since it develops customised products and its delivery time is flexible, can also add production steps such as quality control, audits, and monitoring. Also, the way in which the supply of materials is driven, guided by the relationships with suppliers.

As can be understood then, the ethical fashion production chain is more flexible in its activities and is linked to value, both with the product and with the people who participate in the production chain, leaving aside ideas such as excessive sales, or delivering products that momentarily satisfy a trend, and that their product has a short life span or where the time allowed for production is short, creating pressure on the artisans or designers; Ethical fashion leaves aside the need for growth based on unfair exploitation, and opts for conscious production and that the central idea of the creation of a product is purely the value, whether in the concept of design, utility, materials, environment, labour or all of these together.

- **Fair Trade**

For the analysis of fair-trade ethical fashion, it will be based on figure 4 of Bastos Rudolph et al., (2023)The value factor: equity' which describes groups of dependents involved in product development, including employees, suppliers, consumers, community and suppliers.
On the one hand, there are the employees and suppliers, who have social and environmental concerns, as seen in Figure 4; stages are added to them, but not in a form of pressure, but in a way in which the work on the product can be verified; this being monitoring, audits and quality controls, training employees ethically and using certificates and control codes.

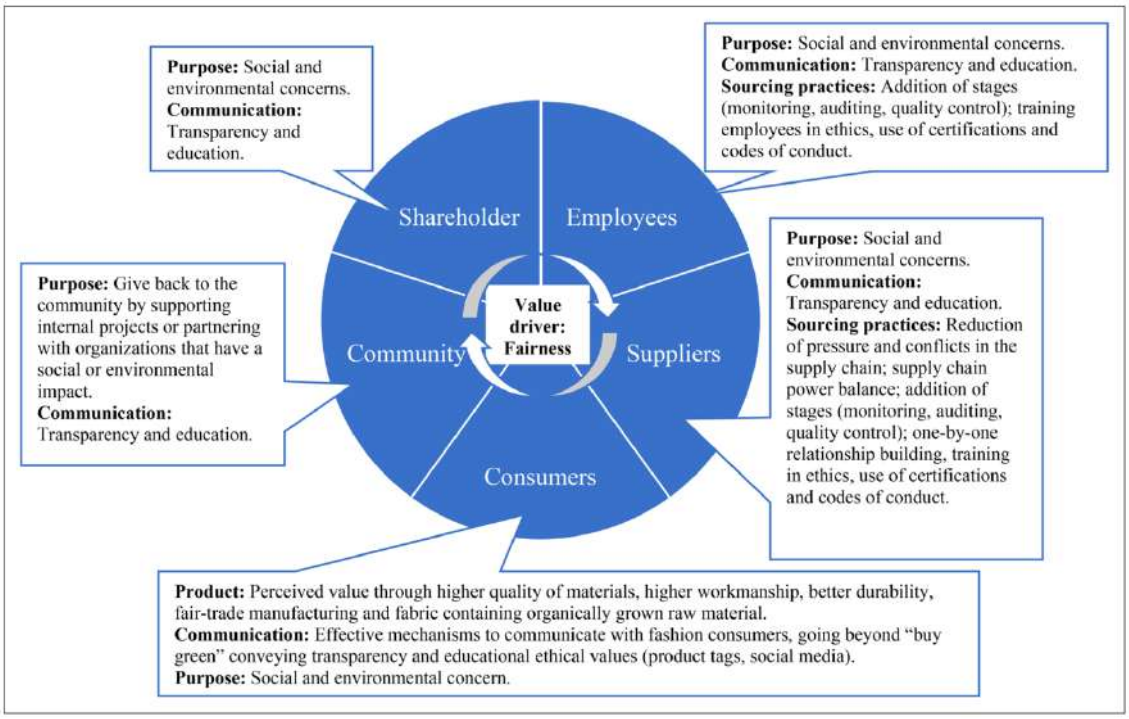


Figure 4. "The fact of value: Equity" Based on principles of distributive justice. (Bastos Rudolph et al., 2023)

Another very important part of fair trade refers to the consumers, corresponding to the product that is delivered, where the part of the suppliers and the product must respond to the product, i.e. the article offered to the product must satisfy the customers or users, through the high quality of the materials, high craftsmanship, better durability, fair trade manufacturing and with raw materials of ecological consumption; furthermore, these characteristics must be communicated, not only as a way of making a 'green purchase', but also by transmitting transparency and educational ethical values. In this way, there are three stages in the development of fair trade: employees, suppliers and consumers; in this part there must be communication and fairness between the three parties.

The author adds two more parts to this system, being the community and the shareholders, on the one hand, having the community, which is intended to collaborate through internal support of projects or collaborating with organisations in a social, economic or cultural way, trying to promote a social and environmental impact, for this it is necessary to have transparency about

the actions that are taken. The last part is the shareholders, where there must also be fairness, transparency and education; it is important to understand that both employees and shareholders are at the same level in the whole process and that each of the parties must have good communication, as well as fulfil their parts, in this way there will be a fair trade.

2.2.2 Slow Fashion

2.2.2.1 Definition of slow fashion

In today's world of fast and disposable consumption, even after reviewing all this data, it remains an open question whether slow fashion can emerge in this industry, and more on this topic is described below.

To begin with, in Fletcher's definition as cited by Pookulangara & Shephard, (2013):

> Slow fashion represents a vision of sustainability in the fashion sector based on different values and goals to the present day. It requires a changed infrastructure and a reduced through-put of goods. Categorically, slow fashion is not business-as-usual but just involving design classics. Nor is it production-as-usual but with long lead times. Slow fashion represents a blatant discontinuity with the practices of today's sector; a break from the values and goals of fast (growth-based) fashion. It is a vision of the fashion sector built from a different starting point.

This means that Slow Fashion is more than just an idea in contrast to Fast Fashion, but a whole, a form of production that aims to contribute to sustainability through its terms, a different way of doing fashion.

On the other hand, Pookulangara & Shephard, (2013)quote Clark who "identifies three components of slow fashion: placing value on local resources and economies, transparency in the production system, and creating products with a longer usable life (2008). Clark's view of slow fashion closely relates to the themes behind the slow food movement". This is in order to further establish that slow fashion encompasses several levels in order to produce a more sustainable and less polluted sale than other forms of fashion.

They also write and make a chart that will help us to understand how they define this term, they write what it is; "A process that embodies the direction of the textile and apparel industry to incorporate more conscientious decisions at all levels of the textile and apparel complex from retailers to consumers " (Pookulangara & Shephard, 2013)

In Figure 5, three divisions can be seen in the process that clothing follows, from retailer to consumer, these are divided into design, production and consumption. As can be seen in design there is an emphasis on taking into account ethical practices and sustainability, with respect to design the authors write: "This supports the ideology that slow fashion garments are intended to be worn for a long time and create "emotional durability" or in other words a personal connection

with the wearer, which will ensure its longevity and may even get passed on to the next generation" (Pookulangara & Shephard, 2013)

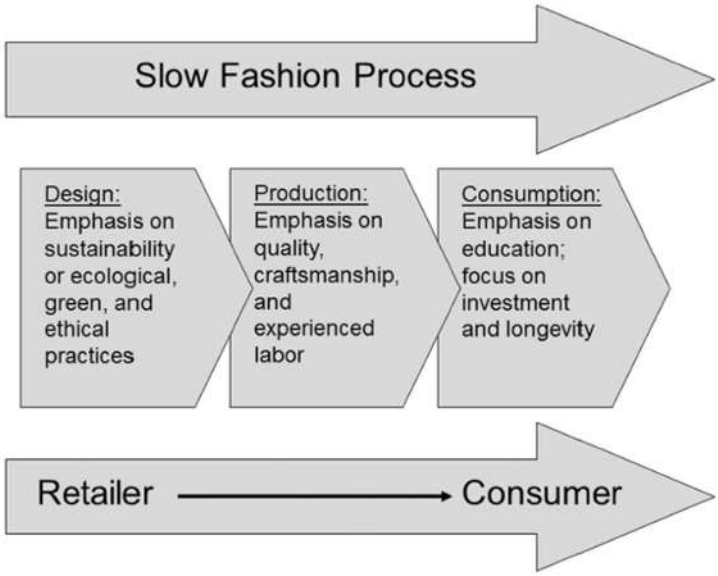


Fig. 1. Framework model for the slow fashion process.

Figure 5. Slow Fashion Process. (Pookulangara & Shephard, 2013)

In other words, the design process is projected towards the creation of a product that is durable and creates an emotional bond with the user to the point of becoming an object that is passed on from generation to generation. With this it can also be stated that the design process, being the first stage, is a guide to be able to continue with production and consumption. In a second part there is the production, where importance is given to quality and workmanship, as well as local labour, also the production is characterised by being exclusive. Finally, the consumption that focuses on customer education, expressing the idea of a product that can last, that is functional and that can be framed in the changes that fashion brings.

To conclude this idea of Slow Fashion, this last definition which encompasses the whole process described above. "Slow fashion is about a shift from quantity to quality, and that it balances fashion expression with durability and long-term engagement. As slow fashion values local cultural heritage and craftsmanship, and incorporates social responsibility, sustainability and transparency to business practices" (Liu et al., 2022).

As reviewed then, Slow Fashion is not only an idea opposed to Fast Fashion, but a different perspective on the creation of clothes, which is about living in a more friendly and sustainable way; both from the perspective of the designer, producer, consumer and user.

2.2.2.2 Contrasts between slow fashion and fast fashion

Having analyzed the consequences of Fast Fashion and knowing a little about the concept of Slow Fashion, it will follow by an analyses whether the latter is viable, without forgetting what was said above about, which can be summarized as follows. “The environmental and economic implications of saving resources and minimizing waste, [...] means that the product availability before upcycling is extended, and the good properties of variable raw materials are maximized"(Lee, 2023) These attributes are framed in the image seen above (Fig 1.) and also add to what was highlighted above, but can Slow Fashion be viable for the consumer?

Chhabra S, Sindhi S and Nandy M (2022), answer this question from a more specific perspective; from the slow production of textiles and loom-made products, they write:

> ‘Weaver limitations,’ ‘availability and affordability of sub- stitutes,’ and ‘acceptability’ are the top three barriers cited by the stakeholders. These were followed by ‘price,’ ‘quality,’ and ‘lack of awareness. The least mentioned barrier is ‘accessi- bility.’ Each barrier theme is addressed by a complementary theme in the support mechanism. The top-cited support mecha- nisms are ‘promotion and awareness,’ ‘weaver mentoring and facilitation, and ‘diversification.’ Surprisingly, ‘affordability’ is the least cited support mechanism.(2022)

It is possible to leave aside the obstacles that can be generated from the perspective of the looms, and give way to the answers of price, quality and lack of awareness, as they are barriers that jump for any form of business within fashion; likewise, a support mechanism that jumps as a solution to these barriers is the promotion and awareness; while the affordability of these products is a support almost not mentioned. Within this it could be said that affordability is not a point that is negotiated with respect to the product created from the Slow fashion look, while a strong support will be the promotion and awareness, directed towards a public that identifies with each of the attributes and that from this can educate people about a more conscious purchase and sale.

Regarding Slow fashion awareness, it has been written about:

> Empirical research has reviewed different attributes of the credibility of sustainable advertising [...] For example, the brand's product design and communication strategies are essential to develop companies' responsibility. However, credibility requires that a consumer perceives the brand as both capable (i.e., competent) and willing (i.e., trustworthy) to deliver regularly on what is promised (Bläse et al., 2023)

Communication about Slow Fashion is an important point not only from the point of view of communication, but also to build trust as a brand and be able to respond to Slow Fashion and obviously to the customer who is buying under this umbrella of attributes that encodes the product. The objective as a brand will then be to offer a product, durable, sustainable socially, environmentally and economically, but also to educate customers on this topic, in this sense it can be argued “A study in the UK that investigated the public's understanding of sustainable

clothing consumption found knowledge on the topic generally low, though some study participants were engaged in sustainable practices and perceived the disposability of fast fashion as problematic." (Armstrong et al., 2015)

Finally, it also contributes to the idea that "sustainability is very important because perceptions of value and quality are essential when fashion consumers evaluate a fashion company's sustainable performance. Satisfaction with sustainability brings greater customer equity to companies and brands, thus strengthening customer relationships." (Velasco-Molpeceres et al., 2023) In the end, it is established that it is a relationship with the customer from a more sustainable perspective, strengthens the relationship with customers.

- Pre-consumer textile waste:

Niinimäki refers to pre-consumer by defining it as that which "is produced during the manufacturing of textiles and garments, and includes fibre, yarn and fabric waste, the last of which is the greatest waste of resources. One study estimated that 15% of fabric used in garment manufacturing is wasted"(2010). It is described then that these wastes are those produced in the value chain, also the author writes further on that the wastes will be produced depending on the width of the fabrics, the edges that these present, if the fabrics are unidirectional for the cuts or bidirectional, and of course that the wastes will be related to the shape of the patterns and their location in the fabric.

It should be noted that there are computer programs for reducing the gaps between patterns, so that the waste of fabric remnants can be reduced, but, as the author points out, there is still fabric that is wasted.

Niinimäki also writes about a term known as DeadStock in reference to "two cases in 2018 shed additional light on deadstock. Swedish fast-fashion brand H&M was reported to hold $4.3 billion worth of unsold inventory in warehouses "(2010). On the June 2018, nd, Niinimäki also writes about "British luxury brand Burberry was reported to have incinerated £90 million worth of unsold inventory over five years as of June 2018" (Niinimäki, 2010).

DeadStock could be defined as that group of garments that failed to sell, the process of selling a garment goes from the launch of a new collection (with its higher price it could be said) to a garment that is already out of season and proceeds to be discounted for sale. The DeadStock is that group of garments that after passing this process have not yet been sold and proceed as it has been seen above to be discarded or incinerated causing more pollution.

- Post-consumer textile waste:

Niinimäki defines post-consumer waste as those garments that end their cycle of use and are discarded, he writes:

> The turnaround from consumption to post-production waste is rapid - the use lives of three garment types (T-shirts, knit collared shirts and woven pants) in six countries (China, Germany, Italy, Japan, the UK and the USA) averaged only 3.1 to 3.5 years per garment, albeit with significant variation between countries (Niinimäki, 2010).

It is considered important to understand and highlight that the useful life of garments over the years has been decreasing, the author classifies them and writes that the life of use have an average of 3 years and then reach the landfill. He also writes that the short shelf life of these garments goes in the opposite direction with the fast way of production. “40% increase in landfilled textile waste in the USA between 1999 and 2009".

Niinimäki concluded by writing “Thus, to close the material loop and create an effective recycling system for all textile waste, not only must garment recycling become more widely adopted but the production and consumption of garments must be slowed” (Niinimäki, 2010). This last sentence is the one that leads us to think about whether the value chain can be slowed down.

2.2.2.3 Product durability and longevity

In order to understand a little more about slow fashion, are analysed the aspects advocated by this sector, on the one hand, it will focus on the durability and longevity of the product, the authors McLaren et al., (2016) quote Evans and Cooper (2010) to describe the longevity in a product write that lengthening the life helps the impact it causes. “Product longevity is a key aspect of sustainability and encouraging consumers to prolong the lifetime of products therefore has a part to play in minimising environmental sustainability impacts”. This with the aim of reducing the need that consumers have to renew their closet, and minimize the replacement of garments, i.e. the durability and longevity of the product is inversely proportional to the impact it generates.

This is why slow fashion “is about producing and consuming fashion at a slower speed, moving from the paradigm of quantity to that of quality. {...} consuming quality products, both in terms of design and durability, less frequently than in the current RM model” [it is about producing and consuming fashion at a slower speed, moving from the paradigm of quantity to that of quality. {consuming quality products, both in terms of design and durability, less frequently than in the current RM model]. (Sánchez-Vázquez et al., 2020). It must be understood that the longevity and durability of a product will depend in the first instance on the way in which the production is developed, the materials become an important plane, and the slow fashion looks for the products that are framed in it.

A comparative study was conducted by the Sustainable Apparel Coalition using the Higg Index tool where “The statistics show that the participating clothing companies have solely addressed the durability and longevity of their products to improve the environmental impacts coming from the use stage.” (Holtmaat & Ryttinger, 2014). As can be seen, then, there are brands that act on the way they produce and aim to make their products last longer.

On the other hand, there are also poor quality of materials, both fabrics and finishes, authors Jung and Jin (2016) point out that they do not withstand continuous washing, while other authors describe washing that compromise the appearance after 10 washes. “Thus, consumers will buy multiple garments at once, dispose of them quickly and buy new garments (Jung and Jin, 2016b). Thus, the throwaway culture is spreading [In this way, consumers will buy multiple garments at once, dispose of them quickly and buy new ones (Jung and Jin, 2016b). Thus, the throwaway culture is spreading]” (Sánchez-Vázquez et al., 2020).

2.2.2.4 Conscious consumption

Another consideration in slow fashion is the conscious consumption which promotes the production and consumption of clothing that is created with the objective of both aesthetics and quality, this part is more directed to the awareness of consumers, and to make known that the customer can choose between a better-quality product with a product produced by fast fashion where, although you get a garment at low cost in the same way but also with a lower quality and quickly becomes obsolete.

Studies show that consumers are open to have a more environmentally friendly behavior if the product offered returns durability characteristics, aspects such as; quoted from Shove (2003) by McLaren et al., (2016)“usage and maintenance, relating to mutually interdependent dimensions of wear and laundering, establishing that there are opportunities to influence consumers to alter their behavior towards more sustainable practices”, having a garment that withstands more washes and more use, creates a longer time and therefore the product creates emotional ties with the consumer or user, also making the customer can move to an emotional relationship not only with the product but also with the brand.

There are examples of authors who describe studies in which it is reported that consumers or users are aware that slow fashion has a greater green value or respect for the environment than other types of fashion and indicate a good emotional and aesthetic value, i.e., they like the appearance of this type of garments and feel comfortable wearing them, especially women. (Sánchez-Vázquez et al., 2020).

At this point it is important to understand that value, is an important criterion for slow fashion, since consumers give it importance to choose clothing, in this regard several authors write “Value is identified as a key factor in retaining garments, moving beyond purchase price to functional, aesthetic, emotional, social, and sensory value” (McLaren et al., 2016) Fitting with what was written above regarding the way in which the customer can generate an emotional value with the garment and then with the brand, starting from that the product is durable and that the purchase that the customer makes. McLaren et al. cites Langley et al. (2013) where they write “However, durability of clothing can be an elusive concept for consumers; they may be unsure of how to check and assess durability at the point of purchase, or not consider it at all” (2016)

In this sense, there are still aspects that the industry can work on because, although the customer feels open to be able to choose certain garments for quality and performs this awareness process, there are still doubts about the purchase action and if the product that is being acquired will have a lasting quality, but it can be emphasized that there is this reflection process at the time of purchase, although it is not possible to affirm a percentage among consumers; whether it is high or low; it is an activity that slow fashion performs and that should be put more into practice.

2.2.2.5 Awareness of the life cycle garment.

As a last consideration, it was described the life cycle of the garment, from the procurement of raw materials to the disposal of the garment with the consumer and user, this in order to conscientize and minimize the environmental and social impact that you generate. The objective of slow fashion is to generate alternatives so that the cycle of the garment yields more, either with recycling or generating reuse.

There are researches that expose the solutions to extend the life of the garment, giving to know several options, but the problem lies in the way in which it is made known to the general public or the depth in which the investigations are conducted, if you can verify that these processes are reliable or that the garment will have optimal terms of use or functionality, in this regard write several authors that are cited by McLaren et al, Other research has proposed that a deeper understanding of the social and experiential dimensions of usage and ability to maintain and repair garments effectively is important to keep clothing in use (McLaren et al., 2016).

On the other hand, some companies have acted in the production they do, from the management they do following unsold sales or recovery of old garments in their factories to the management of redesign, Young (2013) is quoted, where he writes

> Product care, repair and the communication of these services have not yet been developed. When it comes to taking care of the end of life of their products, some clothing companies have started with collecting and progressing old garments, but complete end of life programs, design policies and clear communication towards consumers are missing (Holtmaat & Ryttinger, 2014)

There is an example of how studies have been carried out to extend the life cycle of garments, an example is the AEG home appliance company “the future of textiles and clothing with innovative technologies and methods. [...] to take better care of their clothes by washing them correctly. On their website they quote from WRAP, a registered environmental charity, that by “extending the life of clothing by extra nine months of active use would reduce carbon, waste and water footprints by around 20-30% each.” (Hafberg, 2016)

2.2.2.6 Respect for craftsmanship and artisanal skills.

The concept of slow fashion is predicated on the value of manual labor and craftsmanship. It stands to reason that a slow manufacturing process would be accompanied by a more conscious and friendly sales approach. In this regard, the (Lee, 2023) notes that while the use of hand-woven cloth may be more time-consuming than machine-made alternatives, it allows for the display of artistry and uniqueness. The product's development under the hands results in a unique end product. In some cases, this may be regarded as art.

Slow fashion is also associated with environmental concerns. As the quote indicates (Lee, 2023), products that possess these characteristics are perceived as having greater value due to their uniqueness and are often regarded as art. This prompts the question of whether haute couture suits, which are generally not considered environmentally friendly, should be regarded as art. The time and effort invested in creating these garments, whether by the wearer, the purchaser, or the observer, can be seen as a direct contribution to the artistic realm.

Conversely, one might consider instances where the environment is incorporated into the design process. A case in point are the weavings produced by Suleta. These are hand-woven by the indigenous population of the region, initially using yarns that they themselves manufacture. One might also consider the Panama hat, which is crafted in Ecuador from the paja toquilla palm fiber. This fiber is washed and dried before being finely spun to create a durable product that is highly regarded for its quality. This type of product is considered an art form, given that it is handmade. One may recall Dior's collaborations with weavers from Mexico, who hand-embroidered their suits. These embroidered motifs serve as a testament to the fact that manual work, which requires time and effort, can foster social support in the communities where it is produced.

This is why ethical fashion respects and considers this work as art, thereby conferring upon it a distinctive and invaluable quality for those who engage in its production.

2.2.3 Handcrafted products

In the next stage of the project, it will be carried out a quick review of handmade looms, in terms of definition and history, always with the intention of knowing a little more about these textile tools, starting with the definition of loom:

> Our word “loom” derives from the Old English geloma, which meant simply “tool” or “utensil.” The loom, perhaps next to the stone axe and spear, was the tool in ancient times. Its history has been largely neglected in favour of the textiles woven on it--partly because textiles have survived in greater quantities than looms and partly because the use of a tool can tell us more about a culture than can the tool itself. Nonetheless, the loom has an impressive history that must have been preceded by a prehistory of even greater duration than the period since the earliest textile discoveries (Broudy, 1979).

One of the first observations that can be made about the quoted text is the word that comes from the Old English “geloma”, this word is not common in the searches carried out, it is an old word that evolved over time, and it is interesting to know that it has remained in time without use. The loom is defined as a tool for weaving, and as you can understand, it helps to know a lot about the

culture in which it is developed, there are several types of looms around the world, with different characteristics but with the same objective.

It should also be noted that today there are several looms, including several with digital systems that accelerate the process and the construction of the fabrics, cases that do not fall within the scope of this project, even so it is also worth reviewing a basic and technical definition as to its purpose, where it is written

> For this book, however, the term "loom" is best defined more generally as any frame or contrivance for holding warp yarns parallel to permit the interlacing of the weft at right angles to form a web. As long as the material to be woven was fairly rigid, no additional apparatus was necessary (Broudy, 1979)

Basically, the loom then, generates the weave between the interlacing of yarns, in a vertical way is the warp; which need to be in tension; and then general the weave with the weft in a horizontal way.

2.2.3.1 History of handloom looms.

So "El telar es el arte de entrelazar hilos y entrecruzarlos de forma ordenada. El telar es el nombre de una artesanía que utiliza una máquina para producir un tejido a partir de hilos" [Loom is the art of weaving yarns together and interweaving them in an orderly fashion. Loom is the name of a craft that uses a machine to produce a fabric from yarns] (Brahic, 1992)

Broudy, (1979)writes that ethnologist (the science that studies the origins and manifestations of culture) relate the birth of this tool from what they call "the dawn of prehistory" and consider that this tool has been with us as long as our ancestors could be considered. He locates the birth of this tool in the Mesolithic and it is logical that it can be considered the beginning of the loom or the beginning of the interweaving of yarns, in a more rustic stage, being the basketry or the manufacture of mats, since the characteristics that this work contains is the basic principle of how weaves are composed today, although the basketry is worked with thicker materials has the same principle of creating a network to be able to give it the function that is needed.

On the other hand, also Broudy, (1979) writes that the loom is attributed to the gods of the culture in which it is developed, finding the Incas in the Andes who attribute the loom to the goddess "Mama Ocllo" wife of "Manco Capac", on the other hand, the Assyrians to "Semiramis", the Egyptians to the goddess "Isis", where "(According to Egyptian mythology, flax, the fiber associated with the finest Egyptian weaving, was the first thing that the gods created for themselves before appearing on earth.)" (Broudy, 1979) He also writes that Muslims believe it originated with Noah's son, Japheth, while in Greece it is attributed to Athena, in Rome to Minerva, goddess of the arts.

Sosa & Romero,(2008) write that the artisan loom evolved into the backstrap loom, the authors write that this loom is used in Mexico and Latin America by indigenous peoples “La estructura es de forma rectangular o cuadrangular; los hilos de urdimbre se mantienen tensos al fijar uno de los soportes a una estructura vertical y el otro a una cinta que se ajusta alrededor de las caderas del tejedor” [The structure is rectangular or quadrangular in shape; the warp yarns are kept taut by attaching one of the supports to a vertical structure and the other to a strap that fits around the weaver's hips.] (Sosa & Romero, 2008) hence its name. Later it is described that in 1733 the Englishman John Key patented the flying shuttle which consisted of a lever mechanism, this allowed the weft to be handled by a single worker.

By the time of 1784, Edmund Cartwright created the first loom that used the force of water for its movement, i.e. the energy generated by turbines in the falling water was used, a few years later in 1801, describes Sosa & Romero, (2008) that Joseph Jacquard introduced a crucial innovation in looms in France, this consisted of a design that incorporated a system of punched cards that controlled the position of the weft yarn with respect to the warp. This system worked by means of individualized punch cards for each weft pass, organized according to the desired design pattern.

Although some looms have been created throughout history and changes have been generated for the production of textiles in a faster and more efficient way, the loom has maintained its initial process, generating the interweaving of yarns between weft and warp for the generation of textiles.

2.2.3.2. Types of handloom looms.

After knowing a little of the history of handlooms, the review of the types of looms that exist follows; although there are several types, with the description of two large groups among them, the vertical looms and the horizontal looms, since they are looms that remain rustic but that help to know a little more about the operation and thus relating more with this tool.

Beginning with the vertical loom, (Alvarado, 2006) defines it as a rectangular frame that fixes the warp and that is used more for manual works, being more primitive and chosen by tapestry artists, in this loom you can observe the whole work while the weft is being assembled, understanding then that this loom is not rolled up if it is not kept lying and static.

On the other hand, (Haro, 2012) describes another type of vertical loom (Figure 6), such as the well-known weight loom, also known since the Neolithic period, and the locations of its emergence are different from the floor loom (horizontal loom). In this type of loom the yarns are tensioned by placing a single upper beam called “upper beam” or “warp beam”, while at the bottom a series of weights are used to generate tension in the warp. These weights, usually made of clay or stone, had one or more perforations and were attached by ropes to groups of warp yarns. The weaving form starts from the top and as it is woven, it winds upwards.

Figure 6. Vertical loom (HARO, 2012)

Continuing in the same period, the Neolithic, to describe the horizontal loom, which continued to be used in the same period and did not have much variation, most information comes from Egypt, according to Kohen (2006) cited by Haro, (2012) describes that most of the information comes from the Predynastic and the Old Dynastic period. In addition, they describe that this loom was used until the 15th century BC, where after that the frame loom is introduced.

Alvarado, (2006)describes the horizontal loom instead in a way that the warp is parallel to the ground (Figure 7) as a table; and the fabric is rolled at one end as it is woven, the warp is separated by pairs in odd and the weft is warped, using a “comb”. Nowadays there are more types of horizontal looms; as explained above; they are more sophisticated because they help the weaving in a faster and more efficient way, thus creating the textile.

Fig. 1. Telar de suelo egipcio. Imagen procedente de http://adcproyectoegipto.blogspot.com.es

Figure 7.Horizontal loom.(HARO, 2012)

As mentioned above also, after the horizontal loom is introduced the frame loom (Figure 8), this would become a vertical loom, Haro writes about it (2012). It is constituted as a large loom since it is formed by two large poles nailed to the ground or attached a wooden peg that crosses from pole to pole for stability. Inside this frame are placed the warp bars, both the upper and the lower, which forms a loom completely built in wood, thus recreating the handmade looms that exist today, with the difference that these are used horizontally. To complete this structure, two wooden bars are added, one at the top and the other at the bottom, which close the whole.

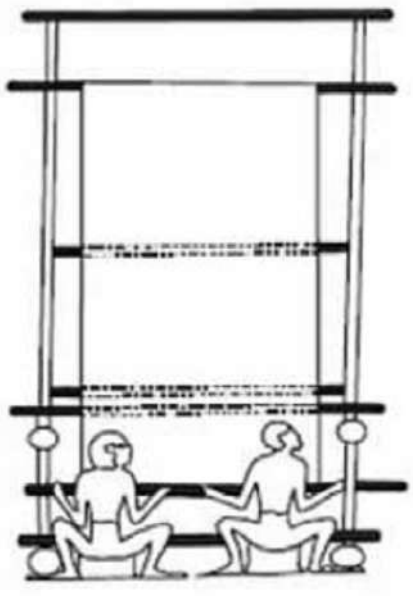


Figure 8. Frame loom. (HARO, 2012)

Before concluding this phase, it is also worth mentioning current options that exist in the market for small-scale manufacturing; this is the case of the Norwegian company, “Digital Weaving” which has for sale the TC2 loom (figure 9), which allows weaving in sizes from 36cm x 73cm to 36cm x 172cm being the largest fabric. The loom allows, thanks to the plains that it contains, to have variety at the moment of designing and speed because the plains are managed through a computer system, being a semi manual loom, because the operator will only have to be in charge of the weft. In Figure 9, It can be seeing an example built with the loom. Although this option provides speed and allows to experiment on the fabrics and is a good option to customize the design, it could also have negative aspects due to its price and even then, there would be scraps that would be wasted.

Figure 9. TC2 Loom. (Font: https://digitalweaving.no/tc2-loom/)

2.2.3.3. Materials and tools used in handlooms

Once described the types of looms that exist, it will be described the basic tools or materials for an artisan loom, with the purpose of familiarizing ourselves with them for the moment of the construction of the weaving, the tools that will be described ahead, will be quoted from Alvarado (2006). Describing the most basic ones.

- Navetas:

The navetas (Figure 10) could be defined as spools in the artisan loom, the author defines them as wooden rods with slits at each end, in order to wrap the yarn around them, as if it were a spool; there are several sizes of spools, with different widths, but the author recommends using a navetas with the thickness of the fabric to be made, in order that the yarn does not tangle.

Figure 10. Navetas. (Font: https://deantano.cl/producto/navetas/)

- Bobbins

The author describes the bobbins (Figure 11) as shown in the image, starting with the round base and later is refined to wind yarn, although it does not have space to wind too much quantity, and later ends in point to facilitate the separation of yarns when passing between the warp, the length of the bobbins ranges from 15 to 20 centimeters, it is not necessary that the length is greater due to its function.

Figure 11. Bobbins. (Font: https://lareallana.com/producto/canillas/)

- Needles

These tools (Figure 12) can be made of wood or metal and the author describes that they are used to work small surfaces because they do not carry too much yarn for the weft, in addition the author describes that there are several types of needles to perform small jobs, such as chain stitches to close or points as twill or satin.

Figure 12. Needles. (Font: https://tienda.handcraftlive.com/producto/agujas-de-madera/)

- Comb

The last tool described is the comb (Figure 13), this tool can be made of plastic, metal or wood (image), the function of this tool is to press the fabric that is already intertwined in the weft with the warp.

Figure 13. Comb. (Font: https://www.bodegaaurrera.com.mx)

2.2.3.4 Handloom applications

After the review of the types of looms, follows the observation of the applications that are made, describing the objects found in the book Small Loom Weaving, written by the artist Ichi.co,(2019) starting with garments, from clothing to accessories or complements, the artist shows in her book, scarves, handbags and applications in accessories, all using colour change or both warp and weft, or plain colours in blocks as the bag seen in Figure 14, the shapes are mostly rectangular, but that come to have utility.

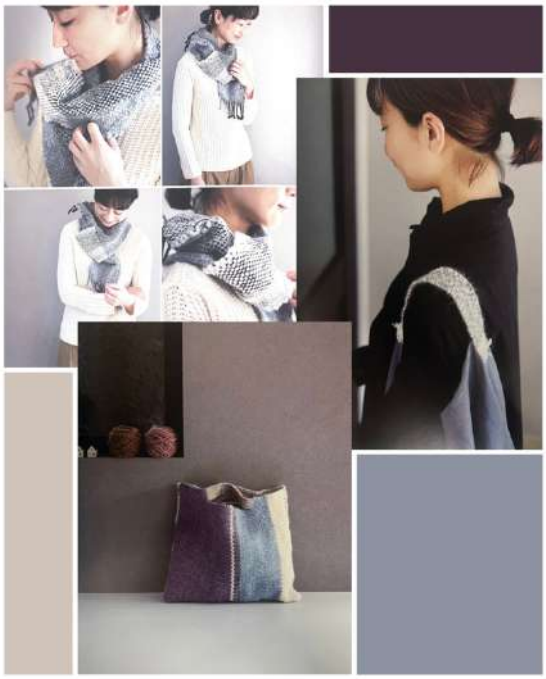


Figure 14. Textile garments with the loom.(Ichi.co, 2019)

On the other hand, home textiles are also made, as can be seen in Figure 15, the artist Ichi.co (2019) makes carpets, rugs, rugs for chairs, and placemats for tea or tableware, among other elements, these elements are simple in the form of construction, for the rugs and carpets are used carpet points to generate another texture and colour changes are used to generate visual forms.

Figure 15. Home textiles applications (Ichi.co, 2019)

Finally, the artist makes works of textile art (Figure 16), such as decorative tapestries, contemporary art works, etc. can be seen in the image on decorative paintings for spaces, with different textures and some forms, as well as contrasts or analogous palettes, some pieces hang on the puezas to hold the warp.

Figure 16. Textil art white the loom. (Ichi.co, 2019)

2.2.4. Contemporary consumers

For the realization of the project, it is necessary to conduct a study of contemporary consumers, for this it was delimited in three groups, generation X, Y and Z, in order to profile the public to which it is addressing, to know characteristics will not help to better communicate the product intended to design and which group can be more connected with the slow fashion, as well as, with the awareness of handmade fabrics as a durable product for their daily lives.

2.2.4.1 Generation X

As the first contemporary consumer, there is generation X, "individuals born between 1965 and 1980 [...] was first labelled 'baby bust' because of the cohort's relatively low birth rates compared with older generations." (Michelle Freeman, 2022)So today, in 2024, they would be aged 59-43.

In addition, Michelle Freeman, (2022) describes that this generation grew up in a solitary way, this is why they are known for being extremely independent as their way of growing up was centered on learning to take care of themselves, this is why this generation is called "the key generation", among some events in their growth are the fall of the Berlin Wall, the end of the Cold War, AIDS as an epidemic, the Challenger space shuttle accident and the end of apartheid in South Africa.

(Rodas & González, 2021) describe Generation X as the children of the Baby Boomers and parents of some Millenials or Generation Z, the authors describe that this generation grew up seeing education as the way to develop themselves, they focus on moving up in their work and having a balance between their work and professional life, they focus on individual advancement and are aware that group work is also important. As for the religion they profess, they are devoted to the religion they inherited, making them look like a generation that remains traditional, as for how they make their purchase decision, it is based on the price and the utility that will be given to the object purchased, finally among their common goods are a house and a car.

This generation can be described as a traditionalist group and that remains on the edge of what they were taught in their upbringing, also Rodas & González, (2021) quote Boullosa (2017) where they write that this generation faced the birth of the internet, i.e., they went from digitization to non-digitization.

2.2.4.2 Generation Y/ Millennials

"Following the lead of the Pew Research Center, I define millennials as individuals born between 1981 and 1996" (Michelle Freeman, 2022), that is to say that today, 2024, this generation ranges in age from 43 to 28 years old.

Michelle Freeman, (2022) describes the Millennials as the generation that came of age in the new century, also while they were growing up the terrorist attack in the United

States and the great recession happened, they also grew up at a time when the internet expanded, that is to say it is the first generation in which the tweets, social networks and sending text messages are developed, for this generation these activities are normal because they grew up in this environment. In addition, the author describes that the great recession of 2008 caused part of the millennials to find themselves with student debts when they finished their studies, which led them to have low-paying jobs that are not desired.

On the other hand (Rodas & González, 2021) cite several authors to describe the Millenials, and write several characteristics, including that since they developed in a technological era are accustomed to a world where you can communicate quickly at any time, on the other hand describe that the personal environment is very important, and do not want to waste time on work activities, which is why most prefer to have a freelance job.

They also describe that this generation is more ecological and organic, they do not care about staying in one place and put the experience of a service over a product, Rodas & González, (2021) cite Deloitte (2019) to write that what they maintain in importance, including activities such as travel, climate change, and the most flexible way to reach them is through images, videos and social networks, because they grew up in this technological environment.

2.2.4.3 Generation Z

The last generation, in this project will be the Z generation, "determina a esta generación como la nacida entre 1994 y 2006 pero para Advance Consultora (2020) la generación denominada también como Centennials nace a partir de 1996." [The "Centennials" generation is defined as the generation born between 1994 and 2006, but for Advance Consultancy (2020) the generation also known as Centennials was born from 1996 onwards.] (Rodas & González, 2021)

On the other hand, Moragon Arias writes about this generation that:

> "The so-called Generation Z. This is an entirely technological generation, in fact the first that does not treasure memories of a pre-digital era, with the transcendence that this has, among other things, in the field of teaching and learning. In addition to their addiction to technological devices, which mark the rhythms of their lives, there are some unique characteristics that make them, according to the author, a "soft" generation, who are driven by their emotions, which monopolize a large part of their lives and lead them to believe that knowledge and truth can be accessed through them, largely determining the way they act." (Moragón Arias, 2020)

Because this generation was born in a world full of technology, the author defines it as a very soft society, for this generation it is easy to use social networks such as Whatsapp, Instagram, Snapchat while it is difficult for them to relate to each other physically, because they grew up with these tools, many of them are self-taught because they grew up hand in hand with Youtube, and give value to learning various skills while degrees, masters and doctorates for them are considered as a feature that is no longer competitive. As for the way they buy, they are prone to a quick purchase but have little linkage with brands.

2.2.5 Slow fashion: Lifestyle trends

After reviewing the contemporary consumer groups, continue to review the trends that develop or fit with slow fashion, for this in addition to reviewing information about the lifestyle of people who choose to opt for a slow fashion, also it will be reviewed the current trends in both textiles and women's fashion in order to have a broad view on what can be designed.

On the one hand one has been thinking that develops in this fashion sector, as summarized in the following text, where Hafberg, (2016)) cites Juliet B. Schor who writes in her book “Cleaning the Close”

> Juliet points out that if we reject the need to keep up with fashion and are satisfied with a smaller wardrobe, we could spend more per garment. The negative impact on the world would be less, and it contributes to longevity, not by skimping on quality, tailoring or quantity of yardage and the clothes would last longer. In the long run the consumer would be better off since high quality means more comfort and better looks.49 Ultimately, we could think of clothing purchases as long-term commitments in which we take responsibility for seeing each garment through its natural life. That does not mean we couldn’t ever divest ourselves, but if we grew tired of a useful garment, we would find it a new home with a loving owner, kind of like with pets.

The author writes about the way a closet would develop if they were to choose products with better quality and that are more durable, this passage aligns with slow fashion as consumers in this sector focus on a more minimalist way of life, this group focuses more on “Friends, hobbies, travel and experiences. These are the things minimalists try to focus on, rather than the possession of things. [...] Instead of letting things and purchases boost up their happiness they make the most of the things you can do, see, hear, feel and so on to them; the important things in life."(Hafberg, 2016)

Understanding then that the way in which the lifestyle of this group develops is more focused on the experience they have and the relationships they have, for them it is important to feel this freedom and they are more aware of their senses, this is why the way in which they see the clothes becomes in a certain way important, This is why the way in which they see clothes becomes important, since in the case of creating a link between a garment, they will take care of it because it will not only be one more garment but it will generate a bond of belonging and it can be said

that they take their time to make a purchase, because for them the experience and the utility that the product will have will always take precedence.

On the other hand, a search for trends in WGSN was conducted in order to review aesthetic trends that can adjust to the slow fashion thinking, in this regard the report on textiles for women in the year 2025, "Shared links" written by (Palmer, 2023) was found. Where several concepts are written for the forecast, some of the concepts will be summarized as for example the concept of working vacations, where it can be seen a retro concept where it is desired to express happiness and nostalgia, this clothing evokes comfort and a relaxed style, but its colours evoke nostalgia.

Other concepts are also described among them, the picturesque retro, which also evokes a feeling of nostalgia in the midst of a multiple crisis and also at the same time a homey feeling. On the other hand, it also writes the concept, decorative veins, where it describes craftsmanship and marquetry, with various colors that celebrate cultural diversity. As can be seen, most of the concepts reflect the state of nostalgia and a life at home, but always celebrating social aspects, reflecting that emotions and connection with society are more important.

It is thought that these concepts described by WSGN, may fit the way in which slow fashion consumers realize their preferences, on the one hand, colours that evoke nostalgia may evoke peace and at the same time mosaics may generate emotion. Of course, as described above, continuing with the making of the jacket and the style of it, but now focusing on the way in which the fabric can be created, and it also makes sense that the fabric expresses calmness and peace.

The concepts are linked because consumers are looking for something that is durable beyond offering quality, aesthetically it has to be a fabric that can be versatile and that aesthetically lasts over time, that is to say that it becomes classic and simple for consumers and users.

2.2.6 Slow Fashion case studies:

Once described the slow fashion, moving on to the study of brands that are called sustainable or that can be framed between the slow fashion market, with the aim of knowing processes that brands perform to have less impact, as well as new projects that develop, this will help to understand how this market is nowadays.

2.2.6.1. Stella McCarney

As the first brand, will be Stella McCarney, the designer registered her name as a trademark in 2001. Marin & Monroy, (2013) write that since 2007, has included in its collection, what is now known as green fashion or ecological fashion, using in most of its garments organic cotton or fibres with a composition of 80% cotton and 20% rayon, also the brand reduces processes in order to minimize impacts on production and aims to be more transparent about the waste it emanates.

In addition, it is possible to review the website where it has a section where the projects and the sustainable side of the brand are exposed, in its page it describes that it is defined as a modern

company that operates between the economy, society and the environment, they write "We strive to achieve this by using innovative materials, promoting restorative agricultural practices and designing products made to last."(McCartney, n.d.)

On the other hand, the brand is also concerned about the social aspect, on their website it is possible to read about what they express in this regard. In which they state that their objective is to have a positive impact on each of the people who are part of the development of the garment, from the production of materials to those who buy and use the garments. The brand is part of the Ethical Trading Initiative since 2012, they follow UN principles and collaborate with several NGOs.

In addition, on its official website it can be found several projects that are developed in the brand with the aim of generating more environmentally friendly options, among them are the regenerative wool, leathers made from banana or vegan innovations for animal skins, recycled nylon, among several others.

At the bottom of the photo (Figure 17), it can be seen the campaigns that this brand has carried out, where it is possible to observe its objective of generating impact and communicating both its concern and its management to generate less impact.

Stella McCarney

Figure 17. Stella McCarney Desings.(McCartney, n.d.)

2.2.6.2. Gucci

Another brand to be described will be Gucci, this brand was born in Florence, Italy in 1921. The source in which information was found was its online page, more specifically in "Gucci Equilibrium" this website of the Italian brand goes public on June 5, 2018, with the objective of exposing the 10-year sustainability plan, which focuses on three pillars, people, planet and innovation.

Regarding its commitment to people, they describe the agreement with gender equality and commitment to artisan traditions, this is considered important because normally is usually understand that for the development of a large brand industrialization is needed and in a way it is correct, but it is also important to understand that luxury brands are committed to artisans and the products they generate are more valued. On the other hand, the brand is committed to the humanitarian part in entering a supportive and sustainable work environment and thus also generate a positive social impact on the supply chain.

On the environmental side, they are committed to a 40% reduction in carbon footprint by 2025, as well as a 50% reduction in greenhouse gases, which are produced by activities such as transportation, distribution, business flights, fuel, energy-related emissions. Also achieve 100% traceability of raw materials and manufacturing processes that are at the heart of the Kering group. As well as using 100% renewable energy.

In terms of innovation, they have generated various recyclable alternatives (Figure 18) as well as a circular economy to give the brand a sense of friendliness to society and nature. Among its projects are materials such as recycled nylon and vegetable leather materials that are intended to give more use in commercial collections, as it can be seen in the Figure 18 the bags (recycled nylon) and sneakers (vegetable leather).

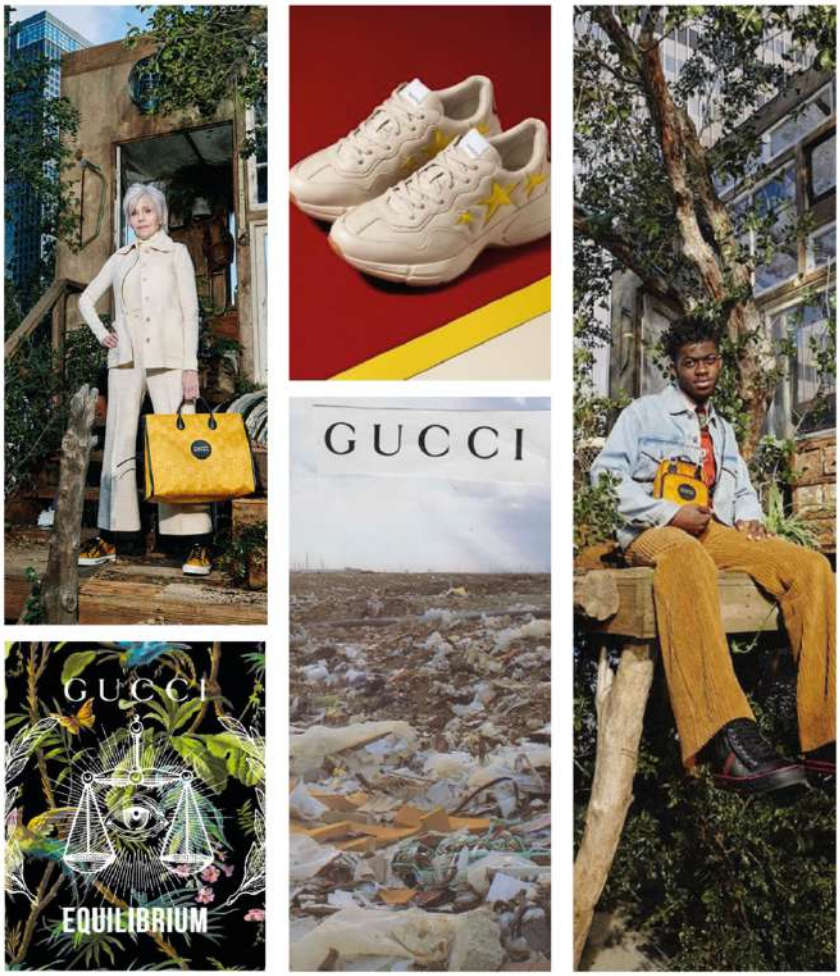


Figure 18. Gucci sustainable products (Gucci, 2015)

Gucci also describes its principle of circularity associated with luxury, beyond recyclable materials the brand seeks to generate products that have longevity not only in the physical part but also emotionally and aesthetically endure over time, this also joins the idea of functionality, as is obvious during the handling of the product as well as washing and drying that is given to the garment.

All these points are combined to generate a luxury product, not only as a brand idea but also as a product with sense, quality, eco-friendly, but above all that lasts with the consumers of this brand.

2.2.6.3. Prada

For the third brand that can be framed as slow fashion, it is Prada, this brand was founded in 1913 in Milan under the signature of Mario Prada. This brand has also developed sustainability as a fundamental pillar of the brand. It describes on its website that sustainability is part of its identity and is at the root of its values, it also describes three fundamental pillars among them “people, planet and culture”. Its goal is to become influential in the fashion market and industry, listening

to its public and consumers as well as to the other parties involved in the production process and to all stakeholders.

Prada,(2023)develops recycling projects to integrate them into its products, the most prominent of which are “Eternal Gold” and “Prada Re-Nylon”. “Eternal Gold” is Prada's collection of 100% certified sustainable jewellery. Prada chooses only recycled gold material and meets the standards of the value chain, established by the Responsible Jewelry Council, thus demonstrating that it is possible to develop high-end products on a large scale and that sustainability is the central idea of this process.

On the other hand, there is also the “Prada Re-Nylon” project (Figure 19). This project is based on the production of products from recycled nylon, which is generated from the purification of plastics collected from the oceans, fishing nets, landfills and waste textile fibres from all over the world.

In addition, the nylon with which all these pieces are made, is a material that according to the brand can be reused indefinitely and that is born from the need to clean the oceans and landfills.

Also, this brand assures that the choice and production of garments from this material contributes to the reduction of global warming up to 90% if compared to nylon that has not had any use.

As you can see in the image, the products made from recycled nylon range from bags to coats and you can also see in the image in a synthesized way the gold that the brand transforms into new jewellery completely recycled.

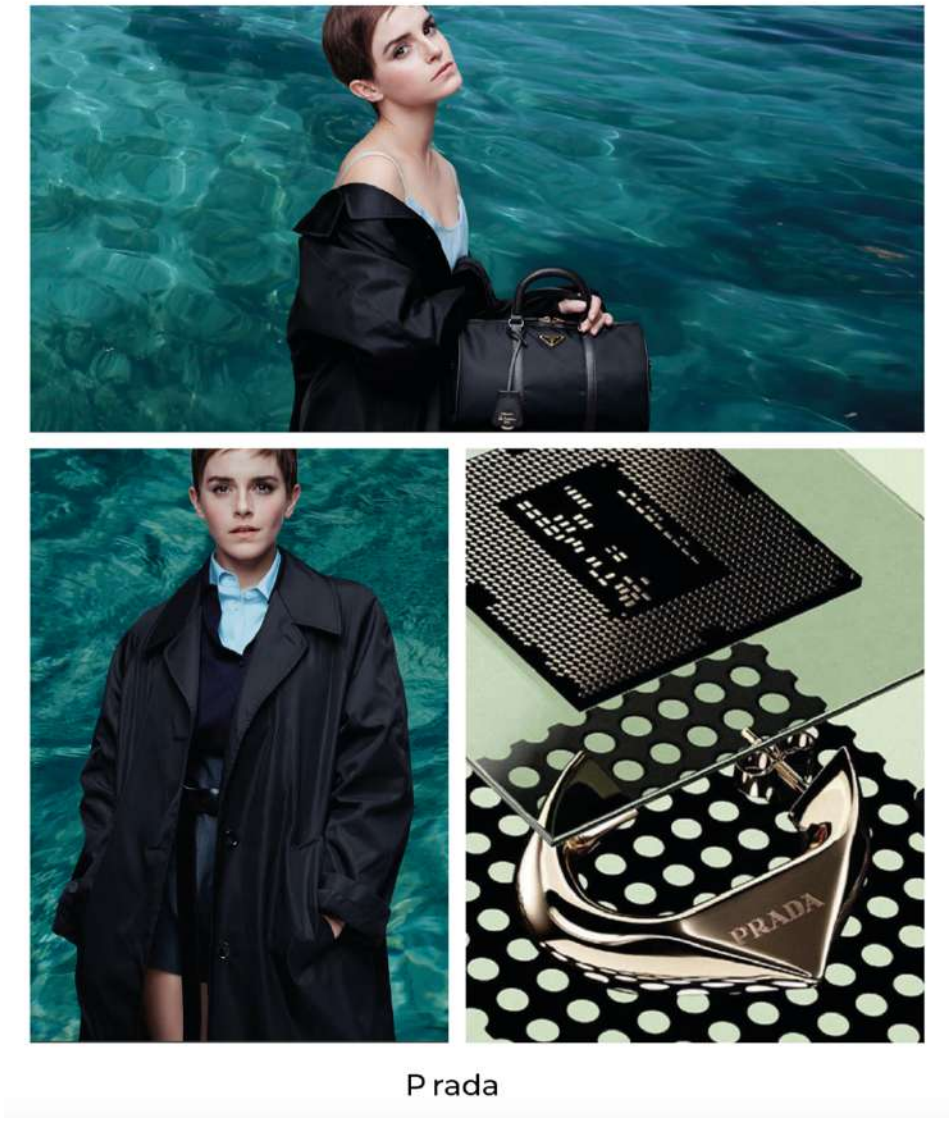


Figure 19. Prada Projects (Prada, 2023)

2.2.6.4. Bottega Veneta

The last brand to be analysed will be Bottega Veneta, which is under the creative hand of Tomas Maier, this brand decided under the creative hand of Daniel Lee to delete all its networks “No more Twitter updates, no more Instagram photos and no more Facebook posts from the Italian luxury brand” (Yokta, 2021)

Italian luxury fashion brand founded in 1966 in Vicenza by Michele Taddei and Renzo Zengiaro, was initially characterized by making products in leather (Figure 20), having its fabric “intrecciato” almost in most of its products. It is also characterized by having no logo and its brand slogan is “when your own initials are enough” which sends a message of simplicity and luxury.

Figure 20. Bottega Veneta Projects (Bottega Veneta, 2024)

As for the sustainability of the brand, it is built between two fundamental pillars, on the one hand, ethics and on the other hand, innovation. On its website it sets out the objectives it has as a fashion brand, among them are:

- Minimize carbon emissions

- Adopt a culture of sustainability

- Preserve our legacy of innovation and craftsmanship

The brand also makes a list of the materials it uses, on the one hand it states that all its leathers are 100% traceable and that 90% of its waste is recycled, they use organic cotton, as for plastic, they do not use PVC and 17% of plastic is organic or biodegradable, finally as for the paper and packaging in its entirety is certified or recycled.

As for the social part, this brand focuses on the value of artisans because they know that their products depend on labour and that from here, they also get a high-quality product that has a long life.

2.2.7. Haute couture and craftsmanship:

Craftsmanship has an important role in this graduation project, that is why in this section it will describe brands that are framed in a high-end production and at the same time craftsmanship is a fundamental pillar for them, in order to know about the way in which they fit the labor in their products and the value they give to it.

2.2.7.1. Pé de Chumbo

To begin describing the Portuguese brand, Pé de chumbo, it was found in its official site information about this clothing firm, its beginning in 1995 by the Portuguese designer Alexandra Oliveira, focuses on women's clothing and the main feature for which it is recognized is the experimentation in their fabrics and the use of innovative techniques in terms of mixing different fabrics and yarns in the craft process.

Pé de Chumbo takes yarn as inspiration, her creative process always involves trial and error experimentation with yarns, which then leads to the production of the fabric, after which the designer focuses on whether the chosen yarn and the fabric are consistent or if it needs to be adjusted. It should also be noted that the brand describes that the yarns used in the experimentation and production of their pieces come from factories in Guimarães, where the designer is from.

As it can be seen (Figure 21) this brand not only focuses on the manual work in the production of its fabrics, but also the production of the same general a circular economy and makes the brand sustainable.

In the image it can be seen fabrics that have been created by the brand where the yarn is the protagonist of the design, and also gives shape to the silhouette, the designer describes on her website that "Each fabric is created with an almost handmade quality that is truly unique and exclusive to the brand". (Pé de Chumbo, 2024)

Figure 21. Pé de chumbo desings (Pe de Chumbo, 2024)

2.2.7.2 Chanel

The brand that is known worldwide for the details in their pieces and fabrics in their garments, Chanel, the French brand that revolutionized women's fashion and today remains a symbol of elegance and simplicity.

Chanel during its history has been recognized by the tweed, which came to this house through his jacket trimmed in 1956 when Gabrielle Chanel sought to give women freedom, movement and fluidity, which is why this Scottish fabric, resistant and versatile at the same time worked for the objectives that Chanel had, As for the designs, the most classic tweed for the house, the “houndstooth” and various tartans, which later evolved with the combination of various materials, ribbons and yarns with sequins or bright as required by the design.

So, over the years the world, its customers and users have been able to appreciate how the fashion house evolves its fabrics, embroidery and various techniques to show us designs that become art, embodied luxury and elegance. Chanel outsources several processes for the realization of their costumes, Parisian workshops such as Lemarié, Maison Michel, Lesage, Atelier Montex, Goosens and Ateliers are responsible for the preparation for the fashion house, through its website they make known these ateliers and how they elaborate where nothing is impossible for the hands of those who make each piece.

Figure 22. Fabrics and clothing of the Chanel brand. (Channel,2015)

They also describe that each of their pieces can require between 200 hours of work, while a dress can reach up to 600 hours of elaboration, and the highest time reaches 1000 hours when they are in the elaboration of a wedding dress. It is described that "The two workshops of the House have 50 'petite mains' dedicated mainly to tweeds, wool and leather and another 50 who work in tulle, organza, muslin, crêpes, lace and other delicate fabrics; spread over two departments 'flou' (soft cutting and sewing)" (Chanel,2015).

All these features generate that Chanel products are positioned as one of the most expensive brands and that each of the products are practically unique, its tweed is made on handmade looms with wool yarns or embroidered pattern is created as the autumn-winter fashion show in 2015/2016 under the direction of Lagerlfeld. While the house of Chanel does not fit as a brand that produces few pieces or that has a retail production of clothing, it does fit as a brand where high fashion and craftsmanship come together.

2.2.7.3. Bottega Veneta

Previously described about Bottega Veneta and the way in which it works with sustainability, but now will continue to describe also the way in which its products are also made in an artisanal way, its current designer Blazy, describes that the soul of the brand focuses on craftsmanship and culture, in an interview with Vogue is described

> "These are garments that, at first, don't match what you consider flattering," says Anne Collier. "But then, they are, and very much so." On our tour, Blazy picks a bag off the rack. "You can appreciate the master craftsmanship with which it's made," she notes. "It has no seams." [...] They are all hand-woven, which means that no two are alike. "That's what luxury is all about" (Heller, 2022)

The way products are made at "Bottega Veneta" is closely linked to pattern making and craftsmanship. It can be taken for granted that their goal is to specialize in the manufacturing of each of their products, to give quality and a life cycle to the products that are marketed. This is what it can be understood when its CEO describes "He asked a colleague in the audience to lift the brand's hand-woven Kalimero bag, a bucket style that requires about 55 meters of calfskin and is created without any stitching." Rongone noted that the artisan simply changes the pressure of the weaving process to make the curved portions. Consequently, "no two bags are identical," (Socha, 2022)

The way Bottega presents itself is very artisanal, it takes it to luxury and sells besides design a luxury, exclusivity in materials and quality, this is determined by its craftsmen and that basically each bag is unique in the world.

2.3 Definition of limits

2.3.1 Market limits

As for the limits of the market, moving on to analyse how the market is with respect to other brands, that is, what are the prices of similar products.

On the one hand, Pe de chumbo, the Portuguese brand that has been analysed above, this brand on its page sells jackets in a value of 450 to 550 euros, it cannot be forgotten that this brand also makes its fabrics with different techniques and that it cares about the sustainability of its processes. On the other hand, Stella Mc Cartney jackets range in price from 1400 euros to 1600 euros. Also, other brands, such as Gucci, Botega Venetta or Chanel in their ready to wear exceed prices up to 2000 to 3000 euros at least, remembering also that these brands are considered luxury and although our product does not consider for now to reach these prices, it is described to get an idea of the prices of the luxury market.

This leads to conclude, first, that estimating an average price of the product, the price will be calculated from the production time and materials; giving an approximate of 600 euros, knowing that the technique produces a unique specimen in terms of fabric, that its process is environmentally friendly and is a garment that lasts over time.

2.3.2 Technological limits

As for the technological limits, speaking about the materials that can be used for this type of project, as one of the objectives is to maintain sustainability, but also to make it marketable to the public, although our niche corresponds to millennial women who are developing in a working environment and this will condition the design. In the prototype it is possible to find natural, artificial, recycled and "dead-stock" yarns.

Based on this, it is also defined that for this type of project, the spring-summer pieces would use finer yarns, preferably with cellulosic fibres, natural fibres such as cotton, linen, silk or artificial fibres such as lyocell and modal, while maintaining the use of fantasy yarns. In addition, it is recommended that it would be beneficial to combine other textiles (such as garments) in the garment to reduce the time and cost of materials, with the hand-woven part having an added value, as it provides creativity and exclusivity in the way it is constructed. On the other hand, in the case of autumn-winter garments, it is possible to combine with other fabrics such as interlock knit in 100% merino wool.

2.4 Creativity

2.4.1 Concept

For the concept of this graduation project, peace was chosen as a key word, in a world where things come and go much faster, serenity in a busy day in the city, a digitalised world with constant information always coming in, updates about updates, trips, search for dreams and goals, courses, pandemics, illnesses, hot days or days when the cold envelops us; sounds and lights, situations in which one always be immersed, worries about duties and responsibilities of the world in which everyone's lives, weights that people carry on their daily lives, this concept is born as a response to all these words, which wants to express a contrast to this agitation of work or simply of daily life, to express a calm, peace and serenity.

For many people peace can mean several things, but this word comes from the Latin word pax, which means, agreement or pact, then it immediately goes to a state of stillness between two parties that brings security and calm. For me as a designer peace is represented in the wind, in the bible is written about the wind, describing those who are born of the spirit and do not know where they come from and where they are going, this for any reader can generate uncertainty, but also in Philippians 4 is written that the peace of God surpasses any understanding, what is sought to say personally is that the wind reminds me the way but at the same time peace, calm, tranquillity, freshness, even more when it is a breeze that is associated with the beach since it represents in a general way, the moment of rest.

The collection is aimed at women corresponding to the Millennials and generation Z, which are developing in a work environment or are starting in a work environment; in some cases, as freelancer; through the jacket it is meant to give a different alternative, fresh, and that transmits calm, serenity and confidence, the jackets will have classic cuts so that they can be coupled to the time. These generations were also chosen because they are generations that are linked to social networks, where it is considered to be a sales channel, on the other hand millennials like emerging brands that give them differentiation, while centennials by the way they are related to technology are prone to purchases and even more if the product generates long-term attachment.

2.4.1.1 Collection Inspiration Panel

The collection panel is the visual reference, images of the beach refer to the calm and tranquillity, almost like solitude, on the other hand the waves refer to the wind and freshness and also recalling the sound of the waves, also refers to various types of fabrics in order to find one that refers to the beach, this leads to the central image, the bags loaded with material and fabric that simulate the nets. The image (Figure 23) in the upper corner refers to the order, like a fabric and the lines that each shell resembles yarns, the image in the lower part reminds us of the public to whom the collection is addressed to.

Figure 23. Collection Inspiration Panel. Own Authorship

2.4.2. Colour Palette

The colour palette will be born from the panel of the collection, the colour that will be used will be the colour that one instantly thinks of when talking about peace, white, not only as a way of seeing it as clean and pure, but simply as a state of stillness and calm, on the other hand having chosen shades of blue that connect directly with water and air.

The colors that will be used are ivory white, light blue, light grey blue, grey blue, air force, cyan blue. On the one hand having the primary color, which will be Ivory White, this colour can express various sensations and associations, firstly this colour is timeless, meaning that any garment of this colour is versatile and lasts several seasons, it is also a very versatile colour to combine with various garments. Just as white is a colour that expresses purity, ivory white has the same meaning but adds warmth to it, giving it a cosier touch. This colour also reminds us of sand and shells on the beach as an association to relaxation.

On the other hand, 'Light Blue' is a colour that expresses tranquillity and is associated with the sky or crystal-clear water which expresses a calm, serene mind, it can also be associated with a sense of freshness like water or spirituality and honesty thanks to the association with the sky.

Then the colour 'Light Gray Blue' this colour is associated with neutrality, thanks to its greyish tone; sophistication, minimalism and elegance are also sensations that this colour conveys and can be considered a colour for people who are looking for a calmer look and who are looking for a more combinable and versatile wardrobe.

This colour is followed by ‘Gray Blue’ which expresses a balance and warm neutrality, despite its base in cold colours (such as blue) it can express a sense of calmness and comfort which makes this colour a welcoming shade.

A colour that will also be in this range of colours will be ‘Air force’ as its name says, it is associated with strength, as it is connected with military institutions, making the colour express security, authority and determination.

The last colour is ‘Dark Gray Blue’ which is the darkest shade in the palette, it is associated with elegance and depth, as well as the night and is connected to the idea of tranquility and reflection.

2.4.2.1 Collection Colour Panel

The union of these colours together generate a feeling of calm and emotional tranquillity, as it is known that blue is associated with peace of mind, the addition of a colour such as ‘Air Force’ gives a touch of authority and security while ‘white Ivory’ gives a sense of clarity and peace. All these colours (Figure 24) seek to generate this sensation when it comes to the chromatic that the product may have, a sensation that can be felt on the beach, with the sea breeze or when thinking about it.

Figure 24. Collection Colour Panel. Own Authorship

2.4.3 Materials

The materials chosen for this collection are divided into fibres and yarns, fabrics and interlinings. On the one hand have the fibres and yarns of the fabric create, among them are fibres such as polyester, polyamide, acrylic, cotton and wool from dead stock yarns, thus having a sustainable and circular character. In addition, as it has benn reviewed above, the sustainability intended to provide will be the way of construction of the fabric, reducing the scraps that can be produced in the construction process. As fabrics findings wool, which as already written, is durable, biodegradable, has antibacterial properties and reduces the carbon footprint. Last but not least it can be mentioned interlinings, among them are interlinings and interlining tapes which help to give a better quality to the garment. (Figure 25)

2.4.3.1. Collection panel of materials

The following is the materials panel, which will guide you in choosing colours and materials, which are described above.

Figure 25. Collection panel of material. Own Authorship

2.4.3.2. Fibres and Yarns

Next, witting about the yarns that will be use for the construction of the fabric, although there are no specific characteristics, later on being able to find in the technical data sheet the characteristics of each one of the yarns and also of the constructed fabric. Table 3

Table 3. Fibres and Yarns. Own Authorship

Fibres and Yarns	
Images	**Description:**
	**Designation:** White fancy yarn
	Code: H001
	**Designation:** Blanco brillante
	Code: H002
	**Designation:** Blanco liso
	Code: H003
	**Designation:** Hilo de fantasia Azul
	Code: H004
	**Designation:** Hilo de fantasia Negro
	Code: H005
	**Designation:** Hilo Azul Noche
	Code: H006
	**Designation:** Wool Light Blue
	Code: H007
	**Designation: W**ool Gray Blue
	Code: H008

2.4.3.3. Aviaments

A fundamental part of this project is also found in the aviaments that will be used, it is considered to be the part that provides quality to the garment, being the following. (Table 4)

Table 4. Description of Aviaments. Own Authorship

Aviaments		
Images	**Description**	
	**Designation:**	**Material:** Spun Polyester
	Code: AV001	**Color:** Ligth Blue
	Price: 3,40 €	**Supplier:** Linhas Sotrio
	Descrption: 40/ 2 emp. code 175	
	**Designation:**	**Material:** Spun Polyester
	Code: AV002	**Color:** Cyan Blue
	Price:3,40 €	**Supplier:** Alpha Liconfe
	Descrption: 3/120 emp. code 735	
	**Designation:**	**Material:** Spun Polyester
	Code: AV003	**Color:** Beige
	Price:3,40 euros €	**Supplier:** Alpha Liconfe
	Descrption: 2/120 emp.code 805	
	**Designation:** Folding tape	**Material:** Polyester
	Code: AV004	**Color:** Black
	Price: 3,00 €	**Supplier:** UBI
	Descrption:1cm wide	
	**Designation:** Folding tape	**Material:** Polyester
	Code: Av005	**Color:**White
	Price: 1,27 €	**Supplier:** UBI
	Descrption: 3 cm wide	
	**Designation:** Button	**Material:** Polyester
	Code: Av006	**Color:**White
	Price: 0,55 euros €	**Supplier:** Amazon
	Descrption: ¾ inches	
	**Designation:** Invisible hook	**Material:** Polyester
	Code: Av007	**Color:** Gray
	Price: 0,30 €	**Supplier:**Amazon
	Descrption:	

2.4.3.4 Fabrics

Once the aviaments have been described, proceeding to describe the materials that will be used, it is important to emphasize that although the materials may not have the characteristics required in the theory, it is a way to represent the project in a first instance, the prototype. (Table 5)

Table 5. Description of fabrics. Own Authorship

Fabrics		
Images	**Description**	
	**Designation:** Wool Ivory	**Material:** Wool
	Code: FA001	**Color:** Ivore White
	Price: 36. 00 €	**Supplier:** UBI
	Description: 1.60 mt width	**Weight:** 490 gr/m2
	**Designation:** blue cyan lining	**Material:** Polyester
	Code: FA001	**Color:** Cyan Blue
	Price: 9.00 €	**Supplier:** UBI
	Description: 1.50 mt width	**Weight:** 70gr/m2

2.4.4. Product Structural Characteristics

After a description of the materials used for this project, going on to expose the characteristics of the product, which will be divided in the fabric and then in the jacket that had been set as an objective to realize.

2.4.4.1 Fabric

The fabric that it is intend to make, is in the tweed group, since tweed is a fabric that is characterized by being formal, classic and is mainly used for jackets and skirts, it is also a resistant fabric, which allows to play with colours, shapes and materials. As a base fabric, having the taffeta, for two main reasons, the first is that from this base fabric can derive the Naté weave (Figure 26), which has the same principle but differs since both in the warp and in the weft at the time of interlacing there are more than a single yarn, this allows the fabric to remain strong and stable.

The second reason for the use of this weave is that it will allow us to see more clearly that the yarns of both the weft and the warp are well interlaced because as the fabric is constructed it is possible to distinguish the forms that are born and in case of some error it will be possible able to correct it, besides the yarns that will used for the fabric will be fantasy yarns, with different textures and thicknesses, which will direct even more the aesthetics of the tweed.

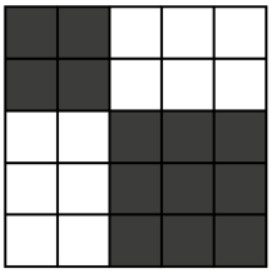


Figure 26. Naté weave. Own Authorship

2.4.4.2 Jacket

As one of the objectives for this project, a classic jacket was designed to be able to apply the fabric created, so after studying the concept and having as a goal a product that can last aesthetically over time, being defined as a Chanel style jacket, this classic garment is iconic for the history of fashion, although by observing a Chanel jacket it can be define that its cut is straight, without shoulder pads, with metal buttons, ¾ sleeves, silk lining and 4 pockets in the front. Although not using all these features, it is based in mind this model for the design to be made.

2.4.5 Experimental Creative Sketches

2.4.5.1 Fabric

The following is a description of the way in which the experimental sketches were made. As a first step, sketches were developed on some samples that were projected from the concept and the

colour palette (Figure 24). The shapes that were drawn tried to express textures of the beach such as the lines of the shells, the white that represents the sand or as can be seen in some of the designs, some wavy shapes that express the wind or the waves of the sea.

Although these sketches presented (figure 27) do not correspond to the structural characteristics of the product that were described previously; plain weave; in the beginning were made sketches that later would be discarded taking into account the samples that have better finishes and that are clearer at the time of their construction.

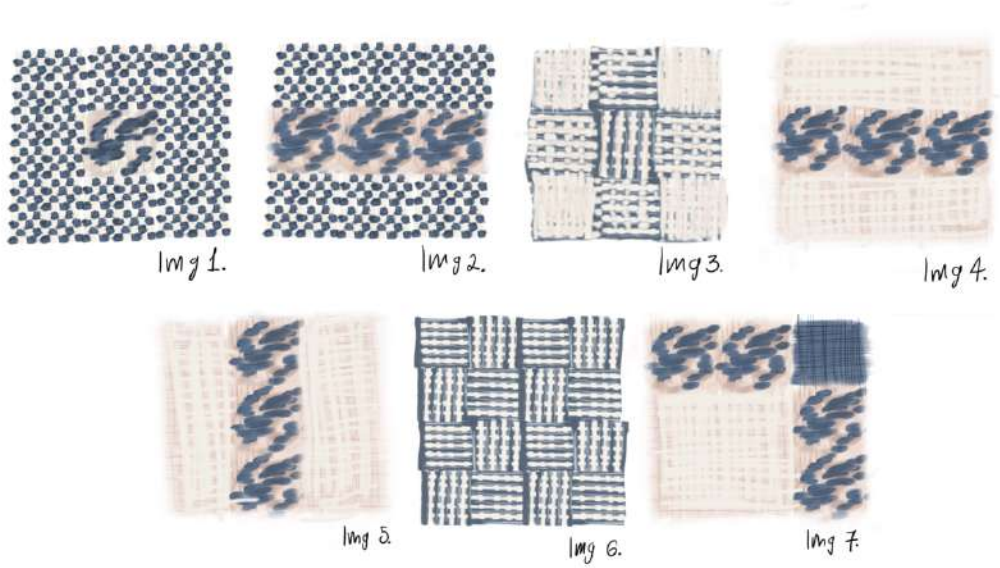


Figure 27. Fabric Desings Sketching. Own Authorship

Once the sketches were made, it was proceeded to the construction of a small loom, in which one could make these samples and experiment on it, as it can be seen in Figure 28, the loom has a size of 10cm x 10cm and the nails have a distance of half a centimetre of separation from the loom and between them. It should also be clarified that two looms were made, a simple loom; with a single row of nails on the sides; and a double loom, as it has been called, in order to experiment with the number of yarns both in the weft and in the warp.

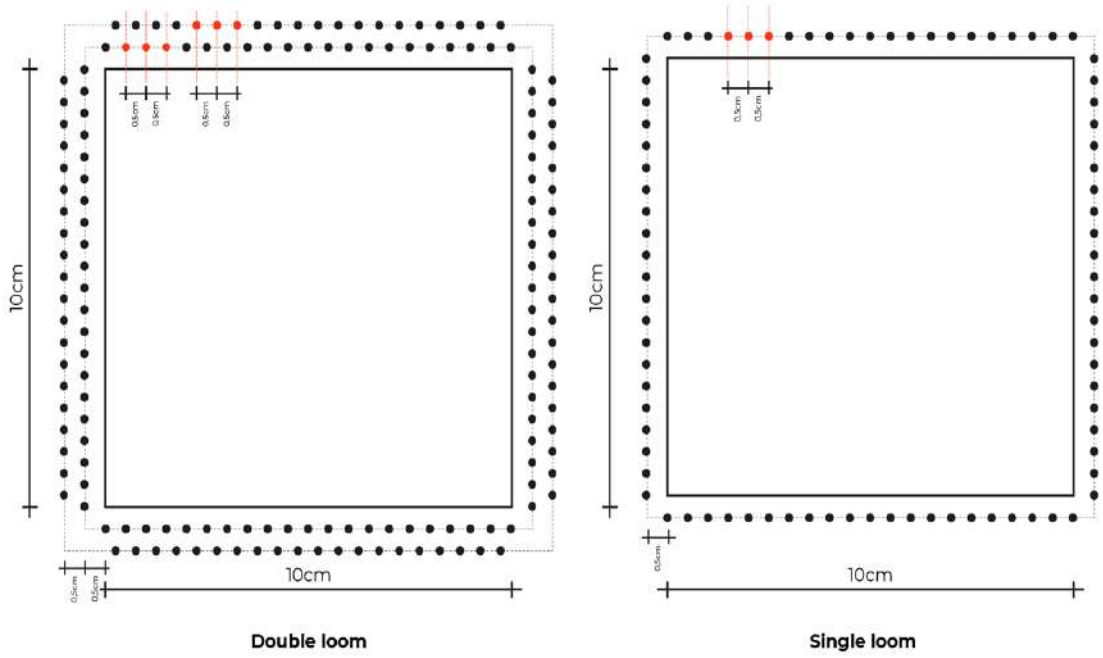


Figure 28. Loom construction graphic. Own Authorship.

As it can be seen in figure 29 each one of the looms constructed allows us to have more yarn counts and therefore, it will have different results and different options at the moment of constructing the loom.

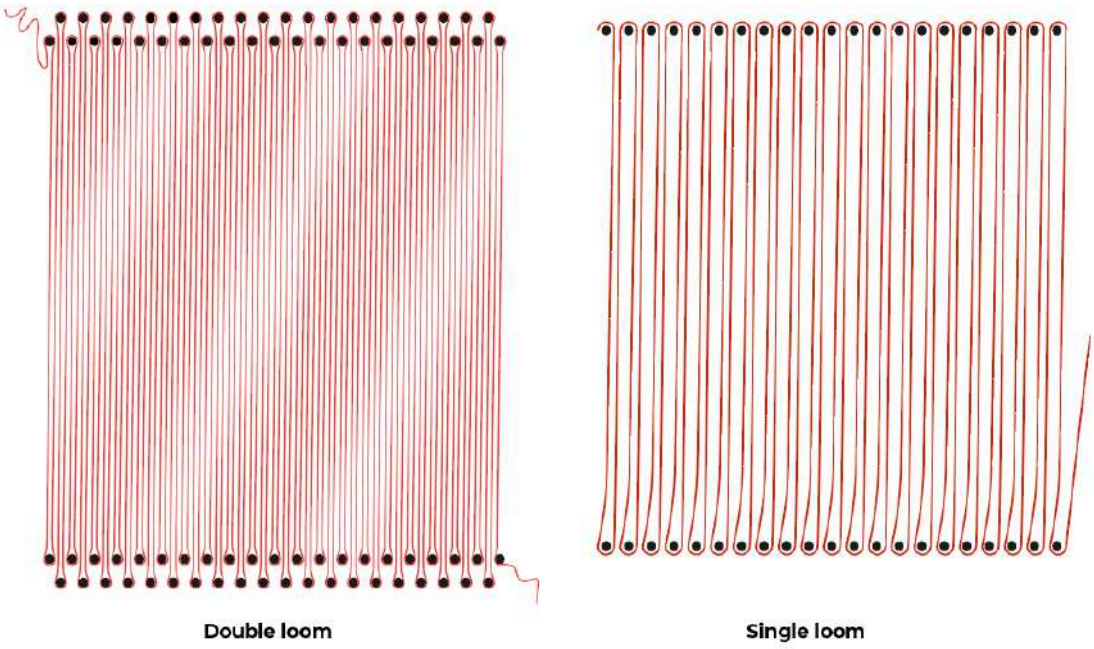


Figure 29. Interlacing of yarns. Own Authorship

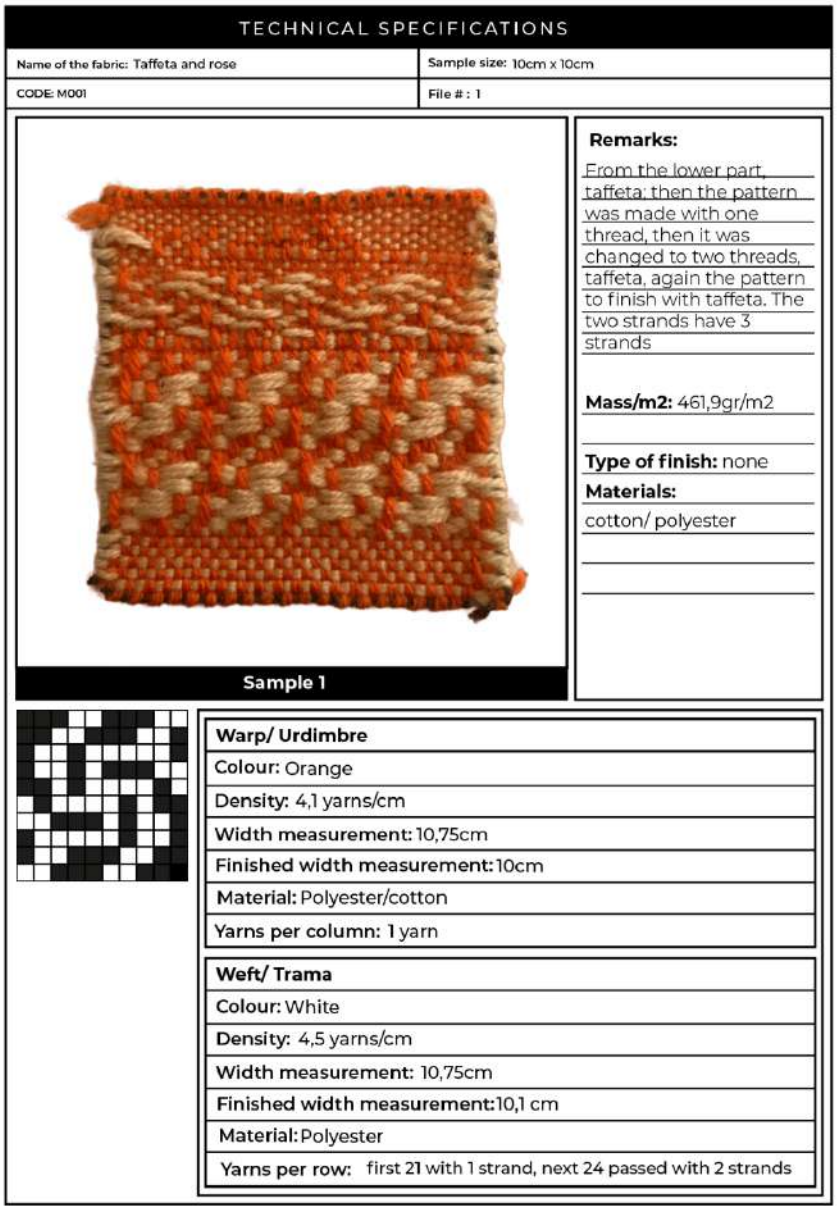
From what has been explained above, follows now the description of the samples that were made:

- Taffeta and Rose:

As a first experience it was started with weaving a taffeta, and then tried to make organic shapes in order to observe what happened with the weaving. The same shapes were also made, both taffeta and curves, but this time passing two yarns in the weft and a thicker shape was obtained, as it can be seen in the lower part of the table 6.

The colours used in this sample do not correspond to the palette, yarns of another colour were used because these samples were the first experiences.

Table 6. Sample data sheet 1. Own Authorship



TECHNICAL SPECIFICATIONS

Name of the fabric: Taffeta and rose	Sample size: 10cm x 10cm
CODE: M001	File # : 1

Sample 1

Remarks:

From the lower part, taffeta; then the pattern was made with one thread, then it was changed to two threads, taffeta, again the pattern to finish with taffeta. The two strands have 3 strands

Mass/m2: 461,9gr/m2

Type of finish: none

Materials:

cotton/ polyester

Warp/ Urdimbre
Colour: Orange
Density: 4,1 yarns/cm
Width measurement: 10,75cm
Finished width measurement: 10cm
Material: Polyester/cotton
Yarns per column: 1 yarn

Weft/ Trama
Colour: White
Density: 4,5 yarns/cm
Width measurement: 10,75cm
Finished width measurement: 10,1 cm
Material: Polyester
Yarns per row: first 21 with 1 strand, next 24 passed with 2 strands

- Taffeta and rose 2:

As a second test it was made a combination inspired by the sketches of figure 27, in image 7, with the objective of knowing how it would look finished and trying to form the organic textures that were clearer in the upper part of the first sample table 7.

Table 7. Sample data sheet 2. Own Authorship

TECHNICAL SPECIFICATIONS

Name of the fabric: Taffeta and rose 2	**Sample size:** 10cm x 10cm
CODE: M002	File # : 2

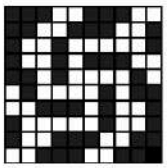
Sample 2

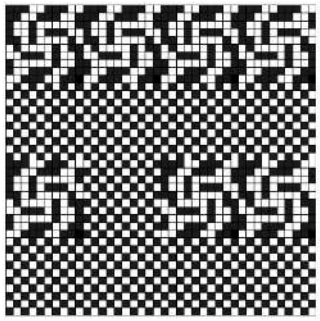
Remarks:
Starting from the bottom, with 10 rows of taffeta, and then making the shape with orange yarn (dons yarns) and at the crossing of orange with orange taffeta.

Then the taffeta was made again 10 rows with white and repeated with orange as before, only now with one thread.

Mass/m2: 49,04gr/m2

Type of finish: iron
Materials:
cotton/ polyester





Warp/ Urdimbre
Colour: Orange and white
Density: 4,1 yarns/cm
Width measurement:10,75cm
Finished width measurement: 10 cm
Material: Polyester
Yarns per column:1 yarn

Weft/ Trama
Colour:Orange and white
Density:4,2 yarns/cm
Width measurement: 10,75cm
Finished width measurement: 10,3cm
Material: Polyester
Yarns per row: 2 yarns

- Taffeta and rose 3:

For the third sample (Table 8) it was meant to leave the shape of a flower, in the contrasting colour, for this sample the process was different, first it was made a taffeta mesh on the double loom using only the internal frame of the smaller nails, then on that base it was used the orange yarn to form the rose and finally reweave taffeta on the base it had to avoid leaving holes in the fabric. Although this process achieved a lighter weave, the process became a little more complicated at the moment of weaving the last taffeta over the base.

Table 8. Sample data sheet 3. Own Authorship

TECHNICAL SPECIFICATIONS

Name of the fabric: Taffeta and rose 3	Sample size: 10cm x 10cm
CODE: M003	File # : 3

Remarks:
For this process, taffeta was made both in weft and warp with white thread, then the shape was woven with orange thread, with a single thread, and in the weft half was made with a single thread and the other half with two threads.

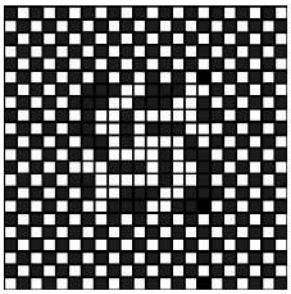
As a last step, a taffeta was woven again on the white taffeta in order to cover the orange thread..

Mass/m2: 35,45gr/m2

Type of finish: none

Materials:
cotton/ polyester

Sample 3



Warp/ Urdimbre
Colour: Orange and white
Density: 4,7 yarns/cm
Width measurement: 10,75cm
Finished width measurement: 10,3cm
Material: Polyester
Yarns per column: 2 yarns

Weft/ Trama
Colour: Orange and white
Density: 2 yarns/cm
Width measurement: 10,75cm
Finished width measurement: 10,3cm
Material: Polyester
Yarns per row: 1 yarns

- Taffeta and rose 4

In the following sample it was intended to make a mix between images 4, 5 and 7 of figure 27. In the sample visually, (Table 9) the organic shapes in the vertical and horizontal parts of the edges of the sample could not be expressed. In addition, the yarns in the centre of the sample turned out to be tight, generating a coarser sample.

Table 9. Sample data sheet 4. Own Authorship

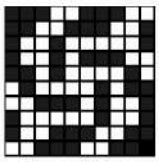
TECHNICAL SPECIFICATIONS

Name of the fabric: Taffeta and rose 4	Sample size:10cm x 10cm
CODE: M004$v	File # : 4

Remarks:
For this sample, from the lower part the form was made with blue yarn and once finished it was changed to white yarn making the form only in the blue warp crossing; in the white warp crossing taffeta was made. Then the sample was made one more time and finished with one more form in blue yarn.

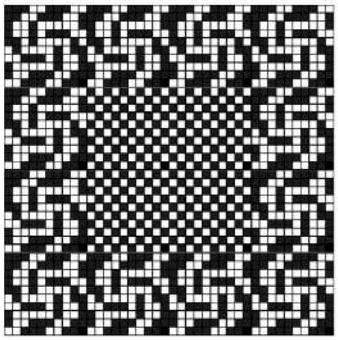
~~It should be noted that in the lower part of the form 2 groups of blue yarns were used, each group having 3 yarns, and in the upper part with only one group of blue yarns.~~

Sample 4



Mass/m2: 73,15 gr/m2

Type of finish: none
Materials:
cotton, polyester and wool



Warp/ Urdimbre
Colour: Blue and white
Density: 4,1 yarns/cm
Width measurement: 10,75cm
Finished width measurement: 10cm
Material: cotton, polyester and wool
Yarn per column: 3 yarns

Weft/ Trama
Colour: Blue and white
Density: 4,1 yarns/cm
Width measurement: 10,75cm
Finished width measurement: 10cm
Material: cotton, polyester and wool

Yarns per row: from the bottom, two yarns were used in the first 30 rows, then 1 yarn was used, one yarns corresponds to the union of 3 rows

- Simple mosaic

After the fourth sample, it was looked for a sample where it could use the double frame loom, with the two rows of nails and where could be obtain a weave where its forms can be perceived. The white yarns of the warp and in the weft with the blue yarns were forming the rhombuses, although the forms were obtained, the fabric was too thick for the application in a case, and the forms did not go according to the conceptual design that was proposed.(Table 10)

Table 10. Sample data sheet 5. Own Authorship.

TECHNICAL SPECIFICATIONS

Name of the fabric: Simple mosaic	**Sample size:** 10cm x 10cm
CODE: M005	**File # :** 5

Sample 5

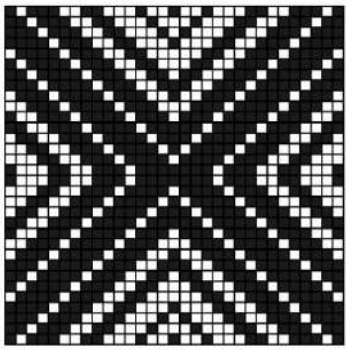
Remarks:

For this sample the warp was made with two groups of threads, each group having 3 yarns and then the shape was made with the blue yarn (3 yarns).

Mass/m2: 80,53gr/m2

Type of finish: none

Materials: cotton, polyester and wool



Warp/ Urdimbre
Colour: White
Density: 4 yarns/cm
Width measurement: 10,75cm
Finished width measurement: 9,5 cm
Material: cotton, polyester and wool
Yarns per column: 3 yarns

Weft/ Trama
Colour: Blue
Density: 4,8 yarns/cm
Width measurement: 10,75cm
Finished width measurement: 9,8 cm
Material: cotton, polyester and wool
Yarns per row: 3 yarns

- Cross weaving

The last sample was woven using the principle of the previous sample, but this time trying to leave space between each of its stripes to form a cross and on a larger scale large cross-square. The sample has a very good feel and thickness as a fabric. Below is the (Table 11)

Table 11. Sample data sheet 6. Own Authorship.

TECHNICAL SPECIFICATIONS

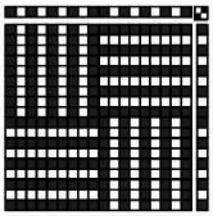
Name of the fabric: Simple basket weaving	**Sample size:** 10cm x 10cm
CODE: M007	File # : 6

Remarks:
For the last sample the warp was made with the two types of threads, leaving a blue stripe in the middle and in the weft the same process was carried out, weaving in the form of taffeta, trying to form the weave of sample number 6 but creating a cross with the blue stripes that we have warped at the beginning.

Mass/m2: 539,3 gr/cm2

Type of finish: none
Materials:
wool-cotton-acrilyc-polyester- polyamid

Sample 6



Warp/ Urdimbre
Colour: Blue and white
Density: 3,4 yarns/cm
Width measurement: 10,75cm
Finished width measurement: 10cm
Material: wool-cotton-acrilyc-polyester- polyamid
Yarns per column: white 2 yarns, blue 3 yarns

Weft/ Trama
Colour: Blue and white
Density: 5,2 yarns/cm
Width measurement: 10,75cm
Finished width measurement: 10cm
Material: wool-cotton-acrilyc-polyester- polyamid
Yarns per row: white 2 yarns, blue 3 yarns

2.4.5.2 Jacket

Once the samples were made, sketches were drawn for the design of the jacket (Figure 30), always taking into account the textures that it was obtained in the samples and that the cuts can express classic garments, most of the textures were concentrated in lines or squares since the contrasting use of ivory white with blue would help us to create smaller shapes in the fabrics, also the samples that were made with a positive result, are characterized by having horizontal or vertical lines. As for the collars, it was meant to leave simple collars or with circular aesthetics, also leaving bangs as a characteristic to express the deconstruction and a more relaxed style, simple or slit pockets to give functionality, the white and blues help to express a more relaxed work style, because what it is meant to express is relaxation.

Figure 30. Sketching collection jacket. Own Authorship

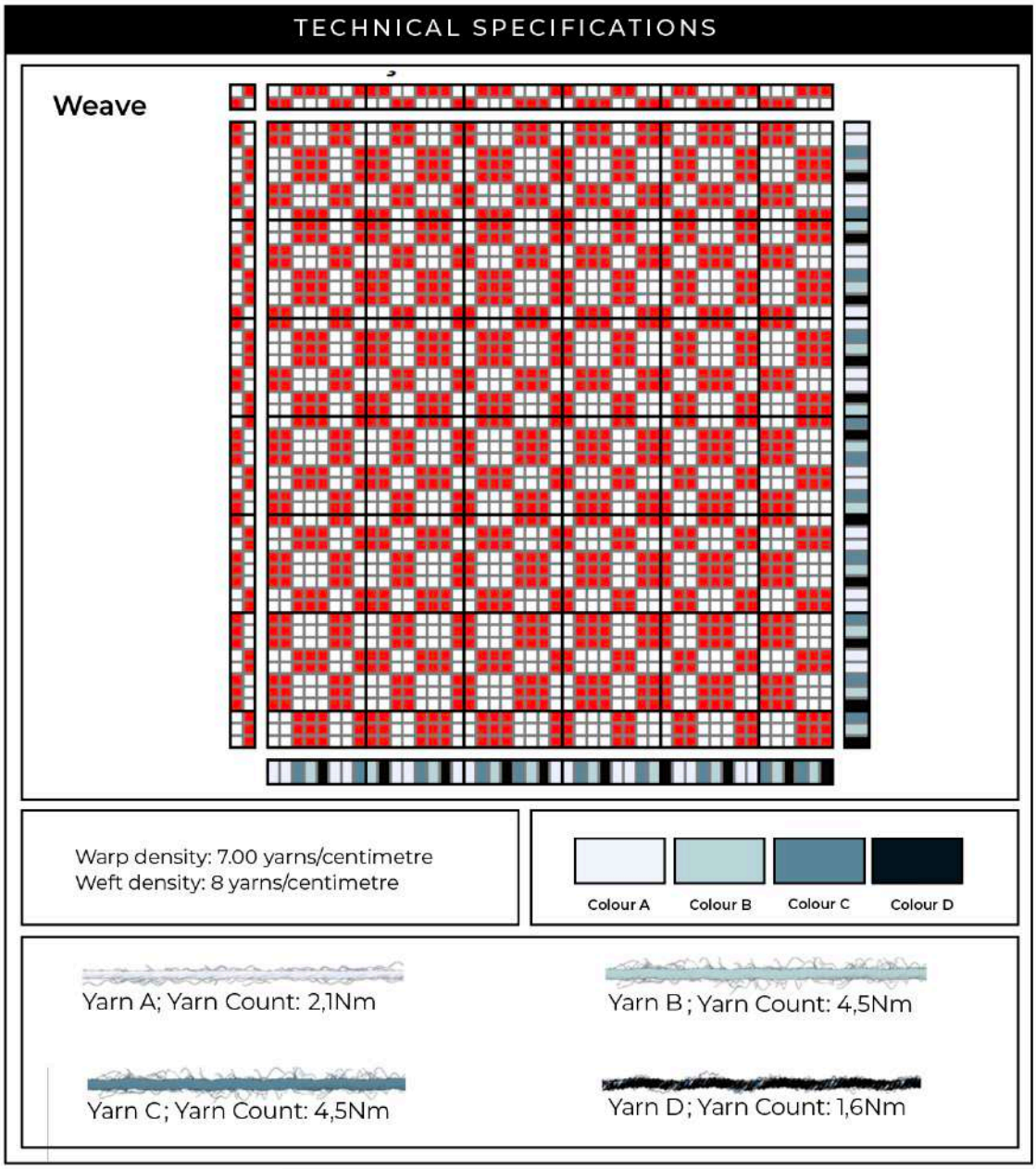
2.4.6 CAD System Simulations

2.4.6.1 Fabric

After the experiences carried out and the sketches that were made, it was possible to ponder which sample could be the most suitable for the jacket that is wanted to construct, the thickness of the fabric was taken into account, the form in which it constructs and that it can follow a pattern where it can be observed that the design has a rhythm and is clear, in addition it was taken into account the tecto and that the weaving does not remain tight, that is why the sample 6 was the chosen one to be able to be applied in the jacket.

From the choice of the sketch of image 6 in figure 27, a CAD simulation was carried out to be able to visualise colours and how the fabric would look on a real scale, as can be seen in Table 12 and Figure 31.

Table 12. Cad simulation data sheet. Own Authorship.



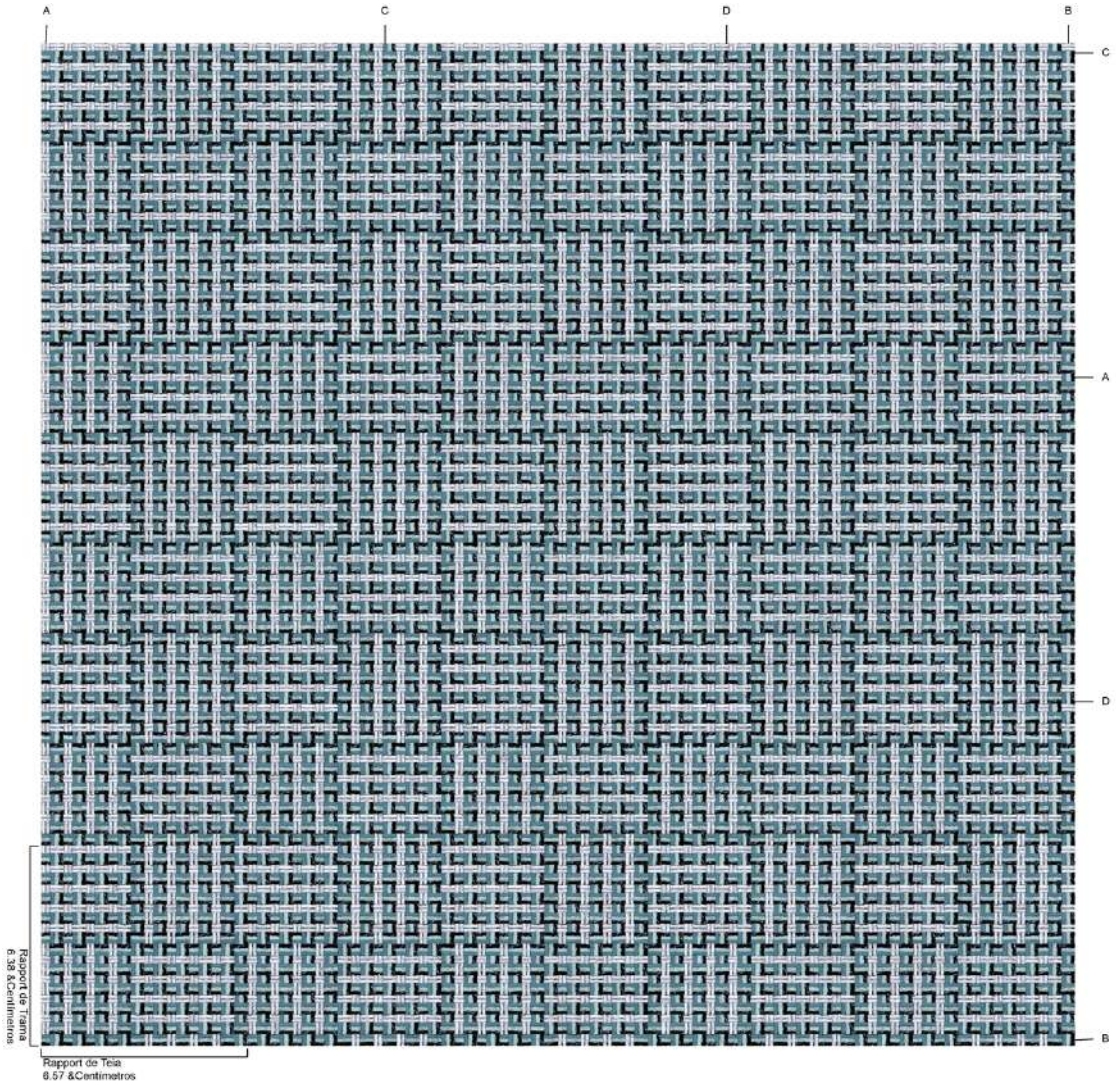


Figure 31. CAD fabric simulation. Own Authorship.

2.4.7 Final solutions

Once the simulation was complete, it was proceed to the construction of the technical data sheets for the fabrics and the jacket, which will be pressed in the future and used for the construction of the jacket at the time of manufacturing the prototypes. The following is a table of the fabric chosen, with its characteristics. (Table 13)

The following sample (Table 13) was created with the objective of reproducing the image 6 of figure 27. It is a nate weave, the weaving of which was carried out on a double loom in order to separate the colours in the warp between the white and the blue. This weaving adheres to the principles of the taffeta and the weaving has a thickness that is optimal for the jacket. Additionally, the yarns were not tight. The shape of the fabric can be distinguished, and the fabric itself projects the shapes and curves of the shells and other elements.

Table 13. Final fabric. Own Authorship.

TECHNICAL SPECIFICATIONS

Name of the fabric: Simple basket weaving	**Sample size:** 10cm x 10cm
CODE: M006	**File # :** 6

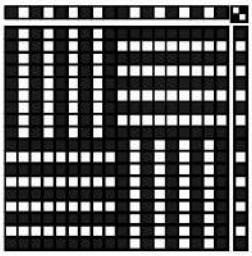
Remarks:
For this sample, the warp was made with white and blue yarn, interleaving them 8 times. At the ninth time, one more row of blue was made and then 8 times of repetitions were started.

For the weft, the weft is woven in taffeta and the interlacing is done in the same way as for the warp.

Mass/m2: 55,83gr/m2

Type of finish: none
Materials:
wool-cotton-acrilyc-polyester- polyamid

Sample 6



Warp/ Urdimbre
Colour: Blue and white
Density: 2,1 yarns/cm
Width measurement: 10,75cm
Finished width measurement: 10cm
Material: wool-cotton-acrilyc-polyester- polyamid
Yarns per column: 3 yarns

Weft/ Trama
Colour: Blue and white
Density: 3,6 yarns/cm
Width measurement: 10,75cm
Finished width measurement: 10cm
Material: wool-cotton-acrilyc-polyester- polyamid
Yarns per row: 3 yarns

Once the fabric had been selected, the case (Figure 32) was also chosen. This will be the fourth sketch of the figure XXX, which was previously shown. The sketch was redrawn in order to define details and visualise dimensions in a mannequin.

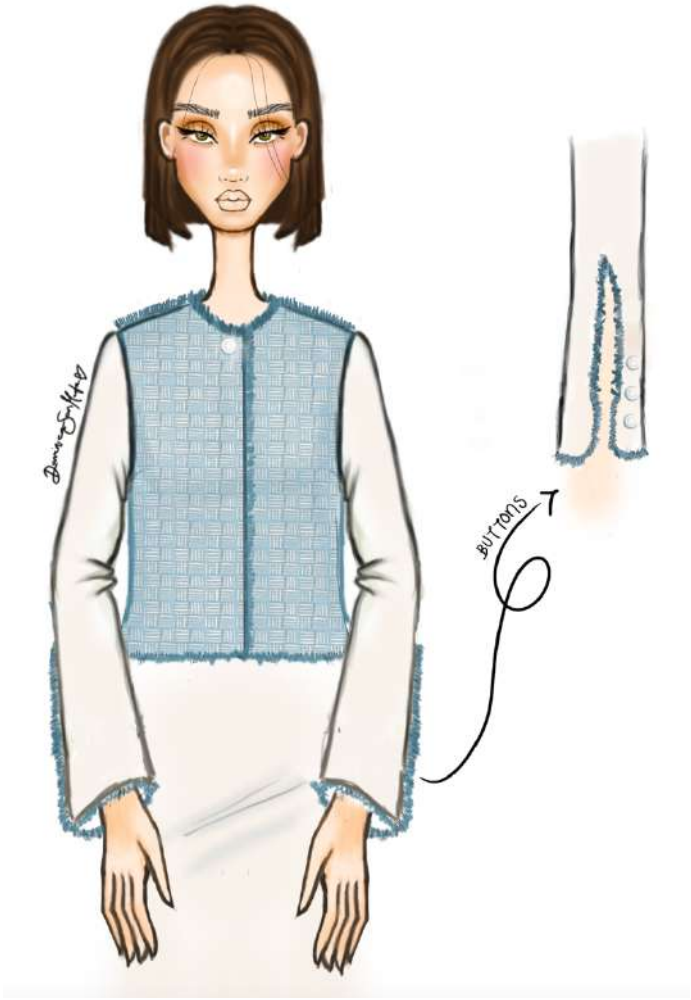


Figure 32. Final Desing. Own Authorship

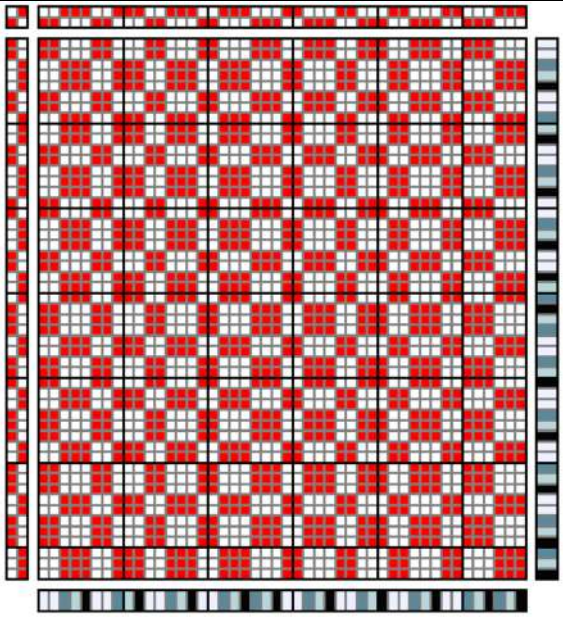
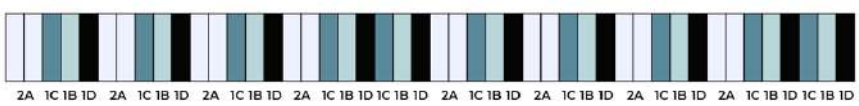
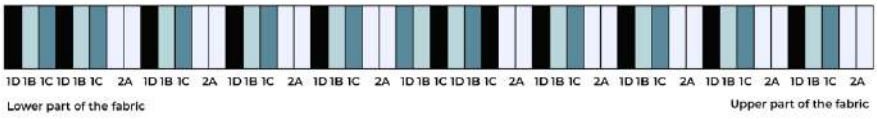
2.5 Technical data sheet

To facilitate the product development process, technical data sheets were created to provide guidance on the weaving and manufacturing procedures. The two data sheets will be presented in the following sections, beginning with the fabric data sheet and subsequently moving on to the jacket data sheet.

2.5.1 Fabric

The technical data sheet contains detailed information about the yarns, including their composition, double twist, density, and colour sequence in both the warp and weft. (Table 14)

Table 14. Final fabric technical data sheet. Own Authorship.

FABRIC DESIGNATION		FANCY NATÉ				
FABRIC REFERENCE		M006				
Fabric Composition	Fibre 1	Fibre 2	Fibre 3	Fibre 4	Fibre 5	
	Wool	Cotton	Polyamide	Acrylic	Polyester	
Weight/m²	558 g/m²					
Finishing type	Vapour					
Weave						
WARP and WEFT YARNS						
Yarn A Characteristics	Normal/Fantasy	Nᵉʳ plies	Yarn count	Double twist	Twist sense	
	Fantasy	3	2,1Nm	114 t/m	Z	
Yarn A Composition	Fibre 1	Fibre 2	Fibre 3	Fibre 4		
	Cotton	Acrylic	Polyamide	Polyester		
Yarn B Characteristics	Normal/Fantasy	Nᵉʳ plies	Yarn count	Double twist		
	Normal	3	4,5Nm	154 t/m	S	
Yarn B Composition	Fibre 1	Fibre 2				
	Acrylic	Wool				
Yarn C Characteristics	Normal/Fantasy	Nᵉʳ plies	Yarn count	Double twist		
	Normal	3	4,5Nm	154 t/m	S	
Yarn C Composition	Fibre 1	Fibre 2				
	Acrylic	Wool				
Yarn D Characteristics	Normal/Fantasy	Nᵉʳ plies	Yarn count	Double twist		
	Fantasy	3	1,6Nm	114 t/m	Z	
Yarn D Composition	Fibre 1	Fibre 2	Fibre 3			
	Wool	Cotton	Polyester			
WARP Yarn Density		7 Yarns/cm				
WEFT Yarn Density		8 Yarns/cm				
WARP Yarn Colour Sequence						
WEFT Yarn Colour Sequence	 Lower part of the fabric Upper part of the fabric					

2.5.2 Jacket

The technical data sheet of the jacket provides detailed information regarding the construction of the garment, including specifications for the front and back, distances between button and label applications, and measurements for the molds to be utilized. (Table 15, 16, 17, 18 y 19).

Table 15. Technical data sheet with materials. Own Authorship

MONDU						
	Article Name	Jacket	**Description**	Paz Collection	**Product Group**	Jackets & Coats
	Created On	05/10/2024	**Material Description**	Wool/ Cotton/ Polyester/ Polyamid	**Gender**	Woman
	Last Modified	07/06/2024			**Season**	AW 2024
Article Code MND0005	**Country of Origin**	Portugal	**Supplier**	UBI		

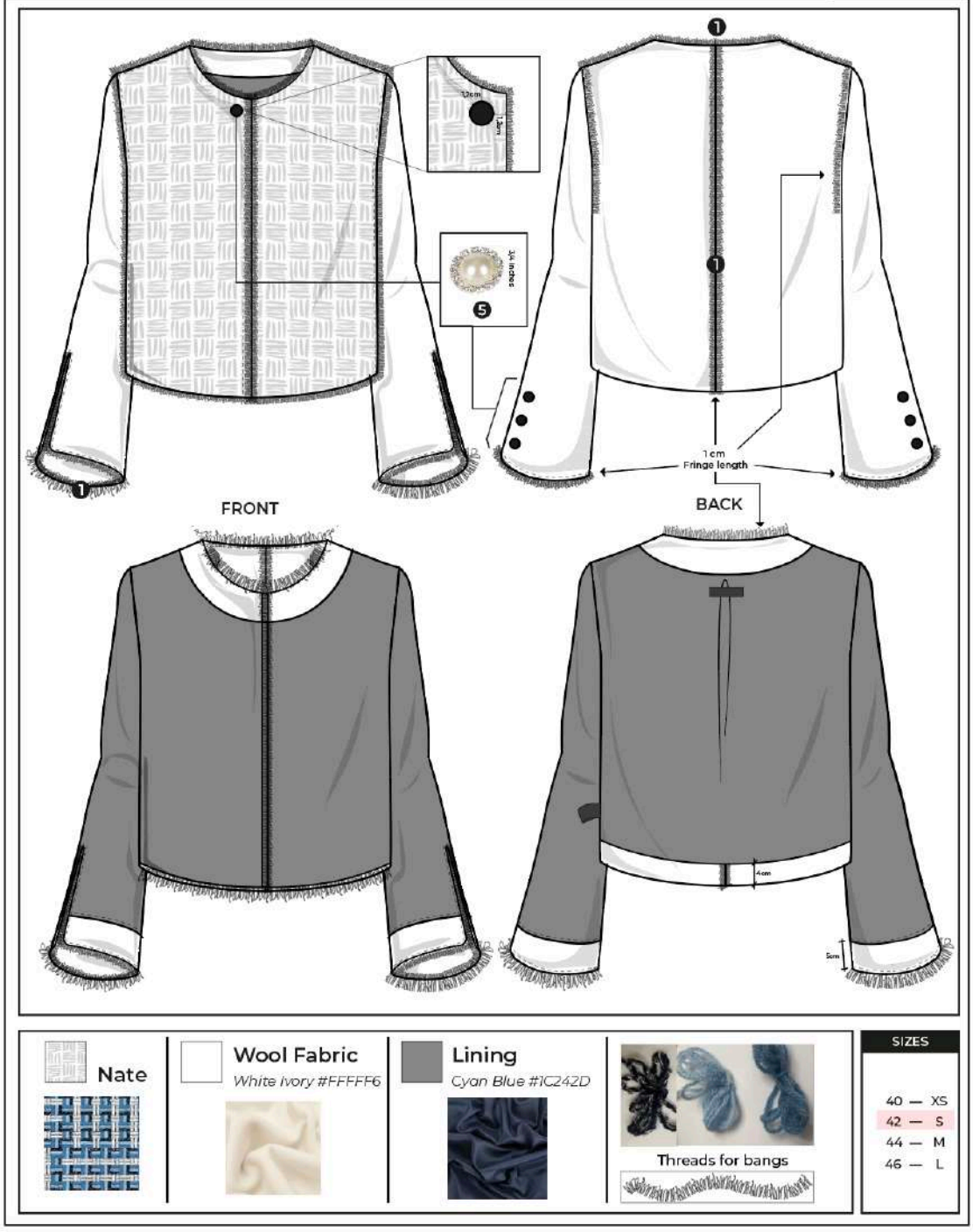
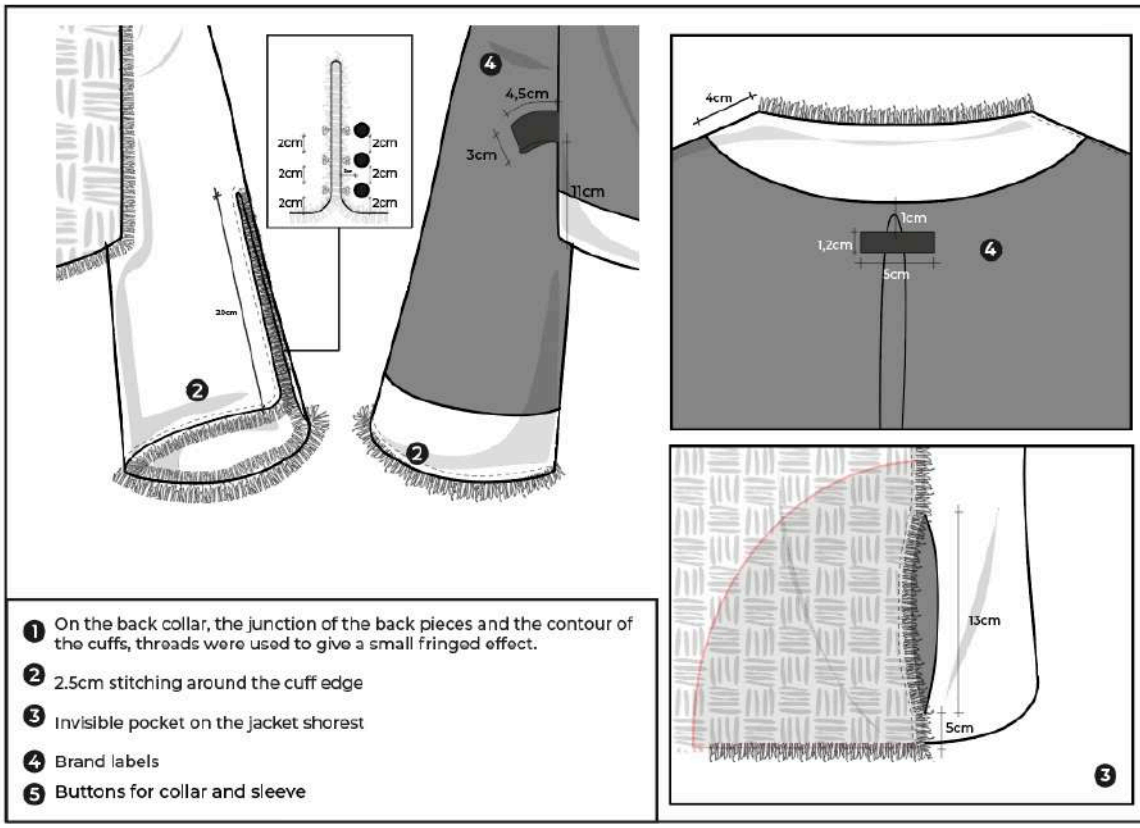


Table 16. Technical data sheet, construction details and measurements. Own Authorship

MONDU						
	Article Name	Jacket	Description	Paz Collection	Product Group	Jackets & Coats
	Created On	05/10/2024	Material Description	Wool/ Cotton/ Polyester/ Polyamid	Gender	Woman
	Last Modified	07/06/2024			Season	AW 2024
Article Code MND0005	Country of Origin	Portugal	Supplier	UBI		



1. On the back collar, the junction of the back pieces and the contour of the cuffs, threads were used to give a small fringed effect.
2. 2.5cm stitching around the cuff edge
3. Invisible pocket on the jacket shorest
4. Brand labels
5. Buttons for collar and sleeve

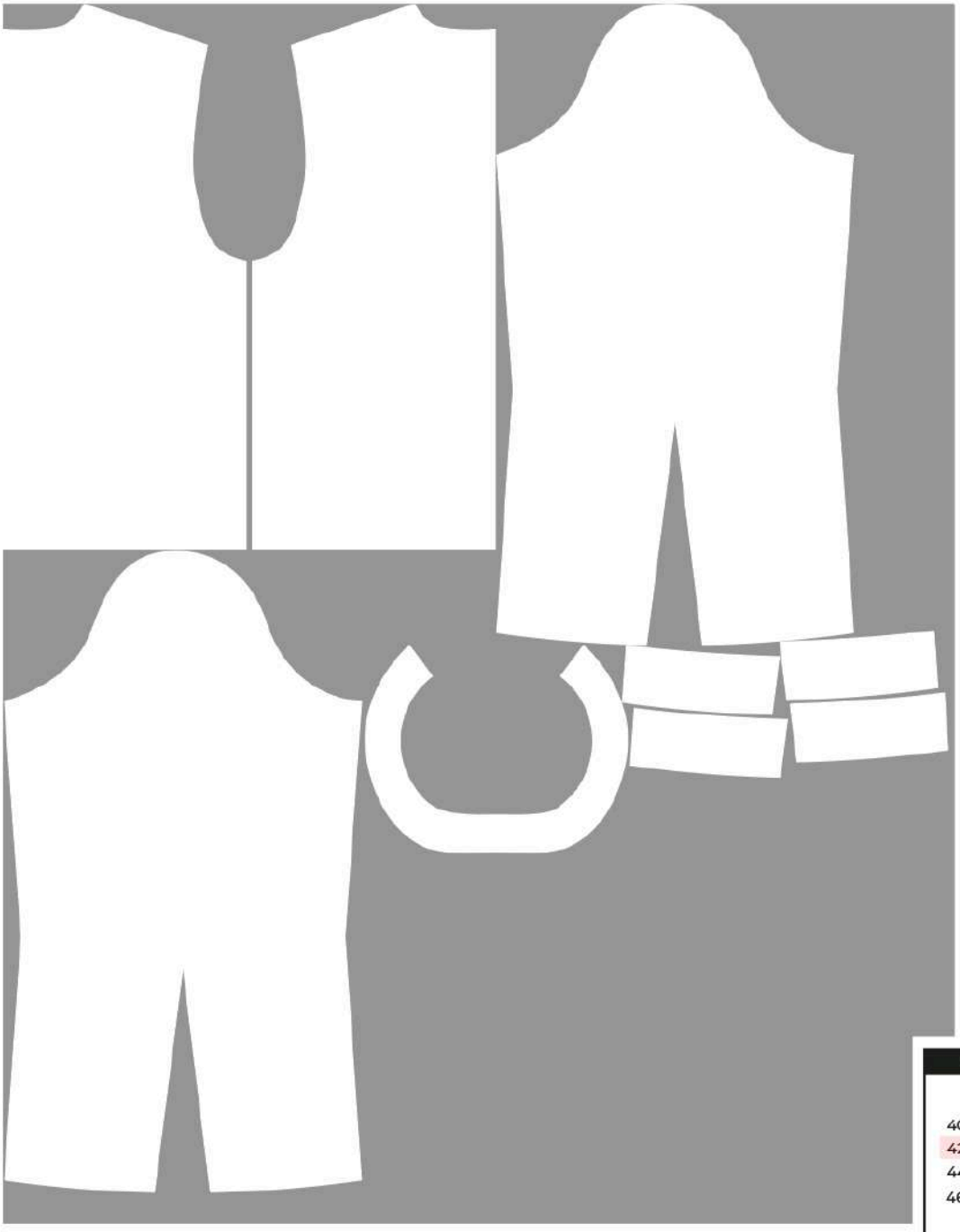
STANDAARD BODY MEASUREMENTS												
Height	157	160	163	166	169	172	175	178	179	180	181	181
Half Chest=size	38	40	42	44	46	48	50	52	54	56	58	60
Head height	19,6	20	20,3	20,75	21,1	21,5	21,8	22,2	22,4	22,5	22,6	22,6
Back waist length	41,1	41,9	42,7	43,5	44,3	45,1	45,9	46,7	47,5	48,3	49,1	49,1
Front waist length	43,1	43,9	44,7	45,5	46,3	47,1	47,9	48,7	49,5	50,3	51,1	51,1
Hip depth	17,8	18,2	18,6	19	19,5	20	20,5	21	21,5	22	22,5	22,5
Jacket length	66,1	67,4	68,7	70	71,3	72,6	73,9	75,2	76,5	77,8	79,1	80,4
Dress length (until knee)	95	97	99	101	103	105	107	109	111	113	115	117
Skirt length	57	58	59	60	61	62	63	64	65	66	67	68
Crotch length	24,1	24,5	25	25,5	25,9	26,3	26,6	27,1	27,2	27,3	27,5	27,5
Knee length	54,5	55,5	56,5	57,5	58,5	59,5	60,5	61,5	62,5	63,5	64,5	64,5
Trousers length	97	99	101	103	105	107	109	111	113	115	117	119
Elbow length	31,9	32,6	33,3	34	34,7	35,4	36,1	36,8	37,5	38,2	38,9	39
Sleeve length	58,5	59	60	61	62,1	63,2	64,3	65,4	66	66,5	66,9	70,3
Chest circumference	76	80	84	88	92	96	100	104	108	112	116	120
Bust circumference	80	84	88	92	96	100	104	108	112	116	120	124
Waist circumference	60	64	68	72	76	80	84	88	92	96	100	104
Hip circumference	86	90	94	98	102	106	110	114	118	122	126	130
Neck circumference	34	35	36	37	38	39	40	41	42	43	44	45
Wrist circumference	19	20	21	22	23	24	25	26	27	28	29	30
Back width	33,9	35,4	36,9	38,4	39,9	41,4	42,9	44,4	45,9	47,4	48,9	49,9
Shoulder width	35,9	37,4	38,9	40,4	41,9	43,4	44,9	46,4	47,9	49,4	50,9	51,9
Bust Height	25,5	26	26,5	27	27,5	27,9	28,4	29	29,5	30	30,5	30
Bust difference	1,5	1,7	2	2	2	2	2,4	2,5	2,7	3	3,6	4
Breast distance	16	17	18	19	20	21	22	23	24	25	26	26

Table 17. Technical data sheet, wool fabric cutting. Own Authorship

MONDU	Article Name	Jacket	Description	Paz Collection	Product Group	Jackets & Coats
	Created On	05/10/2024	Material Description	Wool/Cotton/ Polyester/ Polyamid	Gender	Woman
	Last Modified	07/06/2024			Season	AW 2024
Article Code MND0005	Country of Origin	Portugal	Supplier	UBI		

PATTERN CARD/WOOL

SCALE 1:5



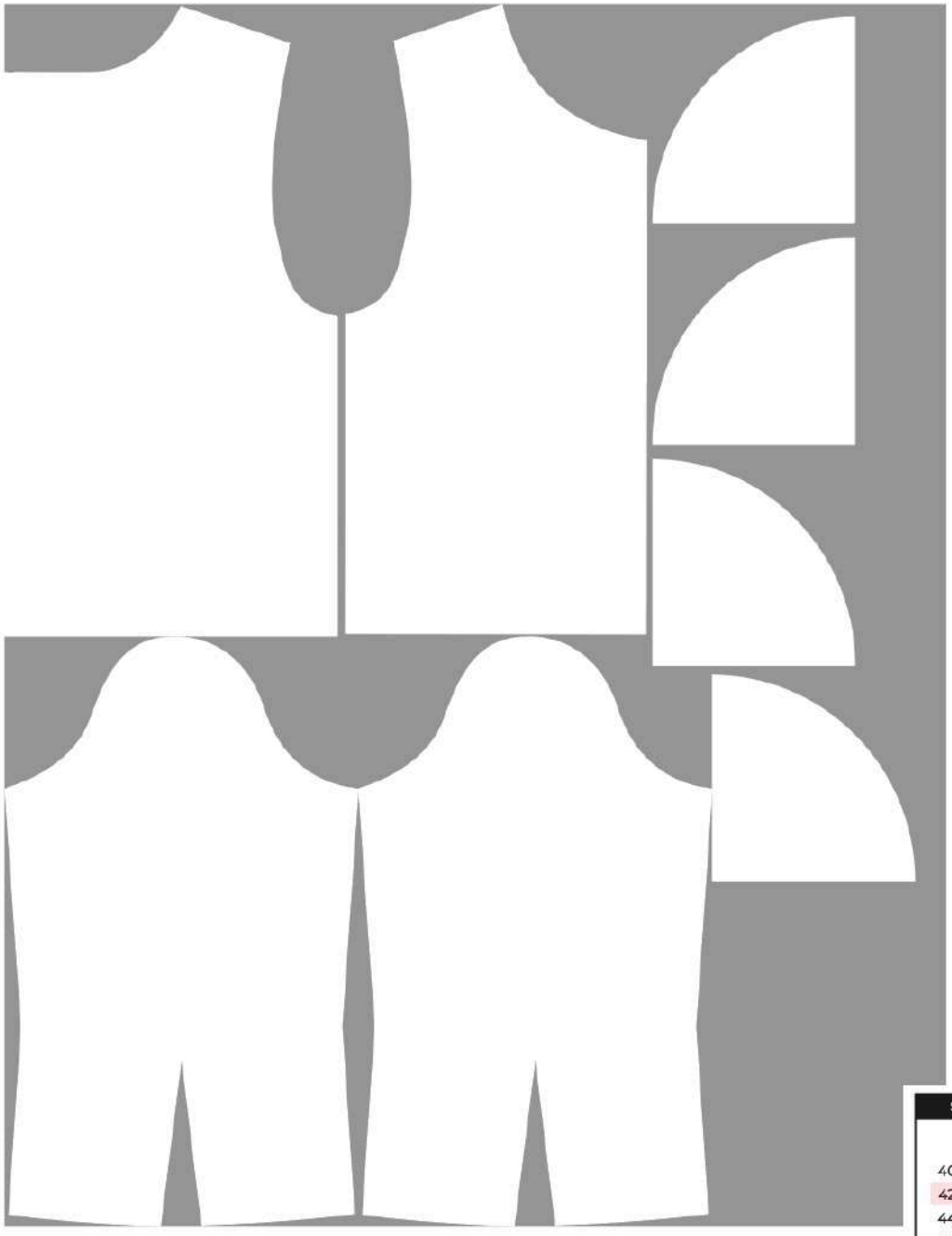
SIZES
40 — XS
42 — S
44 — M
46 — L

Table 18. Technical data sheet, lining cut. Own Authorship

MONDU						
	Article Name	Jacket	Description	Paz Collection	Product Group	Jackets & Coats
	Created On	05/10/2024	Material Description	Wool/ Cotton/ Polyester/ Polyamid	Gender	Woman
	Last Modified	07/06/2024			Season	AW 2024
Article Code MND0005	Country of Origin	Portugal	Supplier	UBI		

PATTERN CARD/LINING

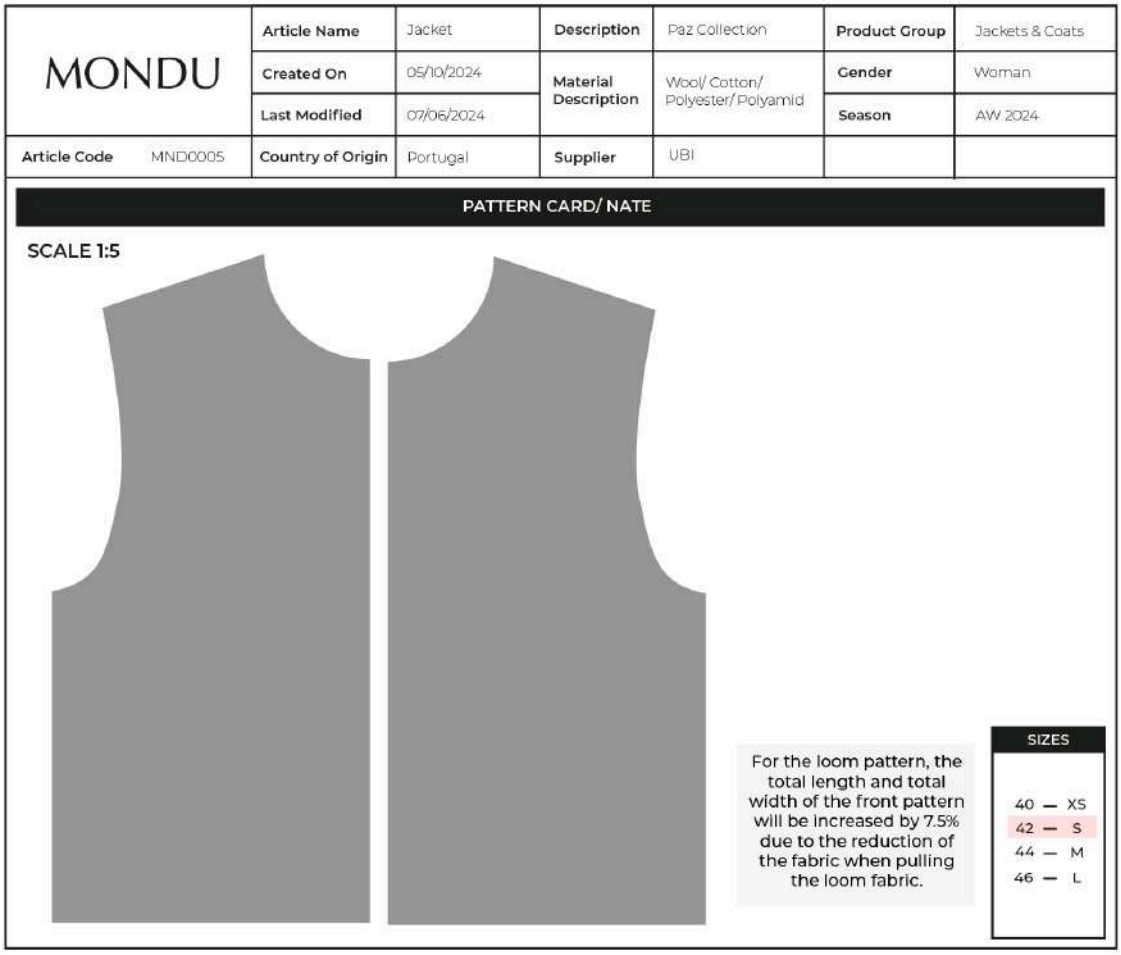
SCALE 1:5



SIZES

40 — XS
42 — S
44 — M
46 — L

Table 19. Technical data sheet, for application to loom construction. Own Authorship



2.6 Prototype production

2.6.1 Fabric

In order to commence the weaving process, it was first necessary to construct the loom. This was done by tracing the pattern onto a 1.5 cm thick piece of wood, taking into account the requisite increases and allowing for shrinkage during the pulling of the fabric. Once the pattern was traced, the frame was drawn, and the cutting process was initiated, as illustrated in Figure 33.

Subsequently, two lines were delineated with a 0.5 cm interval between each line and the mold. The points where the nails would be affixed to the two lines were then marked, with a 0.5 cm separation between each nail. Finally, once the marks were made, the nails were hammered in.

Figure 33. Loom construction. Own Authorship

Once the loom has been constructed, proceeding with an explanation of the weaving construction. The initial step involves the three yarns (Yarn B, C, and D) situated at the lower portion of the armhole, situated on the lower side of the mold. Subsequently, the yarns are passed from the top to the bottom, with a single nail being skipped. This process is repeated three times. After these three repetitions, a single nail is skipped, and the process is repeated three times with a single nail being skipped. This pattern continues until the end of the mold (Figure 34).

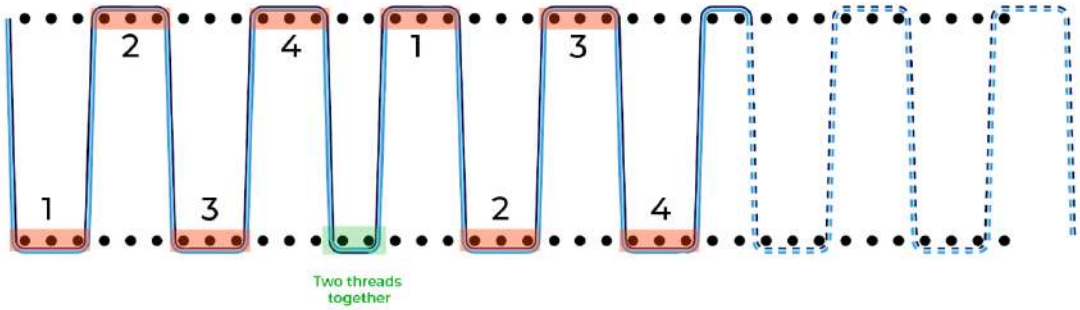


Figure 34. Weaving of blue yarns on the loom. Own Authorship

Subsequently, the white yarn is drawn in a distinctive manner, commencing at the lower side corner and traversing upward to traverse a single nail before descending once more. In the lower region, four nails are counted and then ascend once more to wrap around a single nail. This process will be repeated four times, with the number of nails counted in the lower part varying each time. On the fourth repetition, six nails will be counted, then on the subsequent repetition, four nails will be counted for four times in a row, then six, and so on until the loom is finished. This is illustrated in Figure 35

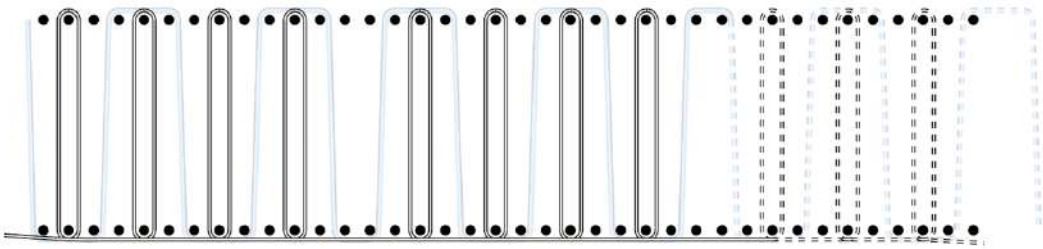


Figure 35. White yarn interlacing. Own Authorship.

It is also observed that in the illustrations of figures 34 and 35, the nails are represented with only one row. However, in the case of a double loom, the same number of nails would be counted, including both rows, at the moment of counting.

Once the weft was completed, it was made as specified in the technical data sheet presented above, Table 14. This was done gradually, as shown in Figure 36, to create the fabric.

Figure 36. Fabric weaving process. Own Authorship.

2.6.2 Jacket

Once the fabric has been woven, the confection is created. At this stage, it is essential to ensure that the pattern is accurate in terms of size. To this end, a series of measurements were taken at three distinct stages: while the fabric was still on the loom, once it had been removed from the loom, and after it had been ironed. (Table 20)

Table 20. Reduction of reduction of measures. Own Authorship

	On the loom	**Out of the loom (12h later)**	**Ironing**
Width x height	29cmx 55	28cmx 54xcm	28cm x 54cm
Center to armhole	23cm	22cm	22cm
Back	29cm	28cm	28cm

The process followed for its preparation is presented below (Table 21):

Table 21. Jacket confection line. Own Authorship

MONDU						
	Article Name	Jacket	**Description**	Paz Collection	**Product Group**	Jackets & Coats
	Created On	05/10/2024	**Material Description**	Wool/ Cotton/ Polyester/ Polyamid	**Gender**	Woman
	Last Modified	07/06/2024			**Season**	AW 2024
Article Code MND0005	**Country of Origin**	Portugal	**Supplier**	UBI		

-Once the weaving was done and the loom was pulled, the next step was the manufacture of the jacket.
-After cutting the molds of each respective fabric, the two back pieces were joined by putting bangs in the middle of each piece.
- The seams were opened and safety stitching was applied to the two back pieces at the edge of the fringe.
-Bangs were added on the back armholes with a 0,5cm seam.
-The bangs of the two sleeves and the back neck were also prepared, also with a 0,5cm seam.
-Shoulder union of the front piece with the back piece

- Close the back darts of the lining and iron.
-Add labels on the back and on the side of the back piece.
-Join inner cuffs with sleeve lining, open seam and stitch.
-Join lining shoulders and iron.
-Sew lining collar to inner collar, open seam with iron and stitch.

-Sew the sleeves to the armholes of the body with 2.5 on both the body of the lining and the body of the fabric.
-Join lining cuff to fabric cuff, open seams and stitch with a seam allowance of 2.3 to 0.5 of the edge.
-Join lining and fabric flaps at the front.
-Close the collar with a blind stitch by hand
-Assemble two pockets with the lining
-Sew pockets to the back side of the fabric, one on each side.
-Close the sides, joining the pocket to the front fabric.
-Join back fabric hem to back lining.
-Close hems of the front by hand.
- Iron
-Cut threads
-Add buttons.

The seams utilized for the integration of the molds have a width of 2.5 mm, while the stitching is 2.3 mm. It is also essential to note that in the union of the woven garment with the wool fabric or lining, Having proceed with an exposed seam, leaving the edges of the fabric visible. Additionally, the process of confection is illustrated in the accompanying images (Figure 37).

Figure 37. Jacket construction process. Own Authorship

As illustrated in the initial image of Figure 37, the visible seam on the shoulder, in addition to the seams on all edges of this pattern, are evident. Furthermore, the final images illustrate the production of the labels and the detailing of the sleeves.

2.6.3 Photo shoot

Once the making of the jacket was finished, photos were taken, in order to record the completion of the project, as for the photographic process can be described that the background chosen was completely white with a point of light, which in this case will be the window, to provide background and play of light.

Figure 38. Finish Jacket. Photographer: Julia Nardin.

Figure 39. Finish Jacket. Photographer: Julia Nardin.

Figure 40. Finish Jacket. Photographer: Julia Nardin.

3 Conclusions and future prospects

The graduation project has addressed several points, which will be summarized below and placed in the appropriate sequence. At the outset of this project, having discussed slow fashion and ethical fashion in contrast to fast fashion. And being able to explore the environmental and social consequences of fast fashion, large-scale production, and low-quality production, which require fast materials that are polluting to nature. Contrasting this information with slow fashion, a business model where it can be considering the design, manufacturing, and sales in a different

way. Despite recent discussions about sustainability, applying it consciously can be challenging. This project has demonstrated that ethical and slow fashion represent a promising avenue for growth and innovation, offering opportunities for creative expression and social discourse. It is envisaged that this project could be undertaken in collaboration with artisans, who would play a pivotal role in the transition towards a more sustainable manufacturing model. Furthermore, ethical fashion encompasses not only the finished product but also the user, thereby conferring additional value upon a process that allows for customization.

Following an analysis of slow fashion and fast fashion, it was possible to define the tool that would be used for the project, namely the loom. This enabled us to gain insight into the history of the loom in different cultures around the world. Currently, there are numerous varieties of handmade looms, which can be classified as vertical, horizontal, or frame looms. Furthermore, conducting a review of the market for more sophisticated conventional looms, identifying the Digital Weaving TC2 loom, which produces small quantities, and the heddles, which offer the operator a variety of options due to their automation.

All of these options can be developed further, but it is believed that the methodology employed in the project allows for the construction of garments at a low cost and without waste. Furthermore, an examination was conducted of the components of the looms and the diverse applications that can be carried out with handlooms, which could be replicated through this process. It is also noteworthy that the aforementioned information proved invaluable during the manufacturing phase, particularly in terms of tool selection and application.

Following an analysis of the looms, and proceeding to analyse consumers. This analysis focused on individuals from Generation X to Generation Z, with the objective of identifying similarities in activities, tastes, ages and lifestyles with those who consume slow fashion. This process of analysis proved to be of interest, as it enabled us to gain insight into the audience that is meant to reach and, consequently, to develop a garment that is of interest, highly functional and long-lasting. Furthermore, it was possible to gain insight into brands that are committed to sustainability. This allowed us to comprehend the various facets of sustainability and identify potential avenues for integrating these principles not only during the manufacturing process but also in other aspects, such as social responsibility, technology, and beyond. The objective was to generate a lower impact.

Following the production of the prototype, it is possible to ascertain its value in a variety of social, economic, sustainable and creative contexts. From a social perspective, the value of this approach lies in its engagement with artisans and the transfer of knowledge through cultural contact. From a sustainable standpoint, the technique avoids waste and allows for the creation of a unique, creative garment. Furthermore, it is postulated that this technique can be employed in specific sections of a garment, thus avoiding any increase in cost or prolongation of the manufacturing process. From an economic standpoint, the resulting product would cater to a female

demographic with a preference for durable garments over those produced in a fast fashion context.

In conclusion, the initial question can be answered in the affirmative: it is indeed possible to generate fabrics and handmade clothing pieces for slow fashion from unconventional handlooms. The answer to this question is affirmative, although the technique in question is somewhat rustic. It is anticipated that these pieces will serve as a source of differentiation for the brand, and in the future, they may even become an alternative for exclusive pieces. The technique offers advantages in terms of creativity, cost, and manufacturing waste, which makes it an option for generating exclusivity for both the brand and the piece, given that the moulds are generated from these looms. It is also important to recognise that, as a handmade tool, the weaving process is more time-consuming. Furthermore, the piece may become more expensive due to the labour involved. However, it is also considered a way to start with little investment and generate unique pieces. It is crucial to remember that the most important aspect learned during the project is adaptation, as the garments will be adapted according to the client's needs, season, or requirements.

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Annexes

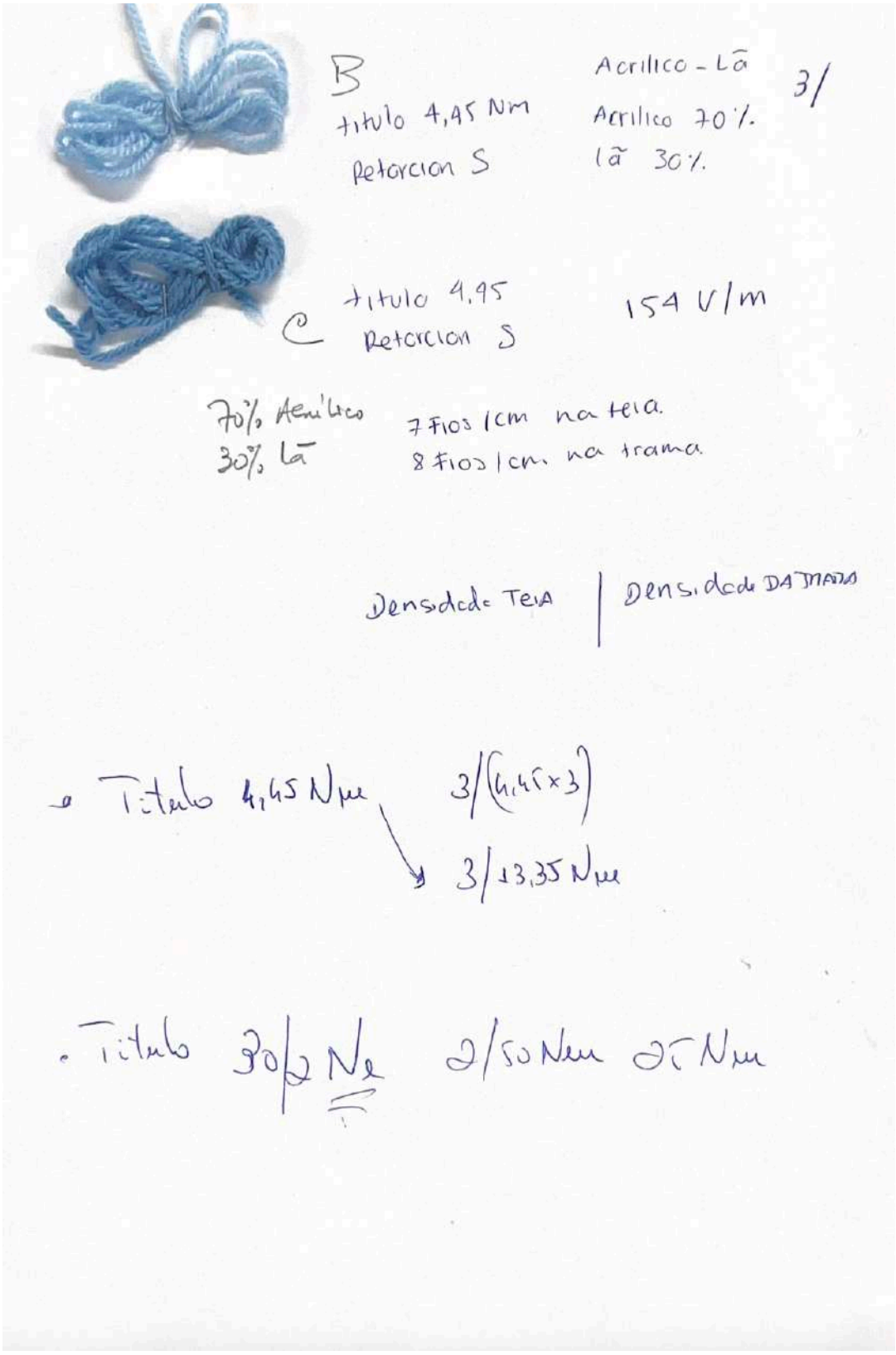

Figure 41. Annex 1. Own Authorship

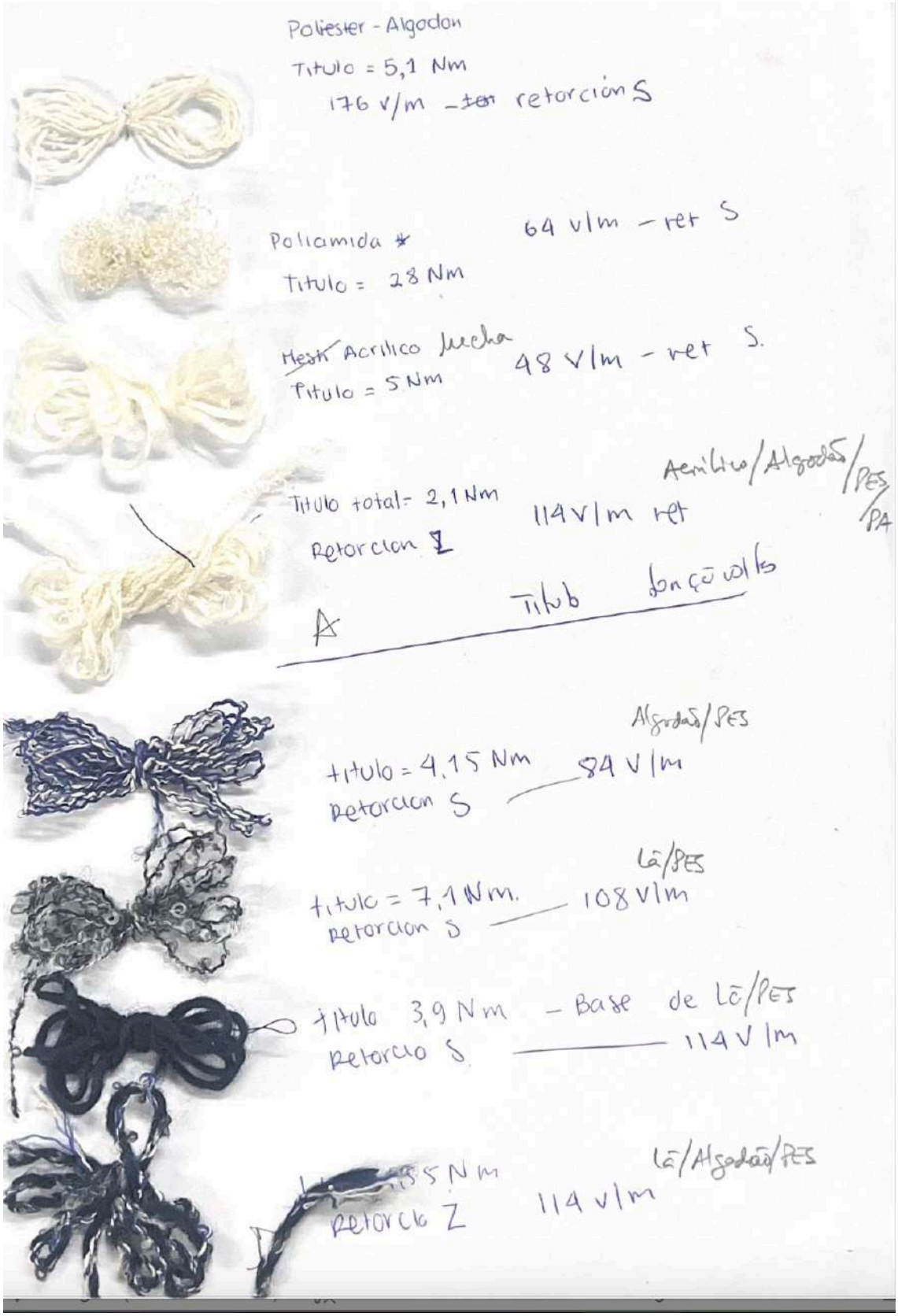

Figure 2. Annex 2. Own Authorship