



## **Development of Graphic Patterns for Contemporary Moa-Hoam Fabric from Tai Phuan Tin-Jok Sinh Patterns of Phrae Province**

Apiwat Puntatong<sup>1\*</sup> Phirasin Sakthong<sup>2</sup> and Ratchanon Upakarn<sup>3</sup>

<sup>1-3</sup>School of Information and Communication Technology, Computer Graphics and Multimedia, University of Phayao, Phayao, Thailand

\*E-mail: Apiwat.puntatong@gmail.com; mr.phirasin@gmail.com; and bestab1748@gmail.com

Received: Nov 14, 2023, Revised: Nov 30, 2023, Accepted: Dec 18, 2023, Published online: Dec 28, 2023

---

### **ABSTRACT**

The research aims to 1) explore the wisdom of Moa-Hoam fabric and Tai-Phuan Tin-Jok Sinh patterns of Phrae province; 2) develop graphic patterns for contemporary Moa-Hoam fabric from Tin-Jok Sinh; and 3) assess the satisfaction towards the development of graphic pattern for contemporary Moa-Hoam fabric from Tai-Phuan Tin-Jok Sinh of Phrae province. The research methodology and methods were conducted. Moa-Hoam fabric was developed in contemporary styles with those patterns which can be used to create contemporary clothing. They are intended to be practically wearable in everyday life and respond the needs of the target groups. Satisfaction evaluation was performed among the sample group of 50 persons including general consumers, manufacturers, and product designers who are interested in contemporary Moa-Hoam fabric based on Tai-Phuan Tin-Jok patterns. Thirty patterns of Moa Hoam were inspected and evaluated by three textile experts. Then the satisfaction evaluation was investigated into the three aspects which are 1) Material suitable for functionality, 2) Functional benefits, and 3) Beauty. The satisfaction evaluation result in overall of the 3 aspects reported a mean value of 4.20, suggesting a high level of propriety.

**Keywords:** Development, Pattern, Moa-Hoam fabric, Tin-Jok Sinh woven fabric, contemporary

### **Introduction**

In this era of social and technological development and change, western artistic and cultural values play a crucial role in people's present life in terms of lifestyle, occupation, society, ideas, values, and ways of practice which have been changed enormously.

Society and culture have changed constantly because human's needs are indefinite and changes could be fast or slow depending on factors involved, such as, the education level of people in society, communications, and transportation, including creativity. Changes in culture and society commonly take place in parallel and adjacent due to interrelated effect. Factors such as discoveries, inventions, conflicts, and competitions cause social and cultural changes which bring about the alteration both materially and non-materially of the social system and patterns as well as human way of life (Chanoknun Panya-apirakkul, 2016).

Changes without attention and timely rectifying, might pose an impact on society, art and culture, customs and traditions passed down from ancestors which are valuable for society and community; but might disappear eventually. Culture determines human behavior in society and their behavior present how certain ways of living based on certain social community. For example, Thai people greet by saying *Sawasdi* while the western by checking hands. Culture also controls society by maintaining its order since culture is



composed of faith, beliefs, values, and norms, etc., including rewards for compliance and punishments for violations (Suthasinee Wangwirot, 2014).

Phrae province is located in the upper Northern Region of Thailand, formerly a small independent city-state. It was old city with rich in history since its establishment; however there are insufficient information was recorded in official reference. The investigation on the story of Phrae; thus need to rely on the evidence of other cities which includes the Yonok chronicles, the legend of Northern cities, the legend of Phra That Lampang Luang, and the stone inscription of King Ramkhamhaeng the Great. Phrae is surrounded by landscape of valleys and mountains where rich in forests. The Yom river is the main stream flowing through the province. Phrae is adjacent to Phayao province (North) Nan province (North and East), Lampang province (West), and Uttaradit and Sukhothai provinces (South). Phrae is famous on making teak furniture, and Moa Hoam products. Moa Hoam is important local fabric of Phrae particularly in Thung Hong sub-district. People in Phrae wearing Moa Hoam in their daily life presenting their uniqueness. Moa Hoam fabric is made of cotton dyed with indigo from the Hom or Indigo plants until yielding even color all through the fabric. Moa Hoam fabric reflects the cultural beauty of clothing identities of Phrae people. It indicates a historical ethnicity inherited from Tai Phuan ancestor at Ban Thung Hong for a long period of time. Besides, their Tin-Jok Sin that has long been with the Phrae people was influenced by the Tai Yuan culture sharing a long history with the Phrae people. The Long district is well-known for its best and beauty Tin-Jok Sin for over 200 years. Formerly, Long district belonged to Tai Yuan or Tai Yonok people. Tai Yuan people possess the weaving art of their own, with the Long's Tin-Jok Sinh fabric as a handicraft of exquisite beauty and unique identity.

Thai wisdom refers to as the folk knowledge or things that are bought about by villagers from their own intellectual, knowledge, and abilities to be used for solving problems or living their life compatible with times, and it requires a long process of accumulation, inheritance, and refinement (Nataya Sinthornphan, 2016).

Local wisdom refers to as the knowledge and process that enable community's ongoing movement. Local wisdom is thus important for artisans to develop and apply these knowledge and wisdom corresponding to the background of a particular area which is likely to be successful. In the past, villagers relied on local wisdom as a core in their livelihood, which differs from the present time where technology become main factor in people's life. Hence, villagers might have ignored the local wisdom that has been handed down from their ancestors (Arunnet Chantasri, 2012).

Moa Hoam fabric as local wisdom was invented in many provinces in the northern region of Thailand. This local fabric is made from cotton through an ancient dyeing process to yield colors of dark blue, navy blue, or indigo blue. The color is obtained by extracting color from the Hom plant which gives a beautiful natural color (Wandee Phattanachokchai, 2014). According to Rapee Wangkarun (2016), the word of Moa Hoam refers to fabric originated from the local wisdom in the northern region of Thailand. It came from 2 words i.e. "Mor (pot)" which means a container for boiling, holding liquids or water, and the word "Hom" means a kind of herbaceous plant in the indigo family which is called Hom plant. The language currently used to call it may be slightly different from the original as can be seen in these words "Mo Hom, Mor Hom, Mor Hoam or Moa Hom, Mor Hom" which refers to the same thing for Moa Hoam.

Pornphan Sujaritwongsarote (2016) stated that Moa Hoam fabric in the past has a process of making it with white cotton woven on a loom, and when the size of woven fabric is as large as desired it will be made into clothes for wearing in daily life. In the dyeing process, woven cotton fabric is dyed with natural colorants from fermented Hom plant. Today, with the less use of cotton woven with traditional loom, woven fabric has thus



become more expensive. Instead, calico is used to make Moa Hoam clothes and dyed with natural liquid Hom or chemical Moa Hoam color. This is to reduce production cost and make it affordable by the local people with inexpensive price, while continuing to preserve the local wisdom.

The uniqueness of Moa Hoam fabric of Phrae is generally well-known and widely used for the cotton offering durability. The fabric is lightweight, comfortable to wear without feeling too warm. The dyeing process provides dark color preventing it to look stained or dirty when wearing to work in the field, and the color does not fall out or fade. The cut style is simple and not too complicated, inexpensive, suitable for people of all sexes and ages, and can be worn in many occasions such as merit events, New Year's event, Songkran event, etc. (Rangsan Chansri, 2016). The value of local costume of Phrae people is now changed over times; as many people think that by wearing local clothes seems outdated which make them become unpopular. Therefore, it is important for encourage people to understand how important of preserving local outfits to suit to their daily chores in order to express their cultural identity.

Nowadays, the conservation, promotion, and continuation of the wisdom of making traditional Moa Hoam fabric by the locals begins to fade away as later generations do not value much on the local wisdom. In addition, the increased price of Hom or indigo plant as natural raw material for dye fermentation affects lower profits or returns from the production and sale, making it hard to bear the high costs of producing Moa Hoam in traditional and natural way. Besides, the indigo and Hom are smell and stained on hands during the dye process. New generation prefer to work on other jobs with better compensation. Other factors are advanced and modern technologies, changing preference of clothing to be more fashionable, and the convenience of daily living. This is a reason why new generation is more likely to turn to other occupations and less likely to pay attention to carry on making Moa Hoam fabric. Consequently, the folk wisdom of Moa Hoam fabric has gradually been neglected and become potential devalued.

Weaving is a handicraft and art that has existed since the ancient times as a part of human way of life because clothing is one among essential factors for humans. Weaving is regarded a type of art work that an individual ethnic group has created in different patterns and designs. Such patterns and designs representing stories and events happening long time ago and also signify the identity, culture, beliefs, and history of that particular ethnic group. The name of some patterns and symbols had been called and passed down for many generations, some in the local language. With observation and comparison, one will be able understand more about the patterns and symbols in traditional Thai fabrics and even realizes their profound value (Thai Encyclopedia for Youth, 2016) At present, weaving the folk and local fabrics remains the traditional patterns especially in the communities where certain ethnic groups scattered in different regions of Thailand. In the lower northern region (Phrae, Uttaradit, Sukhothai, etc.), Tai Yuan and Tai Lao ethnic groups had migrated to settle down there during the different periods of Thai history. Among the immigrated Tai Lao with many tribes such as Phuan, Song, Phu Tai, Khrang, etc., the Tai Phuan continues to preserve their local culture and uniqueness especially the patterns decorated on fabrics that vary in appearances and colors.

The development of Moa Hoam fabric patterns at present has not yet become very widespread because most of those groups who have local wisdom of Moa Hoam are lacked of experience in exploring the marketing needs directly from the target groups. In particular, new generation as teenagers and the youth is not interested much in wearing Moa Hoam clothes, and it is the same old target groups like working people and the elderly who like dressing in Moa Hoam in important occasions rather than in everyday life, such as in merit events, important ceremonies, and work places (Kwanchai Chaiphan, 2017). The patterns of



Moa Hoam fabric found today are inspired by the nature, for instances, the patterns of leafs and flowers as well as the patterns of animals from literatures. However, the patterns with more modern look are deprived. Today, most people in the community prefer to wear T-shirts and jeans with modern and fashionable graphic designs that are wearable in anywhere and any occasions, and also convenient to choose and purchase because they are readily available in a variety of types and styles in the markets (Hasdin Somphiphat, 2016). As mentioned by Sompong Churungroj (2017), people nowadays choose to wear clothes that look modern with varied and beautiful patterns whereas the patterns on Moa Hoam fail to satisfy the needs of the target groups or consumers of new generation. Those traditional Thai patterns might make them look old and outdated, so they pay less attention. In the future, if without a concrete support to promote the conservation of Phrea Moa Hoam, it might possibly be disappeared.

The background and significance of Phrae's Moa Hoam fabric as an inheritance of local wisdom and culture handed down from the past to the present showed that the new generation today is not aware much about the importance and value of this ancient wisdom, with some reason pertaining to the fabric patterns that do not satisfy their needs and preference of modernity. Realizing this problem, the researchers therefore conducted this research on "Development of graphic patterns for contemporary Moa-Hoam fabric from Tai Phuan Tin-Jok Sinh patterns of Phrae province". It aimed to explore the patterns on Tai-Phuan Tin-Jok Sinh so as to guide the development of graphic patterns for contemporary Moa Hoam fabric. It moreover promotes the conservation of local wisdom for the new generation to realize, cherish, and take part in continuing this precious local wisdom.

## **Objectives**

1. To explore the wisdom of Moa Hoam fabric and Tai-Phuan Tin-Jok Sinh patterns of Phrae province,
2. To develop graphic patterns for contemporary Moa Hoam fabric from Tai-Phuan Tin-Jok Sinh patterns of Phrae province, and
3. To examine the satisfaction towards the development of contemporary Moa Hoam fabric from Tai-Phuan Tin-Jok Sinh patterns of Phrae province.

## **Scope of research**

### **1. Study Area**

The study area was located in Phrae province. This research explored the wisdom of Moa Hoam fabric and Tai-Phuan Tin-Jok Sinh patterns of Phrae province by means of information research and designing totally 30 patterns adapted from Tai-Phuan Tin-Jok Sinh patterns. A collection of Moa Hoam products was created including long-sleeve, Chinese-collar shirts and long trousers for men and women, short pants, ribbon-tied collar shirts, gowns, shawls, and bags.

### **2. Sample group**

2.1 Three design experts were purposively selected based on their knowledge, expertise, and work experiences.

2.2 Satisfaction evaluators include general consumers, manufacturers, and product designers who are interested in contemporary Moa Hoam fabric adapted from Tai Phuan Tin-Jok Sinh patterns, totally 50 persons purposively selected.



## Contributions

The contributions of this research are;

1. Knowledge for the design filed through developing graphic patterns adapted from Tai Phuan Tin-Jok Sinh patterns,
2. Potential design solutions for the participants and participating communities, and
3. Research dissemination of the satisfaction result of the sample group based on the contemporary Moa Hoam clothing with patterns adapted from Tai Phuan Tin-Jok Sinh patterns of Phrae province.

## Research Methodology & Methods

The research methodology was a quantitative approach which consisted of literature reviews, participatory observations, interviews, and survey of satisfaction of the sample groups. These research methods were utilized for data collection and analyzed the satisfaction of the sample group towards graphic patterns adapted from Tai Phuan Tin-Jok Sinh patterns. The research methods were described below;

1. Literature review is a survey of the scholarly sources that provides and overview of a particular topic, according to the University of Arizona (2022). Snyder, H. (2019) mentioned that there were three different approaches to literature reviews: systematic reviews, semi-systematic reviews, and integrative reviews. In this research, the research method focused on integrative reviews based on bibliographic search and experience of the researchers when performing an integrative review Souza, M. T., Silva, M. D., & Carvalho, R.d (2010). The researchers used this method to investigate relevant documents and related research comprising academic documents, research reports, articles, journals, related theses, and internet resources; and investigating patterns characteristics and mathematical statistics.

2. Participatory observation was the second research method. The researchers gathered information during the field study. Field visits took place at the sites of an origin of Moa Hoam fabric in Phrae province. The investigation sites are located in Thung Hong sub-district including 1) "Pa Ngiam" learning center for Mor Hom fabric dyeing, and 2) Moa Hoam at Ban Pa Luang. The data collected was about Moa Hoam fabric and Tin-Jok Sinh patterns of Tai Phuan's concept. Investigation was also undertaken at the sites of origin in Long district of Phrae province including 1) Long district's ancient Tin-Jok Sinh by Ms. Pranom Tapaeng, and 2) Long district's "Komol Museum" of ancient clothes. The investigation was to learn about the ancient costume of Long district at Komol Museum and Tin-Jok Sinh of the Tai Phuan.

3. Interviews the design experts were the third method which helped the researchers to develop graphic patterns adapted from Tai Phuan Tin-Jok Sinh patterns effectively. In this research, thirty patterns were developed from the original patterns with modern design to suit the functionality in the present day. Three experts evaluated the graphic patterns for their fashionable design and propriety for modern use. After the interviews, developing new patterns to match contemporary Moa Hoam clothing took place. Tin-Jok Sinh patterns have been adapted to modern style. The clothing included long-sleeves, Chinese-collar shirts and long trousers for men and women, short pants, ribbon-tied collar shirts, gowns, shawls, and bags.

4. Survey was another method which the researchers designed a set of questionnaires to explore the satisfaction towards the contemporary Moa Hoam fabric with applied Tai Phuan Tin-Jok Sinh patterns. There were 50 questionnaire respondents. The data was analyzed, summarized, and presented by descriptive analysis with statistics involving mean and standard deviation, followed by discussion, and preparation of reports for research results.



## Results

The results of this research will be presented in line with conducted process through the outputs of this study.

Field visits took place at the sites of the origin of Moa Hoam making in Phrae province. The study sites were in Thung Hong sub-district including 1) “Pa Ngiam” learning center for Moa Hoam dyeing, and 2) Moa Hoam at Ban Pa Luang, as important sources of Moa Hoam exports and considered as distinctive identity of Moa Hoam in Phrae province. The planning and actual field visits were carried out to collect an evidence of Moa Hoam production and to study about Moa Hoam fabric color using indigo from the Hoam plants, Hoam dyeing, and the designs of Moa Hoam clothing. The obtained information was applied and adapted to making research products by designing contemporary Moa Hoam clothing adapted from Tai Phuan Tin-Jok Sinh patterns.



**Figure 1** Information collected at the sites of Moa Hoam fabric production in Phrae

















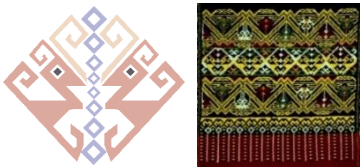

**The study of Tin-Jok Sinh patterns** adopted the idea of Tai Phuan Tin-Jok Sinh with a variety of patterns to be applied to the research products in contemporary style of Moa Hoam clothing with Tai Phuan Tin-Jok Sinh patterns. The field study took place at the sites in Long district of Phrae province including 1) Pranorm Tapaeng’s house of ancient Long’s Tin-Jok Sinh, and 2) “Komol Museum” of Long’s ancient fabric, to learn about different patterns of Tai Phuan Tin Jok Sinh.













**Figure 2** Information was studied and collected on Tai Phuan Tin-Jok Sinh Patterns

The graphic design model employed the information gathered pertaining to Tai Phuan Tin-Jok Sinh patterns. A total of 30 patterns were developed as adapted from those original patterns, in the design of fashionable look and suitable for modern use. The graphic design was evaluated by experts in terms of modernity and functionality in the present time.



1.Karbmark Nokkhum pattern	2. Kalae pattern	3.Kalae Nokkhum pattern
		
4. Korkunjae pattern	5.Korhugyai Keawmah pattern	6.Kandok pattern
		
7.Kamoddaeng pattern	8.Kamoddaeng Karbmark pattern	9.Kamoddaeng Nguhoysaow pattern
		
10.Komchaunoy Tungchai pattern	11.Nguhoysauw pattern	12.Chiengsaen Hongdum pattern
		
13.Dokchanpaedklib Lek pattern	14.Dokchanpaedklib Yai pattern	15.Tomkrue pattern
		
16.Nokkinnumruamtone Kagumbung pattern	17. Nokkinnumruamtone Huanaga pattern	18.Nokkhum pattern
		



19.Noknorn pattern	20.Phakkude pattern	21.Phakwaen pattern
		
22.Funluey pattern	23.Funluey Nguhoysaow pattern	24.Sroykarbmark pattern
		
25.Sumpaow Loynum pattern	26.Sumpaow Loynum Kagumbung pattern	27. Sumpaow Loynum Huanaga pattern
		
28.Hongkoo Karbmark pattern	29.Hongkoo Kinnumruamtone pattern	30.Huajai Nguhoysaow pattern
		

**Figure 3** Graphic design model based on the collection of data on Tai Phuan Tin-Jok Sinh patterns

The study of Tai Phuan Tin-Jok Sinh patterns was brought to design patterns on Moa Hoam clothing by adapting those original patterns to match the contemporary style. The Tin-Jok Sinh patterns adapted for modern look can also be used with other types of products.





**Figure 4** Contemporary Moa Hoam clothing with patterns adapted from Tai Phuan Tin-Jok Sinh patterns

**The results of evaluation on satisfaction** towards the development of contemporary Moa Hoam fabric from Tai Phuan Tin-Jok Sinh patterns of Phrae province were summarized in the following tables.

Table 1 General information of respondents by frequency distribution and mean (n=50)

Topic	Category	No. (person)	%
Sex	Male	33	66
	Female	17	34
	<b>Total</b>	<b>50</b>	<b>100</b>
Age	< 20 yrs.	2	4
	20-25 yrs.	28	56
	26-40 yrs.	10	20
	≥40 yrs.	10	20
	<b>Total</b>	<b>50</b>	<b>100</b>
Level of Education	Secondary	7	14
	Bachelor's degree	36	72
	Higher than bachelor's degree	7	14
	<b>Total</b>	<b>50</b>	<b>100</b>

Table 1 shows general information of respondents, suggesting that the majority is men (66%), aged between 20-25 years (56%), and attained bachelor level of the education (72%).



Table 2 Satisfaction towards the development of contemporary Moa Hoam fabric from Tai Phuan Tin-Jok Sinh patterns of Phrae province (n=50)

Evaluation List	Level of Opinion		
	$\bar{x}$	S.D.	Interpretation
<b>1. Materials used suitable for functionality</b>			
1.1 Moa Hoam fabric suitable for creating contemporary products	4.32	0.96	High Propriety
1.2 Materials suitable for creating patterns on Moa Hoam fabric	4.16	1.09	High Propriety
<b>Total</b>	4.25	1.02	High Propriety
<b>2. Functional Benefits</b>			
2.1 Suitability for the use by the target groups	3.92	1.09	High Propriety
2.2 Suitability as contemporary clothing goods	4.02	0.82	High Propriety
<b>Total</b>	3.98	0.99	High Propriety
<b>3. Beauty</b>			
3.1 Arrangement of pattern component with fineness and beauty	3.92	0.89	High Propriety
3.2 Designs of Moa Hoam clothing with distinct and uniqueness	4.38	0.87	High Propriety
3.3 Designs of Moa Hoam clothing with perfect coherence	3.88	1.09	High Propriety
3.4 Arrangement of color component in the designs with suitability and beauty	4.20	0.78	High Propriety
3.5 Patterns suitable for the style of contemporary clothing	4.72	0.56	Highest Propriety
3.6 Patterns on Moa Hoam fabric suitable for the target groups	4.32	0.68	High Propriety
<b>Total</b>	4.25	0.80	High Propriety
<b>Total of 3 Aspects</b>	4.20	0.88	High Propriety

Table 2 reports mean and standard deviation of evaluation result on satisfaction towards the development of contemporary Moa Hoam fabric from Tai Phuan Tin-Jok Sinh patterns of Phrae province, by the rank of mean value, as described next.

*Materials suitable for functionality:* Moa Hoam fabric suitable for creating contemporary work was reported at the most satisfied with mean of 4.32 as a high level of propriety, followed by materials suitable for creating patterns on Moa Hoam fabric reported satisfaction with mean of 4.16 as a high level of propriety.

*Functionality:* Suitability as contemporary clothing goods was reported most satisfied with mean of 4.02 as a high level of propriety, followed by suitability for the use by the target groups reported satisfied with mean of 3.92 as a high level of propriety.

*Beauty:* Patterns style of the contemporary clothing was reported as the most satisfied with mean of 4.72 as highest level of propriety, followed by the designs of Moa Hoam fabric with distinct and uniqueness reported satisfied with mean of 4.38 as a high level of propriety; and the designs of Moa Hoam clothing with perfect coherence reported at the lowest satisfied with mean of 4.38 as a high level of propriety.

In overall, respondents rated their satisfaction towards the development of contemporary Moa Hoam fabric from Tai Phuan Tin-Jok Sinh patterns of Phrae province for the whole 3 aspects at a high level of propriety with total mean of 4.20.



## Discussion

The analysis provided the results on the development of contemporary Moa Hoam fabric based on Tai Phuan Tin-Jok Sinh patterns of Phrae province, with the data collected from relevant documents and related research, summarized, and analyzed to guide the development adapted from Tai Phuan Tin-Jok Sinh patterns of Phrae province. The designs being developed were evaluated by the three experts, and a range of products were developed using Moa Hoam fabric as main material. According to Tirachai Suksod (2001), the concept of product design is to create new things that are developed from the originals. In the current research, the researchers applied Tai Phuan Tin-Jok Sinh patterns to develop 30 patterns as simple and uncomplicated; while conveying expression through simple lined pattern. As noted by Kittichai Wangwatanaphan (2017), a good product design in this era requires simplicity and reflects on emotion conveyed through the lined pattern expressing the feeling of creator to respond the desire of target groups. Each pattern of lines communicates and expresses emotion to each target group in differently. Therefore, designers must learn to develop goods and services to match targeted customers' needs. The development of Moa Hoam fabric from Tai Phuan Tin-Jok Sinh patterns based on original pattern with contemporary look to attract new generation should be promoted in creative approaches. For example, embroidery with silk threads of natural Hom dyes together with trendy fashion. Moa Hoam is a kind of plain fabric in dark blue color that can be developed in fashionable styles and shapes to go well with the current age and raise both the price and psychological value. Consistently, Narudol Jitsakul (2018) explained that the design of Moa Hoam fabric patterns needs to focus on functioning in a variety of occasions, and suitability for different ages, and targeted groups. The design should be simple with easy and comfortable wearing to suit to present daily life. Moa Hoam clothing products designed with handicraft and decorations in proper shape which should be carefully designed to fit to formal and semi-formal occasions. Modern and contemporary patterns should be simple, looking good, and stylish with a combination of uniqueness of Moa Hoam.

Satisfaction evaluation among the sample group of 50 persons who were interested in contemporary Moa Hoam fabric based on Tai Phuan Tin-Jok Sinh patterns report that most of the respondents were men, aged between 20 - 25 years and attained a bachelor level of education. Moa Hoam fabric was developed in contemporary style with the designed patterns. It can be created into contemporary clothing which are practically wearable in everyday life and responding to the needs of the target groups. Ruenkwan Runreungjai (2017) pointed out that the weaving process and method of the Tai Phuan allow for the development of skills to create new and unique patterns. The woven fabric can be transformed into different types of products without reducing the value and worth of Tai Phuan Tin-Jok Sinh fabric. The evaluation on 1) Materials suitable for functionality, 2) Functional benefit, and 3) Beauty, show the overall satisfaction in these three aspects with mean of 4.20, which suggested a high level of propriety.

## Recommendations

Based on the study to develop graphic patterns for contemporary Moa Hoam fabric adapted from Tai Phuan Tin-Jok Sinh patterns of Phrae province, the researchers recommended that a range of styles of Moa Hoam clothing and patterns need to be created Moa Hoam clothing in many different ways. Moreover, it should focus on specific target group such as teenagers, working people, and the elderly to offer a more variety of Moa Hoam contemporary products in present.



## References

- Chaiphan, K. (2017). *Local Wisdom of the Northern Region*. Bangkok: K. M. Print.
- Chansri, R. (2016). *Phrae Moa Hoam*. 2<sup>nd</sup> Ed. Phrae: Krongkarn Patanasarn.
- Chantasri, A. (2012). *Thai Wisdom and Innovation*. 3<sup>rd</sup> Ed. Bangkok: Charoenkit.
- Churungroj, S. (2017). *Evolution of Thai Costume*. Bangkok: D & K Printing.
- Jitsakul, N. (2018). *Graphic Design Development Guidelines for Contemporary Moa Hoam Silk Fabrics*. Phrae Office of Culture, Ministry of Culture.
- Paranachokchai, W. (2014). *Development of Moa Hoam*. Phrae: Jitradawat Printing.
- Panya-apirugkul, C. (2016). *Society and Cultural Change*. Bangkok: Thepnimit Print.
- Runruengjai, R. (2017). *Guidelines for Creating Applied Tai Phuan Tin-Jok Patterns using Dobby Technique, Hardseow Sub-District, Sri Sachanalai Disrict, Sukhothai Province*. Journal of Industrial Technology: Thepsatri.
- Sinthornphan, N. (2016). *Integrated Social and Cultural Development*. Bangkok: M.N.
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of business research*, 104, 333-339.
- Sompiphat, H. (2016). *Fabric Pattern Design*. Bangkok: Ratanasuwan.
- Sujaritwongsarote, P. (2016). *Moa Hoam and Thai Way of Life*. Bangkok: Krungkasemras.
- Suksod, T. (2001). *Industrial Product Design*. Bangkok: Odean Store Print.
- Souza, M. T., Silva, M. D., & Carvalho, R.d (2010). *Integrative review: what is it? How to do it?*. *Einstein (Sao Paulo, Brazil)*, 8(1), 102–106. <https://doi.org/10.1590/S1679-45082010RW1134>
- Thai Encyclopedia for the Youth. (2016). Vol.21. Bangkok: Printing House of the Thai Encyclopedia for the Youth Project with the Intention of His Majesty King Bhumibol Aduladej.
- Wangkaroon, R. (2016). *Contemporary Moa Hoam*. Phrae: Roong Printing.
- Wangwatataphan, K. (2017). *Product Design*. Bangkok: Book Point.
- Wangwiroj, S. (2014). *Multiculture*. 2<sup>nd</sup> Ed. Bangkok: Suwariyasarn.