Vol. 6, No. 1, January 2025
E-ISSN: 2723 - 6692
P-ISSN: 2723 - 6595
http://jiss.publikasiindonesia.id/

# Analysis of Traditional Elements in Traditional Woven Fabrics Using the ATUMICS Method

## (Case Study: Sidan Woven Fabric by the Endo Segadok Weaving Group in Menua Sadap Village)

**Ega Ariseftia[1*], Alifiansi Nurul Fatimah Azzahra[2], Fajar Ciptandi[3]**
Universitas Telkom, Bandung, Indonesia
Email: ariseftiaega@student.telkomuniversity.ac.id[1], alifiansin@student.telkomuniversity.ac.id[2], fajarciptandi@telkomuniversity.ac.id[3]
Correspondence: ariseftiaega@student.telkomuniversity.ac.id[*]

**KEYWORDS**
Sidan Woven Fabric; Preservation of Traditions; Cultural Heritage; ATUMICS Method

**ABSTRACT**
Knowing about the elements of traditional elements is essential because it can inspire modern design, allowing for innovation while respecting cultural roots. One of the traditional Indonesian woven fabrics that has the potential to be developed and the elements of tradition are known is the Sidan Weaving fabric. Sidan weaving is one of the products made by the indigenous people of the Dayak Iban tribe who come from Kapuas Hulu Regency, West Kalimantan Province. Therefore, the analysis of traditional elements in Sidan woven fabrics of the Endo Segadok weaving group in Menua Sadap Village was carried out to find out a more thorough understanding of Sidan woven fabric products, both in terms of visuals and meanings, so that every detail can be interpreted as part of a valuable cultural heritage and know the potential that can be developed. Data collection was carried out using observation, interview, and literature study methods, then analysis was carried out using the ATOMICS method. The results of the study stated that the results of the analysis of Sidan woven fabrics using the ATUMICS method showed that starting from the production process as a whole, it maintained and revived cultural traditions that had been passed down from generation to generation. Each element of the traditional element not only reflects aesthetics, but also contains a deep symbolic meaning related to the customs, beliefs, and cultural values of the local people.



## Introduction

Traditional fabrics in Indonesia are a pride and social identity of the community that has cultural values with characteristics in each region (Lailatul Maulidiyah et al., 2023). The philosophy in woven fabric design is greatly influenced by the geographical conditions of an area, not only forming the characteristics of patterns and colors, but also describing the customs,

traditions, and cultural values of the local community that have been passed down from generation to generation. These geographical conditions play an important role in determining the motifs, techniques and symbolic meanings of woven fabrics that make them a rich and unique expression of cultural identity (Lungu et al., 2021; Makki et al., 2017). Understanding the elements of tradition in traditional fabrics is essential for preserving cultural identity and enhancing contemporary design practices. Traditional fabrics serve as a medium for cultural expression, embodying the history, beliefs, and values of a community. Traditional fabrics often reflect the social and cultural codes of a community, conveying information about status, gender, and identity (Fayzullina & Khristidis, 2020; Safo-Ankama & Donkor, 2023).

One of the traditional Indonesian woven fabrics that has the potential to be developed and the elements of tradition are known is the Sidan Weaving fabric. Sidan weaving is one of the products made by the indigenous people of the Dayak Iban tribe who come from Kapuas Hulu Regency, West Kalimantan Province. It has a variety of motifs and uses natural plants for the coloring process. Knowledge of traditional elements is essential because it can inspire modern design, allowing for innovation while respecting cultural roots (Wang, 2023). In an effort to learn more about the elements that form tradition about traditional fabrics, various methodologies can be done to reveal elements of tradition that are less visible. One of them is the ATUMICS methodology approach. ATUMICS is a method used to determine certain traditional elements that have the potential to be developed through elements of artefacts, techniques, utilities, materials, icons, concepts, and shapes. ATUMICS aims to identify and analyze the elements that make up fabric artifacts, ranging from aspects, manufacturing techniques, uses, materials, icons, concepts, and shapes that describe the cultural values that are interwoven through these artifacts (Nugraha, 2019).

The products of a region are not only made without a deep philosophy, but also become a reflection of the cultural values, traditions and habits of the local community. Therefore, it is important to conduct an analysis related to various factors that affect the design of the product. This analysis includes aspects of shape, color, ornamental variety, and structure, which are interrelated in forming the unique identity of a product. Using the ATUMICS Method, this analysis is carried out in depth to reveal important elements, such as shape, color, composition and naming, which not only serve for aesthetics but also present the physical taste and philosophical concepts that exist in it (Nurindah & Widiawati, 2021). Based on the current phenomenon, it is necessary to analyze the traditional elements in Sidan woven fabrics which are products of the Endo Segadok weaving group. This study aims to analyze the traditional elements in Sidan woven fabrics to find out a more thorough understanding of Sidan woven fabric products, both in terms of visuals and meanings, so that every detail can be interpreted as part of a valuable cultural heritage and know the potential that can be developed.

## Research Methods

This research uses the data triangulation method, which combines various data sources to gain a more comprehensive understanding of the traditional elements in Sidan woven fabric. Data triangulation is a data collection technique by searching for data from several existing sources (Sugiyono, 2015). Data triangulation can also be interpreted as source triangulation (Sutopo, 2002:80; (Soewardikoen, 2021). This research belongs to a type of qualitative research, where the focus is on an in-depth understanding of the traditions and culture contained in the Sidan woven fabric. The approach used is descriptive, which aims to describe and analyze traditional elements in detail, so as to describe the cultural values that exist in it. Data collection techniques were conducted through direct observation of the fabric making process, in-depth interviews with woven fabric craftsmen, and literature studies to obtain additional relevant information. The data obtained was analyzed using the ATUMICS method, which includes analysis of artifacts, techniques, utilities, materials, icons, concepts, and forms. This technique helps in identifying and understanding the elements that make up the tradition in Sidan's woven fabric.

## Results and Discussion

In knowing the traditional elements in Sidan woven fabrics, an analysis was carried out using the ATUMICS method (artefact, technique, utility, material, icon, concept, and shape) which can be described as follows:

a. Artefact

Artefacts are the core of the development of traditions in the form of products or objects that become a reference in the process of making new objects. In this study, the artefact used is Sidan woven fabric. Sidan woven fabric is one of the traditional fabrics of Indonesian cultural heritage made by the Dayak Iban people who come from Kapuas Hulu Regency, West Kalimantan.

**Figure 1. Artefact of Sidan Woven Fabric**
*Source*: Author's Documentation, 2024

b. Technique

The technique in making Sidan woven fabric still maintains the traditional way ranging from yarn dyeing techniques to weaving techniques. The following is an explanation of the techniques applied in the process of making Sidan woven fabrics:

1) Yarn Dyeing Techniques on Sidan Woven Fabric

The first stage in the process of dyeing woven fabrics starts from taking natural dye plants by walking in the surrounding forest environment which takes 15 minutes to 1/2 hour depending on the distance of the plants needed. The parts of the plant that are commonly used for coloring materials consist of roots, stems, flowers, or leaves, depending on the type of plant. The daily activities of the community live by farming and gardening, so weaving craftsmen can easily find plants that are used for natural dyeing. The plants are taken in sufficient quantities from the surrounding forest environment, according to needs. The community also replanted several natural dye plants around the yard to make the process of picking plants easier.

**Figure 2. The Process of Taking Natural Dye Plants**
*Source*: Author's Documentation, 2024

Plants that have been taken from the forest then undergo a boiling process. This process is done to remove the color from the plant. The plants are boiled manually using a pot placed on firewood. Boil for 10-15 minutes or until the boiled water is colored.

**Figure 3. Natural Dye Plant Boiling Process to Extract Natural Dye Extracts**
*Source*: Author's Documentation, 2024

The next stage is the process of dyeing cotton yarn in boiling water that has released natural dye extracts. The boiled water from natural dye plants is put into a mortar made of wood, then mixed with a little betel lime which functions to increase color fastness so that it makes the color

sharper, after that it is continued with dyeing cotton thread. Before dyeing cotton yarn is tied using raffia rope to make it easier to lift the yarn. This process is usually repeated several times until the desired color is produced. The repetition of the dyeing process serves to increase the concentration of the color so that it is more visible.

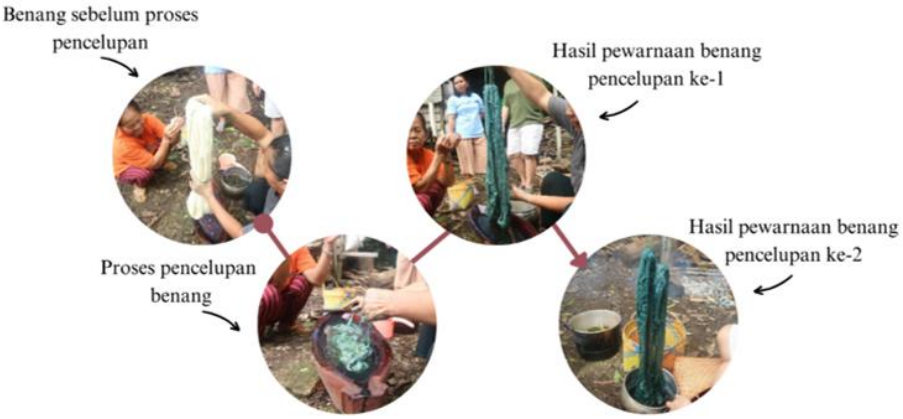


**Figure 4. Yarn Dyeing Process Using Natural Dye Extracts**
*Source*: Author's Documentation, 2024

After going through the dyeing stage, the next step is the drying process of the yarn. Drying yarn should not be done in direct sunlight, usually weaving craftsmen dry yarn by airing which is hung in front of or in the house. This process takes 1-2 days or until the thread is completely dry.

**Figure 5. Thread Drying Process**
*Source*: Author's Documentation, 2024

The dried yarn will then go through the winding process or usually called the nabok process (the process of winding the yarn). Yarn winding is done manually with the help of a tool made by the community from wood called kalai ubung. This process takes 1-2 days depending on the number of threads. The result of the yarn roll is shaped like a ball and stored in a container. The yarn that has been rolled is finally ready to be used to make Sidan woven fabrics.

**Figure 6. Yarn Winding Process Using a Roller Tool**
Source: Author's Documentation, 2024

**Figure 7. Ready-to-use yarn rolls**
*Source*: Author's Documentation, 2024

2) Weaving Techniques of Sidan Woven Fabric

Sidan woven fabrics are made using a traditional loom consisting of two parts, namely the house and the loom. The weaving house is made of wood in a rectangular shape and has four legs, at the front it is made higher than the back. The loom consists of carap, lubung, skewer, youth, ripang ubung, lever and woven motifs. The carapace functions to arrange the threads, the lubung is a round wood located at the top and bottom of the loom to hold the thread, the skewer functions to arrange the motif, the youth functions to close and tidy the thread, the rib ulung functions to wrap the thread to make the base and basic motif, the lever functions to pull and arrange the thread and the wicker which functions as an example of the motif to be made on the woven fabric.


**Figure 8. Traditional Looms Used by Weaving Artisans in Aging Village**
*Source*: Author's Documentation, 2024

The first step in the process of making Sidan weaving is to make an example of the motif pattern that will be made on the weaving. After knowing the motif to be made, then prepare the loom to be used. The initial stage in the weaving process begins by installing the threads in parallel on the traditional loom to be used as warp or what is called ngriit, in the ngriit process cannot be done alone, it requires the help of one person to help attach the yarn. The number of threads installed adjusts to the size of the woven fabric to be made by the weaver. After the ngri-riit process is completed, it is continued by weaving the motif on the yarn, at the time of weaving the yarn will be calculated according to the sample pattern to be made, after the motif is formed then continued by arranging the karap this process is carried out by associating one by one the warp threads on the karap wood, the number of strands of yarn that are associated according to the motif to be made. The yarn karap functions to lift the warp yarn during weaving. After the karap process is complete, the weaving process can be done by inserting the weft yarn into the warp yarn until it is finished. The time to work on sidan woven fabrics takes different times. For a small size of 10-20 cm can produce 3-4 pieces of fabric in one month while for a large size of 40-60 cm can produce 1-2 pieces of woven fabric in one month.

**Figure 9. The Process of Making Sidan Woven Fabric**
*Source*: Author's Documentation, 2024

c. Utility

The utility or use of Sidan woven fabric for the Dayak Iban community is as a complement to the traditional clothes used by the Dayak Iban women. Sidan woven fabric can be used for various groups as a complement to traditional clothing and does not have special provisions. Traditional clothes are used during major events such as gadget events, weddings, births, deaths, traditional rituals and other major events. The use of traditional clothing at major events of the Dayak Iban tribe has a very important role, namely to describe cultural wealth, spiritual values and also as a cultural identity of the Dayak Iban tribe. The traditional clothing of Dayak Iban women consists of sugu algae, tangok, rawai, antin, finger tumpak, tumpak kaki, selampai, and skirt. Algae sugu, made of silver that serves for headdresses. Tangok, made of beads woven in the shape of a circle serves as a chest cover. The rope is made of metal coins that are strung hanging from the waist that serves as a belt. Antiques, made of silver in the shape of flowers are used as earrings. Finger clips, made of silver that serves as a wristband. Tumpak paw, made of coins, serves as an ankleblet. Selampai, made of Sidan woven fabric which is installed crosswise on the front, while on the back of the selampai looks like the letter H. Rok made of Sidan woven fabric used for the bottom cover. So the use of Sidan woven fabric in traditional clothes is used to make a slalom and skirt, as a complement to traditional clothing used by the women of the Dayak Iban tribe.


**Figure 10. Traditional Clothing of Iban Dayak Women**
*Source*: Amir Rodof's documentation at fivehundredpx

d. Material

The following is an explanation of the materials used in Sidan Woven Fabric:

1) Material Pembuat Kain Tenun Sidan

The material used in the manufacture of Sidan woven fabric is cotton yarn. In the past, people made their own yarn using cotton plant fibers, however, due to the limitations of cotton plants in the surrounding environment, they replaced it with cotton yarn produced by factories, even though it did not reduce the quality of the fabric produced. Cotton yarn has a soft and smooth texture so that the resulting fabric is comfortable to use. Cotton yarn can produce strong fabric so

that it is not easy to tear, the weaving craftsmen have been using cotton yarn for many years and produce Sidan woven fabric that can last more than 10 years. Cotton yarn also has good absorption so that cotton yarn is easy to dye, this can certainly make it easier for Sidan weaving craftsmen in the dyeing process because they use natural dyes from plants. Cotton yarn is included in the type of yarn that is environmentally friendly because it is made from cotton fiber plants so that it can be decomposed by microorganisms. Cotton yarn has many advantages so it is very suitable for use in materials for making Sidan woven fabrics.

**Figure 11. Factory Production Cotton Yarn Used to Make Sidan Woven Fabric**
*Source*: Author's Documentation, 2024

2) Yarn Dye Material for Sidan Woven Fabric

The dye material used in the manufacture of Sidan woven fabric is plants in the surrounding forest environment. Plants commonly used by weaving artisans such as, engkerebai api (Psychotria malayana) produces brown color, kepakk (unknown species) produces cream color, engkerebai (Tareena fragrans), babai (Saraca), iron/tebelian (Eusideroxylon zwageri), and engkudu (Morinda citrifolia L.) produces a reddish-brown color, root retardation (Clerodendrum laevifolium B.) and rice rengat (Senna siamea) produce blue color, kemunting (Melastoma polyanthum) produce purple color, kratom (Mitragyna speciosa) produce sage color, yellow root (Arcangelisia flava), and tengkawang (Shorea macrophylla) produces a yellow color. The parts of the plant that are commonly used for coloring materials consist of roots, stems, flowers, or leaves, depending on the type of plant. Natural dye plants are taken in moderation according to the needs of the weavers.

**Figure 12. Engkerebai Plant (Tareena fragrans) Used for Natural Dyes**
*Source*: Author's Documentation, 2024

The use of natural dyes is a form of the Dayak Iban community to continue to maintain the traditions that have been inherited by their ancestors for generations, besides that natural dyes also have many advantages. The use of natural dyes is in great demand in the local and global markets so that it has a high economic selling value. Usually, foreign tourists come directly to Aging Sadap Village to see the production process as well as buy Sidan woven fabrics. Natural dyes are also environmentally friendly, easily decomposable, and non-toxic, therefore Sidan weaving artisans use natural dyes in the dyeing process so as not to damage the environment. The Dayak Iban people are very dependent on the surrounding natural environment because it is one of the sources of life for the Dayak Iban people. In the natural coloring process, the dye plant will be boiled with water that functions to release the natural dye extract, after which it is given a little betel lime or calcium hydroxide. Betel lime serves to increase the concentration and give color fading resistance to cotton materials. The use of betel lime in the coloring process is not overused. The disposal of residual water from natural dyeing is processed through a sedimentation and filtration process first before the end is disposed of in the sludge deposition site, so that the waste produced does not damage the environment.


**Figure 13. Natural Yarn Dyeing Materials for Sidan Woven Fabric**
*Source*: Author's Documentation, 2024

e. Icon

The icons on the Sidan woven fabric artifacts are in the form of a variety of motifs inspired by nature, flora and fauna around the community environment which are used as icons. Traditional motifs that are commonly used are the kemubai foot motif, the nsluai elbow motif, the sky silup motif and the bunut fruit motif. Each motif made has its own philosophical meaning. The Kemubai Foot motif is inspired by the feet of kemubai animals in Kalimantan. The Kaki Kemubai motif has the meaning of the diversity of life of living beings in Kalimantan.

**Figure 14. Sidan Woven Fabric Kaki Kemubai Motif**
*Source*: Author's Documentation, 2024

The motif of Siku Nsluai is inspired by the ramp of the water current and also the type of water climbing wood plant that is commonly used by the Dayak Iban tribe to store ari-ari in newborns, this wood is strong and durable, the leaf shoots of this plant are also commonly eaten

by the community. This motif is named nsluai because it is inspired by the shape of the water tanjak leaf which resembles an nsluai fish. Animals and the surrounding environment are a source of life for the Dayak Iban people so it is illustrated in the elbow motif.

**Figure 15. Can tenu sidan motif siku naslui**
*Source*: Author's Documentation, 2024

The Silup Langit motif is inspired by the bright clouds that can be seen overhead. This motif has a meaning that describes the beauty of the universe created by God. The sky is also a source of air that gives life to humans. The Dayak Iban people strongly believe that the life of the entire universe is governed by God, so it is illustrated in the form of the Silup Langit motif to always remember the greatness of God.

**Figure 16. Sidan Woven Fabric with Silup Sky Motif**
*Source*: https://dekranasda.kalbarprov.go.id/product

The Bunut Fruit motif is inspired by one of the fruits in Kalimantan, namely the Bunut fruit. The Dayak Iban people usually use bunut fruit as a fragrance ingredient, each room in the betang house provides bunut fruit extract which is put into a glass to deodorize the room. The community also believes that if the Bunut fruit extract is given to babies, it will reduce the smell in the urine.

Bunut fruit has many benefits for the Iban Dayak people so it is implemented into the Bunut Fruit motif.

**Figure 17. Sidan Woven Fabric with Bunut Fruit Motif**
*Source*: https://dekranasda.kalbarprov.go.id/product

The Dayak Iban people highly appreciate and explore the noble values in their tribe so that the motifs have a very high philosophical meaning that describes the relationship between life between humans and God, nature and the environment.

f. Concept

The concept of Sidan woven fabric is to carry the concept of tradition from the Dayak Iban Tribe. Weaving is one of the traditions of the Dayak Iban Tribe that must be done by Iban women to make fabric. Through Sidan weaving motifs and techniques, the community represents the tradition of the Dayak Iban tribe which has been inherited from generation to generation without any intervention from modernization. This can be seen from the ornaments that are implemented into the form of motifs that describe the relationship between life between humans and God, nature and the environment which is the source of life and in the midst of the development of modern culture, people still maintain the existence of traditional weaving techniques in the production process. Therefore, the Dayak Iban people introduced tradition through their traditional products, one of which is Sidan Weaving cloth.

g. Shape

The shape applied to sidan woven fabric products is a rectangular shape with varying sizes, namely for widths ranging from 10 – 80 cm with a maximum length of 200 cm. As for the shape of the sidan woven fabric motif using a variety of geometric ornaments, nature, flora, and fauna around the community environment, the motif pattern is made repeatedly so as to form a motif.

**Table 1. Motif Shape on Sidan Woven Fabric**

| No | Visual | Shape Analysis | Dimension (Length x Width) |
|---|---|---|---|
| 1 |  Kemubai kaki Motif | The Kemubai kaki motif is inspired by the feet of kemubai animals in Kalimantan. | 185 cm x 42 cm |
| 2 |  Motif Siku Nsluai | This motif is taken from the shape of a water climbing leaf that resembles an nsluai fish. | 184 cm x 42 cm |
| 3 |   Motif Silup Langit | The Silup Langit motif is inspired by the bright clouds that can be seen overwriting. | 185 cm x 33 cm |
| 4 |   Bunut Fruit Motif | The Bunut Fruit motif is inspired by one of the fruits in Kalimantan, namely the Bunut fruit. | 172 cm x 40 cm |

*Source*: Author's Analysis, 2024

From the results of the identification of traditional elements in Sidan woven fabrics using the ATUMICS method, it can be concluded that Sidan woven fabric products made by the Endo Segadok weaving group in Menua Sadap Village consist of the following elements:

**Identification analysis of traditional elements in Sidan woven fabric with ATUMICS Method**

| No | Element | Analysis |
|---|---|---|
| 1 | Artefact | • Sidan Woven Fabric |
| 2 | *a.* Technique | • The yarn dyeing technique on Sidan woven fabrics starts from taking natural dye plants, boiling natural dye plants, dyeing yarn, drying yarn, to yarn winding (nabok) using traditional dyeing techniques.<br>• The weaving technique of Sidan woven fabric starts from making examples of motif patterns, installing yarn (ngriit), weaving motifs, arranging karap, to the weaving process using the Sidan weaving technique is carried out traditionally using traditional looms |
| 3 | *b.* Utility | • The complement of traditional clothing used by Dayak Iban women is used for scarves and skirts. |
| 4 | Material | • The material for making Sidan woven fabric uses cotton yarn produced by the factory,<br>• The yarn dye material for Sidan woven fabric consists of natural plants, water, and betel lime |
| 5 | Icon | • The icons on the Sidan woven fabric artifacts are in the form of a variety of motifs inspired by nature, flora and fauna around the community environment which are used as icons. |
| 6 | Concept | • The concept of Sidan woven fabric is to carry the concept of tradition from the Dayak Iban tribe. |
| 7 | Shape | • Rectangular fabric with varying sizes, namely for widths ranging from 10 – 80 cm with a maximum length of 200 cm.<br>• The shape of the motif uses a variety of geometric ornaments, nature, flora, and fauna that exist around the community environment, the motif pattern is made repeatedly so that it forms a motif. |

*Source*: Author's Analysis, 2024

In analyzing the traditional elements in Sidan woven fabrics, the results of the study show that these fabrics not only function as aesthetic products, but also as a symbol of deep culture. Each element in Sidan woven fabric contains a symbolic meaning that reflects the values, beliefs, and traditions of the Dayak Iban community. According to Wang (2023), understanding traditional elements in textile design is essential to maintain the sustainability of cultural identity. This is in line with this study, where the elements analyzed not only reflect visual beauty but also represent a rich cultural heritage. Engineering and Material Analysis; The technique of making Sidan woven fabrics using natural dyeing methods reflects sustainability and respect for nature. This is in line with the theory expressed by Fayzullina and Khristidis (2020), who stated that the use of natural raw materials in textile manufacturing is a form of environmental and cultural preservation. Symbolic Meaning of Motifs; The motifs used in Sidan woven fabrics, such as the Kaki Kemubai and Silup Langit motifs, have a deep meaning. As explained by Nurindah and Widiawati (2021), each motif in woven fabric not only serves as a decoration but also conveys a cultural narrative that

is important for the identity of the community. This study also found that Sidan woven fabric plays a role as a social identity for the Dayak Iban community. This supports the opinion of Lailatul Maulidiyah et al. (2023) that traditional textiles function as a medium of cultural expression that binds communities to their history and values.

## Conclusion

Based on the above explanation, it can be concluded that the results of the analysis of Sidan woven fabrics using the ATUMICS method show that starting from the production process as a whole, maintaining and reviving cultural traditions that have been inherited from generation to generation. Each element of the traditional element not only reflects aesthetics, but also contains a deep symbolic meaning related to the customs, beliefs, and cultural values of the local community. Through analysis using the ATOMICS methodology, it was revealed that elements such as artefacts, techniques, utilities, materials, icons, concepts, and shapes in Sidan woven fabrics play an important role in depicting cultural heritage that has been passed down from generation to generation.

Traditional woven fabrics are not just aesthetic products, but as a medium of cultural expression that binds communities to their history and identity. In this case, traditional woven fabrics maintain cultural traditions throughout the manufacturing process, contributing to the preservation of a rich cultural identity, while enriching contemporary designs with inspiration from the elements of the tradition. Therefore, it is important to continue preserving and developing knowledge about traditional woven fabrics, because in addition to enriching the world of design, these fabrics also maintain the sustainability of cultural values that are part of the identity of a community.

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