

Identity of traditional weaving: An exploration of consumer preferences and cultural significance



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ABSTRACT

This study aims to investigate the design of traditional Thai woven cloth patterns, focusing on the Sisaket Province area. A combined research approach, using both qualitative and quantitative methods, was applied. The data analysis involved calculating percentages, means, and standard deviations. Results showed that fabric design prototype 2 received the highest average satisfaction scores, particularly for pattern, color, novelty, appropriateness, and uniqueness. Fabric design prototype 3 also achieved high satisfaction scores in these areas, excelling in pattern, color, novelty, appropriateness, and distinctiveness.

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1. Introduction

Sisaket Province in Thailand is renowned for its cultural heritage and traditional craftsmanship (Fry et al., 2023). As part of its development strategy from 2018 to 2021, the province prioritized infrastructure development and economic growth (Nawir et al., 2023), with a focus on promoting local products under the One Tambon One Product (OTOP) initiative to increase community income (Sriphong et al., 2022). Researchers from the Center for the Development of Small and Medium Community Enterprises recognize the significant role of indigenous textiles in the economic and cultural identity of Sisaket Province (Dalferro, 2021).

Understanding the essence of a society involves more than just analysis (Kwan and Davila-Roman, 2023). Highlighting local knowledge and expertise can effectively raise consumer awareness and establish a distinct cultural identity. Traditional textile designs from Sisaket Province symbolize the community's unique heritage (Tonthongkam et al., 2024). These designs, passed down through generations, are not only artistic expressions but also cultural artifacts that preserve the history and traditions of the region.

This study applies the concept of "Local Charm of Thai Way" and integrates it with systematic design and marketing strategies (Jadhav et al., 2023) to explore and promote the distinctive weaving patterns of Sisaket Province (Singh et al., 2024). The aim is to attract tourists and customers (Mo et al., 2023) while positioning Sisaket as a prominent tourism destination in South Isan (Nishizaki, 2023).

The research investigates the design elements and techniques used in traditional woven fabrics (Han and Cong, 2023) and seeks to combine traditional practices with modern design (Yan and Li, 2023) and marketing methods. This approach aims to produce products that are both economically viable and culturally meaningful (Sudirjo, 2023), aligning with the global trend towards sustainable and culturally respectful product development in the textile and apparel industries (Bureekhampun and Maneepun, 2021; Hegab et al., 2023).

The study hypothesizes that its findings will provide valuable insights for improving the design and marketing of local products (Niros et al., 2023), particularly in textiles and fashion (Saccani et al., 2023). The research also aims to support sustainable and inclusive development (Jordão and Novas, 2024) by emphasizing the unique culture and identity of Sisaket Province (Brondizio et al., 2021). By preserving and promoting cultural heritage through indigenous textiles, the study seeks to contribute to the socioeconomic development of the region (Custodio et al., 2023). The project will create prototypes of traditional weaving patterns inspired by the "Local Thai Charm" of Sisaket and assess customer satisfaction with these designs through a systematic process.

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2. Methodology

This study uses a mixed-methods approach, combining both qualitative and quantitative methods, to understand the design features and techniques used in the traditional woven textiles of Sisaket Province. This approach helps to explore the cultural importance of these textiles and understand what consumers prefer in their patterns.

The participants were chosen using purposive sampling to focus on those with specific knowledge and skills in traditional fabric making. The group included three local weavers with deep experience, three cultural experts knowledgeable about preserving and passing on traditional weaving methods, and 100 consumers who were interested in traditional fabrics. These consumers were selected to assess how satisfied they were with the designs of the woven fabrics.

Data collection involved two main steps. First, interviews and observations were carried out with local weavers and cultural experts to gather detailed information about their ideas, strategies, and techniques for preserving and improving the traditional woven patterns of Sisaket. This information was analyzed to find common themes and special features in the traditional designs.

Second, a survey was conducted among the selected consumers to measure their satisfaction with the woven fabric patterns. The survey data were analyzed using percentages, averages, and standard deviations to summarize their feedback. At the same time, the qualitative data from the interviews and observations were reviewed to

identify recurring ideas and themes. This combined method ensured a complete understanding of the cultural value of Sisaket's woven textile designs and their appeal to customers.

3. Result and discussions

The researchers selected key topics to analyze the findings of the Sisaket Traditional Woven Fabric Pattern Design study, aligning with the study's objectives.

The first step involved conducting a detailed study of indigenous weaving techniques to support the development and creation of traditional woven textile patterns in Sisaket Province. The study thoroughly examined the entire weaving process of three groups and analyzed it as a design reference for the color tones derived from natural dyes, as outlined in [Table 1](#).

The study found that all three groups used the same six natural colors for dyeing yarn. These colors were derived from various natural sources: red from dyeing with Krang, purple from soaking in clay, yellow from the bark of Kea or Maphud (*Garcinia dulcis*), black from dyeing with salt, brown from the bark of the Wa tree, and indigo from the indigo plant. The current weaving patterns are categorized into two types: traditional patterns, such as Mi Khoem and Mi Kho, and modern adapted patterns. The modern patterns are created by combining traditional designs, such as Mi Dok Kaew and Mi Bai Pai, or by taking inspiration from nature, such as the Lamduan flower pattern unique to Sisaket Province. These classifications are summarized in [Table 2](#).

Table 1: An analysis of the natural dyes used in three kinds of traditional woven fabrics from Sisaket

Name of the group	Color tones obtained from natural dyes											
	Red	Pink	Purple	Yellow	Silver	Black	Brown	Grey	Green	Indigo	Old rose	
Ban Noi Na Choroen	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Ban Hi Lerng	✓	✓	✓	✓		✓	✓			✓		
Ban Khanuan	✓		✓	✓		✓	✓			✓		

Table 2: Analysis of the Mud Mee patterns

Fabric weaving group	Antique patterns	Applied patterns
Ban Noi Na Choroen	Mi Kho, Mi Khome	Pa-Ma Rumpkaowan, Dao Luk Kai, Dok Kaew with Phai
Ban Hai Leung	Mi Bak Bak Jab, Mi Kong Noi	Dok Lamduan, Ton-Son, Kluai Hui, Applied Thai Patterns
Ban Khanuan	Mi Dok Kaew, Mi Bai Pai	Tao Pattern

The Luk Kaew and Mud Mee Mi designs achieved the highest distinctiveness scores (5.00, SD = 0.000), indicating their strong preference among customers and their significant cultural value within the local community. These patterns serve as symbols of regional craftsmanship and act as a means of preserving and sharing the cultural heritage passed down through generations.

[Table 3](#) shows the average scores for patterns, techniques, and colors unique to Sisaket, emphasizing a strong preference for items that are deeply connected to the region's cultural identity. The positive customer perception and satisfaction with these culturally-rooted items highlight the relationship between preserving cultural traditions

and meeting the expectations of modern consumers, who value uniqueness and authenticity in products.

The Jok technique received slightly lower scores (2.30, SD = 0.483), while the Khit method scored marginally higher (2.40, SD = 0.516). These results suggest that these techniques are less recognized or valued by modern consumers, highlighting the need to modernize or reinterpret them to enhance their appeal and cultural relevance. This analysis underscores the importance of balancing the preservation of traditional culture with the expectations of contemporary clients. Striking this balance is critical for sustaining the success and longevity of traditional weaving by supporting both cultural heritage and economic viability.

Table 3: The average patterns, techniques, and colors that are unique to Sisaket

Fabric pattern names	Mean	SD	Level of uniqueness
Patterns			
1) Luk Kaew pattern fabric	5.00	0.000	Highest
2) Mud Mee pattern fabric	5.00	0.000	Highest
3) Applied pattern fabric	4.40	0.516	High
Techniques			
1) Mud Mee fabric	5.00	0.000	Highest
2) Jok pattern fabric	2.30	0.483	Low
3) Khit pattern fabric	2.40	0.516	Low

SD: Standard deviation

In the second step, the development and design of traditional woven fabric patterns in Sisaket Province involved analyzing data from three weaving groups: Ban Noi Na Choroen, Ban Hai Leung, and Ban Khanuan. These data provided a foundation for pattern creation and were supplemented by qualitative insights from interviews with group members. The unique characteristics of Sisaket’s weaving include the Mat Mi technique, recognized for its adaptability and continuous evolution.

The weaving patterns fall into two categories: the Luk Kaew pattern, which involves weaving standard fabric, and applied patterns derived from the Mud Mee technique. A prototype design was developed using the Mud Mee method, inspired by traditional designs but incorporating a more abstract and modern approach, including elements of Lac

(*Laccifera chinensis* Mahdihassan). This design emphasizes vibrancy and energy, creating a more dynamic aesthetic. The initial pattern design, shown in Fig. 1, draws from traditional Mud Mee motifs, while Fig. 2 illustrates the intricate weaving process that enhances the vibrancy of the final product.

The colors used in this prototype are more intense and diverse than those in the original designs. Red is produced through a dyeing process, purple comes from soaking Lac in clay, yellow is obtained from Kea (*Maclura cochinchinensis* Corner) or Maphud (*Garcinia dulcis*), black is achieved through dyeing with salt, brown comes from dyeing with Wha (*Syzygium cumini*) bark, and indigo is derived from *Indigofera tinctoria*. These vibrant hues reflect the goal of creating contemporary and varied products while maintaining a connection to traditional methods.

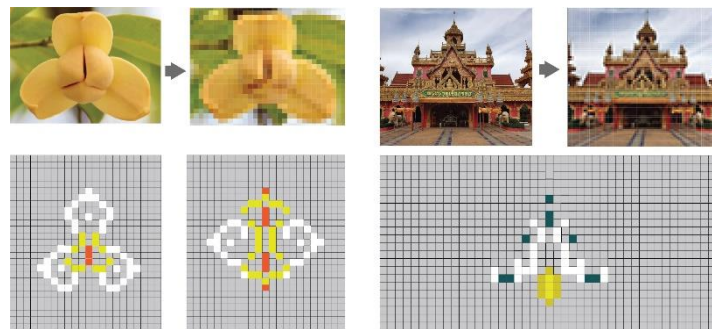


Fig. 1: Creating patterns from the Dok Lamduan flower and castle

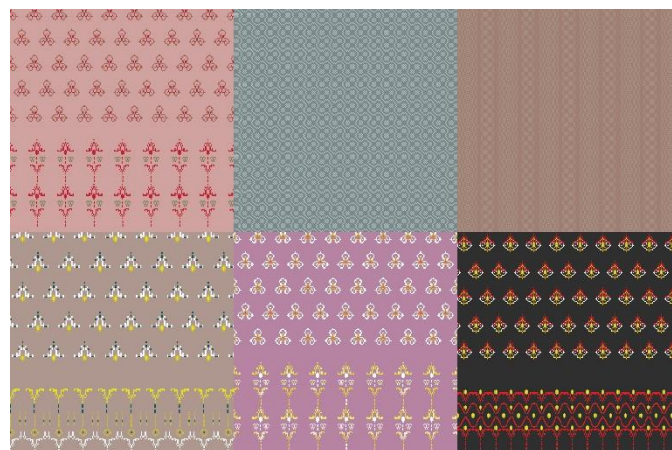


Fig. 2: Weaving process with patterns 1–3 in the first row and patterns 4–6 in the second

The analysis of satisfaction levels revealed that Pattern 1 received the highest satisfaction score, with a mean of 4.76 and a standard deviation of 0.617. Pattern 3 closely followed with a mean of 4.80 and a standard deviation of 0.402, while Pattern 2 had a slightly lower mean of 4.63 and a standard

deviation of 0.645. In contrast, Pattern Types 4 (mean = 4.19, SD = 0.563), 5 (mean = 4.28, SD = 0.482), and 6 (mean = 4.01, SD = 0.414) showed somewhat lower satisfaction levels. However, these scores still reflect a notable degree of approval, as shown in Table 4.

Table 4: The mean level of satisfaction regarding fabric patterns

Pattern type	Mean	SD	Level of satisfaction
1	4.73	0.617	Highest
2	4.63	0.645	Highest
3	4.80	0.402	Highest
4	4.19	0.563	High
5	4.28	0.482	High
6	4.01	0.414	High

Pattern types refer to Fig. 2 arrangement: Patterns 1–3 in the first row, Patterns 4–6 in the second

In the third step, a prototype evaluation was conducted to support innovative product development and market testing. The evaluation results indicated that the design of Sample 1 achieved the highest satisfaction level, with a mean score of 4.75 and a standard deviation of 0.479. Table 5 highlights that Sample 1 was rated exceptionally high for distinctiveness and suitability, with mean scores of 4.94 and 4.76, respectively. Additionally, Sample 1 was perceived as highly distinctive, earning a satisfaction rating of 4.70.

Overall, Sample 1 received the highest average score among all prototypes, with a mean of 4.61. Fig. 3 visually represents Sample 1, showcasing the design features that contributed to its top ratings in terms of distinctiveness and suitability.

The evaluation results reveal that the participants expressed a significant level of satisfaction with the second fabric design. The areas of design, distinctiveness, and overall satisfaction had the highest mean scores, ranging from 4.75 to 4.82, as shown in Table 6. The range of standard deviations was between .435 and .662, suggesting a high level of consistency in the assessments among the individuals. Overall, the findings indicate that the second fabric design was favorably received and fulfilled the participants' expectations. Fig. 4 illustrates the second fabric design, highlighting the elements that contributed to its high scores in satisfaction and distinctiveness.

The evaluation data in Table 7 shows that respondents expressed the highest level of satisfaction with fabric pattern 2, which received a mean score of 4.66 and a standard deviation of 0.572. This pattern was particularly praised for its color, with a mean score of 4.67 and a standard deviation of 0.472. Additionally, fabric pattern 2 was noted for its high level of uniqueness, achieving a

mean score of 4.75 and a standard deviation of 0.479.

The design was also rated as highly suitable and distinctive, with mean scores of 4.69 and 4.82, and standard deviations of 0.662 and 0.435, respectively. The overall satisfaction with fabric design 2 was very high, with a mean score of 4.71. Fig. 5 provides a visual depiction of fabric pattern 2, highlighting the design features that contributed to its strong ratings in color, uniqueness, and overall satisfaction.



Fig. 3: Fabric prototype type 1



Fig. 4: Fabric prototype type 2



Fig. 5: Fabric prototype type 3

Table 5: The mean satisfaction scores for fabric design template 1

Item	Mean	SD	Level of satisfaction
Design	4.75	.479	Highest
Color	4.62	.678	Highest
Uniqueness	4.94	.238	Highest
Suitability	4.76	.570	Highest
Distinctiveness	4.70	.577	Highest
Overall	4.61	-	Highest

Table 6: The mean satisfaction scores for fabric design template 2

Item	Mean	SD	Level of satisfaction
Design	4.82	.435	Highest
Color	4.69	.662	Highest
Uniqueness	4.63	.562	Highest
Suitability	4.70	.577	Highest
Distinctiveness	4.75	.479	Highest
Overall	4.71	-	Highest

Table 7: The mean satisfaction scores for fabric design template 3

Item	Mean	SD	Level of satisfaction
Design	4.66	.572	Highest
Color	4.67	.472	Highest
Uniqueness	4.75	.479	Highest
Suitability	4.69	.662	Highest
Distinctiveness	4.82	.435	Highest
Overall	4.71	-	Highest

This comprehensive study employs diverse research methods to examine the traditional woven fabric patterns commonly found in Sisaket Province, Thailand. The primary goal was to uncover the distinct cultural identity embedded in the local community while promoting sustainable economic growth through the creation of innovative products (Phonthanukitithaworn et al., 2023). This aligns with efforts to increase the province's appeal as a key tourist destination in South Isan (Lim and Chuangchai, 2023). The findings classify traditional weaving patterns into two main categories: enduring traditional patterns and contemporary applied patterns influenced by modern trends. The Mat Mi technique, notable for its adaptability and ongoing innovation, was identified as a unique and valuable method (Samaksamarn, 2022). Among the designs, Luk Kaew and Mud Mee Mi were highlighted as the most distinctive, with the Mud Mee style standing out for its variety of techniques. In contrast, the Jok and Khit techniques were found to have lower levels of distinctiveness. Fabric Pattern 2 emerged as the most favored prototype, receiving high ratings across categories such as pattern design, color, novelty, appropriateness, and distinctiveness. Fabric Pattern 3 also received positive feedback, indicating a high degree of satisfaction among participants.

These findings contribute valuable insights into local product design and marketing, particularly in the textile and fashion industries. By emphasizing Sisaket's unique cultural character, the study supports sustainable development and the growth of the local community. This aligns with previous research emphasizing the importance of cultural identity in the development of local products and sustainable tourism (Janjua et al., 2023). Comparisons with the historic cloth motifs of Manipur (Thanglen and Maheo, 2020) reveal similar sociological and symbolic connections in fabric designs. However, this study has limitations, particularly regarding the sample size and the specific context of Sisaket Province. These findings may not be directly applicable to other regions or groups. Future research should aim to include larger and more diverse samples across multiple provinces to explore the variety of traditional woven fabric patterns in Thailand (Chudasri et al., 2020). Additionally, further studies should evaluate the economic potential of these patterns in generating revenue for local communities.

4. Conclusion

Ultimately, this study provides valuable insights for scholars, policymakers, and industry experts in

the textile and fashion sectors. The results underscore the possibility of achieving sustained economic expansion and fostering community advancement in Sisaket Province, Thailand, by actively promoting its culturally diverse and distinctive traditional woven fabric designs. These findings have the potential to significantly enhance the province's reputation as a prominent tourist destination in South Isan.

The traditional textile designs of Sisaket Province function as symbols of local craftsmanship and as manifestations of cultural heritage and importance that have been passed down for ages. These patterns represent the historical, cultural, and societal features of the local community. Each design has its own specific meaning related to religious beliefs, good luck, and the display of communal unity.

Hence, it is crucial to conserve and enhance these complex textile patterns in order to successfully transmit our cultural heritage. This effort has two main objectives: To conserve local skills and knowledge and to promote a more profound comprehension of cultural values among younger individuals. These patterns help to foster local pride and serve as a way to construct a shared identity at both the regional and national levels.

Furthermore, the complex textile patterns have a substantial influence on strengthening the local economy. By adapting traditional designs to fit modern products, their value is increased, and they capture the interest of both local and worldwide consumers. The relationship between woven fabric designs and local identity enhances uniqueness and attracts tourists and consumers who have a strong interest in local culture.

This extensive research allows us to understand the significant connection between woven fabric designs and the cultural identity of Sisaket Province. These designs not only reflect historical characteristics but also contribute to the long-term sustainability of the local community.

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their kind support and cooperation until this study has been successfully reported.

Compliance with ethical standards

Ethical considerations

This study adhered to ethical standards, with informed consent obtained from participants and their confidentiality maintained throughout.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

- Brondízio ES, Aumeeruddy-Thomas Y, Bates P, Carino J, Fernández-Llamazares Á, Ferrari MF, Galvin K, Reyes-García V, McElwee P, Molnár Z, and Samakov A et al. (2021). Locally based, regionally manifested, and globally relevant: Indigenous and local knowledge, values, and practices for nature. *Annual Review of Environment and Resources*, 46: 481-509. <https://doi.org/10.1146/annurev-environ-012220-012127>
- Bureekhampun S and Maneepun C (2021). Eco-friendly and community sustainable textile fabric dyeing methods from Thai buffalo manure: From pasture to fashion designer. *SAGE Open*, 11(4). <https://doi.org/10.1177/21582440211058201>
- Chudasri D, Walker S, and Evans M (2020). Potential areas for design and its implementation to enable the future viability of weaving practices in northern Thailand. *International Journal of Design*, 14(1): 95-111.
- Custodio HM, Hadjikakou M, and Bryan BA (2023). A review of socioeconomic indicators of sustainability and wellbeing building on the social foundations framework. *Ecological Economics*, 203: 107608. <https://doi.org/10.1016/j.ecolecon.2022.107608>
- Dalferro AG (2021). *Shimmering surfaces: An ethnography of silk production in Surin, Thailand*. Ph.D. Dissertation, Cornell University, Ithaca, USA.
- Fry GW, Kaewpigit J, and Apahung R (2023). The correlates of student happiness in Thailand: Paradoxes and potential. In: Fry GW and Chun H (Eds.), *Happiness education*: 115-140. Routledge, New York, USA. <https://doi.org/10.4324/9781003037262-7>
- Han D and Cong L (2023). Miao traditional patterns: The origins and design transformation. *Visual Studies*, 38(3-4): 425-432. <https://doi.org/10.1080/1472586X.2021.1940261>
- Hegab H, Shaban I, Jamil M, and Khanna N (2023). Toward sustainable future: Strategies, indicators, and challenges for implementing sustainable production systems. *Sustainable Materials and Technologies*, 36: e00617. <https://doi.org/10.1016/j.susmat.2023.e00617>
- Jadhav GG, Gaikwad SV, and Bapat D (2023). A systematic literature review: Digital marketing and its impact on SMEs. *Journal of Indian Business Research*, 15(1): 76-91. <https://doi.org/10.1108/JIBR-05-2022-0129>
- Janjua ZUA, Krishnapillai G, and Rehman M (2023). Importance of the sustainability tourism marketing practices: An insight from rural community-based homestays in Malaysia. *Journal of Hospitality and Tourism Insights*, 6(2): 575-594. <https://doi.org/10.1108/JHTI-10-2021-0274>
- Jordão RVD and Novas JC (2024). Information and knowledge management, intellectual capital, and sustainable growth in networked small and medium enterprises. *Journal of the Knowledge Economy*, 15(1): 563-595. <https://doi.org/10.1007/s13132-022-01043-5> **PMCID:PMC9709746**
- Kwan GF and Davila-Roman VG (2023). Uncovering endemic heart failure and hypertension in low-and middle-income countries: Challenges and opportunities. *Circulation: Cardiovascular Quality and Outcomes*, 16(2): e009611. <https://doi.org/10.1161/CIRCOUTCOMES.122.009611> **PMid:36472191 PMCID:PMC10038165**
- Lim MK and Chuangchai P (2023). Towards a creative old town district: A process evaluation study of the creative district development of Sakon Nakhon in Northeast Thailand. *The Royal Society of Edinburgh, Edinburgh, UK*.
- Mo X, Yang X, and Hu B (2023). The interaction of clothing design factors: How to attract consumers' visual attention and enhance emotional experience. *Journal of Fashion Marketing and Management: An International Journal*, 27(2): 220-240. <https://doi.org/10.1108/JFMM-10-2021-0269>
- Nawir D, Bakri MD, and Syarif IA (2023). Central government role in road infrastructure development and economic growth in the form of future study: The case of Indonesia. *City Territory and Architecture*, 10: 12. <https://doi.org/10.1186/s40410-022-00188-9>
- Niros MI, Niros A, Pollalis Y, and Ding QS (2023). Effective marketing strategies for global FMCG brands during COVID-19 pandemic crisis. *International Marketing Review*, 40(5): 1012-1034. <https://doi.org/10.1108/IMR-11-2021-0327>
- Nishizaki Y (2023). Family ties that bind: Decentralisation local elites and the provincial administrative organisations in Thailand. *TRaNS: Trans-Regional and-National Studies of Southeast Asia*, 11(1): 45-70. <https://doi.org/10.1017/trn.2022.8>
- Phonthanukitithaworn C, Srisathan WA, Ketkaew C, and Naruetharadhol P (2023). Sustainable development towards openness SME innovation: Taking advantage of intellectual capital sustainable initiatives and open innovation. *Sustainability*, 15(3): 2126. <https://doi.org/10.3390/su15032126>
- Saccani N, Bressanelli G, and Visintin F (2023). Circular supply chain orchestration to overcome circular economy challenges: An empirical investigation in the textile and fashion industries. *Sustainable Production and Consumption*, 35: 469-482. <https://doi.org/10.1016/j.spc.2022.11.020>
- Samaksamarn S (2022). Arts of color for colorful pattern design of antique Poomboran and Pidan Mudmee silk combining six colors transfer following ancient Khmer wisdom traditions. *Arts and Culture Journal of the Lower Moon River*, 11(2): 35-48.
- Singh PP, Roy S, and Padun A (2024). A system design approach of gamification for disseminating intangible oral expressions of indigenous textile heritage. *International Journal of Serious Games*, 11(2): 3-26. <https://doi.org/10.17083/ijsg.v11i2.727>
- Sriphong C, Esor A, and Kachonkitiya N (2022). Value chain management and business performance of one tambon one product businesses in the southernmost province of Thailand. *Journal of Positive School Psychology*, 6(4): 8706-8720.
- Sudirjo F (2023). Marketing strategy in improving product competitiveness in the global market. *Journal of Contemporary Administration and Management*, 1(2): 63-69. <https://doi.org/10.61100/adman.v1i2.24>
- Thanglen H and Maheo LM (2020). Traditional dress and its cultural significance: A case study of the Chiru Tribe in Manipur. In: Meitei SY, Chaudhuri SK, and Arunkumar MCT (Eds.), *The cultural heritage of Manipur*: 493-502. 1st Edition, Routledge, London, UK. <https://doi.org/10.4324/9781003132745-47>
- Tonthongkam K, Arayajaru S, Boonsringam N, Phonsongkroh N, and Phusri N (2024). Heritage design: Developing products

based on traditional knowledge and creating an artisan community in Nakhon Pathom Province. *International Journal of Designed Objects*, 18(1): 61-80.
<https://doi.org/10.18848/2325-1379/CGP/v18i01/61-80>

Yan WJ and Li KR (2023). Sustainable cultural innovation practice: Heritage education in universities and creative inheritance of intangible cultural heritage craft. *Sustainability*, 15(2): 1194.
<https://doi.org/10.3390/su15021194>