

Designing Furniture Equipment from the culture of Thi-Lue Tribal group to Encourage Tourism in Tai-Lue Village, Baan Yuan, Yuan district, Chiangkham, Phayao Province

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Article History: Received: 10 January 2021; Revised: 12 February 2021; Accepted: 27 March 2021; Published online: 20 April 2021

Abstract: The purposes of this research were 1) to design and develop the furniture products from the weaving design of Tai-Lue, 2) to study the different pattern which is suitable to make the weaving cloth for household furniture, and 3) to study the appropriate size of the household furniture. There are 8 processes: 1) Study and collecting the data from the study site by observing and interviewing, 2) interview the participant to collect information on the opinion about developing the products, 3) visit the study site and collect survey questionnaire, 4) Design and develop the furniture products by researcher and the people who make Tai-Lue weaving cloth in Yuan temple, 5) create the products (the initial furniture product), 6) take the measurement tool to the study site to measure the satisfaction of consumer, 7) analyze the primary purpose for design and develop the furniture, and 8) summarize of the research study by analyze the data from participants for the use of this research. The population or participants in this study are included 16 people in Yuan temple weaving group, 29 consumers who need the products or will use these products. Forty-eight people who are interested in this furniture from weaving products to analyze the satisfaction. The researcher collecting data by doing interview and give research questionnaire. The statistics that use in this study are average mean (\bar{x}) and Standard Deviation (S.D). The result has indicated that the design of furniture from weaving products (Stool) need to be related with the human physical structure by considered these: 1. Height of seat, 2. Width and depth of seat. The design of furniture products from Tai-Lue that we need is Pattern A. The design which is appropriate is the one with clover leaf and water. We need the product of stool to be made from wood. We also need the natural color. We need the stool to be strong and beautiful as well as comfortable for setting. The satisfaction of developing furniture from Tai-Lue products (Stool) found to have average of ($\bar{x}=4.762$ and S.D.=.037). It also been found that the profit from selling these products will be increase 66% per one month. The research considered about important of designing household furniture from Tai-Lue cultural products so the community can develop and use this knowledge to adapt in solving problem in this. This will increase more variety of the products for producer, consumer and can create the occupation with the saying that the women are weaving and the men are creating or making the furniture products to continue make income for Tai-Lue community in Baan Yuan, Chiangkham, Phayao Province

Keywords: Design Furniture, Weaving Product of Tai-Lue, Baan Yuan, Chiangkham, Phayao Province.

1. Introduction

The changing situations of consumers have resulted in low distribution of income and led to lack of balance, conservation, and sustainability. Economic and social development plan is therefore initiated to improve tourism with quality and sustainability, including standardized continual service business and health and education tourism, and creative products that increases high value) Mr. Thanit Laiphaiboon, National Economic and Social Development Plan, 12th issue: Strategy Transformation to Strategy plan in Northern Thailand's Natural Resources and Environment Management). Thailand has brought the idea of creative economy to become one of the ways to drive the strategies in National Economic and Social Development Plan, 11th issue (2012-2016). Its main principle is Value Creation using knowledge and innovation, together with cultural resources variety and Thai traditions, which can help the country's development to conform to the developed countries' economic development current (Saowarop Kusuma Na Ayudhdhaya 2553:26).

Tai-Lue weaving village, in the Cultural Center of Tai-Lue Wat Yuan, is the cultural art exhibition and vocational training center of Tai-Lue tribal group people, especially in the patterned and colorful weaving designs, such as Nam Lai Pak Waen, Dok Kor Kruea, Dok Kor, Ma, and Dok Tang. The weaving cloth is also produced in terms of clothes including Tai-Lue shirts, Tai-Lue sarong, trousers, scarfs, and pillow cases.

According to the fieldwork survey, the village has produced the Tai-Lue weaving that conserves local wisdom. It was apparently found in clothes including Tai-Lue shirts, Tai-Lue sarong, trousers, scarfs, and pillow cases, but not found in furniture products in Phayao province. Therefore, Tai-Lue furniture design becomes an option for manufacturers and consumers by integrating original knowledge and capabilities of Tai-Lue Wat Yuan village, Yuan subdistrict, Chiangkham, Phayao, which is to promote vocational opportunities for the villagers and tourism in the village. According to the interview of the villagers, weaving has come from group members and relatives, working in the way of separating their own duties such as dyeing, weaving, or sewing. This research focuses on adapting Tai-Lue weaving into furniture, as Tai-Lue Wat Yuan Cultural Center is prepared for providing information about Tai-Lue weaving, designing Tai-Lue weaving, and collaborating in this research.

2. Literature Review

The researcher has reviewed the history of Tai-Lue Cultural Center. It is located at Wat Yuan in 1993 by the purpose of Provost Suphat Promkhun, Wat Yuan's abbot, that the weaving group in the village should be moved to weave in Wat Yuan, to conserve and restore the weaving culture. Tai-Lue Cultural Center is the cultural art exhibition and vocational training center of Tai-Lue tribal group people, especially in the patterned and colorful weaving designs, such as Nam Lai Pak Waen, Dok Kor Kruea, Dok Kor, Ma, and Dok Tang. Tai-Lue weaving cloth is divided into 2 types: the cloth that is used in a ceremony and the cloth that is used in household. The example of the household cloth is called "Tam Kao Blanket" which cannot find its expert in making it. Tam Kao is Lue dialect, containing 2 meanings: 1. Design name and 2. Its process. Tam means weaving, and Kao means the action of pulling the wood to put the design in and insert to make patterns. It is normally called "Ta Saeng blanket" or "Si Pae blanket" or "Ta Kong blanket". It was a high-relief weaved cloth, weaved into a big square with small one's patterns. Its popular colors are black, red, and white. Its weaving processes are considered complicated and therefore expensive. It is not widely used now but found weaved at certain places. The Center decorates the design in several types of cloth (Source: www.museumthailand.com/th/museum/Centre-of-Tai-Lue-Culture-Wat-Yuan). Additionally, according to the human proportion study by JULIUS PANERO and MARTIN ZELNIK, human's average level of comfortable sitting postures is used with the area of 35.4–42.2centimeters width, 43.7–55.1 centimeters length, and 37.8–47.8centimeters height.

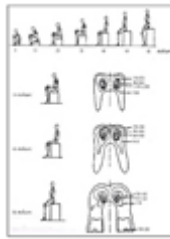


Image 1 size of comfortable sitting postures

Source: pinterest.com/ JULIUS PANERO and MARTIN ZELNIK Comfortable Chair Size Body dimensions 2 | Human Dimension & Interior Space, Julius Panero & Martin Zelnik

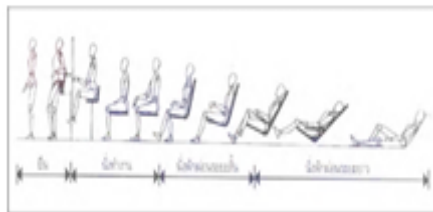


Image 2 Sitting level and balance of hip muscle with the most suitable sitting weight distribution of 40 centimeters height chair

Source: Wannee Sahasomchok, Furniture Design (Bangkok: Technology Promotion Association (Thailand-Japan) (2549, 205).



Image 3 levels of sitting gestures: working, short-relaxed, and long-relaxed

Source: Wannee Sahasomchok, Furniture Design (Bangkok: Technology Promotion Association (Thailand-Japan) (2549, .206

The height of Resting Chair is always shorter than a working chair's height, as when people lean their back on the backrest, the legs automatically go forwards. The widely-used chair is 40 – 30 centimeters height, 53 – 45 centimeters depth, and 125 – 105 centimeters backrest slope. The armrest can be designed in parallel with the seat or the floor. The mostly-used height is 25 – 50 centimeters from the seat (Ms. Rojana Chantrasa, Ms. Kanittha Rueangwannasak, and Mr. Phanu Phatthanapanithipong, 2553, (57-53

Risom Chair was designed by Jens Risom in 1943, and invented from a surplus parachute harness from World War II. Risom Stool is recently made from cotton-harness basket for hard-woven seats located on solid wood frame. Risom chair is 42centimeters wide, 39centimeters deep, and 44centimeters high.

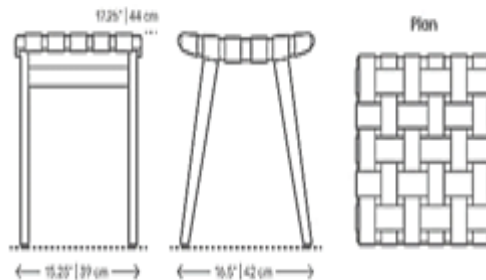


Image 4 Risom Chair, designed by Jens Risom

Source: www.dimensions.com lounge-chair-ottoman, accessed by www.pinterest.com.

Therefore, the researcher specified the appropriate size of sitting chair as 40 – 30centimeters height and 53- 45 centimeters width.

Purposes

1. to study the weaving designs of Tai-Lue clothes that is suitable for furniture,
2. to study the proportion of furniture for use, and
3. to design and develop furniture.

Scope of Study

The research of Designing Furniture Equipment from the culture of Thi-Lue Tribal group to Encourage Tourism in Tai-Lue Village, Baan Yuan, Yuan district, Chiangkham, Phayao Province was processed in 2020 – 2021, and contains the scope of research namely:

1. details of furniture design processes and its format,
2. Tai-Lue weaving design that matches stool furniture, and
3. stool furniture production.

The scope of sample population includes:

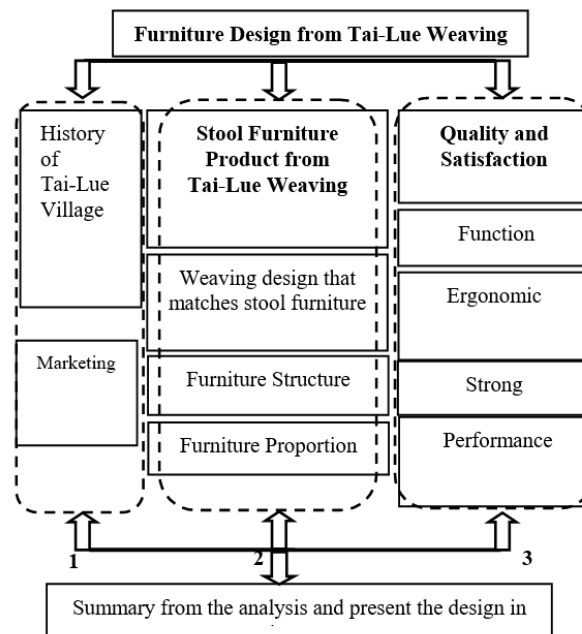
- 1 . 16 people in this research,
2. 29 consumers with interest of improving Tai-Lue weaving furniture products, and
- 3 . 48 people who are interested in Tai-Lue weaving furniture products, for satisfaction assessment.

3. Methodology

This research was about collaboratively designing and improving Tai-Lue weaving furniture products from Baan Yuan, Yuan district, Chiangkham, Phayao Province, to help the village to adapt the knowledge in solving problems and creating more various options to manufacturers and consumers, with the research frame.

The frame of Collaborative Furniture Design from Tai-Lue Weaving Villagers was used. The idea was divided into:

Table 1 Research Frame





1. interviewing and questioning
2. photography, literature review, interview
3. questioning




The sample population interview was purposed to prepare opinionated data into collaboratively designing and improving stool furniture of Tai-Lue Village, Baan Yuan. Then, the results were cumulated by description. The questionnaires about needs in designing and improving factors were collected, including these processes: .1Study primary data and collect field data by observing, interviewing, and studying other related researches about furniture design and the history of Tai-Lue weaving village and the ideas of making its products .2Interview the sample group to prepare opinionated data from the consumers with the interest in developing products in the purpose that can be adapted with Tai-Lue weaving furniture .3 Operate fieldwork to collect questionnaires about needs in designing and improving factors .4Collaboratively design and improve furniture by the researchers and Tai-Lue weaving villagers .5 Collaboratively create furniture products (model furniture) .6 Bring satisfaction assessment tools into the fieldwork 7. Analyze and synthesize tentative data for designing and improving model furniture products in the idea of Tai-Lue Wat Yuan village.

4. Results

The results were divided into issues namely: 1. The design of Tai-Lue weaving that is suitable for using with stool furniture should be a type of sarong cloth since it is tighter weaved; other types are less tight and contain certain buttons or hooks that can harm the cloth, so the stool may not be strong enough to use. It was also found that the design that matches stool furniture is Nam Lai Pak Waen as it was an original and unique design. There were 8 most popular colors to use: green, yellow, black, pink, purple, light blue, and white.





Table 2 Tai-Lue weaving design

Item	Picture	Design name
1		Nam Lai Pak Waen
2		Saeng

3		Ta Saeng, or striped
4		Ngu Loi Salab Lai Nuai Kruea, generally horizontal. Chiangkham people call it Tam Kao blanket.
5		Kor

The researcher concluded the idea by specifying stool patterns, strength, convenience, and natural dyeing colors, and collaboratively developed furniture patterns with Tai-Lue Wat Yuan weaving group in 3types, by having an assessment about demands of who supports Community Enterprise Group.

Table 3 Stool Furniture Pattern Demands of who supports Community Enterprise Group

Pattern	Stool Furniture Pattern Demands	Demand Level		
		\bar{x}	S.D.	Result
A		4.66	.614	Highest
B		3.90	.817	High
C		3.28	.841	High
D		3.59	.780	High
Total mean		3.85	.102	High

According to Table 3, which is the result from the 29samples, the demands of stool furniture pattern of who supports Community Enterprise Group was shown that all 4patterns were in the high level (\bar{x} =3. 85 S.D.=.10). Pattern A was the highest (\bar{x} =4. 66S.D.=.614). Pattern B was the second highest (\bar{x} =3. 90S.D.=.817). Pattern D was the second lowest (\bar{x} =3. 59S.D.=.780), and Pattern C was the lowest (\bar{x} =3. 28S.D.=.841).

Table4 Furniture color demands of who supports Community Enterprise Group, percentage of sample groups, categorized by gender and frequency of color choices) N =29)

Sex	Color			Total
	Red	Pink	Natural color	
Male	3	0	5	8
Female	2	2	17	21
Total	5	2	22	29

$\chi^2=3.652$ Sig =0.161

According to Table 4, from 29samples, both male and female consumers need natural colors the most, which was 22samples. The second highest need was red, which was 5, and the lowest need was pink, which was 2. It was also discovered that gender and frequency of color choices are not influential.

Table 5 Furniture structure demands of who supports Community Enterprise Group, percentage of sample groups, categorized by gender and frequency of structural material choices) N =29)

Sex	Structural material			Total
	Steel	Wood	Plastic	
Male	4	3	1	8
Female	8	12	1	21
Total	12	15	2	29

$$x^2=1.134 \quad \text{Sig} =0.567$$

According to Table 5, from 29 samples, both male and female consumers need wood structural material furniture the most, which was 15. The second highest need was steel, which was 12, and the lowest need was plastic, which was 2. It was also discovered that gender and frequency of structural material choices are not influential.

Table 6 Demands of appropriate design of Tai-Lue weaving to be made into stool furniture

Item	Design Name	Demand Level		
		\bar{x}	S.D.	Result
1	Nam Lai Pak Waen	4.96	0.18	Highest
2	Saeng	4.45	0.57	High
3	Ta Saeng, or striped	3.31	0.54	Medium
4	Dok Kor	2.24	0.43	Low
5	Ngu Loi Salab Lai Nuai	2.27	0.45	Low
Total Mean		3.45	0.15	Medium

According to Table 6, from 29 samples, the Tai-Lue weaving design that matches stool furniture the most was Nam Lai Pak Waen ($\bar{x} =4.96$, S.D.=.18). The second highest need was Saeng ($\bar{x} =4.45$, S.D.=.57). The third highest was Ta Saeng ($\bar{x} =3.31$, S.D.=.54). The second lowest was Ngu Loi Salab Lai Nuai ($\bar{x} =2.27$, S.D.=.45), the lowest was Dok Kor ($\bar{x} =2.24$, S.D.=.43).

Table 7 Satisfaction in Furniture Development from Tai-Lue Weaving of consumers and who supports Tai-Lue Wat Yuan weaving group

Item	Furniture Development from Tai-Lue Weaving	Demand Level		
		\bar{x}	S.D.	Result
1	Satisfaction in Developing Tai-Lue Weaving Furniture	4.95	.201	Highest
2	Satisfaction in Tai-Lue Weaving Furniture Benefit	4.85	.460	Highest
3	Satisfaction in Tai-Lue Weaving Furniture convenience	4.89	.308	Highest
4	Satisfaction in Tai-Lue Weaving Furniture Strength	4.79	.503	Highest
5	Satisfaction in Tai-Lue Weaving Furniture Usage	4.72	.535	Highest
Total mean		4.84	0.141	Highest

According to Table 7, from 48 samples, the overall satisfaction of stool furniture development by the consumers and who supports Community Enterprise Group of Tai-Lue Wat Yuan weaving group was averagely highest (\bar{x} =4.84 S.D.=.141). The Satisfaction in Developing Tai-Lue Weaving Furniture was in the highest (\bar{x} =4.95 S.D.=.201). The Satisfaction in Tai-Lue Weaving Furniture Benefit was in the highest (\bar{x} =4.85 S.D.=.406). The Satisfaction in Tai-Lue Weaving Furniture convenience was in the highest (\bar{x} =4.89 S.D.=.308). The Satisfaction in Tai-Lue Weaving Furniture Strength was in the highest (\bar{x} =4.79 S.D.=.503), and the Satisfaction in Tai-Lue Weaving Furniture Usage was in the highest (\bar{x} =4.72 S.D.=.535).

To conclude the result of this Table, the highest overall satisfaction of stool furniture development by the consumers and who supports Community Enterprise Group of Tai-Lue Wat Yuan weaving group was The Satisfaction in Developing Tai-Lue Weaving Furniture (\bar{x} =4.84 S.D.=.141).

Table 8 Thoughts and satisfaction in Tai-Lue weaving stool furniture price of consumers and who supports Tai-Lue Wat Yuan weaving group, percentage of sample groups, categorized by gender and frequency in answering questions about the price of Tai-Lue weaving stool furniture (N =29)

Item	Furniture Price Questions	Furniture Price					Total
		4,500 baht	4,000 baht	3,800 baht	3,500 baht	Other (please specify)	
1	Male	2	5	1	0	-	8
2	Female	3	13	5	0	-	21
Total		5	18	6	0	-	29

$\chi^2=0.744$ Sig =0.69

According to Table 8, from 29 samples, both male and female consumers considered that the most possible price for Tai-Lue weaving furniture was 4,000baht; there were 18 samples. The second most was 3,800baht; there were 6 samples. The least was 4,500baht; there were 5 samples. It was also discovered that gender and frequency of answering about furniture price are not influential.

Table 9 Satisfaction in buying and selling Tai-Lue weaving stool furniture, percentage of sample groups, categorized by gender and frequency in answering questions about the satisfaction in buying and selling of Tai-Lue weaving stool furniture (N =29)

Item	Furniture Price Questions	Furniture Price					Total
		4,500 baht	4,000 baht	3,800 baht	3,500 baht	Other (please specify)	
1	Male	0	3	5	0	-	8
2	Female	1	5	13	2	-	21
Total		1	8	18	2	-	29

$\chi^2=1.537$ Sig =0.674

According to Table 9, from 29 samples, the greatest number of male and female, 18 samples, were satisfied with buying and selling Tai-Lue weaving furniture in the price of 3,800baht. The second greatest, 8 samples, were satisfied with the price of 4,000baht. The second lowest, 2 samples, were satisfied with the price of 3,500 baht. The lowest, 1 sample, was satisfied with the price of 4,500baht. It was also discovered that gender and frequency of answering questions about satisfaction in buying and selling are not influential.

To conclude this result of the Table, the highest overall satisfaction of stool furniture development by the consumers and who supports Community Enterprise Group of Tai-Lue Wat Yuan weaving group was the

satisfaction in buying and selling Tai-Lue weaving furniture in the price of 3, 800baht. The cost of manufacturing one piece of furniture was approximately 2, 290 baht, sold at 3, 800 baht, so the benefit was 1, 510 baht; the income was increased by 66percent.



Image5 Collaboration in furniture development between the researcher and the villagers



Image6 Structuring and sewing stool furniture cloth

The structure of stool furniture was built using MDF 20-millimeter plywood and 1X2 inches hardwood to be the main structure adhered to the seat and the legs by screws, and the seat was adhered by glue gum. The first step of sewing is to make a draft model. The cloth must be enough for the cutting and folding to cover the seat. The cloth with Nam Lai Pak Waen design and dyed with natural color was used.



Image 7 Model picture of Tai-Lue weaving furniture

5. Discussions

The significant factor for developing Tai-Lue weaving furniture was designing and developing the furniture from Tai-Lue tribal group culture by bringing knowledge in weaving cloth of Tai-Lue Wat Yuan group to collaboratively develop the products to gain more income to the village. The villagers can therefore improve their knowledge to sustainably solve problems and add more options to manufacturers and consumers, in harmony with what Amphai Saengchanthai and Jirawat Phirasan (2558, page 2) stated that it is necessary for Thai household to own furniture. Furniture has nowadays been designed in a more modernized way to match consumers' behaviors, including making use of natural materials to apply into furniture design and make it more attractive and unique. It was also related to what Singha Prarom (2557: 82) referred in Angkab Boonsoong (2556: 85-97) about adapting cultural uniqueness and traditions in designing, what Natthikarn Pinjurai and Songwut Akewutti-ongsa referred in Wiboon Leesuwana (2522, 243) about human nowadays becoming more creative in applying various kinds of materials to assemble into equipment and continuously improving themselves depending on human's creativity in redesigning and developing to suit the period and technology. Handcrafts are valuable themselves since they are made of materials with natural beauty and they are made by hands, which are different from the products made by factories, so they are uniquely precious. Their designs and patterns illustrate different local characteristics. Udomsak Saribut (2550: 18-19) stated that when it comes to designing, designers must consider 1) its proper function 2) its proper strong and low-cost materials 3) the strong, low-cost, and proper 4) convenience in proper size and proportion and 5) the beauty with proper figure and size that suits the consumers' needs. Lastly, Jeeraphan Kanchanajittra (2526, page 24-25) addressed that developing the village using this method can help to promote Community Enterprise Group and also improve more knowledge to apply and solve all problems in community's products and sustainably develop the community.

This research is shown that utilizing knowledge in developing Tai-Lue weaving furniture is beneficial for applying in harmony with actual consumers' needs and helping the manufacturers to improve the skills and products with sustainable variety.

6. Conclusion

According to the interview with Tai-Lue Baan Yuan village, the design of Tai-Lue weaving that is suitable for using with stool furniture should be a type of sarong cloth since it is tighter weaved. The design that matches stool furniture is Nam Lai Pak Waen as it was an original and unique design with tighter weaving methods of "Tam Kao". The researcher also studied the appropriate size of furniture in Literature Review and found that the most appropriate height is 40 centimeters as it is the most appropriate weight distribution, and the most proper width is 45 centimeters. The researcher then collaboratively designed 4 types of furniture with Tai-Lue villagers. After accidentally asking people who supports Community Enterprise Group about the demands in patterns of furniture, the result from 29 samples stated that pattern A is the highest need ($\bar{x}=4.66$, S.D.=.614). The most needed color for the furniture is natural color, which was 22 samples. The second highest need was red, which was 5, and the lowest need was pink, which was 2. Wood structural material furniture is the highest need, which was 15 out of 29 samples. The second highest need was steel, which was 12, and the lowest need was plastic, which was 2. The highest need for weaving design is Nam Lai Pak Waen ($\bar{x}=4.96$, S.D.=.18). After obtaining the data in Tai-Lue weaving furniture development, the draft of the product model was presented and collaboratively developed with weaving teams, finding appropriate methods and models, then bringing those models to be produced collaboratively with Tai-Lue weaving group for improving skills. Male workers' duty was originally to repair weaving equipment, and female workers' duty was only to weave. Furniture production helps those workers to gain more jobs, as the sayings stated "women weave, men make furniture". After finishing the model furniture production, the researcher collected the surveys about satisfactions by accidentally asking people who supports Community Enterprise Group. The highest overall satisfaction of stool furniture development by the consumers and who supports Community Enterprise Group of Tai-Lue Wat Yuan weaving group was The Satisfaction in Developing Tai-Lue Weaving Furniture ($\bar{x}=4.84$, S.D.=.141). After that, the questions about that the most possible price for Tai-Lue weaving furniture were accidentally asked to 29 samples, and it was found that there were 18 samples who considered 4,000 baht was the most possible price. When accidentally asking about the satisfaction in buying and selling Tai-Lue weaving furniture price, both male and female consumers were mostly satisfied with the price of 3,800 baht; there were 18 samples. The conclusion was therefore the highest overall satisfaction in buying and selling Tai-Lue weaving furniture price of the consumers and who supports Community Enterprise Group of Tai-Lue Wat Yuan weaving group was in the price 3,800 baht. The cost of manufacturing one piece of furniture was approximately 2,290 baht, sold at 3,800 baht, so the benefit was 1,510 baht; the income was increased by 66 percent.

This research has built a product model for furniture in production and applying knowledge to solve problems, hold vocational trainings, and sustainably encourage tourism Tai-Lue Village.

7. Recommendations

1. Nowadays, Thailand has become an elderly society. Development in Tai-Lue weaving for the elderly is considered an option to be improved to meet the needs of the elderly.
2. The design of Tai-Lue Weaving is unique. The idea to redesign the weaving should be considered.

Acknowledgement

This study was sponsored by PMU, and processed by university of Phayao, with the research name of "Designing Furniture Equipment from the culture of Thi-Lue Tribal group to Encourage Tourism in Tai-Lue Village, Baan Yuan, Yuan district, Chiangkham, Phayao Province". I, as a researcher, would like to thank the chancellor, the vice-chancellor, Associate Professor Chanthanee Petcharanon, the Dean, Ms. Hathaitip Chuasa-ard, all people relating to this research, and the most important people which is the members of Tai-Lue weaving village who took part in this furniture design research in Yuan district, Chiangkham, Phayao Province, with acceptance and collaboration in improving valuable knowledge and wisdom of Tai-Lue culture to be adapted sustainably.

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