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CREATING PATTERNS FROM NATURAL PLANTS BASED ON THE ECO-PRINT CONCEPT TO ADD VALUE TO FASHION PRODUCTS

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ABSTRACT

This research aimed to create patterns from local natural plants into living fabrics, adding value to sustainable fashion products. This research utilizes an ancient technique of direct contact printing, which involves placing leaves, flowers, and plant bark on fabric and steaming it to transfer the plant's pigments and shapes directly onto the fibers. Each resulting pattern is unique, reflecting the plant species and season, reflecting the natural production process to add value to the design and sewing of fashion products and to survey consumer satisfaction with natural plant fabric products. The target group was the Khlong Ha Community Enterprise Group, Khlong Hok Subdistrict, Thanyaburi District, Pathum Thani Province. A satisfaction survey was conducted with 30 respondents. The research instruments used were a multiple-choice checklist and a satisfaction assessment form. Statistics used included percentages, means, and standard deviations. The results showed that the design of the golden lotus pattern had the highest mean score ($\bar{x}$ = 4.65, SD 0.58). The overall suitability of the prototype of the natural plant product was the highest ($\bar{x}$ = 4.76, SD 0.42). The suitability of using local materials in Pathum Thani Province, such as lotus flowers and coral tree leaves, was the highest ($\bar{x}$ = 4.82, SD 0.37). The overall satisfaction with its use was also high ($\bar{x}$ = 4.82, SD 0.37). The overall satisfaction was at the highest level ($\bar{x}$ = 4.78, S.D. 0.41) and overall satisfaction was at the highest level ($\bar{x}$ = 4.75, S.D. 0.45).

KEYWORDS: Creating Patterns from Natural Plants, Eco-Print, Product Design and Sewing, Fashion Products.

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1. INTRODUCTION

Thailand is considered a major textile industry, as the country boasts a diverse range of raw materials that can be imported into the industry. Typically, textile materials may take the form of fibers, yarns, or fabrics. However, fiber type determines the type of dye used in the printing process, temperature, and chemicals used. However, some chemicals and components used in printing must be imported, resulting in significant budget constraints and increased costs for the manufacturing and consumption of woven clothing and textile products. Fabrics are constantly changing, evolving with social trends, fashion cycles, and Everett Rogers's Diffusion of Innovation Theory (Ponglawhapun, 2020).

The production of naturally dyed green clothing is a new trend for health-conscious individuals who prefer clothing that is free from chemicals, especially those dyed with lead residue (Dulal, Fazla, Abu, & Abdullah, 2021). This is consistent with a United Nations report that states that the current garment industry contributes approximately 10% of global carbon emissions and 20% of global wastewater. (Haque, Haque, Mosharaf, Islam, Islam, Hasan, Hossain, & Haque, 2022). Therefore, the textile and garment industry recognizes its importance and has implemented an eco-friendly fashion policy to address water scarcity and pollution from fabric dyeing. Fabric printed with leaves and flowers is an innovative environmentally friendly research method. Printing fabric with various plant species is traditionally Western knowledge (Pujeep, 2023). It originated in Australia and is an environmentally friendly, eco-friendly product without chemicals. When various leaves are placed on the fabric through a natural process, the resulting fabric is a unique, multi-colored fabric product, as if it were a unique product in each manufacturing process. This is because nature is constantly changing with the seasons and environment. This results in the colors in each leaf being valuable and naturally beautiful (Liman, Islam, Hossain, & Sarker, 2020). Printing fabrics with natural dyes is connected to nature, easy to maintain, saves energy and costs in product care. Natural dyes are therefore a symbol of maintaining the balance of nature and also creating fashion art that provides both value and price. The products of printing fabrics with natural dyes do not use chemicals. They use natural substances that do not impact the environment, such as ash, salt, alum, leaves, bark, roots, and the colors of leaves and flowers on the fabric are naturally beautiful and unique (Al Sarhan & Salem, 2018). Printing fabrics with natural dyes is a beautiful art form made from the colors of leaves and flowers designed with various patterns on natural fiber fabrics (Karolia & Khaitan, 2012). It can be used for personal use, as a main career for the new generation, or as a secondary career after retirement (Benlengloi, Suungthuk, & Ladnongkhun, 2022).

The Creative Economy Agency (Public Organization) or CEPA places importance on supporting, promoting, and developing the potential of the creative economy and supporting factors, as well as developing the creative industry as a new engine of growth to enhance the country's economic competitiveness. This initiative aims to support innovation and creative development, including promoting data collection, developing platforms for storing and processing statistics, knowledge, as well as various technologies and innovations to stimulate and enhance the potential of personnel (Capacity Building), and systematically develop the Thai creative industry ecosystem. Therefore, developing creative industries in each sector to prepare and enhance their competitiveness to meet or be recognized internationally is a key goal in developing strategic plans and policy recommendations for four creative industries: Creative Services (Advertising), Design (Fashion Design), and Architectural Services. (Architecture) and creative goods or products (Creative Goods /Products), which include fashion products (Fashion) including the production of ready-made clothing (Creative Economy Agency, Public Organization, 2022, Rittibul, Boontonglek, Ngerndang, Orachun, & Nasom, 2025)

Community capacity, or community enterprise capacity, refers to the entrepreneur's level of competitiveness in trade, which consists of product development capabilities and commercial capabilities. According to research reports from the Department of Agricultural Extension, community enterprises face problems such as:1) lacking the ability to leverage local wisdom for further development; 2) lacking production and marketing skills; often following trends that do not align with market demand; inconsistent product quality and quantity; lacking continuous standard control; and lacking a reliable market for distribution; and 3) promoting community enterprises often rely on a fixed formula, disregarding the suitability and needs of the area (Banjongpru, Kamonlimsakun, Tanawut, & Charoen, 2018). This aligns with Taikham & Sungrugsa's (2015) study, which found that most community enterprises operate in traditional ways, relying on existing production factors and expertise. Most community enterprise products are local food

products and souvenirs, with some products featuring repetitive designs and lacking product variety. A lack of understanding of trends and consumer behavior in the market leads to product designs that do not meet market demand. Furthermore, they lack the knowledge and skills to develop products and packaging, and lack research and product innovation to market.

Therefore, we recognize the importance of creating patterns from natural plants to add value to fashion products as a guideline for developing eco-friendly fashion that is environmentally friendly, increases consumer safety, and promotes the sustainability of nature and the environment.

1.1. Objectives

1. To create patterns using natural plants in design and tailoring, adding value to fashion products.
2. To assess consumer satisfaction with natural plants fashion products.

2. LITERATURE REVIEW

2.1. Eco-print Concepts

Eco-printing, also known as botanical printing or contact printing, is an innovative and environmentally friendly art technique that uses natural plant materials to create intricate patterns on fabric. Eco-printing is a meticulous and sustainable method that preserves the natural pigments and textures of various plants by transferring these elements onto the fabric surface without the use of harsh chemicals or synthetic dyes. The technique uses natural fabrics such as cotton, silk, wool, and linen as a medium for artistic expression which carefully selected plant materials, including leaves, flowers, and stems, are meticulously arranged on the fabric, forming bundles that beautifully reflect nature's rich diversity. The bundles are tightly tied with string or clips to hold the plant materials in place. The heart of eco-printing lies in the steaming or boiling process. In this process, the bundles are exposed to heat, allowing the natural plant pigments to penetrate the fabric. As the heat activates the pigments, the fabric absorbs the color and texture, resulting in unique and beautifully natural prints (Dulman, 2024). Eco-printing is a natural dyeing technique that uses leaves, flowers, and other plant materials to create patterns and colors on fabric or paper. This process involves combining plant and fabric materials and steaming or boiling them to transfer the plant's colors and patterns to the fabric. The methods and materials used can vary depending on the artist, but the result is a unique and individual print that reflects the beauty of nature. It also allows you to create works that are in tune with the seasons, using materials that have been responsibly grown, found, shared, or harvested. Eco-printing is a relatively new technique that has been developed in recent years, but it still uses traditional natural dyeing methods that have been used for centuries. The term "eco-printing," as it is known today, was first used by Australian artist India Flint in the early 2000s, who is credited with pioneering the technique and helping to popularize it (India, 2008).

2.2. Design Concept

Design is a human-created problem-solving approach, applying knowledge and principles of art to create beauty and utility. Beauty is primarily derived from psychological perception, as the mind expresses feelings of like, dislike, satisfaction, or dissatisfaction, or the expression of needs (Rittibul, Boontonglek, Ngerndang, & Nasom, 2025). Therefore, it can be stimulated by various factors. Generally, people perceive beauty and satisfaction in various things differently, so there is no clear standard for determining these values. Therefore, design results must be based on visual perception through the form of the object. This form is what makes people who see it happy and satisfied. Design or creative works include the design of everyday objects, beautifying spaces, and creating various works of art. Utility is often the primary consideration for satisfying physical and mental needs. Therefore, utility design is primarily found in consumer goods essential to the lives of people in various occupational groups, such as housing, clothing, vehicles, tools, agricultural equipment, and office equipment. These benefits directly emphasize physical benefits. Therefore, in product design, designers must consider It is essential to possess excellent knowledge and skills in translating imagination into product design to create aesthetically pleasing works. Design, in particular, emphasizes function, combining aesthetics and utility to meet the needs of diverse audiences. The importance of design is that design can solve various product problems. Therefore, design is essential and valuable to human life, with its endless physical, emotional, and attitude needs. Furthermore, design can contribute to the successful completion of various operations (Inkong, 2020).

2.3. Product Prototype Creation Concept

A prototype is a final design model for a product designed for testing purposes. Prototypes are created to assist entrepreneurs and those involved in product

development in analyzing and testing the product before proceeding to production. These prototypes require customer evaluation and data collection, and after this stage, actual prototypes are produced. During collaborative design research (R&D), once the product's conceptual details are crystallized, prototypes are created, which serve as a research and development tool. Prototypes enable designers to explore designs, test theories, and verify product performance before actual production begins. Prototypes are useful for validating design concepts, identifying product design patterns, including appearance, materials used, manufacturing processes, and technologies. Prototypes serve as a tool for studying consumer user experiences, allowing designers and those involved in product development to experience the actual product before proceeding to manufacturing. Furthermore, prototypes facilitate clearer communication when presenting new products to executives or customers, as three-dimensional visualizations facilitate understanding more easily than verbal explanations. Even sketching a product on paper isn't as comprehensive as creating a prototype. Since a prototype can be tactile, it truly creates a direct, shared experience between designers and consumers. Therefore, the concept of product prototyping is crucial for product design research, as it reflects the benefits consumers will receive from using the product, such as its functionality and value. Researchers have therefore incorporated this into consumer market trials to select products for production and distribution, allowing for appropriate adjustments. This reduces production costs, as consumers can evaluate and refine their purchasing decisions by experiencing the shape and form of the prototype and identify design flaws before actual production begins, significantly saving time and cost (Keawpan, Itsaranuwat, & Plangnok, 2020).

3. METHODS

Research Participants and Data Collection. The population/informants for this research study were selected from the Ponpiman Khlong Ha Village Community Enterprise in Thanyaburi District, Pathum Thani Province. A total of 30 individuals were chosen using purposive sampling. These individuals willingly agreed to participate in the activities and represented a diverse group necessary for brainstorming and evaluating satisfaction with the design and tailoring of fashion products.

Protection of Research Participants' Rights (Ethics). The researcher protected the rights of the voluntary participants by ensuring that all data collected from this study would be kept confidential. Only the researcher will have access to the data, and the data will be destroyed once the research is complete. Research findings will be reported in aggregate and will be handled with care and diligence. There will be no reference to the informants' names or any personal information in any research-related documents without prior permission from the informants.

The research design utilizes a mixed methods research design, combining qualitative and creative research. **The research process is as follows**

1. **Research Preparation** The researcher studied and researched information from books, academic documents, textbooks, and related research to analyze the data.
2. **Research Procedures** The researcher used the ADDIE Model to define the following steps in the research process.

3.1. Analysis Step

1. Review documents on theories, concepts, and related research works, such as fabric patterns, design techniques, community basic information, current market needs, and other information on various products and other related matters, to serve as guidelines for study, research, and data collection.
2. The researcher went to the area to build relationships with the community by making appointments with the key informants. The community people participated in the selection of the prototype before the product was developed.

3.2. Design Step

1. Analyze data to design fabric patterns from natural plants for fashion product development.
2. Establish the concept of designing natural plant products to develop various types of fashion products, including ties, bags, women's clothing, hats, and passport cases, to achieve unique community designs with beautiful designs that can persuade consumers.

3.3. Development Step

Design fabric patterns and draft prototype products by using 5 natural plant fabric patterns and placing them in 5 product patterns, totaling 25 patterns, to achieve unique patterns that align with current consumer tastes. This can attract consumers'

attention in an era where cultural capital is used to create social value, increase economic value, and improve the quality of life of communities. The participatory process stimulates and supports creativity, or Soft Power, to enhance and develop the knowledge, skills, and creativity of people in the community with participation to create value.

3.4. Implementation Step

The collected information was brought to a focus group meeting with representatives of the Ban Phonphiman Khlong Ha Community Enterprise Group, Thanyaburi District, Pathum Thani Province, consisting of 1 group president, 2 group vice presidents, 1 committee member, and 1 secretary. They jointly considered and selected fabric patterns from a total of 5 patterns, narrowing down to 1 pattern before producing it as a fabric prototype and then producing a fashion prototype product.

3.5. Evaluation Step

Find the product-objective congruence index using the IOC formula and use ready-made statistical programs to analyze the data, including

1. **Fabric Pattern Design** Satisfaction was assessed by the sample group, with data expressed as means and standard deviations.
2. **Product Suitability** Satisfaction was assessed by the sample group, with data expressed as means and standard deviations.
3. **Material Suitability** Percentages were expressed.
4. Overall Satisfaction was assessed by the sample group, with data expressed as percentages.

4. RESULTS

4.1. Create Patterns Using Natural Plants in Design and Tailoring to Create Value for Fashion Products

The researcher studied natural plant patterns found in the local community of the Ban Phonphiman Community Enterprise Group, Khlong Ha, Khlong Hok Subdistrict, Thanyaburi District, Pathum Thani Province. The researcher found that the community is home to a wide variety of natural plants, due to the large community context and the availability of natural plants in nearby communities. Each plant produces different colors and patterns. Mordants are also readily available in the community, including alum, a key ingredient that gives the fabric its vibrant colors, as shown in Table 1. The researcher applied design knowledge to select the prototype fabric pattern to create the identity pattern on the fabric by bringing the prototype product of the 5 fabric pattern designs to the community enterprise group of Ban Phonphiman, Khlong Ha, Khlong Hok Subdistrict, Thanyaburi District, Pathum Thani Province, from 5 patterns to 1 pattern before using it to make the prototype product. The research results are as shown in Table 2.

The results of the analysis in Table 1, found that 5 representatives of the Ban Phonphiman Khlong Ha Community Enterprise Group chose the golden lotus pattern as their first choice, with 5 people choosing it, or 100 percent. The second choice was the golden lotus pattern, with 4 people choosing it, or 80 percent. The third choice was the 2 designs, the lotus around the heart pattern and the lotus leaf pattern, with 3 people choosing it, or 60 percent. And the last choice was the lotus stem pattern, with 2 people choosing it, or 40 percent.

The golden lotus pattern is a pattern that the community is interested in and has chosen as a model because it uses local plants as raw materials to create diverse patterns/dyes. It can convey local wisdom and clearly represent the story of the community, giving the product a unique identity that is distinct from other industrial products.

The process of creating a product prototype from fabric patterned cloth is the first stage of product development. Products were selected from observations and interviews with the product needs of the Ban Phonphiman Khlong Ha Community Enterprise Group, Khlong Hok Subdistrict, Thanyaburi District, Pathum Thani Province. Five product categories were summarized for design: clothing, hats, bags, neckties, and passport cases. These were then used to design products incorporating the golden lotus pattern, as shown in Table 2.

The process of creating the golden lotus pattern on the cloth. The researcher recorded data and worked with members of the community enterprise group, Ban Phonphiman Khlong Ha, Khlong Hok Subdistrict, Thanyaburi District, Pathum Thani Province, including experimenting with the coloring of leaves found in the area, such as lotus flowers, the provincial flower of Pathum Thani, and Indian Coral trees, the provincial tree of Pathum Thani, and taking notes. The process of creating the color of the pattern on the cloth was divided by using the Eco print formula with bright colors. This formula produces bright colors and patterns of the cloth, with colors obtained from leaves: yellow, orange, brown, and green.

Table 1: Information on the Identity of Natural Plants in the Area of the Ban Phonphiman Community Enterprise Group, Khlong Ha, Khlong Hok Subdistrict, Thanyaburi District, Pathum Thani Province.

Natural plants	Leaf image	Dyeing Result	Coloring of leaves	Arrangement on fabric	Uniqueness
1. Lotus			One sided	1.The uniqueness of the plants used in the arrangement emphasizes independence and direction. 2.The layout of various patterns still uses the principles of rhythm. 3.The layout is usually vertical. 4.The arrangement of the leaves is determined by the length of the fabric to suit the piece to be used.	1.Natural plant patterns printed on fabric 2.Bright colors with natural dyes 3.Can make patterns on a cloth size of 1.50 X 2.10 meters. 4.It has a variety of patterns and can be developed to create a variety of designs. 5. Layout with empty space
2. Lotus Leaf			One sided		
3. Indian Coral Leaf			Double sided		
4. Rang Daeng Leaf			Double sided		
5. Teak Leaf			Double sided		
6. Cotton Leafed Jatropha			Double sided		
7. Cassia Leaves			Double sided		
8. Coral Hibiscus Leaves			Double sided		
9. Frond			Double sided		
10. Indian gooseberry leaves			Double sided		

Table 2: Fabric Pattern Selection Table (Representatives Selected by the Ban Phonphiman Khlong Ha Community Enterprise Group) Uses the Score from the Largest Number of Choices (Selected by Checklist) in Selecting Patterns for Use in Production.

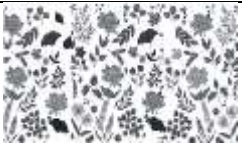
Selection of 1 fabric pattern to be used as a prototype for making N=5 prototype products				
Coral leaves with Lotus PatternPatent application no. 2502002312	Lotus pattern surrounding the heart Patent application no 2502002305	Lotus stem pattern Patent application no. 2502002303	Thin lotus leaf pattern Patent application no. 2502002314	Golden lotus pattern Patent application no. 2502002307
				
4 people choosing, or 80 percent	3 people choosing, or 60 percent	2 people choosing, or 40 percent	3 people choosing, or 60 percent	5 people choosing, or 100 percent

Figure 1: Natural Plant Arrangement on Fabric.

Figure 2: Fabric Made from Natural Plants That Has Undergone a Steaming Process.

Results of the experiment on sewing fashion products. The researcher has taken the golden lotus pattern fabric and sewed it into fashion products such as clothes, bags, hats, neckties, phone cases, passport cases, to be used as product prototypes for the Ban Phonphiman Khlong Ha Community Enterprise Group, Thanyaburi District, Pathum Thani Province, for further commercial development.

Table 3: Fabric Patterns Used to Design the Five Types of Prototype Products.

Pattern name (Golden lotus pattern)	**Clothing products**	**Hat products**	**Bag products**	**Necktie Products**	**Passport case products**
					
					

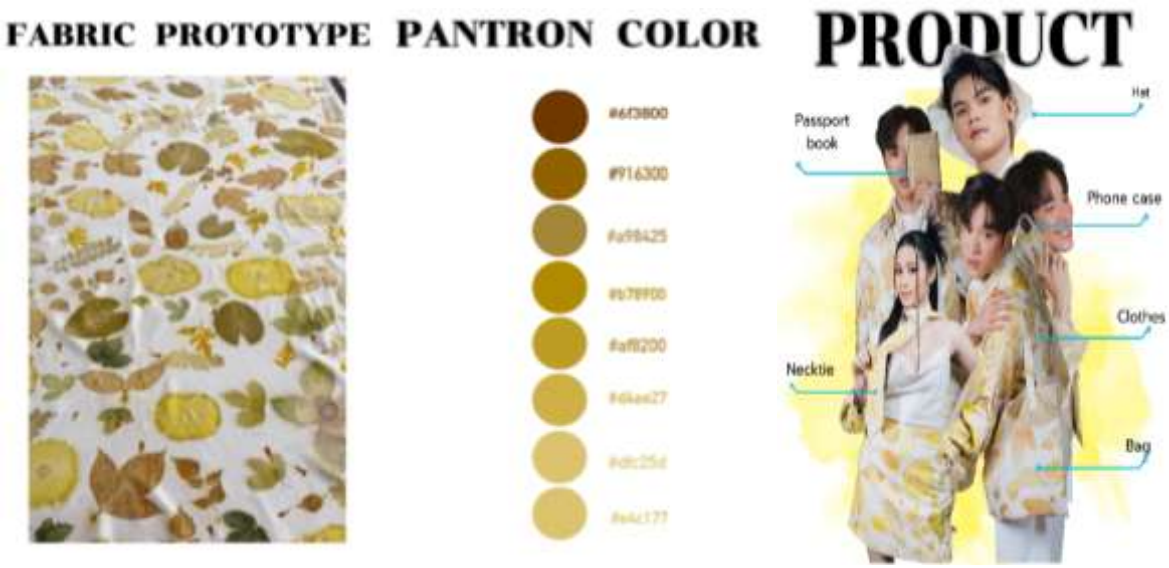


Figure 3: Patterns and Colors for Sewing Fashion Products.

4.2. Evaluate Consumer Satisfaction with Natural Plant Fashion Products

Table 4: Average Satisfaction of Five Prototype Products from Golden Lotus Pattern Fabric, N=30.

Evaluation List	$\bar{x}$	S.D.	Satisfaction Level
Fabric pattern design			
The prototype pattern had interesting patterns, colors, and decorations	4.62	0.62	Highest
Fabric pattern design and prototype pattern exhibited creativity in designing unique shapes and uses	4.67	0.54	Highest
The original pattern has the characteristics of appropriateness of form, color, material harmony, perfect shape and complete elements.	4.67	0.60	Highest
In terms of the suitability of the prototype of natural plant products			
The prototype product was most appropriate in its composition with the pattern	4.80	0.40	Highest
The size of the prototype product is suitable for use.	4.77	0.43	Highest
The prototype product is interesting and attractive to users.	4.73	0.45	Highest
In terms of the suitability of local materials in Pathum Thani Province, including lotus, Indian Coral leaves			
Materials used to convey the identity of Pathum Thani	4.87	0.34	Highest
The materials used were beautiful	4.73	0.45	Highest
The materials used have a clear line pattern.	4.87	0.34	Highest
In terms of satisfaction with the use of environmentally friendly products			
The product is exquisite and beautiful	4.73	0.45	Highest
The product is convenient and comfortable to use	4.77	0.43	Highest
The product is environmentally friendly.	4.83	0.37	Highest
The product is valuable and has a price	4.80	0.40	Highest
The overall level of satisfaction	4.75	0.45	Highest

The analysis results in Table 4 revealed that the fabric pattern design and prototype pattern exhibited creativity in designing unique shapes and uses. The prototype pattern was characterized by appropriateness of form and color, material harmony, perfect shape, and complete components, with an average score of 4.67 percent, the highest level of satisfaction. The prototype pattern had interesting patterns, colors, and decorations, with an average score of 4.62 percent, the highest level of satisfaction. In terms of the suitability of the prototype of natural plant products, the prototype product was most appropriate in its composition with the pattern, with an average score of 4.80 percent. The size of the prototype product is suitable for use., with an average score of 4.77 percent, the highest level of satisfaction. The prototype product was interesting and appealing to users, with an average score of 4.73 percent, the highest level of satisfaction. In terms of the suitability of local

materials in Pathum Thani Province, including lotus, Indian Coral leaves, materials used to convey Pathum Thani's identity, and materials with clear line patterns, the average score of 4.87 percent, the highest level of satisfaction. The materials used were beautiful, with an average score of 4.73 percent, the highest level of satisfaction. In terms of satisfaction with the use of environmentally friendly products, the prototype product was the highest, with an average score of 4.83 percent, the highest level of satisfaction. Next, the product is valuable and has a price, with an average of 4.80 percent, the highest level of satisfaction. The product is convenient and comfortable to use, with an average of 4.77 percent, the highest and least satisfaction level. The product is exquisite and beautiful, with an average of 4.73 percent, the highest level of satisfaction. The overall level of satisfaction, with an average of 4.75 percent, the highest level of satisfaction.

5. DISCUSSION

This research is an experimental research on the creating of patterns from natural plants to add value to fashion products. The results of the research can be summarized and discussed as follows

Create patterns from natural plants in the design and sewing to create value for fashion products. The design and sewing results of fashion products. The eco-printing process draws inspiration from nature and local identity (Rakprayoon, Chanchay, Nakprasom, & Veerasilpa, 2024) by selecting natural plants found in the area, such as lotus, the provincial flower of Pathum Thani, and Indian Coral tree, the provincial tree, as the main components. Furthermore, natural plants found in the community, such as eucalyptus leaves, guava leaves, mango leaves, and Indian gooseberry leaves, are used to create unique patterns on fabric, this aligns with Phannaen (2023) 's study of the development of products from printed fabric art and patterns from local leaves and student satisfaction with the integrated education process using printed fabric art and patterns from local leaves. This integration between teaching and community academic services in the project "Improving the Quality of Life and Enhancement of the Grassroots Economy with Printed Fabric Art and Leaf Patterns (Eco-print)" at the handicraft group in Ban Lat Subdistrict, Kantharawichai District, Maha Sarakham Province can summarize the results of the study and Dekel (2021), Nurmasitah, Solikhah, Widowati & Milannisa (2022), chose to use plants that are available all season and easy to find. In terms of color fixation, it has an efficiency similar to chemical mordants. From the research of Wangatia, Tadesse & Moyo (2015) and Khunadilok & Pattarakunamorn (2013), using a balanced all-over pattern throughout the fabric without a single highlight, allowing the pattern to be continuous in all directions. The researchers chose to use 100% handwoven cotton to create color and durability of natural plant dyes through a steaming process. The work was developed into a variety of prototype fashion products to meet the needs of consumer groups. In line with Kaewthong (2017), who found that consumer attitudes towards sustainable fashion products and sustainable fashion approaches positively influence the purchase intention of sustainable fashion products. In line with Tri & Bahari (2023) In terms of visuals, the using screen printing to make eco-prints better has been successful. When we use screen printing with eco-printing, it makes the designs more exciting and colorful. It also helps the patterns stand out more, so the finished product looks more interesting and not boring.

Consumer satisfaction with natural plants fashion products. The overall satisfaction level of consumers or customers and tourists with natural printed fabric fashion styles was at the highest level, including the utility of clothing, ties, bags, hats, passport cases, and phone cases. Materials used were appropriate for their price and resonated with the current era, with practicality taken into account, pricing must be appropriate, calculated from appropriate production costs. Fabric printing with patterns enhances features and uniqueness, making it suitable for different uses. In addition to creating novelty for fashion products, it also expands the options for processing natural printed fabric fashion products, increasing the variety. This aligns with Ngamnisai's (2018) concept, which states that the perspective of creating or improving traditional products to be contemporary should be consistent with trends, and newly created products must be usable in everyday life. This aligns with Inkong's (2020) research findings, which found that souvenirs must be usable so that consumers can recognize their utility. Dechsri & Wisetprapha's (2022), findings indicated that consumers in Bangkok tend to choose eco-friendly products when deciding to purchase eco-friendly products. In line with Soesilowati, Agustin, & Nafiah, A. (2024) Most people, about 62%, learn about these products through social media, like on Facebook or Instagram. The study showed that people care a lot about how good the product is and how much they get for their money. This study looked at what people think about eco-print products, which are special items with pretty colors made in a way that’s friendly to the

environment. It found that most people, about 57%, like eco-print products because they have nice, colorful designs. About 41% of people thought the fabric felt cool to the touch. Also, around 43% said that the price of these products is fair for how good they are. The study suggests that makers of eco-print products should work on making them better in quality, more available, and keep making new designs. They can do this by using Indonesia's natural resources and paying close attention to how the products are made and used, because these special art items need to be touched and worn by people to be appreciated and in line with Nurcahyanti & Septiana (2018) an interesting example is Ria Miranda's handmade eco-friendly prints. Because she makes her designs by hand, it makes her work look special and different from mass-produced items. Her handmade prints are unique and can't be exactly copied because no two are exactly the same. This way of working is called "One Process One Product" or OPOP. It helps prevent others from copying her designs and making lots of similar products, keeping her work special and original.

6. SUGGESTIONS

6.1. Expanding the Scope of Raw Materials and Sustainability

1. Exploring New Natural Plants: Research and experiment with local plants or plants with potential but underutilized applications for pattern/dye creation, such as agricultural waste, to create a variety of patterns and colors.
2. Developing Eco-Friendly Techniques: Focus on in-depth research on dyeing/printing techniques that are
3. Zero-Waste or use minimal energy/water, such as direct contact printing and the use of natural dyes to reinforce sustainability selling points.

6.2. Application of Technology and Design

1. Digital Research and Simulation: Study the use of Computer-Aided Design (CAD) or Artificial Intelligence (AI) to create pattern repeats or simulate natural plant colors on fashion products to ensure accurate and rapid production.
2. Durability Assessment: Conduct experimental research to compare the color fastness of natural plant patterns to that of synthetic dyes, particularly for heavy-duty products.
3. Functional Design: Research the application of natural plant patterns to functional fashion products, such as breathable fabrics and herbal mosquito repellents. To Increase Product Value

6.3. Economic and Marketing Value Creation

1. Market Demand Analysis: Conduct market research to determine the willingness of target consumer groups, such as eco-conscious and premium consumers, to pay more for products using natural plant patterns and dyes.
2. Storytelling and Branding: Research communication and marketing strategies that emphasize plant provenance, environmentally friendly processes, and local wisdom to create emotional attachment and add value to the brand.
3. Knowledge Transfer and Networking: Research technology and knowledge transfer models for community enterprises to enhance production capabilities and connect natural plant producers with fashion entrepreneurs.
4. Cost-Benefit Analysis: Study and analyze actual production costs, from harvesting to finished products, to create sustainable business models for community enterprises.

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