Towards Understanding *Kansei* through Aesthetic Experience and Value Perception in Cultural Design

Cross-Cultural Comparison of Cognitive Styles between Africans and Japanese

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Abstract: Having observed a growing product market among African and Asian countries, in addition to the cultural aesthetic traditions across both ends, a point of convergence and divergence is being sought through the process of perception in cross-cultural product design. In this paper, we attempt to examine the cognitive distance that might exist among Africans and Japanese, in order to project possible implications for difference in the cultural style of aesthetics perception and value sensibility in product design. The study took a cognitivist approach by adapting Chiu's cognitive test method through an online test; however, using selected triadic objects represented in word (of natural and artificial objects) as the stimuli. We found that the African subjects showed more tendencies for logic-based and intrinsically-oriented thoughts than the Japanese respondents. Following this result, the study further seeks to delineate the characteristics of aesthetic experience and value perception among African and Asian cultures. It is expected that this knowledge can foster innovative *Kansei* approach to design over cultural diversity.

Key words: Cognition, Culture, Aesthetic experience, Value perception, Design, Kansei

1. Introduction

As the profusion of affective values in modern design continues to foster trade potentials for consumer products, designers in recent times are becoming more aware on expanding possibilities in a global but culturally sensitive market. In promoting genuine product values, users' cultural and subjective attributes are pertinent in the design thinking. *Kansei* is a holistic and contextual sensory-mental model for human-being, thus, the *Kansei* approach to observing the human feeling and exploring the thought processes in relation to the properties of design products is significant towards this achievement. A number of *Kansei* related studies have considered cultural inclinations in perception, and cognitive experience with design artifacts [1,2,3,4]. Though recent *Kansei* studies have been aimed at exploring the cross cultural perspectives in design characteristics and perceptions, yet, previous studies were limited to cultural landscapes of Asia, America and Europe to represent a dichotomy of the Orient and Occident. While Africa might share some similar cultural tendencies with these cultures, it also represents a distinct cultural entity of its own.

When we see a certain object, there is a dimension of thought or way of thinking about the object which guides our 'sense of value' and aesthetic perception of it. This system of thought is presumed to be strongly attributed to people's cognitive process or style. In a previous *Kansei* study by Park and Yamanaka [5], the attention on

subject's cognitive styles was adopted as methods to perceive the user's *Kansei* taking on Sigel and Chiu's experimental method. Chiu [6] investigated a divergence in categorisation between Chinese and America children, using pictures of artifacts, plants, and animals. A 28-item cognitive styles test was constructed as a measuring instrument. It contained 21 items adapted from the Sigel Cognitive Styles Test (Sigel 1967) and 7 items from the study by Kagan et al. (1963) [7]. His result which was further strengthened in subsequent studies showed that American (Western) children tended to group based on categorical associations (cow goes with chicken because they are both animals) while Chinese (Asian) children tended to group based on relationship (the cow eats the grass). Park conducted a series of cognitive test experiments (categorisation and image association) by comparing the tendencies among the British, Dutch, Japanese and Korean university students studying design. For the categorisation task involved presentation of one target picture (e.g. a mouse) and two related pictures (e.g. a phone and a human hand), and the subjects were asked to select one of the two latter objects that best belong to the target object i.e. either a mouse with a phone or a mouse with a human hand. His result showed that Korean university students were apt to greatly categorise the stimuli by identifying relationship, whereas European students had a greater tendency to categorise them through recognizing similarities. However, he noted that the Japanese, in spite of the regional similarities showed a greater tendency than the Korean subjects to categorise through recognizing similarities [8]. Though, some other factors that might influence on cognitive styles were further examined such as considering the impact of the subjects' level of mathematical skill or interest. The implication for the study was connected to the importance to the operational use of a product such as the cognition of images like icons and buttons in digital products.

Differences in cognitive processes originate from the social practices and beliefs in different cultural background [9]. Chiu and Kagan presented four types of cognitive styles as namely Descriptive-Analytic (DA), Descriptive-Whole (DW), Inferential-Categorical (IC) and Relational-Contextual (R). Park in *Kansei* study, adapted and categorized the three thought systems (DA, DW and IC) as 'Attribute-oriented Thought (AT)' to define a cognitive tendency to identify objects through recognizing similarities in attributes. Whereas the classification for (R) was based on 'Relationship-oriented Thought (RT)' to represent cognitive tendency that identify objects on a relationship-based similarities. For the purpose of this study, we also proposed a two-fold dimension of classification as Intrinsically-oriented Thought (IT) based on analytical tendency of categorizing in recognizing the intrinsic properties of an object and Extrinsically-oriented Thought (ET) to show tendency for holistic categorisation in recognizing the externally related properties of an object or relating in context of use.

2. Cultural Difference in Cognition: Premise for Cultural Difference in Aesthetic Perception

At the inception of the 21st century, Nisbett expounded on the substantial evidence that the socio-psychological differences characteristic of ancient China and Greece do in fact persist. China and other East Asian societies maintain collectivist in orientation whereas America and other European-influenced societies are more individualist in orientation [10]. Whereas psychologist have assumed universality in the systems of thought (human cognition), many scholars in humanities and other social sciences agreed that Westerners and East Asians have maintained very different systems of thought for thousands of years. For example, Westerners have been shown to have strong interest in categorization, which helps them to know what roles to apply to the objects in question, and formal logic plays a role in problem solving. East Asians, in contrast, were said attend to objects in their broad context. The world seems more complex to Asians than to Westerners, and understanding events

always requires consideration of host of factors that operate in relation to one another in no simple, deterministic ways. These claims about the nature of thought are summed up as: Firstly that member of different cultures differs in their "metaphysics", or fundamental beliefs about the nature of the world. Secondly that the characteristic thought processes of different group differ greatly. Thirdly that the thought processes are of a piece with beliefs about the nature of the world. [9]

Aesthetics fills an important role in the evolutionary trend of design as the design of objects in-turn has taken a key position in shaping culture, and impacting lives in far-reaching ways. In a neuro-psychological point of view, aesthetic experience touches on cognition and emotion—inciting our sense of judgment and influencing our behaviour. A fundamental definition that succinctly explains this phenomenon was presented by Koren [8]: "Aesthetics or the aesthetic is a cognitive mode in which you are aware of and think about, the sensory and emotive qualities of phenomena and things." Furthermore, Koren [11] described that: "Aesthetics is about where your mind goes- analytically, conceptually, imaginatively-when you engage with things designed, artistic, and the like." In general, aesthetics is a strong factor for product development in a highly-competitive market. But there is a need for cultural understanding in product development in order to promote wider acceptance in aesthetic appreciation. In a previous study [12], we proposed a theoretical framework where we identified aesthetics as part of *Kansei* experience which can be anchored on the cognition of sensori-emotional values evoked in interactions between humans and artifacts within situated contexts either through immediate sensory perception or bodily interaction. Hence, we construe aesthetic perception as a *Kansei* factor and an emotive cognition in the construction of products' values and hence propose that this phenomenon traverse all layers of product experience in both intrinsic and extrinsic ways, with cultural distinctions. A holistic view of aesthetics using the three levels of experience includes surficial, functional and symbolic dimensions of aesthetics. (Table 1)

Table 1. Thought process in the perception of a product aesthetics

Aesthetic experience with Product	Thought Process
Sensory Experience (Aesthetics of Appearance) A user experience of the physical properties of a product	Attraction and preference of the product Impression of mood or feelings through senses
Interactive Experience (Aesthetics of Use) A user experience the beauty of using a product	Perception of ease and fun of interacting operating system; Association of the operation
Meaningful experience (Symbolic Aesthetics) A user experience in finding meaningful associations with a product	Reflections on what the product represents Associations of product with things important and meaningful to the user Inference on the nature of the product from the material value

3. Aesthetic Characters in African and Japanese Designs

The African aesthetics manifests itself well through the visual materials like the arts and crafts. African aesthetics had been arguably presented as a socio-psychological and anthropological phenomenon from which we can learn as different paradigms to inform our design thinking [13]. This was based on a critical observation of the people, and the typical objects with which they interact with on daily basis. Unlike Western culture where aesthetics might be well linked to utility value, its being noted that the African aesthetic appreciation tends to show a strong inflection of ethnical and religious beliefs and values in addition. Most African words signifying aesthetics or a sense of beauty are intertwined with the good, proper and appreciable [13]. This conception however, seems to resonate with the Greek word for aesthetics, "*to kalos*", which also mean the beautiful and the (morally) good. Another interesting dimension is the concept of African aesthetics which can be expressed

materially or symbolically in a cultural product. The impact of the westernization and colonialism might have brought about a diluted taste and varied sense of aesthetic perception in contemporary Africa. However, traditionally, there are clearly stated and common standards of beauty across most of Africa's tribal societies. African cultures which are usually considered to be diverse and rich, typically bear concurrently traditional and modern aesthetic styles, and these tend to be spiritual, flexible, diverse and akin to nature. The unifying components of aesthetic appreciation include togetherness, craftsmanship, symbolism, anthropomorphism, self-composure, luminosity and youthfulness [13,14,15].

The Orient including Japan is well known for its rich aesthetic tradition. The distinctions which are expressed in term of craftsmanship and symbolism can also be found in African countries (Figure 6) though many other cultural gaps might exist. While the philosophy of Japanese aesthetics in the Western sense never evolved not until around the nineteenth century, it is now profoundly seen as a set of ancient ideals which includes *mono no aware* (the pathos of things), *wabi* (subdued, austere beauty), *sabi* (rustic patina), *yūgen* (mysterious profundity), *iki* (refined style), and *kire* (cutting)[16]. These ideals, and others, are said to underlie much of Japanese cultural and aesthetic norms on what is considered tasteful or beautiful. While seen as a philosophy in Western societies, the concept of aesthetics in Japan is seen as an integral part of daily life. Its essence is rooted in the idea of understanding the basic reality of constant *change* or *impermanence* which is derived from Buddhism. Japanese aesthetics has transcended to include a variety of ideals; some of these are traditional while others are modern and sometimes influenced from other cultures [17]. In the modern context is a prominent value of cuteness or *kawaii*. It has been identified as a *Kansei* (emotional) value of Japanese origin which has positive meanings, such as cute, lovable, and small [18]. This cultural phenomenon has become a vigorous aesthetic value for Japanese popular culture, entertainment, clothing, food, toys, personal appearance, behavior, and mannerisms.

While cross-cultural interaction is becoming an important issue for the product design in the global economy, the intersection of design and culture is a platform to promote local design in the global market.

Old cultural masks

| Ivory mask (Nigeria) | Noh mask (Japanese) |

| Zulu mama café chair by Haldane Martins (South Africa) | Hiroshima Arm Chair by Naoto Fukasawa (Japan) |

Figure 6. Iconic cultural designs from Africa and Japan- a reflection of the aesthetic taste

4. Goal

While there is currently a growing products market among Asian into African countries, targeted for the consumer and industrial markets, the affinity to cross-cultural product design may not only have be drawn on the basis of affordability or technical possibilities alone. Meanwhile, a gravitation of aesthetic values in product design is likewise supposed a contributing factor. Then, the cultural inclination could be a vista to understanding *Kansei* dynamics in the process of eliciting inference from the point of interface between the Africa and Asia traditions in regards to aesthetic interpretations and value perception in design. Hence, this study focuses on the cultural variables involved in the process of perceiving object's aesthetics and value sensibility in cultural product design in order to understand their *Kansei* (Sensibility). Particularly for this study, it is of imperative consideration to understand the cultural inclination in the pattern of cognition between Africans and East Asians (with preliminary focus on the Japanese). We hypothesized that there is a significant difference in the cognitive style between African and Japanese which in consequence, might shape the perception of aesthetics in a product.

5. Pre-Survey on African Design Aesthetics

5.1 Method

In a pilot study [10], we focused on investigating the aesthetic sensibility in traditional African design. An online questionnaire was conducted to elicit the perceptions of African designers (*n=24*) on the reflections of African aesthetic values in modern African design and affinity with the Asian design culture. The participants included members of the Network of African Designers (NAD) and International Council of Societies of Industrial Design (ICSID), covering nationalities from Nigeria, South Africa, Botswana, Uganda, Kenya and Egypt and their areas of design practice included information/ graphic design, ceramics, textiles/fashion design, industrial design and design promotion.

5.2 Discussion

The survey findings revealed the concept of aesthetics in a contemporary context of African design, possible factors for demand of Asian products and *Kansei* awareness as the field grows beyond its border. In a broad sense, African designs implied the ideation and creation of all forms of artifacts (tangible and intangible) partly or fully

developed based on Africa's cultural ingenuity and its aesthetic dimensions. African designs were mostly considered to be craft-based and culturally inspired (Figure 2). The overriding factors for contemporary African design include cultural preservation, user's satisfaction, social interaction and sustainable development. It is worth noting that African designs have not greatly explored the functional dimension of aesthetics which could extend to product usability and human-product interaction. Since Asian products seem favoured in most African nations, some inflections of socio-cultural factors are perceived to compel product preference besides the cost advantage (Figure 3). African designers are becoming aware of *Kansei* design with about 40% affirmative response. This could also imply a sensitisation towards improving on the method and process of redefining African cultural products and expressing emotional values through aesthetics. Hence, we propose a cross-cultural product evaluation based on *Kansei* method.
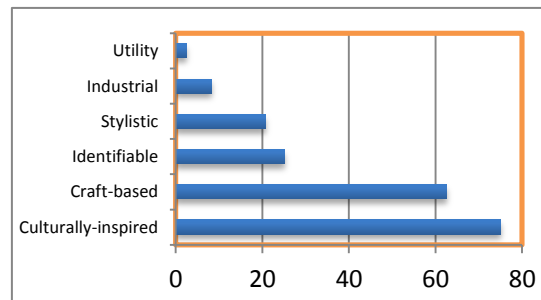

Figure 2: Designers' perception of African design attributes
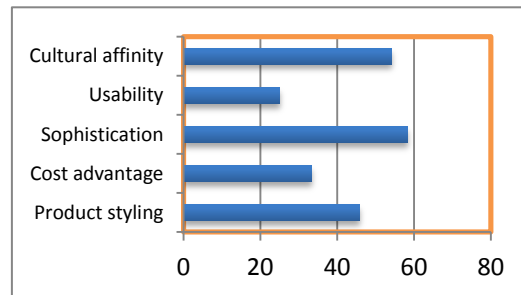

Figure 3. Ratings on social-cultural factors influencing demand for Asian products

6 Cognitive Style Test

6.1 Method

We developed our test based on this principal method used by developmental psychologist Chiu, L. H. (1972) in testing for the recognition process of relation. According to Chiu's experiment [6], American and Chinese children were presented triplets of pictures (e.g., cow, chicken, and grass) and asked which two belonged together. Ji *et al*. [19] showed the same phenomenon with subjects using words instead of pictures. In this study test, only words were used to represent the stimuli instead of pictures. An online test was set-up where Japanese (n=35) and Africans (n=37) participated, comprising mostly university students. Out of the 37 Africans that responded, two responses were incomplete and thus we had 35 valid responses for Africans (M_{age}=30;57% male) and 35 (M_{age}=24;60% male) from the Japanese. The Japanese represented Asian while no restriction was placed on nationalities of African participants (Table 2). For the participants, there were variations in age and professional background. The question was offered as follows: *From question....., please select from the given options which*

*you think is CLOSEST to the *TARGET object and probably stating your reason*. A pair of test questionnaire having same content was administered in English and Japanese languages. The English-based questionnaire was presented to the African respondents while the Japanese version was prepared for the Japanese respondents. A triadic combination of artificial and natural objects was set as the stimuli represented in words (Table 3). It is important to note that this is a pilot study, and therefore, we have purposively selected our sample size and delimited the scope of study. In addition, we did not restrict the subjects to a particular class of people though the bulk of the response came from among university students in Japan and Africa.

Table 2: Participant's profile

Cultural Region	Asian	African
Nationality	Japanese	Nigerian, Ghanaian, Kenyan, Ugandan, Benin, Tunisian, Malawian, Eritrean
No. of valid responses	35	35
	21 Male; 14 Female	20 Male; 15 Female
Total	70	

Table 3: Selected objects as word stimuli for the online test

	Target object	Option A	Option B
1.	Paper	Tree	Pen
2.	Mug	Wine glass	Clay
3.	Cow	Grass	Hen
4.	Ice	Water	Freezer

6.2 Assumption

Following the preceding studies [6,7,20], it was predicted that the Japanese who represent 'Asians' would have a natural tendency of relationship-based or extrinsically-oriented categorisation than the subjects who represent 'Africa'. Whereas, the African subjects, being a Western-influenced societies, would tend to categorise objects by identifying similar attributes or in an intrinsically-oriented manner. Though there might also be variation among the African countries, however, this experiment stood on the basic commonality of diverse cultures that exists in Africa such as in the heritage of aesthetic tradition and prevailing world view.

7. Result and Analysis

In order to verify the hypothesis, we analyzed the cultural inclination in the process of perception according to participant's characteristics based on the main regions- Africa and Japan. This experiment is about the comparison of the cognitive distance between African and Japanese in relation to the basic mechanism of thought process – categorization and inferential thoughts. The answer to the question is either choice A (word related to attribute) or B (word related to relationship).

Table 4. Prediction of categorization on the perception of relationship between objects

Dimensions of Categorisation for Object Recognition		
Cognitive style	Classification	Examples of predicted combination
Analytic– Intrinsic Orientation	Taxonomic; focus on intrinsic properties property	Paper - Tree Mug – Clay Ice – Water
Holistic– Extrinsic Orientation	Thematic; focus on externally related property or relationship in the context of use	Paper - Pen Mug – Wine glass Ice – Freezer

In order to confirm the difference of recognition tendency by region, the tendency according to four questions was compared. Tendency analysis is done by chi-square (x^2) test which verifies the difference of choice-ratio between A or B. The significance level of the test is 0.05(P value). Table 4 and figure 5 show the analysis by region. The charts in figure 5 descriptively show the distribution of responses collected from African and Japanese participants derived from four ranges of question.
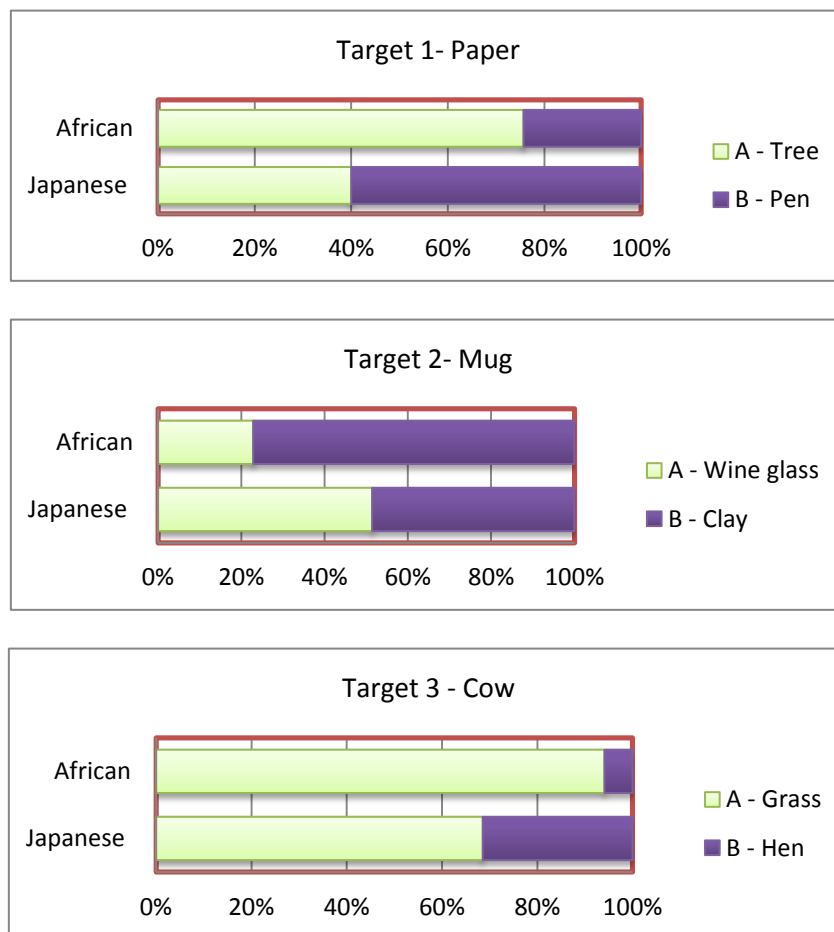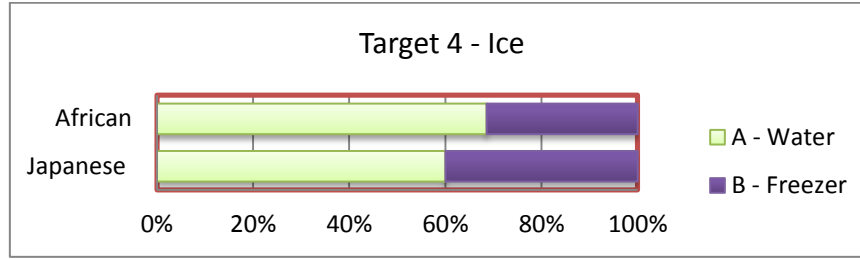
Figure 5. Classification tendency between African and Japanese within four ranges of question

Table 5: Comparison analysis of classification tendency by region

Question	Selection ratio of A			Pearson Chi-square (x^2) test	
	Africa	Japan	Average	Chi Square Value	Asymp. Significance (2- sided)
1.	25	14	19.5	7.006	.008
2.	8	18	13	6.119	0.13
3.	33	24	28.5	7.652	.006
4.	24	21	22.5	.560	.454

The selection ratio of A according to the questions was analyzed. As a result, there was difference in questions number 1, 2, and 3. In the case of categorization, it was inferred that there is significant difference in the style of perception.

8. Discussions

8.1 Cognitive Differences in Categorising Objects

Through responses to an online test, we considered the exploration of thought processes with a cognitivist approach. In a categorisation task using familiar objects presented in words, we examined the cognitive difference between Africans and Japanese as a basis to expect difference in aesthetic and value perception of objects. The result indicated that African subjects were more likely to respond with more logic-based reasoning and intrinsically-oriented thoughts than the Japanese subjects. In regards to categorisation of 'Ice' with water and freezer, whereas it seems to show no significant difference, the Africans were still considered a bit more intrinsically-inclined in thought than the Japanese according to the described data (Figure 5). In spite of some tendencies of closeness in the variations of response, the result of the test seems to correspond with the hypothetical proposition. By examining the added comments made by the respondents, the African point of reasoning were anchored on the attribute of origin and source in connecting objects together. Examples of prevailing statements are 'paper is made from tree', 'clay is the raw material (for mug)', 'you don't necessarily need a freezer to make an ice but you need water', 'hens feed on grains but cows eat just grass' and so on. Whereas compared to the African subjects, the Japanese point of reasoning tends to establish the relationship between objects in the context of use. An instance of this tendency was shown when some of the Japanese respondents associated mug with wine glass by presenting such reasons as 'because of the same use', 'both of them are cups', 'they are both container', 'the use is similar', 'pour wine into them', and so on. Also among the Japanese style of response was observed a tendency of creating mental images to establish the perceived difference between the set of provided options even though the objects were not presented in visual forms. For

instance when providing reasons to justify the choice of pen with paper, in translation, there were statements such as - 'the image of using pen to write on paper is stronger than the image of raw material', 'the image of the combination of paper and pen is strong'. Also for the choice cow with grass, we had such responses as 'the image of them being together', 'if I imagine about cow, the grass will come into my mind' and the like.

If these differences exist, then rule might also holds that social factors influence cognitive processes, therefore several interrelated predictions can be made concerning cognitive differences between African and Asian in the perceptual experience of objects. Considering other influential factors might allow for a more comprehensive explanation on the variation that might exist across the cultural groups. For instance, in recent studies by Knight and Nisbett [20,21], the behavioural difference by social class was shown to influence on the formation of cognitive styles even within similar cultural groups. In this regard, we can suppose that social class, specific social background and educational training of participants may be among the influential factors creating cognitive difference in perception. For the study, the characteristic difference across gender and African nationals were not considered due to the constraint of the sample size of the targeted population. Expanding this scope and population size in further will be considered necessary for the possibility of strengthening some claims made in this study and also mapping out the distinction among diverse cultures in Africa and Asia.

8.2 Perceptual Process in Rational *Kansei*

Harada [22] in his attempt to develop a comprehensive definition of "*Kansei"* surveyed opinions from a set of researchers at University of Tsukuba. The definitions posited was presented in [5] as follows: *Kansei* is …"subjective and unexplainable function; innate nature and cognitive expression of knowledge and experience; interaction of intuition and intellectual activities; evaluation ability reacting symbolically and intuitively, and mental function creating images". According to this purposed inquiry, researchers not only anchored their definitions on subjective and intuitive process *(subjective…innate nature…interaction of intuition)*, but also rational thought process *(cognitive expression of knowledge…intellectual activities)*. Hence, following the previous *Kansei* study by Park & Yamanaka[5], which focused on the differences of Attribute and Relationship Oriented Thoughts among selected Asian and European nationalities, the inclusion of 'recognition processes' was established. This was supported by the fact that recognition processes have been studied in the field of humanities, social sciences, cognition science, and psychology as well as marketing, education, and interface design which require knowledge of specific groups' ways of thinking. Other notable perspectives of *Kansei* given by the researchers highlight human ability of evaluation through symbolic and intuitive reaction and the imaginative function of the mind in making sense of the world.

Scholars in the humanities and social sciences claim that members of different cultures differ in their "metaphysical thought," or fundamental beliefs about the nature of the world. Based on these opinions, people from different cultural backgrounds should have diverse cultural inclinations towards understanding object's properties. Nisbett and his colleagues [10,19,20] have argued that these differential perceptual and cognitive tendencies are rooted in the different social practices of the two regions. East Asians are more dependent on each other in many respects, and their attention is focused on the social world and hence the field as whole. On the other hand, Westerners are more likely to attend to, perceive and remember the attributes of salient objects and their category memberships. Africa, due to its closeness to the western countries and the lingering influence of colonialism, might be assumed to share similar cognitive traits with the Westerners. While this tendency might

exist, this speculation remains as an assumption until it is proved. Besides, Africa is attributed with a social system and traditional cultural values which are at some variance with the Western culture.

In spite of little evidence to reinforce whether African's systems of thought is more inclined to the western or eastern culture, through this study, a trait of evidence can be drawn to support that there is a cognitive gap between African and the Japanese culture.

9. Inference and Further Study

Understanding of *Kansei* impact on users' behaviour is becoming a key factor in recognizing new gaps in the design process. Hence, the design outputs can be improved to embody qualitative meaning and distinct aesthetic values which emotionally and instinctively connect with the users. In a highly competitive global front, it is imperative for designers to gain a deeper understanding of users' culture and find strategies on how they can use culture as potential resources in product development and innovation. The implication for design community will be a paradigm shift from 'imposed product' to 'impactful product'. A consideration for differences in subjectivity and cultural values in design will help to achieve a successful outcome for a product design that is culturally-sensitive, aesthetically pleasing, instinctively connective and widely acceptable. This will trigger promotion of cross cultural product considering cultural diversity such as between African and Asian as a catalyst for designing aesthetically fulfilling products.

Currently, the elements of distaste in local design products are seen to be a reason people prefer foreign products. Besides counting on the recoil effect of globalization against the competitive survival of the indigenous design industry, the lack of recognition and acceptance of the traditional African product designs are in part an indication of the need for redefining quality and adapting the timeless aesthetic values into the modern product domain. To further promote the cross-cultural understanding of perceptual tendencies among African and Asian societies, we identify the need for more in-depth and elaborate studies on cultural difference in cognition,study propose for a cross-evaluation of cultural products using semantic and affective measuring tools.

10. Acknowledgement

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