



## Reliability and Validity of Questionnaire on Assessing the Aesthetic Perception of Design Motif Applied on Sarawak Pua Kumbu Cloth Using the Art Reception Survey (ARS)

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**Abstract.** The objective of this study was to assess the reliability of the Art Reception Survey (ARS) in measuring the aesthetic experience of a Pua Kumbu cloth among visitors who visited the textile museums in Kuching Sarawak. Using this instrument with 28 items grouped into 6 factors, the reliability was assessed by measuring its internal consistency using Cronbach's alpha coefficient. Thirty (30) visitors served as respondents in this study, who were from various age groups and different geographic backgrounds. The results from the reliability analysis revealed that the factors had good internal consistency. Cronbach's alpha coefficient ranged from  $\alpha = .672$  to  $.978$ . The results also indicate that Negative Emotion, Expertise and Positive Attraction produced a low intraclass correlation coefficient. Negative Emotion and the first items from two other factors revealed poor item-scale correlations. This study suggests the removal of the Negative Emotion factor, which was revealed to be irrelevant in measuring the aesthetic experience of the Pua Kumbu cloth, and of items 1 of both Expertise and Positive Attraction, making the remaining 21 items in the instrument reliable to measure the aesthetic experience of the respondents towards the Pua Kumbu cloth.

**Keywords:** *aesthetic experience; perception; Ngepan; traditional costume; design motif.*

### 1 Introduction

The Iban people in the State of Sarawak are also known as the Sea Dayak. The community is the largest group of indigenous people in Malaysia Borneo [1]. Historically, the Iban community lived as nomads in Borneo and were known for their courage, reflecting their reputation as fighters and headhunters, being feared by many in the past [2]. The Iban see themselves as a great tribe and will do anything to protect their culture and traditions from extinction [2]. Pua Kumbu, made of woven cotton, is the most famous textile from the Iban people in Sarawak. They are strongly bound to their customs and beliefs and their understanding is evidently well-matched and crafted in Pua Kumbu. In most

societies, weaving is linked to women and their status within the community is revealed by the type of motifs they weave. While most motifs are visual representations of animals, plants and even daily activities, others are more complex and abstract. Intricate patterns in Pua Kumbu are often traditional and hereditary [3].

Pua Kumbu are produced by Iban women using the dye resist technique and weaving on a backstrap loom. The textiles with multi-colored patterns are highly appreciated as ceremonial blankets [4]. The design motifs applied on Pua Kumbu are complex and abstract, inspired by flora, fauna and animistic beliefs as well as the Iban communities' daily activities [4]. The creativity of the Iban weaver can be traced from the attractive and meaningful design motifs applied. The cultural values they contain are transferred to the wearer [5]. The striking look of Sarawak Pua Kumbu attracts the public to buy them as a souvenir without knowing the intrinsic meaning of the design motifs, thus potentially leading to misinterpretation [6].

The role of the Iban motifs as crucial elements of visual communication for the tribe have shown a decline in recent times. They do still receive appreciation from the younger generations, but only for their aesthetic value, not the intrinsic meaning of their cultural identity [7]. The complexity of the design motifs is based on a combination of several geometrical forms inspired by nature and interpreted according to the understanding of the weavers with their own meaning and symbolism [3].

Most of the design patterns applied are created at different levels of difficulty, which has an influence on the public's aesthetic perception as a decision-making factor in buying a cloth. As for the Sarawak Pua Kumbu, the correct information is required to clarify the meaning of the motifs in the hope that this will keep the culture alive [6]. Misinterpretation of the design patterns applied on the cloths may lead to their misuse and could upset the feelings of the Iban people. Therefore, the public needs to be well-informed about these traditional motifs before wearing them [10].

'Aisthesis' in Greek comprises all activities that involve the collection of information through the senses: hearing, sight, touch, smell, and, taste. The relation between art and aesthetics is constituted by the embodiment of perceptual, emotional-responsive, and expressive communicative relationships [13]. To ensure that the aesthetic process goes smoothly, high sensitivity is required because any interference that occurs during the process will change the perception [13]. For example, the color red, in the family of warm colors, is considered a bold and beautiful color and highlights the confidence of its fans.

However, for some red is not a good choice because they think the color is too 'screaming' and 'disturbing'.

The process involved in human perception is known as the aesthetic experience. It is generally defined as a special state of mind that is qualitatively distinct from everyday experience [10]. To that extent, 'flow' [11,12] is a similar concept applied to the aesthetic experience phenomenon. It is an effortless mental energy flow caused by the awareness of the similarity between incoming information and one's own goals. To have an aesthetic experience, a person should be open and attentive. This is because in order to undergo a purely aesthetic experience there is a certain way to look, hear, feel and perhaps imagine or process an object that lends itself to a more profound experience [9].

Perception can vary a lot in terms of definitions and theories. It involves different types of processes, such as recognition (being aware of), organization (gathering and storing), and interpretation (binding to knowledge) of sensory information. The human senses (sight, hearing, touch, smell and taste) receive signs from the environment and simultaneously generate a perception [12]. An illusion of the visual representation of objects frequently contributes to misinterpretation, due to mismatching perceptions, or sometimes the visual representation is deliberately misinterpreted [13].

The reaction of people towards a work of art stimulates an aesthetic emotion ('beautiful' or 'ugly') towards the work, which is strongly related to personality traits and one's preferences. Beauty is a daily phenomenon but defining it is difficult [13] as this concept is deliberately wide-ranging: it covers feelings towards what we like, what we find fascinating, interesting, great, funny or inspiring [14]. However, it is possible to explain beauty using psychological theory [15]. The feeling of pleasure more or less depends on how we perceive or are aroused by beautiful things around us.

Many great philosophers, such as Plato, Aristotle, Kant, Hegel, and Schopenhauer, have the common understanding that pleasure is a central element of the aesthetic experience [14], while others think have defined pleasure as 'flow'. A feeling of pleasure can only be achieved when positive emotions of high (excitement, enthusiasm, thrill) and low intensity (happiness, joy, gladness and serenity) are stimulated [16].

The aim of this pilot study was to assess the reliability of the Art Reception Survey (ARS) [17] in representing the aesthetic experience of Sarawak Pua Kumbu with regard to the ability of this instrument to match the art reception of the respondents, more specifically visitors of a textile museum that displays Pua Kumbu cloths.

## 2 Methodology

The pilot study was carried out with the voluntarily participation of visitors ( $N = 30$ ) who visited the Tun Jugah Foundation and Sarawak Textile Museum in Kuching, Sarawak. The acceptable sample size for a preliminary research is suggested to be between 10 to 30 respondents [19]. Before the respondents were given the questionnaire, they were briefly informed on the purpose of the survey and they were prompted to comment on the questionnaire. Upon answering the questionnaire, they were shown some Pua Kumbu designs (Figure 1).



**Figure 1** Pua Kumbu designs.

They were given approximately 10 minutes to observe the cloths. Then, they filled in the questionnaire. The time taken to complete the questionnaire was recorded. The range time for the respondents to complete the questionnaire was between 10 and 15 minutes.

The Art Reception Survey (ARS) was utilized to measure the respondents' aesthetic experience towards a Sarawak Pua Kumbu cloth. It measures various components of the aesthetic experience, including the respondents' cognitive participation, their affective assessment (positive or negative), their judgment on the artistic quality and creativity as well as their knowledge and understanding of the cloth. The first section of the questionnaire elicits the demographic profile of the respondents. The second section consists of 28 items grouped into six factors: Cognitive Stimulation, Negative Emotion, Expertise, Self-Reference, Artistic Quality and Positive Attraction. The items are rated by using a 5-point Likert scale, ranging from strongly disagree to strongly agree (1 to 5).

Every factor that appears in the ARS represents the diversity of measures needed for analyzing the aesthetic experience of the respondents in detail [19]. Cognitive Stimulation is the first factor, which indicates that the ability to process cognitive mastering depends on a person's knowledge. The next factor, Negative Emotionality, or negative emotions or affects, refers to the experience of the respondents having negative emotions towards the Sarawak Pua Kumbu.

The third factor, Expertise, is related to the level of skills or knowledge possessed by the respondents in the particular field of Sarawak Pua Kumbu. The fourth factor, Self-Reference, refers to an individual's tendency to remember or recall information when information regarding the Sarawak Pua Kumbu is linked to him/her. Artistic Quality measures the respondents' understanding of the originality and technical skills in the making of the Pua Kumbu. The last factor is used to measure any positive attraction the Sarawak Pua Kumbu exerts on the respondents; Positive Attraction is considered a feeling that emerges based on the subjective success of processing information and is often described as pleasure or happiness processing [17].

For the purpose of this pilot study, the reliability was assessed by measuring its internal consistency using Cronbach's alpha, which indicates the internal correlation of all items on a scale. A high coefficient suggests a more consistent scale, pointing to a more precise evaluation of a defined parameter through the items. An alpha value of 0.7 or higher indicates good internal consistency [19].

### 3 Result and Discussion

A total of  $N = 30$  respondents completed the questionnaire (Table 1). Forty percent ( $n = 12$ ) of the respondents were male and 60% ( $n = 18$ ) were female. Thirty percent of the respondents were from the age categories of 18 to 25 years old ( $n = 9$ ) and 31 to 35 years old ( $n = 9$ ) each. The age groups of 26 to 30 years old and more than 41 years old were 23.3% and 16.7%, respectively. For the education level, SPM holders and diploma holders were 16.7% ( $n = 5$ ) each. Sixty six percent ( $n = 20$ ) of the respondents were bachelor degree holders. The majority of the respondents were from Sarawak (53.3%,  $n = 16$ ), followed by Peninsular Malaysia (36.7%,  $n = 11$ ) and the remaining were from Sabah (10%,  $n = 3$ ).

**Table 1** Characteristics of the respondents.

Variables		N (%)
Gender	Male	12 (40)
	Female	18 (60)
Age groups (years)	18-25	9 (30)
	26-30	7 (23.3)
	31-35	9 (30)
	> 36	5 (16.7)
Education level	SPM	5 (16.7)
	Diploma	5 (16.7)
	Bachelor degree	20 (66.7)
Background	Sarawak	16 (53.3)
	Sabah	3 (10)
	Peninsular Malaysia	11 (36.7)

To assess the reliability of continuous variables, the intraclass correlation coefficient (ICC) is presented (Table 2). The correlation coefficients of the instruments varied between 0.291 and 0.951. The Cronbach's alpha coefficients ranged from 0.672 to 0.987 (Table 3). All factors had values greater than 0.60 so they can be considered to have moderate to high internal consistency.

**Table 2** Intraclass correlation coefficient.

Scales	Intraclass Correlation Coefficient	p-value
Cognitive Stimulation	.899	.001
Negative Emotion	.463	.001
Expertise	.291	.001
Self-Reference	.895	.001
Artistic Quality	.951	.001
Positive Attraction	.431	.001

**Table 3** Cronbach's alpha for scales of the questionnaire.

Scales	<i>n</i>	$\alpha$	Lower	Upper
Cognitive Stimulation	5	.978	.963	.988
Negative Emotion	5	.812	.680	.900
Expertise	5	.672	.441	.826
Self-Reference	4	.971	.950	.985
Artistic Quality	4	.987	.978	.993
Positive Attraction	5	.791	.644	.889

The ARS was developed to measure the aesthetic experience towards artworks [17]. In this pilot study, the researchers intended to measure the aesthetic experience toward a Pua Kumbu cloth. The items in the assessment resulted in good internal consistency as assessed with Cronbach's alpha. The ICC indicated sufficient reliability, except for the factors Negative Emotion, Expertise and Positive Attraction. Therefore, item-scale analysis for each of the factors was conducted to further consider the removal of any of the items if necessary.

**Table 4** Item-scale analysis of Cognitive Stimulation.

Item	Adjusted item-scale correlation	Cronbach Alpha if the item is deleted
1 It is exciting to think about this Pua Kumbu Cloth	.870	.977
2 I would like to learn more about the background of this Pua Kumbu cloth	.974	.961
3 It is fun to deal with this Pua Kumbu cloth	.974	.961
4 This Pua Kumbu cloth is thought-provoking	.941	.966
5 This Pua Kumbu cloth is makes me curious	.882	.976
Internal consistency of Cognitive Stimulation	$\alpha = .978$	Standardized $\alpha = .979$

Tables 4-9 represent the item-scale analysis for each of the scales in the ARS. The range of item-scale correlation was .870 to .974 for Cognitive Stimulation (Table 4). For Negative Emotion, the range was .293 to .781, with the lowest correlation coefficient for item 1 (Table 5). Negative Emotion measures the respondent’s negative emotion or the experience of negative emotions. If item 1 is deleted, the alpha value will increase to .883, thus, this item is suggested to be removed.

**Table 5** Item-scale analysis of Negative Emotion.

	Item	Adjusted item-scale correlation	Cronbach Alpha if the item is deleted
1	This Pua Kumbu cloth makes me feel troubled	.293	.883
2	This Pua Kumbu cloth makes me feel afraid	.701	.742
3	This Pua Kumbu cloth disgusts me	.781	.747
4	This Pua Kumbu cloth makes me sad	.701	.742
5	This Pua Kumbu cloth makes me feel lonesome	.781	.747
Internal consistency of Negative Emotion		$\alpha = .812$	Standardized $\alpha = .852$

Expertise measures the respondent’s having skill or knowledge in the particular field of Pua Kumbu cloth. The Emotion item-scale correlation ranged between -.310 and .700, with the lowest value for item 1 (Table 6). If this item is deleted, the alpha value will increase to .812, thus, this item is suggested to be removed. Self-Reference measures the respondent’s tendency to remember information when the Pua Kumbu cloth information has been linked to him or her. The item-scale correlation ranged between .905 and .954 (Table 7). Artistic Quality, refers to the originality and technical skills in the process of making Pua Kumbu cloth. The item-scale correlation ranged between .960 and .963 (Table 8).

**Table 6** Item-scale analysis of Expertise.

	Item	Adjusted item-scale correlation	Cronbach Alpha if the item is deleted
1	With regard to its content, this Pua Kumbu remains inaccessible to me	-.310	.812
2	I can relate this Pua Kumbu cloth to its art-historical context	.546	.586
3	I know this Pua Kumbu cloth	.700	.520
4	I have an idea what the weaver is trying to convey with this Pua Kumbu	.678	.531
5	I can relate this Pua Kumbu cloth to a particular weaver	.578	.559
Internal consistency of Expertise		$\alpha = .672$	Standardized $\alpha = .597$

**Table 7** Item-scale analysis of Self-Reference.

	Item	Adjusted item-scale correlation	Cronbach Alpha if the item is deleted
1	This Pua Kumbu cloth mirrors my own personal emotional state	.954	.949
2	I can associate this Pua Kumbu cloth with my own personal biography	.914	.962
3	Personal memories of mine are linked to this Pua Kumbu cloth	.917	.960
4	This Pua Kumbu cloth makes me think about my own life history	.905	.963
Internal consistency of Self-Reference		$\alpha = .971$	Standardized $\alpha = .972$

**Table 8** Item-scale analysis of Artistic Quality.

	Item	Adjusted item-scale correlation	Cronbach Alpha if the item is deleted
1	The composition of the Pua Kumbu cloth is of high quality	.960	.980
2	The Pua Kumbu cloth is very innovative	.960	.980
3	The Pua Kumbu cloth features a high level of creativity	.963	.980
4	The weaver's manner of creating Pua Kumbu cloth is fascinating	.963	.980
Internal consistency of Artistic Quality		$\alpha = .985$	Standardized $\alpha = .985$

Positive Attraction measures the feeling that emerges related to the subjective success of the information processing and is often described as pleasure or happiness processing (Table 9). Item 1 had the lowest item-scale correlation at .221. If this item is removed, the alpha value will increase to .923. Thus, this item is suggested to be removed.

**Table 9** Item-scale Analysis of Positive Attraction.

	Item	Adjusted item-scale correlation	Cronbach Alpha if the item is deleted
1	I would consider spending money to buy this piece of art	.221	.923
2	This Pua Kumbu cloth is beautiful	.758	.721
3	This Pua Kumbu cloth is pleasant	.760	.702
4	This Pua Kumbu cloth thrills me	.674	.721
5	I feel inspired by this Pua Kumbu	.795	.678
Internal consistency of Positive Attraction		$\alpha = .791$	Standardized $\alpha = .885$

Based on the ICC, Negative Emotion, Expertise and Positive Attraction had the lowest values. Analyzed in detail, items 1 of these three factors are suggested to be removed to increase the alpha values. Regarding the scales, the respondents were assumed to have no idea of expressing negative emotions or were less likely to have an experience of feeling negative towards a cloth. They were



unable to relate the cloth's meaning. Lack of knowledge on Pua Kumbu could lead to the inconsistency of this item (item 1) of Expertise. In addition, the respondents would not consider spending money to buy a Pua Kumbu. This is an interesting finding. The respondents visited the museum for the sake of enjoying the artwork, but not intending to buy Pua Kumbu. This explains the internal inconsistency of this item (item 1) from the Positive Attraction factor.

Table 10 shows the mean score for each of the factors in the instrument. The mean score for Negative Emotion was  $1.153 \pm .271$ , which indicates that the respondents strongly disagreed with having negative emotions towards the Pua Kumbu cloth. Therefore, this factor can be considered unnecessary for measuring the aesthetic experience towards the cloth.

**Table 10** Descriptive statistics of each ARS scale.

	Scales	M±SD
1	Cognitive Stimulation	4.233 ± .826
2	Negative Emotion	1.153 ± .271
3	Expertise	3.207 ± .629
4	Self-Reference	2.133 ± 1.090
5	Artistic Quality	4.750 ± .431
6	Positive Attraction	4.507 ± .457

On the other hand, the mean scores of Expertise ( $3.207 \pm .629$ ) and Self-Reference ( $2.133 \pm 1.09$ ) indicate a sufficient explanation that the respondents were less likely to agree that they have expertise or knowledge on the Pua Kumbu cloth and also could not refer to information that linked them with the cloth. This is acceptable as the respondents were visitors to that particular museum and could find the Pua Kumbu interesting and still have no knowledge related to it. The study does suggest to remove item 1 of Expertise to increase the internal consistency. Positive Attraction had a high mean score ( $4.508 \pm .457$ ), which means that this factor was relevant to the respondents, but item 1 is suggested to be removed to increase the internal consistency.

#### 4 Conclusion

Taken together, this pilot study found that Artistic Quality was of the highest concern for the respondents, followed by Positive Attraction and Cognitive Stimulation. However, Expertise, Self-Reference and Negative Emotion were placed lower in the rating of the respondents. This is very relevant to the aesthetic experience of the respondents of Pua Kumbu. In addition, the lowest score of Negative Emotion indicates that had a positive perception towards the Pua Kumbu cloth. The findings suggest that the ARS is reliable in measuring the aesthetic experience towards Pua Kumbu cloth when removing the factor Negative Emotion, item 1 of Expertise and item 1 of Positive Attraction.

Therefore, the total number of remaining items for this instrument is 21 and the total number of remaining factors is 5: Cognitive Stimulation, Expertise, Self-Reference, Artistic Quality and Positive Attraction. This study presents a revised, more relevant version of ARS, called ARS-Revised (ARS-R), comprising of 21 items of the original 28 ARS items and five factors. ARS-R seems to be improved and reliable to examine the aesthetic experience towards artworks, in this study, Pua Kumbu.

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