

DESIGN AND DEVELOPMENT OF PRODUCTS FROM REED MATS OF BAN PHAENG AGRICULTURAL HOUSEWIFE PROFESSIONAL REHABILITATION GROUP

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Abstract

This research aims to study the context, concepts, evidence of wisdom as well as the management of reed mats of Ban Phaeng Agricultural Housewives Rehabilitation Group (BPG), Phaeng Sub-district, Kosum Phisai District, as it also developed the local wisdom by designing the reed mats with geometric shapes to represent the community's identity of BPG. The final aim assesses the satisfaction of the distributors and consumers towards the product from the reed mat material. The key findings after conducting the research are as follows: 1) the product design from Ban Phaeng reed mats present local characteristics; the reed mats work that has been summarized in the form of endemic products; the community needs the form of products in the area of design, create draft, to be developed into 4 types; regarding the evaluation result of 2 product design, the experts found that the 4th pattern, 9-compartment hanging storage from reed mats, had the highest level of opinions, followed by the 1st pattern, the closet product from the reed mats and the 3rd pattern, 4 compartment hanging storage from the reed mat had the same level of opinions. In part of the evaluation results from a group of 50 product makers and distributors, it was obtained from the sample group selected by purposive sampling and their attitude toward the product forms using local pattern reed mat material designed. When evaluated using the 5 product design principles, it was found that overall satisfaction of both product makers and distributors is at the highest level when considering each aspect. However, it is found that the dealers have the highest level of satisfaction for Usability, Beauty and Local Characteristics and Convenience in Use respectively, followed by Durability and Delivery rated with high level of satisfaction. They also showed the highest satisfaction for all aspects including Durability, Delivery, and Convenience in Use, Beauty, Local Identity and Usability respectively.

Keywords: Reed mat; designing; product

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Introduction

“Wisdom” is the knowledge body derived from personal experience by studying, observing, and synthesizing data and this knowledge body can be formed with a variety of specific knowledge. Each of particular knowledge is not explicitly specified but generally exists in society or community, wisdom, or villagers. In other words, local wisdom is the foundation of innovative knowledge to facilitate the individuals in learning, problem-solving, self-management, and self-adjustment. This can be searched for studying and implementing for the sakes of economy, society, and culture so that the individuals can live securely and independently on their local resources. Additionally, local wisdom can be learned from one generation to another so the younger can apply into their career or life that reflects an identity of their group living together, man-man relation, man-nature relation, career building, an intellectual self-dependence of an individual person by integrating personal knowledge with the external ones, as well as social wisdom. This local wisdom will powerfully introduce that specific community to the public while the knowledge body can be accepted, transferred, and developed for the latter generations through time. Particularly, local wisdom is rather transferred orally via words of mouth than recording or teaching with a family or community.

“Mat” is a hand-woven product with unique appearance reflecting a local wisdom with a long history. In fact, mat weaving (Saea Kok) is a local-wisdom based basketwork using local material called “reed” and this kind of mat is popularly used by the people in local communities for their daily use since it is a multi-purpose product that completely answer the needs of the users. It is perfectly usable for the local people, especially those living on agriculture; since they can make this mat themselves from different local materials such as Reed (Kok), Blue rush (Krajood), Screw Pine (Lamjiak), or other similar plants. That is, the making of the mat depends on different contexts in each local community so the appearance and use can be varied by its original community. Recently, the making of the mat, patterns, and materials has been changed by geographical attributes, social contexts, and use suitability in order to suit the lifestyle of new generations. Nowadays, “Mat” is a hand-crafted product that can be made at home in which the people can make it during their free time after finishing their

main activities; meanwhile, the high competitiveness in a business world is pushing the mat-makers in several regions to create and improve new designs and patterns for their mat in order to make it more valuable in the market. Unfortunately, while the wisdom-based products are making more incomes for local people, neither support nor development has been seriously offered for the local product. There actually are some organizations working on this issue, but it is still insufficient. The problem seems to be that the product design and pattern as well as the marketing plan has not been developed continually so it becomes a burden for product makers to struggle alone along with careless support. The fact is that the local wisdom is a very important factor for economy, culture, and lifestyle of local people, the majority of the country.

On this matter, Ban Phaeng community has inherited their reed-mat weaving from their ancestors for over 100 years and it is their identity and local wisdom that allows the community members to spend their free time after farming to make the reed mat for extra income. Some are made for special festivals or traditions that eventually become part of their life today. Actually, Ban Phaeng is a tourism community for art and culture of reed mat weaving and the place has a number of outstanding tourist's attractions presented via the community tourism route starting by showing respect to Don Phu Ta (the ancestor's shrine), visiting Wat Chai Prasit temple to witness the wall paintings depicting a history of Ban Phaeng community and their red mat weaving, visiting the community learning center for local product transforming from reed mat, relaxing by feeding fish and paying respect to a big Buddha statute at Ban Phaeng Lake, and finally shopping at Ban Phaeng OTOP center to get some nice souvenir from a variety of local products transformed from the reed mat e.g. cowboy hat, tissue paper box, toothpick box, and many more.

Particularly, Suae Kok or reed mat of Ban Phaeng is a product locally made by Ban Phaeng Agricultural Housewife Professional Rehabilitation Group at Ban Phaeng, Ban Phaeng Sub-district, Phaeng District, Kosumpisai District, Maha Sarakham Province. The mat is a local product with a long history of how it has been learned and inherited from the ancestor, so it is a famous hand-crafted product that makes greater income for the community. Eventually, it becomes the core business of the whole community and a number of the mat has been

constantly produced in which the groups of mat-maker have to prepare materials, product designing process, production procedure, as well as training the skillful members for standard and quality product. High quality mats will be sold for a high price whereas those who make low quality mats will get a cheaper price and have to offer a lower price than others to sell more products. As a consequence, this study aimed to investigate the key for the development of Ban Phaeng reed mat industry at Ban Phaeng sub-district, Ban Phaeng district, Maha Sarakham Province in order to improve better products that perfectly match the consumer's need and to add more value to the product that will further provide more benefits for the community as well as promoting career development and sustainable income.

From the abovementioned, the researcher was interested to study the product designing and development of Ban Phaeng reed mat made by Ban Phaeng Agricultural Housewife Professional Rehabilitation Group at Ban Phaeng, Ban Phaeng Sub-district, Phaeng District, Kosumpisai District, Maha Sarakham Province, in order to promote and support the mat makers in creating new patterns that apparently represent their local identity in which it should be eye-catching, modern, and suitable for use to fully answer the consumer's need at the present days. Actually, the mat design and development should be created from local wisdom to bring out the community's potential and upgrade the product for extra income as well as to facilitate the community members to be self-dependent with sustainability as part of the national basis.

Research Objectives

1. To explore the context, ideas, evidences of the wisdom, and the reed mat weaving management by Ban Phaeng Agricultural Housewife Professional Rehabilitation Group at Ban Phaeng sub-district, Kosumpisai district, Maha Sarakham Province.
2. To develop an old wisdom for the reed mat design and development using geometric shapes to represent the local identity of Ban Phaeng.
3. To evaluate the satisfaction of both the mat seller and consumers toward the reed-mat products.

Expected Benefits

1. New patterns for the reed mat representing the local identity of Ban Phaeng Agricultural Housewife Professional Rehabilitation Group at Ban Phaeng sub-district, Kosunpisai district, Maha Sarakham Province.
2. Groups of the handcrafted makers can be encouraged to use and transform their local materials into a new product for sale and make more income for a household or the whole community.
3. New products that is multi-functional and perfectly make full use of the unique style of Ban Phaeng reed mat specially made at Ban Phaeng Agricultural Housewife Professional Rehabilitation Group.
4. The local handcraft makers can be promoted to make use of local resources so that they have to preserve an ecology system for reed planting that will help building up sustainable community and economy.
5. The local handcraft can be preserved and passed on to the next generations while the local cultural identity can be introduced to the eyes of the public

Research Conceptual Framework

Several key concepts and theories were applied in this study as follows. The guideline for the design and development of the reed-mat products was based on the designing principle proposed by Udomsak Saribut (2006) that particularly considered 5 parts including Usability, Convenience in Use, Durability, Local Beauty, Local Identity, and Delivery. In term of the product development, an Earle's development process mentioned in a study by Nirat Soodsang (2005) was used to construct the 6-step guideline comprising Problem Analysis, Initiative Thinking, Sorting, Designing, Analysis, Decision Making, and Achievement.

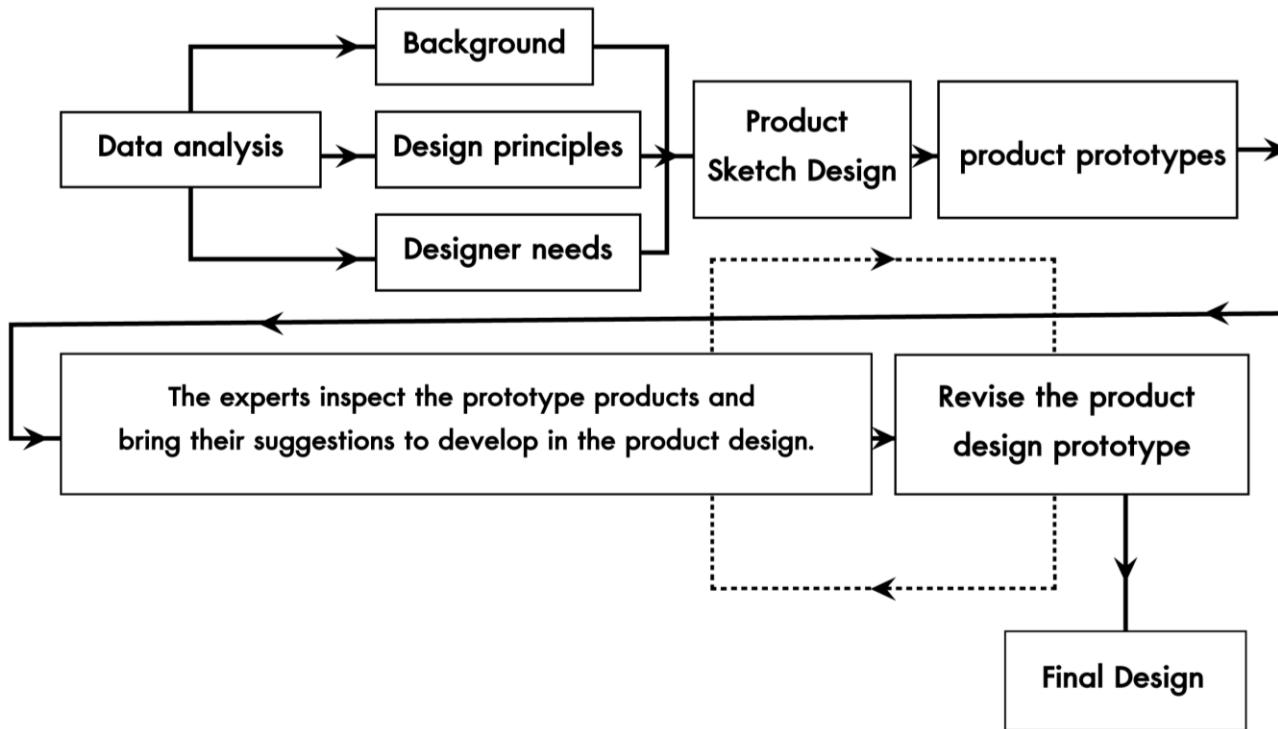


Figure 1: Design Process Method of the Reed-Mat Products Prototypes

Scope of Study

The research project was conducted on the design and development of the reed-mat products by Ban Phaeng Agricultural Housewife Professional Rehabilitation Group and the researcher defined the scope of study as listed below.

1. Population: The population consisted of 50 people from the mat-making villages, the sample group, the representatives, and the reed-mat maker groups.

2. Area: The area of study was limited to Ban Phaeng and Ban Phaeng Agricultural Housewife Professional Rehabilitation Group at Ban Phaeng sub-district, Kosumpisai district, Maha Sarakham Province.

3. Content: The contextual study considered the physical characteristics, socioeconomic factors, and entrepreneurial performance, attitude and demand for an extra job.

4. Sample group: the sample group comprised 2 specialists chosen by purposive sampling.

5. The scope of product design was limited to 4 types of prototyped products comprising: 1) Reed-mat wardrobe; 2) Reed-mat shoe rack; 3) 4-compartment hanging storage shelf; and 4) 9-compartment hanging storage shelf.

5.1 Design planning: Collecting and analyzing the data.

5.2 Pre-design: Using the collected data to define and sketch suitable formats of the prototype products together with studying different types of computer software for product designing.

5.3 Pre-production: Using the collected data to define and sketch suitable formats of the prototype products together with studying different types of computer software for product designing.

5.4 Production: Using the sketched formats to create the prototype products via Adobe Photoshop and Illustrator.

5.5 Data record: Collecting all data in sort of document and record it on CD-ROM.

Terminology

1. Value adding is referred to the case that local wisdom is one of the value added to the products of both industry and culture that has been used to support consumerism.
2. Transformation is referred to mixing, cooking, or other transforming methods of materials such as grinding or extracting to obtain a new form for product making.
3. Reed mat is referred to a product commonly used in a country and abroad in which reed is a plant that can naturally grow in any parts of the country and the local wisdom of reed transforming can be either similar in several areas or conceptually influenced by one another. Hence, reed mat becomes one of the key factors for the living of the people in the past.
4. Ban Phaeng Agricultural Housewife Professional Rehabilitation Group is referred to a group of local labors in a community gathered for local handcraft production for sale e.g. reed mat and reed-mat based products.
5. Reed-mat product design and development is referred to the use of locally unique pattern to create a new product from reed mat in order to explore the production structure and method.

Research Outcome

This was a creative research conducted to design and develop the products from Ban Phaeng reed mat made by Ban Phaeng Agricultural Housewife Professional Rehabilitation Group in Ban Phaeng Sub-district, Kosumpisai District, Maha Sarakham Province. The conceptual framework was based on the related research works and documents, the researcher's observation, the questionnaire completed by the product makers and sellers, as well as the evaluation by the designing specialists and the experts in the related fields. All data was analyzed and resulted as several forms of reed-mat products as follows.

Context, Concept and Evidence of Wisdom

1) Context

Ban Phaeng Community has long inherited the making of reed mat from their ancestor for over 100 years which is the local identity and wisdom.

The community members spend their free time after farming on making the reed mat to earn extra income while some of them make the mat for the festivals. It finally becomes part of the local lifestyle today. Actually, the reed mat made by Ban Phaeng Agricultural Housewife Professional Rehabilitation Group in Ban Phaeng Sub-district, Kosumpisai District, Maha Sarakham Province is the well-known handcraft that have long made an extra income for the local people and it now becomes the major business within the community so they have been producing a variety of local products. In this regard, a group of the product makers who carefully prepare the materials, design the product and the production procedure, as well as having a good handcrafting skill will be able to produce the high-quality products under the same standard that can be sold for a high price. On the contrary, the product makers whose product quality is lower than the standard will sell it with lower price, and they will finally cut the price of their product to compete with one another. As a result, this research aimed to deeply explore the way to develop the reed-mat production industry within Ban Phaeng Community in Ban Phaeng Sub-district, Kosumpisai District, Maha Sarakham Province in order to improve the local product to mostly serve the consumer's demand as well as adding more value to the product so it would provide the whole community with more benefits that would help promoting the local career and sustainable income.

2) Concept

After analyzing the data, attitude, and need of the participants toward the product design and development from Ban Phaeng reed mat, the findings could be concluded as follows.

- Data analysis affirmed that the reed mat is a unique product since it was made by the local people with local characteristics. The weak part of the mat is popular only in the local context as it has been reproduced in the same form of product without any new design.

- Regarding the consumer's behavior, the consumer commonly buy and use the mat for seating, resting and relaxing, performing religious activities and rituals, family activity e.g. sitting, having meal, greeting guests, or giving as a souvenir.

Accordingly, the researcher created and designed several forms of product from the reed mat made by Ban Phaeng Agricultural Housewife

Professional Rehabilitation Group in Ban Phaeng Sub-district, Kosumpisai District, Maha Sarakham Province. The products were presented below.

1. Prototype product: Reed-Mat Wardrobe
2. Prototype product: Reed-Mat shoe rack
3. Prototype product: 4-Compartment Hanging Storage Shelf
4. Prototype product: 9-Compartment Hanging Storage Shelf

3) Evidence of Wisdom

From the aforementioned, the guideline to the product design and development form the reed mat made by Ban Phaeng in Ban Phaeng Sub-district, Kosumpisai District, Maha Sarakham Province could be discussed and summarized as below.

In term of the product design and development from the reed-mat made by Ban Phaeng in Ban Phaeng Sub-district, Kosumpisai District, Maha Sarakham Province, as mentioned in this research, the research had continually revised several times before obtaining the final product. Namely, the researcher collected and verified the data from the interview, discussion, suggestions, as well as examining the attitude and need of both product makers and sellers in order to guarantee that the prototype product would correctly fit in their demand. In this regard, the product should be designed with several key components including: 1) Appearance and Shape – the product must be designed with a clear concept and unique characteristics as the structure should be strong and matching with the design; 2) Color – the product's color should be based on the original color of the material or blended color from different materials and coated with artificial color or decorated with varnishing substance; 3) Pattern – the product's pattern may exist from the material texture or newly created depending types of the products; 4) The product should represent the mixed concept of local identity and contemporary design following the current trend; 5) The product should present the concept of natural resource conservation or making the fullest use of the resources e.g. making use of local resources to its fullest benefit or using the renewable materials; 6) Usability – the product design should rely its particular use e.g. durability, safety, authentic use, ease of use and maintenance.

The Product Design Development

Using the collected data to define suitable products by sketching the prototype products along with considering the most appropriate software for product designing. The sketched prototypes were used to create the real products using the computer software. The result was finally recorded, collected in sort of document, and stored in digital format. In this regard, the research tools consisted of 2 parts as below.

1. Research tool for data collection: the questionnaire to obtain general information to construct a guideline for the product design and development.
2. Types of prototype products designed and developed from Ban Phaeng reed mat as listed below.

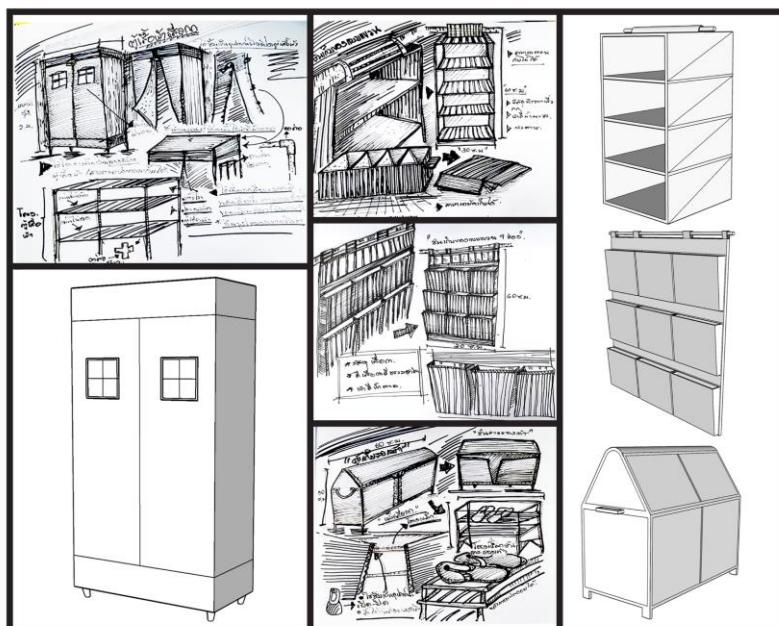


Figure 2: Hand Sketch Prototypes and 3-Dimensional Sketch Prototypes

- 2.1 The prototype of reed-mat wardrobe
- 2.2 The prototype of reed-mat shoe rack
- 2.3 The prototype of reed-mat 4-compartment hanging storage shelf
- 2.4 The prototype of reed-mat 9-compartment hanging storage shelf

All of the products were beautiful, matching the needs, and easy for consumers to use. This outcome well answered the research objective in aiming to encourage the Ban Phaeng community members to create new patterns for the reed mat that signifies their local identity through an attractive and modern design suiting for the need of new-gen consumers. The products were intently developed from the local wisdom by enhancing the community member's potential and upgrading the local product to make more incomes for the whole community so they could stand on their own feet sustainably as a key contribution to the national basis.

At this point, there are several shapes that are suitable for transforming an original product into, but the geometric shapes are most suitable for space-saving, mix and match, reproducible and easy for arrangement.

Consequently, a new product inspired by reed and the material previously mentioned was used as part of the prototype product design. Meanwhile, the conceptual framework for the product design was resulted as: 1) the wardrobe; 2) the shoe rack; 3) the 4-compartment hanging storage shelf; and 4) the 9-compartment hanging storage shelf. All of the prototype products had been developed with the unique patterns of the reed mat showing the local identity with beautiful and modern design suitable for the new-gen consumers; the products could be used to create a livable environment in a house. A piece of product could be made through the main process consisting of cutting, sizing, drilling, and shaping the materials before weaving pieces of reed to wrap around the product using different techniques e.g. sewing, stretching, etc.

Satisfaction of the Sellers and Distributors

After derived the prototype product, the researcher investigated the attitude of the product makers and distributors toward the product in several aspects.

Table 1: Prototype Product Evaluation and Interpretation Criteria

Mean	Attitudinal Levels
4.51-5.00	Mostly agreed
3.51-4.50	Highly agreed
2.51-3.50	Moderately agreed
1.51-2.50	Slightly agreed
0.00-1.50	Least agreed

The design of the prototype product was composed of local identity, design, usability, material, pattern that were all verified by 2 specialists in product design.



Figure 3: Prototype product 1 Reed-Mat Wardrobe and Prototype product 2 Reed-Mat Shoe rack

Table 2: The Attitudinal Evaluation on Reed-Mat Wardrobe by 2 Specialists in Product Design

Attitudinal Questionnaire on Reed-Mat Wardrobe (Product 1)	Satisfaction Evaluation		
	\bar{x}, \bar{x}	SD	Attitudinal Levels
1. Identity	4.33	0.52	Highly agreed
2. Design	4.67	0.33	Mostly agreed
3. Usability	4.41	0.51	Highly agreed
4. Material	4.49	0.50	Highly agreed
5. Pattern	4.87	0.13	Mostly agreed
Total	4.55	0.55	Mostly agreed

After analyzing the attitude toward Product 1, it was found that the highest mean score “Mostly Agreed” was rated for the pattern ($\bar{x} = 4.87$) and the next was rated for the design ($\bar{x} = 4.67$). In the same vein, the evaluation score from those 2 specialists was “Mostly Agreed” ($\bar{x} = 4.55$).

Table 3: The Attitudinal Evaluation on Reed-Mat Shoe Rack by 2 Specialists in Product Design

Attitudinal Questionnaire on Reed-Mat Shoe Rack (Product 2)	Satisfaction Evaluation		
	\bar{x}	SD	Attitudinal Levels
1. Identity	4.45	0.51	Mostly agreed
2. Design	4.60	0.40	Highly agreed
3. Usability	4.70	0.30	Mostly agreed
4. Material	4.45	0.51	Highly agreed
5. Pattern	4.13	0.54	Highly agreed
Total	4.47	0.50	Mostly agreed

After analyzing the attitude toward Product 2, it was found that the highest mean score “Mostly Agreed” was rated for the usability ($\bar{x} = 4.70$) followed by the design ($\bar{x} = 4.60$). Similarly, the evaluation score from those 2 specialists was “Mostly Agreed” ($\bar{x} = 4.47$).



Figure 4: Prototype Product 3: 4-Compartment Hanging Storage Shelf and Prototype Product 4: 9-Compartment Hanging Storage Shelf

Table 4: The Attitudinal Evaluation on 4-Compartment Hanging Storage Shelf by 2 Specialists in Product Design

Attitudinal Questionnaire on 4-compartment Hanging Storage Shelf (Product 3)		Satisfaction Evaluation		
		\bar{x}	SD	Attitudinal Levels
1. Identity		4.53	0.47	Highly agreed
2. Design		4.50	0.50	Mostly agreed
3. Usability		4.68	0.32	Highly agreed
4. Material		4.58	0.42	Highly agreed
5. Pattern		4.53	0.47	Mostly agreed
Total		4.56	0.44	Mostly agreed

After analyzing the attitude toward Product 3, it was found that the highest mean score “Mostly Agreed” was rated for the identity ($\bar{x} = 4.63$) followed by the material ($\bar{x} = 4.58$). Similarly, the evaluation score from those 2 specialists was “Mostly Agreed” ($\bar{x} = 4.52$).

Table 5: The Attitudinal Evaluation on 9-Compartment Hanging Storage Shelf by 2 Specialists in Product Design

Attitudinal Questionnaire on 9-compartment Hanging Storage Shelf (Product 4)		Satisfaction Evaluation		
		\bar{x}	SD	Attitudinal Levels
1. Identity		4.63	0.37	Highly agreed
2. Design		4.55	0.45	Mostly agreed
3. Usability		4.50	0.50	Highly agreed
4. Material		4.58	0.42	Highly agreed
5. Pattern		4.33	0.52	Mostly agreed
Total		4.52	0.48	Mostly agreed

After analyzing the attitude toward Product 4, it was found that the highest mean score “Mostly Agreed” was rated for the identity ($\bar{x} = 4.70$) and the next was the material ($\bar{x} = 4.60$). Similar to the previous products, the evaluation score from the 2 specialists was “Mostly Agreed” ($\bar{x} = 4.49$).

The evaluation was tried out with 50 product makers and distributors; this sample group was selected via a purposive sampling method.

Table 6: The Attitudinal Evaluation on Reed-Mat Wardrobe by 50 Product Makers and Distributors

Attitudinal Questionnaire on Reed-mat Wardrobe (Product 1)	Satisfaction Evaluation		
	\bar{x}	SD	Attitudinal Levels
1. Identity	4.85	0.15	Mostly agreed
2. Design	4.60	0.40	Mostly agreed
3. Usability	4.73	0.27	Mostly agreed
4. Material	4.45	0.50	Highly agreed
5. Pattern	4.83	0.52	Highly agreed
Total	4.61	0.39	Mostly agreed

An analysis on the attitudinal score on Product 1 by the sample group indicated that the highest mean score was given to the identity ($\bar{x} = 4.85$) followed by the usability ($\bar{x} = 4.73$). Likewise, the total score rated by those 50 product makers and distributors on the product was “Mostly Agreed” ($\bar{x} = 4.61$).

Table 7: The Attitudinal Evaluation on Reed-Mat Shoe Rack by 50 Product Makers and Distributors

Attitudinal Questionnaire on Reed-mat Shoe Rack (Product 2)	Satisfaction Evaluation		
	\bar{x}	SD	Attitudinal Levels
1. Identity	4.90	0.10	Highly agreed
2. Design	4.78	0.22	Mostly agreed
3. Usability	4.88	0.12	Highly agreed
4. Material	4.48	0.50	Highly agreed
5. Pattern	4.38	0.52	Mostly agreed
Total	4.67	0.33	Mostly agreed

An analysis on the attitudinal score on Product 3 by the sample group indicated that the highest score was similarly rated for the identity ($\bar{x} = 4.90$) followed by the usability ($\bar{x} = 4.88$). Likewise, the total score rated by those 50 product makers and distributors on the product was “Mostly Agreed” ($\bar{x} = 4.67$).

Table 8: The Attitudinal Evaluation on 4-compartment Hanging Storage Shelf by 50 Product Makers and Distributors

Attitudinal Questionnaire on 4-compartment Hanging Storage Shelf (Product 3)	Satisfaction Evaluation		
	\bar{x}	SD	Attitudinal Levels
1. Identity	4.55	0.45	Highly agreed
2. Design	4.56	0.44	Mostly agreed
3. Usability	4.48	0.50	Highly agreed
4. Material	4.53	0.47	Highly agreed
5. Pattern	4.44	0.51	Mostly agreed
Total	4.51	0.49	Mostly agreed

After analyzing the attitudinal score on Product 3 by the sample group, it was indicated that the highest score was rated for the design ($\bar{x} = 4.56$) and the next was the identity ($\bar{x} = 4.55$). Likewise, the total score rated by the product makers and distributors on the product was “Mostly Agreed” ($\bar{x} = 4.51$).

Table 9: The Attitudinal Evaluation on 9-compartment Hanging Storage Shelf by 50 Product Makers and Distributors

Attitudinal Questionnaire on 9-compartment Hanging Storage Shelf (Product 4)	Satisfaction Evaluation		
	\bar{x}	SD	Attitudinal Levels
1. Identity	4.78	0.22	Highly agreed
2. Design	4.90	0.10	Mostly agreed
3. Usability	4.88	0.12	Highly agreed
4. Material	4.80	0.20	Highly agreed
5. Pattern	4.60	0.40	Mostly agreed
Total	4.79	0.21	Mostly agreed

After analyzing the attitudinal score on Product 4 rated by the sample group, it was indicated that the highest score was given to the design ($\bar{x} = 4.90$) followed by the usability ($\bar{x} = 4.88$). Likewise, the total score rated by the product makers and distributors on the product was “Mostly Agreed” ($\bar{x} = 4.79$).

Conclusion and Discussion

After conducting the research on the design and development of the reed-mat product at Ban Phaeng Wormen's Professional Reformation Association, the researcher was able to analyze the findings based on the research objectives as discussed below.

According to the abovementioned, the product evaluation by 2 specialists indicates that Product 1 - the reed-mat wardrobe is most suitable and rated with the highest score. When considering each component, the wardrobe clearly represents the cultural identity with proper composition for good usability and unity. Significantly, the reed mat pattern on the product shows the local identity, beautiful and modern style suitable for the new-gen consumers today. Exactly, the product has been transformed from the local wisdom and it promotes the potential of the community members to upgrade their local product to earn more income and to eventually become self-dependent.

The products that have been designed from the reed mat contain a unique weaving style of Ban Phaeng Agricultural Housewife Professional Rehabilitation Group. These products have been developed after observing the area of study to find suitable formats of the product and finally resulted as 4 types of product. The prototype products were thoughtfully developed under the key concept of product design and the evaluation score rated by 2 specialists in product design, it was confirmed that Product 4: 9-compartment hanging storage shelf was rated the highest score followed by Product 1: reed mat wardrobe and Product 3: 4-compartment hanging storage shelf with similar score.

After the evaluation by 50 product makers and distributors chosen by purposive sampling toward 5 components of the product, it was indicated that their total attitudinal score was highest and the highest satisfaction score was given to the product usability, local identity, and Convenience in Use respectively. A high score was rated for the product durability and delivery. In the same vein, the consumers were mostly satisfied with all components of the product including durability, delivery, Convenience in Use, local identity, and usability.

According to the research objectives, it could be concluded that the local product with a combination of art and culture and the reed mat is extremely

outstanding as well as the tourism route to visit the scared places within Ban Phaeng community such as the ancestor's shrine and Wat Chai Prasit temple with the wall painting that depicts the history of the community and their reed mat weaving. This research finally entails a prototype product of the reed-mat wardrobe that is very satisfactory for both the product makers and consumers. It is expected that this outcome will be likely a guideline for product making from the reed mat to provide more income and wealth to the community while it can balance the local resource consumption to maintain an ecological system for reed as the key material for the local product. This mechanism will build up sustainability for the community and economy in the future.

Suggestions from Research Outcome

In term of using the reed mat patterns, it is necessary to choose the suitable one that fit in the space of the product for good arrangement. In addition, the reed flower can be developed as a flower or to be other types of products with trendy design that directly answer the consumer's need. Above all, this product requires the support from both government and private sectors for marketing and other facilities.

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