Interactive Rattan Vase Design

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ABSTRACT

In addition, rattan is a fast-growing and environmentally friendly resource, which is a suitable fit for today's sustainable design concepts, but Thai handicrafts are facing declining popularity due to the expansion of technology-based products, which can create convenience and provide a better interactive experience for users. This research therefore proposes a way to develop wickerworkto interact with consumers. It relies on the elastic properties of rattan as a basis for experimenting with new works. The result of the experimental design was a wicker vase made from rattan that merged wires with copper wires inside to control the structure. The important factors are the density of the weave, the spacing of the pattern, and the size of the rattan, which will clearly affect the shape stability and the ability to collapse, shrink, and bend the workpiece. In conclusion, this research suggests that rattan not only meets the needs of decorative and functional uses. But it can also be developed into handicraft products that interact with users. The result is an approach that helps to enhance the value of local wisdom. It connects with contemporary ways and opens up new opportunities for the development of more sustainable design innovations.

Keywords: Rattan, Weaving Craft, Contemporary Craft, User Interaction

Introduction

Home decor is very important because every home decor helps to make the house livable and impresses visitors. (Codman, 2025; Wharton & Codman J, 2024) It is also useful to add flowers to freshen up the home.(Hassard, 2024).

The vases that everyone sees today come in a variety of forms. Hanging vases come in different sizes and shapes, and the vases generally use the technique of ceramics or pottery with hardness. (Kurian & Thankachan, 2023) When dropped, it causes damage that cannot be repaired. In addition, all types of vases must be processed by baking or firing. This causes smoke and pollution that causes air pollution. (Sani, 2024) As a result of this situation, new methods have been invented to reduce the amount of pollution caused by incineration.

Rattan is a natural material that is locally resident, a palm plant characterized by climbing stems, with single stems or clumps. Rattan has a special feature of easy bending. (Rachman et al., 2021) It is exceptionally flexible; it can be bent. It is tough as a characteristic. The skin is oily. (Ahmed et al., 2022; Yu, 2023) It is useful in many aspects, including being used to bind various items and wicker into various utensils, such as making baskets, lamps, and even furniture, sofas, or chairs. (Sulaiman et al., 2022; Latifah, 2024) It is also an economic crop that is easy to find in Southeast Asia, especially in the Thai provinces of Sakon Nakhon and Khon Kaen. A large amount of commercial rattan is cultivated.

Based on the above information, with all of these features, there is a guideline for designing vase sets used for home decoration from the rattan weaving technique and process, as well as the development of local materials that can be easily found in the region to be more attractive and more diverse.

Research objective

To design a set of vases for home decoration from rattan

Research methodology

This research uses a qualitative research process to create vase products for decorative use. The process of operation is as follows:

1. Study information about the characteristics, properties, and uses of rattan from relevant documents and research.

2. Designing and manufacturing prototypes of rattan vase products with the following steps: Create design ideas.

2.2 Drafting and developing drawings
2.3 Create product mockups
2.4 Drawing for production
2.5 Product Prototype Manufacturing

Findings

Findings from the study of the characteristics, properties, and uses of rattan in product design and decoration. Found that

Physical Characteristics

1. Internodicated structure There are long sticky fibers throughout the ship. Gives the material strength. It is not brittle and does not break easily and can bear weight well.

2. The size of the rattan is varied, with an estimated size of 0.5-1.2 cm and a length of 100-200 cm.

3. Smooth surface It can be easily polished or painted. Rattan is suitable for a variety of design genres. Both traditional and contemporary.

4. Lightweight compared to solid wood, conducive to moving and designing furniture with a light, airy structure

Material Properties

1. High flexibility can bend well without breaking, suitable for creating soft curves in designs such as curved chairs. Organically shaped lamps

2. Durability and toughness. Not easy to tear Good pressure and tensile strength

3. Moisture resistance to a certain degree. It can be used outdoors (when drying/coating) and can be extended by baking and coating.

4. It is a renewable material that grows faster than many types of wood, making it highly sustainable for design.

5. Easy repair Woven or wound parts can be repaired in parts without replacing the whole piece.

Product Design Applications

1. Furniture such as chairs, tables, sofas, shelves, etc.
2. furniture frames that require roundness and lightweight;
3. Decorative & Lifestyle Products
4. Storage products such as baskets, trays, and baskets.
5. Home decorations such as lamps, vases, pots, etc.
6. Fashion jobs such as woven bags Jewelry, contemporary arts and crafts

In addition, rattan can be used in good combination with other materials such as wood, metal, fabric, and leather, resulting in new products with a contemporary twist.

Interior Design Applications

1. Wall and ceiling decorations, such as wicker woven panels, are used as wall panels or ceilings, adding naturalness and breathability.

2. Partition/divider, such as transparent partition walls that feel soft and adjust light and shadow beautifully.

3. Interior architectural elements such as facades, arched decorative frames, and window and door frames

4. Resort-style decoration, organic, minimalist, and rattan are important materials to create a warm, close-to-nature, and contemporary simplicity.

Design Potential

1. Suitable for the concept of bio-based design/sustainable design because it is a natural material that grows quickly. Low processing energy consumption

2. It supports the development of new techniques such as steam bending, mold molding, UV coating, and mixing with polymers for strengthening.

3. Form exploration is used to create organic forms that are difficult for ordinary wood.

4. It communicates local identity and wisdom as a material that reflects Thai handicrafts. It can be developed into a contemporary cultural product.

Based on the above information, it can be seen that rattan is a material that is outstanding in terms of toughness. Strong, lightweight, and highly flexible This has great potential to develop into contemporary products and interior decoration applications, especially for demanding applications. Beautiful curved lines Natural materials and sustainability In addition, rattan can be well combined with other materials. Expand product design opportunities in terms of functionality, decoration, and cultural identity, which is in line with the international trend of design that focuses on naturalness and sustainability. Therefore, it leads to the design concept. as follows

Concept Design

In modern times. The trend of products that have gained the attention of consumers is often directed towards products that can generate interaction with users. Whether it's smart products, home appliances, or decorations, technology has played a major role in lifestyles and product expectations. As a result, products with the ability to respond to users are more prominent and popular. However, the growth of technology products has made products born from traditional wisdom Especially handicrafts are being reduced in importance. Crafts themselves are full of processes that have "interaction" in them. Sculpting, carving, or other types of arts and crafts all require concentration, subtlety, and delicate work. Physical touch and the aesthetic experience of the creator are profound.

In this context, rattan is a suitable material to be developed into a product that emphasizes the interaction between the user and the workpiece. With the physical characteristics of rattan with long, sticky fibers. The structure is continuous internodes. It is also lightweight and strong, allowing rattan workpieces to be shaped to a certain extent without being deformed or easily broken. These features help open up the opportunity for rattan to be designed as a user-engaged product. It is able to adapt forms or express itself creatively through direct contact, a unique feature that cannot be replaced by conventional industrial materials.

Due to the properties of rattan that support bend and tensile strength, coupled with the surface that feels natural, warm, and harmonious with the home environment, the idea of designing home décor products from wickerworkthat can interact with users has been born. Users may twist, crumple, or reshape certain parts of the product similar to clay molding, which not only enhances the fun but also creates an experience between the product and the consumer. It also allows users to adapt to their specific functional or decorative needs.

Design Brief

This design aims to evolve traditional wickerworkbeyond the traditional framework. By applying the weaving process to a new technique that can respond to modern consumer behavior. This focuses on products that can generate user interaction. To create new design opportunities and enrich contemporary handicrafts.

Concept Interaction

Reasons to Support The behavior of today's consumers, who are often interested in interacting with products quickly, (Rachmad, 2024) is often a product of a technological model, so handicrafts are forgotten. Therefore, there is an idea to design handicraft products that interact with consumers. and help promote handicrafts to be more valuable.

Design Steps

The concept sketch allows the vase to be collapsible to adjust the height to suit the user's needs.

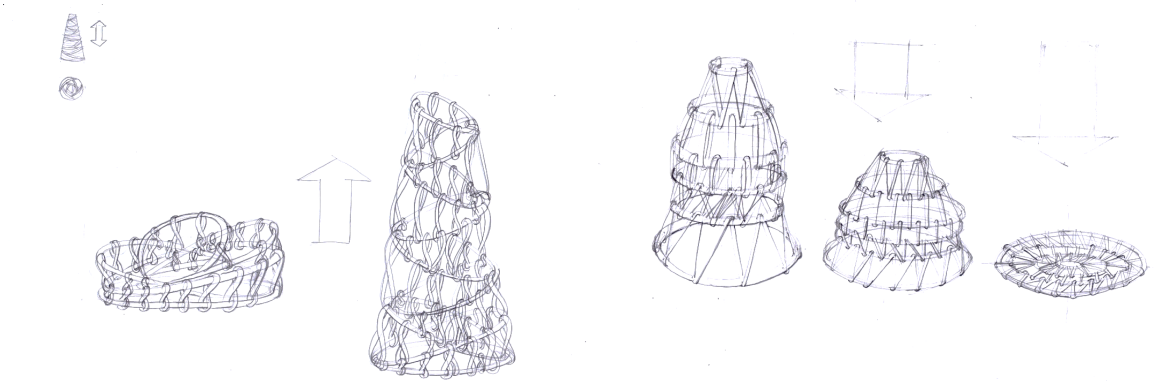

Figure 1. The photo shows a sketch of a collapse-and-shrink vase.

A conceptual sketch that can be twisted and bent to modify the shape of the vase to suit the location and use.

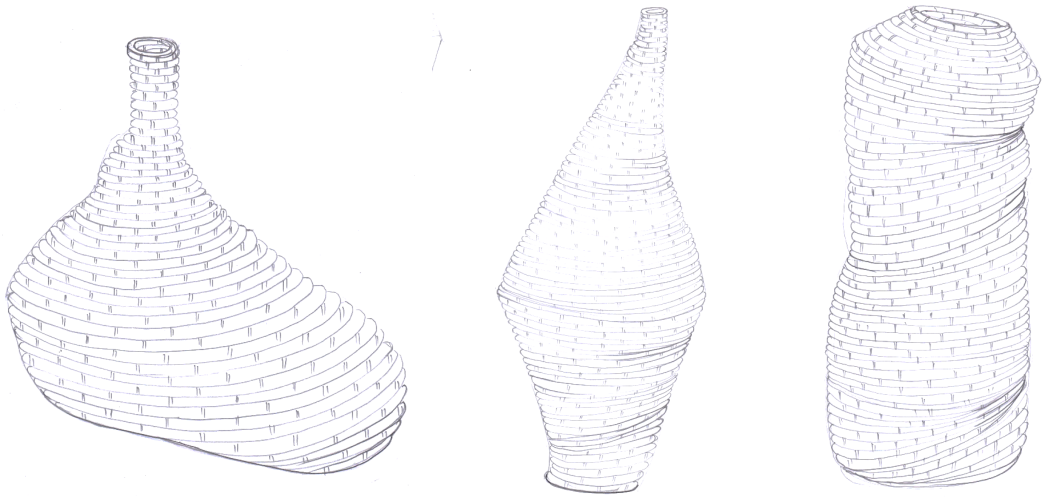

Figure 2. The picture shows a sketch of a vase that can be twisted.

Figure 3. Sketch design

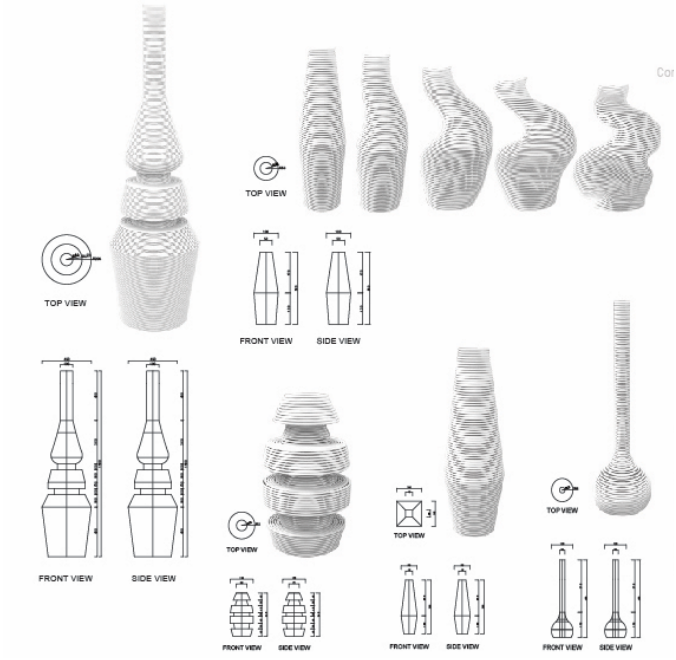

Figure 4. Display the proportional size of the vase.

Figure 5. The image shows the model of the workpiece.

Process

1. Soak the rattan in water for about 30 minutes to 1 hour, depending on the size of the rattan filling, before it can be molded.

Figure 6. The photo shows the process of soaking rattan in water.

2. Wrap the cord around the rattan filling and use your fingers to support the rattan filling according to the size we force.

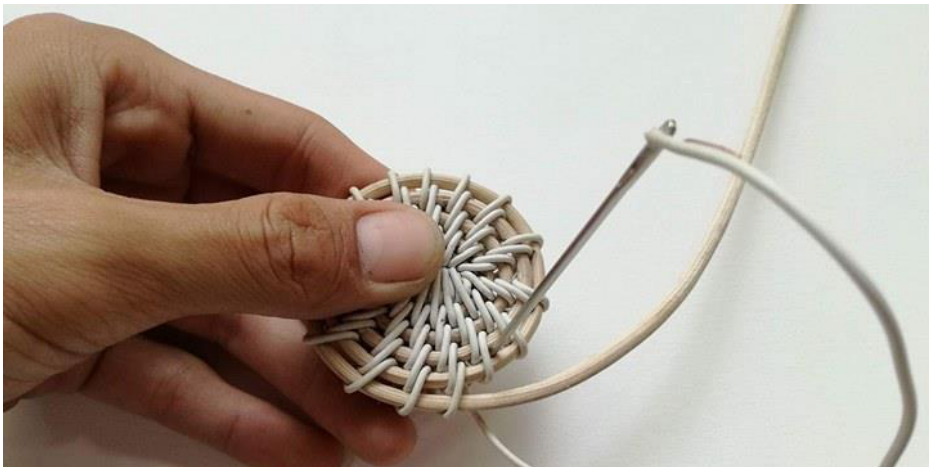

Figure 7. The photo shows the process of forming a vase.

Connecting the wires using the method of tying them tightly and using pliers to squeeze them will help prevent the wires from falling off.

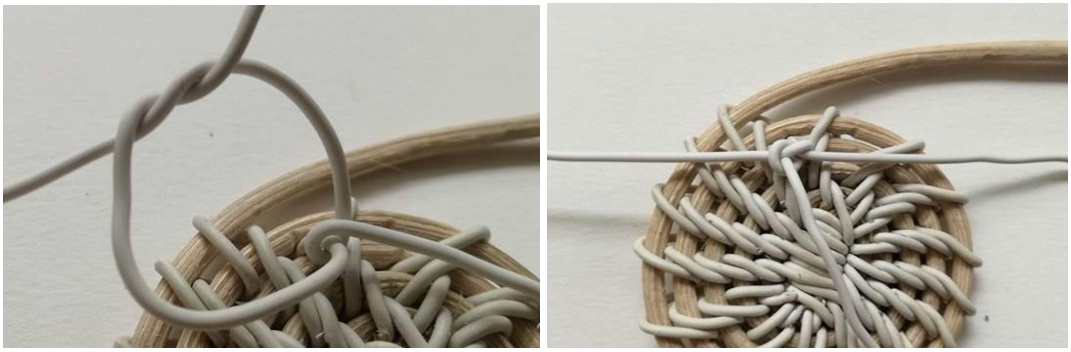

Figure 8. The picture shows the process of connecting the wiring lines.

3. Showing the molding of the vase using the knitting technique by knitting according to step 1 until the desired size and height are achieved

Figure 9. The photo shows the process of forming a vase.

Complete pieces of vases from rattan

Figure 10. Shows a complete picture of a vase that can be collapsed.

Figure 11. Shows a complete picture of a vase that can be twisted to adjust the pattern.

Figure 12. Shows a complete picture of a vase that can be twisted to adjust its shape.

Figure 13. Prototype of a vase product from rattan

Conclusions and Discussion

The results of the study on the characteristics, properties, and uses of rattan in the context of product design and decoration show that rattan is a natural material with high potential for development into contemporary products, with advantages in both structure and material properties such as toughness, light weight, high flexibility, and good bendability or formability. The physical characteristics of rattan, which consists of long continuous fibers and an internodular structure, give the material strength. It is not brittle and easy to break and supports tensile and pressure well. At the same time, the surface is smooth and can be easily polished or painted. This allows rattan to be applied in a variety of designs, including contemporary, minimalist, and organic, or in perfect combination with other materials. These properties support the use of rattan to create curved lines in furniture. In addition, rattan is a fast-growing renewable material, in line with the concept of sustainable design and the use of natural materials in today's global trend.

When this information is taken into account with the contemporary situation, it is found that although Thai handicrafts have cultural values and reflect local wisdom, their popularity has declined due to the growth of technological products that respond quickly to consumers and interact directly. This change poses a challenge in maintaining the identity of the handicraft in the modern era. However, The study found that rattan possesses inherent material properties that strongly support interaction-oriented design. Its flexibility, torsional capacity, bendability, and ability to deform in response to human touch enable the creation of craft products that are responsive to user interaction in ways comparable to interactive technology-based products.

These physical responses allow users to engage with the product through tactile exploration, movement, and sensory feedback, transforming the object from a static artifact into an interactive experience. Consequently, the design process goes beyond aesthetic and functional considerations to incorporate user behavior and bodily engagement as core design elements.

This interaction-based approach creates new opportunities to integrate traditional craftsmanship with contemporary design thinking, enhancing user experience while preserving cultural identity. It also aligns with the expectations of modern consumers who seek emotional connection, engagement, and participatory experiences through product interaction.

From this concept, therefore, research has led to the design of new types of wicker products. It focuses on creating interaction between the product and the user through the ability to twist, bend, or collapse to change the shape according to needs. The experimental product in this research was a wicker vase that mixed a frame with a wire. Confirming the potential of rattan to actually transform The power cord acts as a shape control rod, allowing the user to freely adjust the height, curvature, or shape of the vase. Experimental results indicate that weaving density, wire spacing, and rattan dimensions have a direct influence on the deformation capacity and structural strength of the workpiece. Furthermore, the product's ability to deform in response to user manipulation captures users' attention, enhancing enjoyment and promoting relaxation through tactile interaction and hands-on shaping experiences.

In conclusion, Research has shown that rattan is not only suitable for product and decorative applications. But it can also be developed into an effective interaction-oriented product. This adds value to handicrafts and meets the needs of modern consumers who want a unique user experience. Therefore, such development is an important way to expand the identity of Thai handicrafts in line with the contemporary context and create new opportunities for the design industry in terms of creativity. Economics and Sustainability in the Future.

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